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Health Services Research into European Policy and Practice

Final report as part of the HSREPP project

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1 Introduction to the HSREPP project: concept, objectives and report overview

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Contents

1.1 Introduction

This final report, part of the FP-7 funded project Health Services Research into European Policy & Practice (HSREPP), addresses how health services research (HSR) can help decision-makers tackle the challenges they face and provide scientific evidence to inform policies and practices. Its aim is to contribute to a refinement of the European agenda of priorities in health services research, tuned to the information needs of health policy-makers. This can contribute to promoting effective interfaces between the research community and policy-makers for the benefit of scientific underpinning of health care policies. Better application of available and identification of new scientific evidence should result in more effective policy measures and health care systems that are both efficient and responsive to the needs of European citizens. For several reasons, policy decisions on the design of health services often lack an underpinning of scientific evidence. In part, communication channels between the research community and decision-makers may be poorly developed (Black, 2001; Innvaer et al., 2002). But it should also be admitted that the contributions that scientists can offer are incomplete. For instance, the insights in the transferability of evidence from one health care system to another are still limited. This should be understood, however, in a historical context. The incremental way in which health care systems have developed in many Member States, in particular those with 'Bismarckian' roots, has resulted in a collection of unique 'patchworks', in which health services research knowledge is highly context-dependent (Marrée and Groenewegen, 1997).

A main reason why optimizing health care systems and services has become a priority is because of the need to contain growing costs for health care and to be prepared for future challenges of demand. Another is because health systems are increasingly seen in the larger context of general societal values like solidarity and equity that should be reflected in good access for all and responsiveness of health care services to the population's needs. Although Member States retain sovereignty with respect to their health care systems, these efforts to optimize health care systems can be observed throughout the EU. The European Commission aims to actively support the optimization of Member States' health care by providing added value to national efforts (EC, 2006a). One of the target areas in its Seventh Framework Programme is the research area of health systems and services under Pillar 3, *"Optimising the delivery of health care to citizens"*, aimed to provide the necessary evidence basis for informed policy decisions on health systems. Objective of this report is to provide inputs that can help achieve this aim, among others for the benefit of determining annual work programmes within the Seventh Framework Programme, as well as future Framework Programmes. However, the focus of the report is on other users as well, such as governments in Member States, national funding bodies, and international organisations including WHO and OECD, to contribute to ongoing dialogue and fine-tuning between initiatives in order to make effective use of (European) funded resources in the field of HSR.

1.1.1 Definition and approach of HSR

As the object of study of this report is on health services research, we start with a general step, namely defining what we consider as health services research and narrowing down which elements to include. For this purpose we adopt the definition used by AcademyHealth:

> *HSR is the multidisciplinary field of scientific investigation that studies how social factors, financial systems, organisational structures and processes, health technologies and personal behaviours affect access to health care, the quality and cost of health care and, ultimately, the health and wellbeing of citizens (Lohr and Steinwachs, 2002; AcademyHealth, 2007).*

As this definition makes clear, health services research covers a broad field which requires more precise definition of the areas of HSR around which this report will be centred. We will address the level of analysis of HSR, its relationship with other fields of health research and its relationship with (health) policy.

1.1.2 Level of analysis

A major characteristic of HSR is its broad focus: phenomena can be investigated at macro-level, meso-level and micro-level of health care provision. The macro-level refers to the health care system at large, either at regional level, at national level, or even at supra-national level. The meso-level is the intermediate level of health care organisations and the services they provide, while the micro level includes physicians' use of medical devices and technologies. Increasingly, studies in the field of HSR take an international or European perspective, in part related to the growing interconnectedness of health systems and health policies across the EU. As the EC notes 'this increased interconnection raises many health policy issues, including quality and access in cross-border care; information requirements for patients, health professionals and policy-makers; scope for cooperation on health matters; and how to reconcile national policies with the obligations of the EU's internal market' (EC, 2006b: 1). The manners in which health services can be studied from a European perspective, while considering the diversity among European health care systems, is a key element of HSR to be addressed.

1.1.3 Relationship with other fields of health research

The definition presented above, implies a close relationship and partial overlap between HSR and (Public) Health Research, in which health or quality of life is the object of study. Similar to HSR, Health Research can be done at different levels. Among others, when focusing on groups or national settings it is often referred to as Public Health Research, studying a population's health, while at lower levels it includes clinical (intervention) research, studying the effect of treatment methods on health outcomes. The partially overlapping relationship between HSR and (Public) Health Research is depicted in the following Venn diagram (based on Van der Zee et al, 2004).

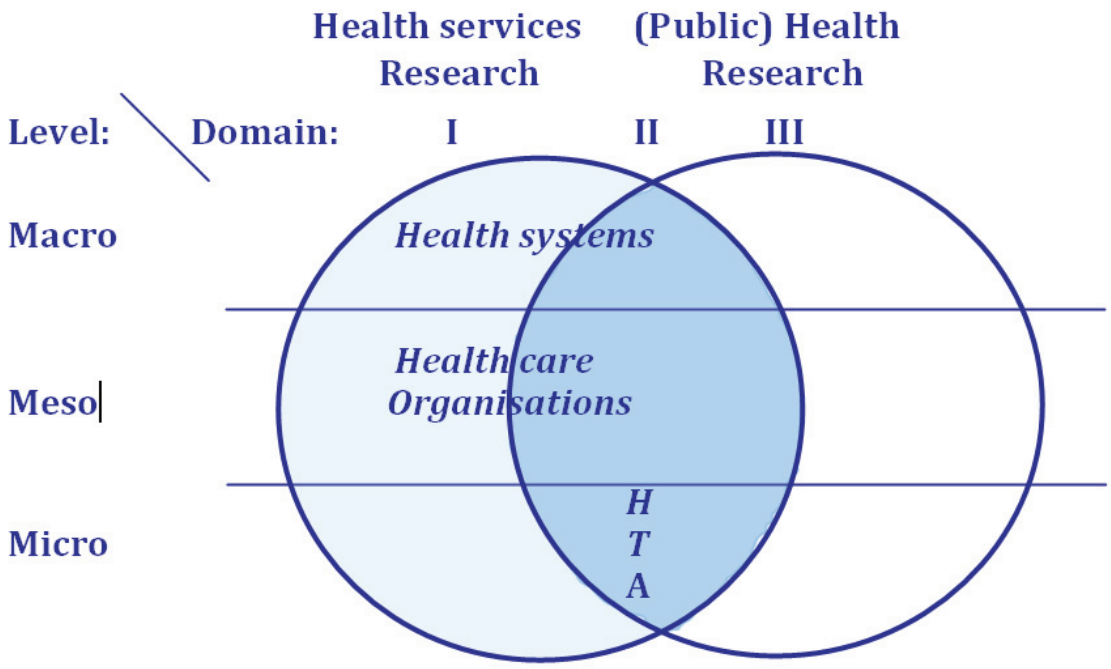

Figure 1.1 Relationship between Health Services Research and (Public) Health Research

Explanation of figure 1:

- Domain I has no overlap with (Public) Health Research. This domain is the utilisation of health services without taking individual health as an outcome or specific clinical interventions into consideration. Examples are determinants of doctors' incomes; teamwork and division of tasks between health care providers; and studies on health care expenditure.
- Domain III is the exclusive domain of (Public) Health Research. It includes research on health status or clinical interventions without taking into account the influence of the organisation or type of health services. Examples in the field of public health are studies about smoking behaviour or population-based epidemiological studies; examples in the field of clinical research are studies on the influence of specific medical interventions or pharmaceuticals on health outcomes.
- Domain II refers to the overlap between both adjacent research domains, relating the organisation of health care with health outcomes. For instance, health systems or health service facilities may be compared in terms of health outcomes. Or, features of the health care system or the organisation of facilities may be considered as a determinant of health or an influencing factor for the implementation of clinical interventions. Health Technology Assessment (HTA) takes up a special place within this domain. HTA entails the overlapping field between HSR and Health Research at different levels, as it not only covers topics such as medical devices, screening programmes or diagnostic technologies, but also concerns 'the organisation and delivery of care, since assessments, by definition, include issues about the use and diffusion of technology' (Jonsson et al., 2002). This especially applies to studies concerning the long-term effects of health technologies and their applicability and transferability to different (national) settings.

Health Services Research consists of both domains I and II and consequently both are addressed in this report.

1.1.4 The relationship between HSR and policy-making

As HSR is typically applied research, it is vital that an overview of HSR not only aims at research activities in themselves, but also addresses the manner in which these activities are being funded and used, as it helps understand and enhance an effective relationship between decision-makers, other stakeholders and researchers. In practice, the relationship and communication between the health services research community and decision-makers has been structured differently across Europe, varying from formal councils and other bodies to more informal connections. Reinforcement of this relationship, whatever its shape, is indispensable for at least two reasons. Firstly, in this relationship the policy problems to be studied need to be identified and clarified. Secondly, researchers and the users of study results together play a role in formulating lessons and recommendations as inputs to new policy. Without effective communication channels between researchers and the users of their results, the available HSR potential may not be focussed on the priorities of policy-makers, and policy-makers may not be effectively provided with available evidence from HSR studies (Mays et al., 2005). Therefore, we aim to contribute to future dialogue by clarifying possible contributions of HSR to policy-makers in order for gaps that deserve to be prioritised to be filled (Tennison, 1996).

1.1.5 Position of HSR in Europe

By a number of activities we aim to map and promote effective HSR contributions that can enhance the information base of health policy. However, there is not much to promote or to coordinate in this respect in the absence of HSR capacity. The level of development and the volume of health services research is quite diverse across European Member States (Gonzales-Block, 2006; Delnoij and Groenewegen, 2007). In particular in most of the newest EU Member States, HSR has very little tradition and has only developed slowly since the mid 1990s. Researchers in these countries learn from joint international projects and exchanges, but their numbers remain modest, mainly because funds for health services research are scarce. This situation is highly relevant and it gives a considerable European added value to this overview. Our exploration of the European 'HSR landscape' explicitly pays attention to the diversity in the position of health services research in Member States. This may also contribute in reducing the gap in research capacity among Member States. If the information base of health policy is to be strengthened, at national and European level, HSR capacity in individual Member States needs to be further developed. It is not sufficient for policy-makers to rely on international comparative studies alone. These are useful to compare general indicators, but are usually not detailed enough for balanced policy-making in the national 'patchwork situations' of health care. Moreover, for most relevant policy issues no results from international studies are available. Information-based national health policy cannot do without its own HSR inputs. As copying service arrangements from other (different) health care systems is not always justified (Øvretveit, 2003; Ros et al., 2000), national HSR is indispensable for the monitoring and evaluation of newly implemented health policy measures. We will address this problem by mapping the HSR potential in Member States, by employing strategies to involve researchers and policy-makers from countries that are developing their HSR capacity and by discussing a HSR agenda that is also aimed at such countries.

1.2 Objective

The *overarching* aim of this report is:

" to identify, evaluate and improve the contribution of health services research to the health policy process at the level of Member States and the European Union, and thus to help optimizing the delivery of health care services to European citizens."

This general objective can be broken down to the following specific objectives:

a. To identify the state-of-the-art of HSR in Europe.

***Explanation*:** An identification of the current state-of-the-art of HSR clarifies the areas that are currently well-defined and the outcomes of which can be used for policy-making purposes to improve health services. At the same time, this mapping results in an inventory of research areas that are currently under-researched from a policy perspective. Identified gaps are possible priorities for new research and a future HSR research agenda.

b. To identify at European and Member State level current and upcoming priorities in HSR for addressing policy needs.

***Explanation*:** In order to create and support a market place for health services research, the needs and demands of policy-makers for HSR inputs need to be clarified. Health services research priorities may concern either the specific topics of studies, the methods used or the timeliness of research. Priorities vary because of the differences in the body of knowledge in research areas and how these relate to the policy agenda (Bensing et al., 2003). The linkage to the policy agenda illustrates the importance of health services research being aimed at asking the right questions, in the right manner and at the right time. This refers to mapping research topics and priorities as well as to the methodological issues involved, e.g. for improving comparability in studies between Member States (Dash et al., 2003). Another aspect is the timeliness of research, in order to meet "real time" needs of policy-makers (AcademyHealth, 2006), but also in terms of distinguishing short- versus long-term priorities (Dault et al. 2003). As such, this objective requires a picture of the current state-of-the-art in HSR (objective a), as well as identification of what the needs of policy-makers are.

c. To assess at Member State and European level current infrastructures for the translation of HSR into the policy and practice.

***Explanation*:** This assessment and evaluation relates to research practice (for instance, the exchange of methods and data availability) as well as to the use of research networks and scientific and advisory bodies, and how these contribute to effectively disseminating HSR results to policy-makers. Promoting the "linkage and exchange" between health services researchers and the users of their products is crucial in ensuring an effective use of HSR (Lomas et al., 2003). This evaluation includes opinions and experiences of policy-makers, other stakeholders and researchers as to the role of HSR in health policy development. This to determine whether current infrastructures are sufficient to meet the needs of health policy-makers and to recommend how possible shortcomings can be removed.

d. To contribute to agenda setting on HSR at European and Member States' level.

***Explanation*:** This objective relates to the intended outcomes of the report and therefore, its main focus. On the basis of the state-of-the-art of HSR, consultations among decision-makers and researchers and presentations of innovative research across the European Research Area, a dialogue will be established in order to determine and refine HSR priorities at European level. These priorities will help EC Directorates-General to further develop their research programmes.

This study should also provide major information for Member States to set their own HSR agenda and create structures to enable to improve the information base of their health care policy.

1.3 Overview of the report

This report and its mapping activities on the state-of-the-art and future priorities is structured around a number of sub-areas in HSR, broken down into different chapters, 3 to 7. First, chapter 2 will shortly describe the research activities that were carried out for the production of this report. Although the exact activities differ somewhat between HSR areas and chapters, there are three key elements that all chapters make use of: literature searches, country consultation forms, and an online stakeholder survey. The following chapters then focus on each of the main HSR areas: chapter 3 deals with HSR at macro level, focusing on health care systems; chapter 4 with HSR at the level of organisations and professional practices; chapter 5 will focus on HSR at micro level: the effects of interventions and services; chapter 6 and 7 apply to all these levels and address the relatively new field of benchmarking studies, and the HSR research-policy interface, respectively. The five chapters are briefly explained below.

- **Chapter 3** will address the available knowledge of HSR at the level of health care systems, being national or sometimes regional entities, influenced by European institutional forces. As health care systems may contribute to the realisation of general values of universality, access to good health care, equity and solidarity, attention is being paid to understanding and improving health systems performance. Many topics that are currently high on the European research agenda are linked to the arrangements of the health system as a whole (for instance, cross-border healthcare purchasing and provision, migration of health care professionals, and patient safety).
- **Chapter 4** will focus on health care organisation and service provision. Health care organisations and the services they provide form an intermediate level between the health care system at large and service provision in the interaction between patients and providers. Their systematic coherence can be evaluated (in terms of interactions and interconnections between organisational structures) (Sibthorpe et al. 2004), as well as their contribution to optimal and sustainable health care delivery. As such, the functioning of organisations is influenced by the system at large, for instance by prevailing regulation that may affect their degree of autonomy and market exposure.
- **Chapter 5** will address health care interventions, by specifically looking at the field of Health Technology Assessment (HTA). HTA is a multidisciplinary field of policy analysis that systematically assesses the medical, social, ethical, and economic implications of the development, diffusion, and use of health technology (INAHTA, 2007). HTA addresses a wide range of interventions used in health care and health promotion. It studies the effectiveness of methods for prevention, diagnosis, treatment and rehabilitation and the systems in which health is protected and maintained. Compared to other areas of HSR, HTA is a field in which most experience is available concerning the transferability of research to (evidence-based) health policy and the various forms in which research and policy meet structurally (councils, by means of national expert centres, chief scientists, conferences, seminars). As such, HTA can provide valuable lessons for other fields of HSR for refining the research agenda and strengthening the linkages between research and policy.

- **Chapter 6** will be devoted to benchmarking and performance indicators. An issue relevant to all areas of HSR is the collection and dissemination of information on 'good practice'. Benchmarking is increasingly important in the light of 'responsive health care systems' with a growing emphasis on the needs of users (and choosers) of health care services. This activity entails monitoring health services within and across Member States over time, pooling valuable health services initiatives and setting up (European) mechanisms to exchange best practice. A crucial step in this process is to develop and refine criteria for benchmarking health services by using comparable performance indicators (Arah et al., 2003). A growing number of studies has shown concern about the quality of indicators used (WHO, 2000; Wait and Nolte, 2005; De Koning et al., 2007). This chapter will address these issues by identifying main themes and opportunities to improve the HSR evidence base behind policy developments and to identify priorities and recommendations for setting the research agenda in the field of performance indicators and benchmarking.
- **Chapter 7** will focus on the relationship between the HSR community and the health policy process at the various subsystems and levels of the health care system (regionally, nationally and at European level). Its focus will be on modes of commissioning research by policy-makers as well as on how results of research are fed into the policy process. This includes structures and conditions for the effective transfer of knowledge as well as feedback structures between decision-makers and researchers. This information will be considered in the context of the organisation of the policy cycle and the general political structure (e.g. coalition governments versus two party systems) and general health care system structure (social security health care systems versus National Health Services). The question of how research is (and should be) linked to policy is applicable to all of the areas within HSR. Lessons from HTA, for instance, may also apply to other areas. On the other hand, linkages between research and policy may well vary between HSR topics and between Member States, depending on the overall structuring of the national (health care) system.

Given the European perspective of this report, each of the chapters 3-7 will put special emphasis on evaluating research across the European Research Area, including Eastern and Central European countries that may up to now be underexposed. As such, the combined efforts of these chapters will help build on *past* European HSR, evaluate *current* HSR and help develop *future* research initiatives based on the past and current state of research as well as policy information needs, which can be used in current as well as future research programmes.

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2 Use of information tools for measuring the production of HSR, its use in health care policy and future priorities

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Contents

2.1 Introduction

This chapter provides an overview of the methods used in the HSREPP project to measure HSR output and its use in policy and the methods used to identify future research priorities. When it comes to setting research priorities, two broad strategies can be identified: a technical assessment, using quantitative approaches (e.g. epidemiology, cost data), and second, interpretative assessments, dominated by a consensus view of informed participants (Lomas et al 2003).
Ideally, a combination of both approaches should be used. To combine technical data and stakeholder debates, five steps should be undertaken for a so-called interpretative 'listening model' for priority setting (Lomas et al, 2003; see also Viergever et al 2010 for a similar checklist):

1. Identification of stakeholders to participate in the consultation;
2. Identification and assemblage of data needed for the consultation;
3. Design and completion of the consultation with the stakeholders to identify those issues likely to be a priority over the next three to five years;
4. Validation of the identified priority issues against similar exercises;
5. Translation of priority *issues* into priority *research themes*.

Based on this approach, a strategy was developed to come to a well-founded prioritisation of health services research. We started with a general step, namely defining the field and narrowing down which elements to include in a priority-setting process (see chapter one for more details). It led to a distinction into five main areas of HSR around which all other activities were centred:

1. Research on health care systems;
2. Research on health care organisation and service delivery;
3. Health technology assessment (HTA);
4. Performance indicators and their use in benchmarking;
5. The relationship between research and policy.

In each of these areas a search of existing scientific literature was done. As published studies do not reflect the whole range of what is currently done and has been done in HSR, we also incorporated overviews of EU funded projects. At the same time we held a consultation among country consultants on the position of HSR in their countries and conducted a wider survey among both policymakers and researchers from Europe to identify priorities in HSR over the next two to five years. The outcomes of these different activities were presented and discussed at a working conference in April 2010. The following sections will further explain the different steps taken.

2.2 Literature searches

For the different themes, it was chosen to search the literature with different approaches, depending on the availability of relevant information. E.g. for the themes "Health systems" and "Health care organisations and service delivery" a structured search and analysis based upon sub-topics was performed. For the other themes slightly different approaches were chosen. The exact strategy used depends on the characteristics of the theme. Precise descriptions of the literature searches can be found in the concerning chapters.

2.3 Inventory of EU-funded projects

Additional to the analysis of published materials, a search was done on past and currently running EU funded projects. As this project aims to identify future research priorities in Europe, it is also important to provide insight in currently researched topics. This is to avoid that a certain topic is identified as a "gap", while it is currently being researched in a European context but has not yet been published about.

The inventory of EU funded project was done based on the knowledge of the various authors of key projects in their research fields. For the themes "Health systems", "Health care organisations and service delivery" and "Benchmarking and performance indicators" searches were conducted in different databases. First, the CORDIS (Community Research and Development Information Service) project database was used, which contains information on current and past Framework Programmes (http://cordis.europa.eu/search/index.cfm?fuseaction=proj.advSearch) . Secondly, the database of the EAHC (Executive Agency for Health and Consumers was used (http://ec.europa.eu/eahc/projects/database.html). Additionally, varying per area, internet search engine Google was used and websites of European organizations were consulted in searching for projects. The searches were conducted with different keywords per area. The results were then analyzed in order to determine which topics and which countries have been object of study or have participated in EU funded health services research.

2.4 Country consultants and country consultation forms

The HSREPP project covered 34 European countries as subject of research being:

- all 27 EU Member States (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom),
- 3 Candidate Member States (Croatia, the Former Yugoslav Republic of Macedonia and Turkey),
- and 3 out of 4 Members of the European Free Trade Association, EFTA (Iceland, Norway and Switzerland).

To ensure full geographical coverage of HSR expertise throughout Europe, a country consultant for each of these countries was approached who could describe the activities in HSR in each country and how this research is used to inform policy-making. Country consultants also assisted in identifying key experts to invite to the project's survey and conference and provided critical reading of the various end products. In four of the countries project partners acted as experts to provide this information (Denmark, Germany, the Netherlands and the UK). The other consultants were selected based upon their expertise and were mainly persons within the professional network of the project consortium.

Each country consultant was asked to complete a consultation form. To develop the design of the consultation form and the framework of analysis a brief review of the literature was undertaken. Given the wealth of studies on research utilisation, knowledge transfer and evidence-based policy-making, focus was on reviews that bring together existing knowledge about the research and policy interface. The consultation forms covered the following topics (see chapter 7 by Ettelt and Mays for more details):

1. ***Funding and prioritising health services research (HSR)***
   E.g., who are the main funders of HSR in one's country, what is the volume of funding for HSR, how are priorities for HSR funding established nationally and what are the key topics policy-makers in one's country have identified as priorities for HSR?
2. ***Production of health services research***
   Who are the main producers of HSR in one's country, are there any organisations or institutes dedicated specifically to HSR, is there specialised training/education available for health services researchers, and are there any scientific journals or conferences specifically focusing on health services research?
3. ***Use of health services research in policy-making***
   E.g., who are the main users of HSR in one's country in relation to policy-making, are the government or other policy organisations held accountable for using (or not using) HSR evidence, how is health services research used to inform policy-making and in what ways are health services researchers involved in policy-making?
4. ***Activities to promote the use of health services research***
   E.g., Whose responsibility is it to promote or facilitate the use of HSR in policy-making, are there mechanisms in place to promote the distribution, availability and access to HSR evidence, are there mechanisms in place to support the uptake of HSR by policy-makers, are there mechanisms in place to promote linkages between researchers and policy-makers, and is there evidence of the effectiveness of any of the measures mentioned above?
5. ***Barriers to and facilitators of the use of health services research in policy-making***
   E.g., in one's experience, what are the most important barriers and facilitators that determine whether HSR is used or not used in policy-making in one's country, and what would need to change in your country to increase the use of HSR in policy-making?

The complete consultation form can be found in Appendix 1. Consultants could also seek advice from other national experts if appropriate. They could also indicate if questions did not apply to their country (e.g. if there is no organisation undertaking health services research or no public funding for research). Consultants were furthermore asked to add weblinks to organisations, events or publications where appropriate. In total, for 29 out of 33 countries a consultation form was returned (with 2 consultation forms for the UK, both for England and Scotland).

2.5 Online stakeholder survey

To assess views on future health services research priorities in each of the European countries, a stakeholder survey was carried out. The objective of this consultation was to identify priorities in the various fields of HSR and to explore options for improving the translation of HSR into policy and practice. Stakeholders in all European received personal invitations to participate in the consultation. Following an approach used by AcademyHealth (2006), it addressed two main questions:

a) What are (or what should be) the research priorities for the field of health services, including topics, methodology issues and timeliness?
b) Is the current research infrastructure equipped for these needs, and if not, how can it be strengthened?

In the past, a number of endeavours have been undertaken to solicit the opinions of experts on health services research. Examples are a set of consultation studies by the Canadian Health Services Research Foundation (e.g. Dault et al. 2003), as well as initiatives by AcademyHealth

(2006), and others. Similar experiences are available from the field of health research (e.g. Cherry and Anderson, 2002) and other areas of public consultation on research priorities, such as the online consultation on a new European Research Area (EC, 2007).

Based on these earlier initiatives an online consultation form was developed. The form was built around the main themes of the project: health systems, health care organisation and service delivery, HTA, benchmarking & performance indicators and research & policy. As each of these themes is a major topic for consultation in itself, the form was centred around key issues for each theme. Experts could answer one or more themes in detail, depending on their background and expertise. A full version of the questionnaire is available on the website www.healthservicesresearch.eu.

The online survey was carried out among researchers and decision-makers in order to assess views on upcoming HSR priorities and to explore options for improving the translation of HSR into policy and practice. Three groups of respondents were approached:

- Country consultants and people who were identified by country consultants as experts in HSR in their country received a personal e-mail invitation and reminder in the period December 2009 to February 2010. Of the 383 persons approached, 140 filled in the online survey (response rate 37 %).
- Invitations were sent to subscribers to the project's electronic newsletter, as well as to members of the mailing list of the Section HSR of the European Public Health Association (EUPHA). It was also possible for each visitor of the project website to fill in the same survey. This resulted in 127 responses.
- After the working conference, held in April 2010, a follow-up workshop was organised at the annual conference of the European Health Management Association (EHMA) in June 2010. Invitations were sent through the regular EHMA newsletter and to all conference participants. In total, 28 people responded.

Analyses showed that responses from different groups were similar. Therefore, the three groups were combined into one group of 295 respondents. The survey contained questions on the background of the respondents (researcher versus policy-maker) and their country of residence. Of all respondents 24% considered themselves as being a decision-maker, 67% as researcher and 9% as something other. Further, 88% of the respondents were from EU Member States, 2% from EU Candidate Member States, 3% from the EFTA countries, 2% from other European countries and 4% of the respondents were from outside of Europe. Of these 297 respondents, 241 persons filled in the questions on research and policy questions as well as questions related to one or more of the 4 other themes (health systems, health care organisation and service delivery, HTA, benchmarking & performance indicators). An overview of the response is provided in the table below:

Table 2.1 Respondents stakeholder survey per theme

Theme	Researcher: %	Decision-maker: %	Other: %	Total: n (%)
Health systems	27%	67%	6%	78 (26%)
Health care organisations and service delivery	24%	68%	8%	85 (29%)
Health technology assessment	18%	74%	8%	38 (13%)
Benchmarking and performance indicators	18%	76%	5%	40 (13%)

2.6 Working Conference "Health services research in Europe", 8-9 April 2010

In April 2010 in The Hague, the Netherlands, a working conference was held, titled 'Health services research in Europe: where research and policy meet'. This conference was aimed to contribute to the development of a future research agenda. The conference was attended by almost 350 participants, both decision-makers and researchers, coming from 40 different countries within and outside Europe.

The theme of the first day of the conference was "State of the Art of HSR in Europe". At this day, plenary sessions focused on the relationship between research and policy, presenting preliminary findings on the position of HSR in each country, among others based on consultation forms. In parallel sessions preliminary findings were discussed on the state of the art of HSR in the other four areas ("Health systems", "Health care organisations and service delivery", "HTA" and "Benchmarking and performance indicators"). In each session, discussions took place in carousel format, in which participants were divided into three equal sized groups. Each group then discussed a certain topic, led by a facilitator, after which groups switched to a new topic. A reporter then provided a summary of what had been discussed on the topic in the previous round. After three rounds all groups discussed all three topics, building on the inputs of the groups before. The session was then closed with a summary by a reporter per topic, followed by a general discussion to determine final outcomes. This led to the identification and refinement of a large number of ideas within each topic.

The second day of the conference addressed the future of HSR and how to improve its contribution to the health policy process. After sketching and debating the future research-to-policy landscape a closing session delivered main outcomes and concrete action points to a panel of representatives of the policy and research community both at European and national level. Topics covered this day were: Developing HSR data and methods; Capacity-building of policy and research; Funding and commissioning across Europe; Organising and supporting HSR community; Increasing impact of HSR in policy.

Finally, during and after the conference participants were asked to fill in a form on which they could state "One priority" as being the main priority of HSR. This form was filled in by 56 persons and findings were use to refine the results.

To safeguard the overall aims of the conference and to advise on the conference organisation a Scientific Advisory Committee (SAC) was established. For the final programme determination, we consulted the Scientific Advisory Committee. The member of the Committee included leading experts in each of the five fields and were asked to see to it that the programme, including a selection of themes and invited speakers, addressed the right topics from a European perspective.

2.7 Discussion

This chapter provided an overview on the different methods which are used to come to a well founded set of future priorities for HSR. A combination and triangulation of sources of information was used based on the assumption that research priorities can be best identified through using a combination of technical and interpretive assessments. However, there are also downsides to be distinguished for each of the various steps undertaken. For example, the literature searches based

on bibliometric analyses were restricted to a limited number of databases. Nevertheless, they included a majority of relevant journals. Another limitation is that searches often have to be limited to English publications or publications with an English abstract, and that grey literature is generally missing in such databases. It is therefore very difficult to get a full overview of all HSR in countries. Moreover, as the body of knowledge can differ considerably per research theme, it is also essential to adjust the mapping depending on the topic at hand. E.g. in the case of research-policy relations the number of empirical studies (as well as EU-funded projects) is especially limited, which makes the insights from country consultants even more important. In the following chapters the results of the different steps taken are presented per health services research area.

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3 Health Systems Research in Europe

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Contents

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3.1 Introduction – Health Systems

Europe's health care decision makers are facing an increasingly complex and rapidly changing landscape. One of the most prominent developments is the continuous aging of the population which implies that the demand for care for the elderly, in particular long term care and palliative care, will probably substantially grow. Non-communicable diseases and in particular chronic illnesses have become the main sources of burden of disease (World Bank, 2006). It also implies greater emphasis on the need to strengthen preventive care in order to relief some of the pressure of the health system in later stages and to ensure that sufficient numbers of people will remain active and in good health at higher age.

The same demographic developments will imply a considerable shift in the workforce, with from 2020 onward fewer and fewer people in the working population – if migration does not increase – able to ensure our future prosperity (EC DG-ECFIN, 2009).

A second challenge on countries' health care system is the high spending on health care, which generally is rising faster than economic growth (OECD, 2010). In many countries, a debate is ongoing how to realise major cuts in the health care system, even though health spending has only recently been recognized as an investment, contributing to the health and wealth of Europe (WHO European Ministerial Conference on Health Systems, 2008). At the same time, for-profit providers are growing in the health care arena, which implies that an increasing amount of health care expenditure is not being spent directly on health services but on profit paid out to share-holders.

With this increasing pressure on public finances, one particular element that remains high on the European agenda is the solidarity of the health system, ensuring that vulnerable groups such as the chronically ill, lower incomes or different ethnic groups do not suffer unevenly and that any health inequalities, for example in terms of access of the health care system, are reduced rather than increased (European Commission, 2007).

In this context it is of great value to recognise and adopt technological as well as organisational innovations that can help make health care more effective and efficient. As for organisational changes (i.e. health care reforms), a number of developments are taking place, the consequences of which on health care, including its quality and cost, are not always sure. Examples are the growing emphasis on privately owned health care provision, the shifts in health insurance (towards competition in some countries and centralization in others), the introduction of co-payments, or the organization of care for chronic illnesses around disease management programmes.

These problems are faced by many European countries and call for more empirical evidence on both intended and unintended consequences of different types of action. Especially in times of scarcity it is crucial that health care problems are addressed with evidence informed policy and that evidence finding is aimed at those topics most urgent on the current policy agendas.

Within health services research, health systems research addresses the macro level of health care, i.e. the level of nations or regions, and the issues related to the organizational structure, the model of financing, the regulation and planning of the system, the ways to create physical and human resources and to provide services, as well as it changes over time.

According to the definition provided by the European Observatory on Health Systems and Policies –

which draws on the World Health Report 2000 (World Health Organisation, 2000) – a health system consists of all the

> *"people, institutions and resources, arranged together in accordance with established policies, to improve the health of the population they serve, while responding to people's legitimate expectations and protecting them against the cost of ill-health through a variety of activities whose primary intent is to improve health." (European Observatory for Health Systems and Policies, 2007)*

This definition acknowledges what the WHO has defined as the fundamental goals of a health system (World Health Organisation, 2000), namely:

- to improve the health of the population they serve,
- to respond to the wishes and expectations of individuals about how to be treated, and
- to provide financial protection to individuals against the costs of ill-health.

Additionally, the definition above covers a plurality of professions and institutions being part of a health system as well as a broad range of activities to promote, restore and protect health. A health system includes health care of ailing individuals, ranging from the informal care provided by relatives to the highly specialised and technologically advanced medical care delivered in tertiary hospitals. It also includes actions targeting whole populations, ranging from educational campaigns to public health laws and other kinds of interventions explicitly or predominantly intending to protect the health of populations, such as environmental protection, workplace safety, or food and water safety policies. In this line, the Tallinn Charter on Health Systems adopted by the WHO European Ministerial Conference in 2008 indicates that health systems

> *"ensemble all public and private organizations, institutions and resources mandated to improve, maintain or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health."* (WHO European Ministerial Conference on Health Systems, 2008)

This Charter also stresses that health systems are more than health care and includes health promotion and any other efforts to influence other sectors to address health concerns in their policies (WHO European Ministerial Conference on Health Systems, 2008). In most countries, the majority of financial and workforce resources available to address health-system goals are, however, committed to the organization and delivery of preventive, curative, rehabilitative and palliative services, i.e. to the health care system. A health care system has been defined as the arrangements, individuals and institutions through which personal health services are provided, organized, and controlled (Myers, 1986). It is characterised by a formal structure, whose finance, management, scope and content is defined by law and regulations and aims at delivering health services (in the primary, secondary and tertiary sectors, as well as at home) to a defined population (European Observatory for Health Systems and Policies, 2007).

This is to a certain extent contradictory with the OECD System of Health Accounts, which divides expenditure on personal health care services and goods (HC.1-HC.5 in the classification) from that on collective health care services (with the latter encompassing both prevention and public health services incl. e.g. occupational health care [HC.6] and health administration and insurance [HC.7]), i.e. which uses the term "health care" for both (notwithstanding other topics regarding the division, e.g. that certain services of mother and child health may also be classified as personal) (OECD, 2000).

3.2 Frameworks for Health System Research

There are several manners to approach health systems and health care systems in the context of research, all of them sharing that they put the main focus on the macro-level. Mainly there are two models established in health (care) system research: a health production model, which is especially appropriate to assess the performance of the system (see Figure 3.1) and a triangular model, which is very suitable to describe and compare the organisational, financial and governance arrangements of the system (focussing on health care/ personal health services; see Figure 3.2) (Busse, 2006).

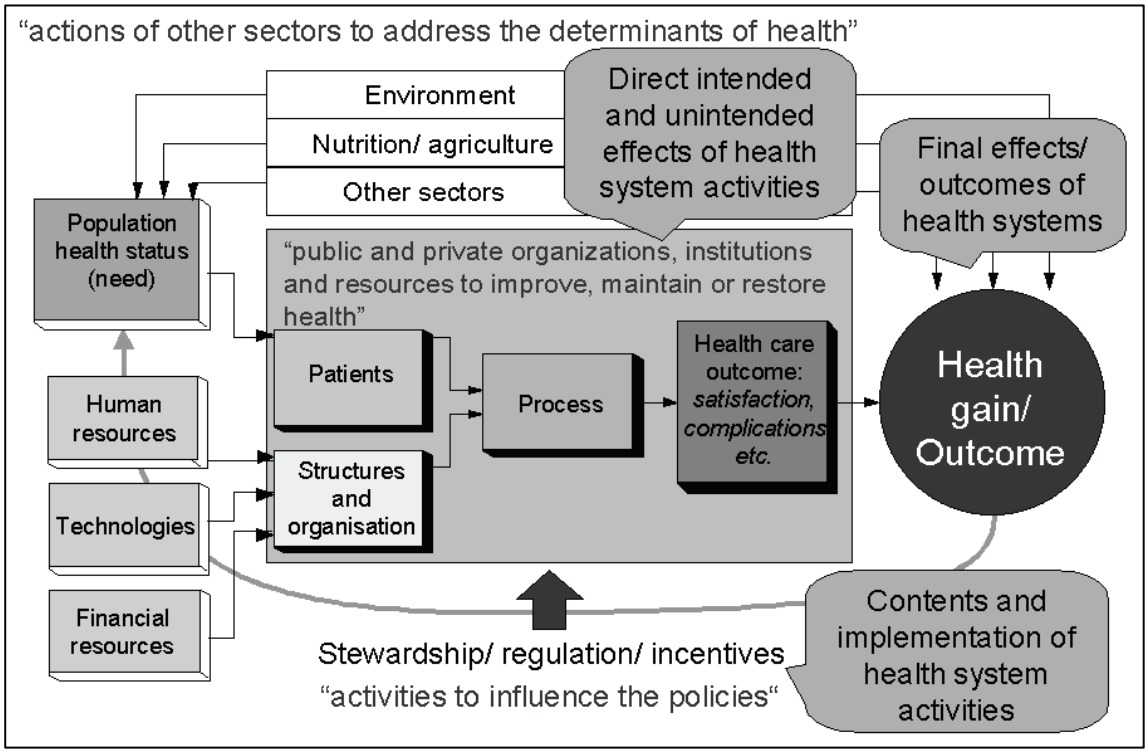

Figure 3.1 Health Production Model for Health Systems Research

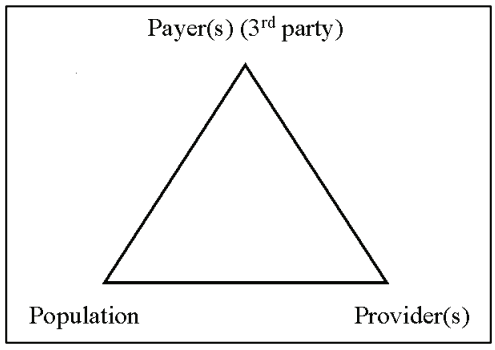

Figure 3.2 Triangular Model for Health Systems Research

The European Observatory on Health Systems and Policies structures its analysis of health systems (HiT profiles) into the categories organizational structure, regulation and planning, financing, physical and human resources, provision of services, principal health care reforms and assessment of the health system (Mossialos et al., 2007). In our view, this structure integrates the

two models briefly presented above in a practical manner by relating to the functions of health systems described above.

The topics addressed within health systems research or health care systems research can be identified with the help of the models described before and can be systematized along the four functions of modern health systems (based on (1) and later modifications):

- Service delivery/provision (supply/ availability and utilization of primary, secondary … care etc.);
- Financing & health expenditure (resource mobilisation, pooling, allocation, purchasing, provider payment – Incentives, equity/ fairness …);
- Resource creation (infrastructure, human resources, technologies/ goods…);
- Stewardship/ governance (decentralization/centralization…, access).

Alternatively, topics can be arranged according to the building blocks of the health production model (cf. Figure 3.1):

- Inputs[1]*: health needs & demand on the one side; financial resources, supply/availability of human resources (work force), infrastructure/ technologies (e.g. beds, pharmaceuticals, medical devices, etc.) as well as their organization and structure on the other;
- Processes*: Access (population coverage, benefit coverage/ entitlements, waiting times …), Utilisation (numbers, appropriateness, equity …);
- Outputs and outcomes*: satisfaction, health.

Any of the topics can be studied following a more descriptive approach (e.g. status quo, evolution over time) or a more analytic one (e.g. trying to establish causal relationships between topic and health outcomes or satisfaction). Some studies may focus on single countries, others may address international comparisons – the most prominent characteristic of health system research being its focus on the macro-level (i.e. at the level of nations or regions).

One proposal on types of studies that can be conducted within the overarching topic of health (care) systems research has mentioned –for each of the above mentioned building block topics– (Delnoij & Groenewegen, 2007):

- studies of the organization, cohesion and arrangement of health care supply according to the demands/needs of the target population;
- studies of inequalities (e.g. distribution of goal achievement);
- studies of the efficiency and quality (studies of the performance).

3.3 Objective of the Assessment Report

The objective of this assessment report is to provide a general overview of the principal areas of research on health systems in Europe, based mainly on an analysis of published literature. Special focus will be given to the countries of the European Union and the European Economic Area (EEA).

[1] * Issues of structural, process and outcome quality on the system level are disregarded here as they will be dealt with in a separate chapter.

3.4 Methods

Based on a literature search, a bibliometric analysis was performed in order to provide an estimation of the field of health systems research in Europe. After providing definitions relevant for the assessment, we describe the approach followed, which was similar to the one followed in the SPHERE-Project (Delnoij & Groenewegen, 2007).

3.4.1 Preliminary Definitions

3.4.1.1 Definition of Europe

For the purpose of this study we considered "Europe" as the countries listed as members of the European Region of the World Health Organisation (see Box 3.1). In more detailed analysis we only focus on the countries of the European Union (as of 2010) and of the European Economic Area.

Box 3.1 Countries belonging to the European Region of WHO (Source: http://who.euro.who.int/countryinformation)

Albania	Greece*	Republic of Moldova
Andorra	Hungary*	Romania*
Armenia	Iceland#	Russian Federation
Austria*	Ireland*	San Marino
Azerbaijan	Israel	Serbia
Belarus	Italy*	Slovakia*
Belgium*	Kazakhstan	Slovenia*
Bosnia and Herzegovina	Kyrgyzstan	Spain*
Bulgaria*	Latvia*	Sweden*
Croatia	Lithuania*	Switzerland#
Cyprus*	Luxembourg*	Tajikistan
Czech Republic*	Malta*	The Former Yugoslav Republic of Macedonia
Denmark*	Monaco	Turkey
Estonia*	Montenegro	Turkmenistan
Finland*	Netherlands*	Ukraine
France*	Norway#	United Kingdom of Great Britain & Northern Ireland*
Georgia	Poland*	Uzbekistan
Germany*	Portugal*	

*EU countries; #non-EU EEA countries (Liechtenstein is part of the EEA but not listed in WHO-Europe)

3.4.1.2 Definitions of health system topics

Setting out from the accepted definitions of health system summarized above, we identified four thematic areas for health systems research. Each of the thematic areas covers a set of topics which can be the object of health systems research (see Box 3.2). More detailed descriptions of the areas and topics are provided below. The definitions used here were mainly taken or adapted from the Glossary of European Observatory for Health Systems Research and Policies (European Observatory for Health Systems and Policies, 2007) – where this is not the case, it will be indicated.

Box 3.2 Areas and topics of health systems research

Service delivery/provision	Availability, supply
	Accessibility access
	Acceptability
	Coverage, benefit basket/ package, entitlements
	Waiting time, waiting lists
	Utilization
	Responsiveness, Satisfaction
Financing/Expenditure	Financing
	Funding
	Payment of providers
	Reimbursement
	Purchasing
	Allocation
	Equity/Fairness
Resource creation	Professional education
	Research and Development
	Innovation management
	Knowledge generation and management
	Public health intelligence
Stewardship/Governance	Planning, Health Plans
	Health Policy, Policy Making, Health Care Reform
	Centralization/Decentralization/Devolution
	Privatisation/Recommunalisation
	Commissioning
	Licensing
	Accreditation
	Contracting

Services delivery/provision (input/process)

Health services are any services which can contribute to improved health or the diagnosis, treatment and rehabilitation of sick people and are not necessarily limited to medical or health-care services. They include primary, secondary and tertiary care as well as services delivered.

Regarding health services (and goods), the system perspective can address the description and/or analysis of problems regarding the

- **Availability, supply**: identifies the presence or absence of needed health care services
- **Accessibility, access**: the extent to which people are able reach appropriate health services; it can be distinguished between financial, geographical and cultural accessibility (the latter related to acceptability) of available health care services
- **Acceptability**: degree to which a service meets the cultural needs and standards of a community, which in turn affects utilisation of that service
- **Coverage, benefit basket/ package, entitlements**: overlapping concepts as "coverage" is viewed as three-dimensional – the "who" (breadth or "population coverage"), the "what" (depth or "benefit coverage", to which insured or citizens are entitled) and the "how much" (extent, i.e. taking issues such as coinsurance, deductibles, copayments into account)[2] ; all three dimensions are related to access.

[2] The objective to fill all three dimensions can be for example seen in the NHS principles: universal (first dimension), comprehensive (second dimension), and free at the point of service (third dimension)

- **Waiting time, waiting lists**: The time which elapses between 1) the request by a general practitioner for an appointment and the attendance of the patient at the outpatients' department, or 2) the date a patient's name is put on an inpatients' list and the date he is admitted. Waiting lists: the number of people awaiting admission to hospital as inpatients or to appointments for ambulatory care. Can be seen as an aspect of access.
- **Utilization**: the number of health services used, often expressed per 1000 persons per month or year.
- **Responsiveness, Satisfaction**: overlapping concepts, with responsiveness defined as how the health system performs relative to non-health aspects, i.e. meeting or not meeting a population's expectations of how it should be treated by providers of prevention, care or non-personal services, while satisfaction also includes the health aspects.

Financing / Expenditure = the process to collect/raise funds and to put them at the system's disposal (through pooling, allocating, purchasing, etc.) (World Health Organisation, 2000):

According to the triangular model of health system research, it can be studied how the following interrelated aspects (i.e. keywords) are arranged:

- **Financing**: Raising revenue/ financial resources to pay for a good or service – may be broken down into public (taxation, contributions) & private (voluntary health insurance premiums, out-of-pocket [OOP] payments) or pre-paid (taxation, contributions, premiums) and at point of service (OOP)
- **Funding**: Providing health care organizations with the financial resources required to carry out a general range of health-related activities.
- **Payment of providers**: The allocation of resources (usually money) to health sector organizations and individuals in return for some activity (e.g. delivering services, managing organizations). There are different models of payment e.g. capitation, fee-for-service, prospective payments, DRG, etc.
- **Reimbursement**: Refers primarily to the activity of compensating health professionals for their time and effort in providing care (even though it is also used in the payment of institutions, e.g. "hospital reimbursement").
- **Purchasing**: Buying of health care services from providers. A proactive approach defines what to purchase, how and from according to health needs assessments of a population. On the other side of spectrum, its most passive form is the mere reimbursement of providers for services delivered (Robinson et al., 2005).
- **Allocation**: Primarily any process by which financial resources flow from a third-party payer (e.g., government, insurer, etc.) through the health care organization to the individual clinical provider; also used to describe processes by which financial resources flow from the pooler to the third-party payer/ purchaser.
- **Equity/Fairness**: There are two kinds of equity: horizontal equity is the principle that says that those who are in identical or similar circumstances should pay similar amounts in taxes (or contributions) and should receive similar amounts in benefits; vertical equity is the principle that says that those who are in different circumstances with respect to a characteristic of concern for equity should, correspondingly, be treated differently, e.g., those with greater economic capacity should pay more; those with greater need should receive more.

Resource creation (input) = the basic inputs to production of health in the health system:

Here we refer to time and abilities of individuals (human resources) as well as capital (financial resources). The latter are transformed into facilities, equipment, etc. which is raw materials such as

land and natural resources (air, water, minerals, etc.), transformation and accumulations of these into capital (facilities, equipment) and knowledge production processes (technologies). Some of the keywords/ aspects described under Services Delivery/ Provision and Financing can be considered to be related to resource creation. Additional aspects / keywords include:

- **Professional education**
- **Research and Development**
- **Innovation management**
- **Knowledge generation and management**
- **Public health intelligence**: e.g. health needs assessment, surveillance, health reports, health accounts information systems…

Stewardship/Governance = a function of government responsible for the welfare of the population, and concerned with the trust and legitimacy with which its activities are viewed by the citizenry:

Stewardship involves oversight of all other functions and thus is relevant for the performance of a health system in all kind of outcomes. Stewardship may have several aspects:

- **Planning, Health Plans**: A broad term for all kinds of public or private schemes of health care coverage, including, for example, national health systems, sickness fund schemes, and private health insurance schemes
- **Health Policy, Policy Making, Health Care Reform**: A formal statement or procedure within institutions (notably government) which defines priorities and the parameters for action in response to health needs, available resources and other political pressures. Besides addressing aspects under the other subheadings, health policy/ reform can also deal with:
  - **Centralization/Decentralization/Devolution**
  - **Privatisation/Recommunalisation**
- **Commissioning**: A government or public sector function that involves the development of national (regional) health strategy and its implementation through a wide range of public health functions including both health care services and as intersectoral strategies (Robinson et al., 2005).
- **Licensing**: The establishment of legal restrictions defining which individuals or (institutions) have the rights to provide services or goods (usually based on meeting minimum requirements); also used for technologies (i.e. may to be used in the health system, which may not be equal to being reimbursed, i.e. covered in the benefit basket).
- **Accreditation**: The process by which an authorized agency or organization evaluates and recognises an institution or an individual according to a set of "standards" describing the structures and processes that contribute to desirable patient outcomes.
- **Contracting**: Negotiating agreements between payers and providers regarding payments and services to be delivered.

3.4.2 Literature Analysis

3.4.2.1 Databases

We searched the databases Pubmed and EMBASE, for the period between 1st of January 2004 and 1st of January 2010. Pubmed is provided by the US National Library of Medicine and it is accessible via the internet (www.pubmed.org). EMBASE is a database provided by the Elsevier Publishing-Group. We accessed EMBASE via the Ovid-SP Platform.

3.4.2.2 Development of Search Strategy

The search strategies were first developed for Pubmed and then – after having found a strategy

delivering an acceptable degree of estimated specificity and a manageable number of hits – applied to EMBASE.

In a first step, 4 strategies were developed to address the four thematic areas of "Service delivery/provision", "Financing/Expenditure", "Resource creation" and "Stewardship/Governance" identified previously (see Box 3.2). For each of these thematic areas, the search strategy consisted on the combination of the topics listed in Box 3.2 with the with the Boolean operator "OR". Terms were searched both as free-text and as MeSH terms[3]. The searches were limited to the set of European countries defined above (see Box 3.1) adding the terms Scotland, Wales, Northern Ireland and England[4]. In addition the search was limited to publications with abstract and dealing with "Human". With the aim of increasing specificity for identifying health systems research, a further search phrase including variations of the terms "Health System", "Health Services" and "Health Policy" was added to the strategy[5]. The resulting search strategy was estimated to have a very low specificity[6] , i.e. it retrieved a very high amount of in-vitro or clinical research.

Thus the search strategy was refined by focusing on MeSH terms and abandoning free-text entries. Such a restriction has been also used previously in the SPHERE project (Delnoij & Groenewegen, 2007). For each topic, relevant MeSH terms were identified with the help of the MeSH term search engine of Pubmed. The conversion of the topics identified into relevant MeSH is documented in Appendix 2A. After removing duplicate MeSH (some topics lead to the same MeSH term) a total of 30 entry MeSH terms were applied.

The final search can be summarized as having three major modules as illustrated in Figure 3.3: one contents module including the MeSH terms, one module for European countries and one "restriction" module, the three being combined with the Boolean operator "AND". The restriction module included the terms "health system", "health care system" and "healthcare system" with the aim of enhancing specificity of the search strategy for health systems research. As already mentioned, the search was additionally restricted to items with abstract and research with humans.

For the search in the database EMBASE the search terms identified in Pubmed were applied as search entries. Both the Pubmed and the EMBASE search are documented in the Appendix (Appendix 2B and 2C respectively).

[3] The Pubmed search engine automatically checks whether there is a MeSH Term for the text entered and if so automatically performs the search in the Field "MeSH Terms" and additionally in "All fields". When a MeSH term does not exist, the Pubmed search engine automatically performs a free-text search in "All fields".

[4] The countries were combined with the Boolean operator "OR" and then this module was combined with the thematic modules with the Boolean operator "AND" for restricting to papers with European content.

[5] The terms were combined with the Boolean operator "OR" and the resulting search phrase added to the content and country modules with the Boolean operator "AND".

[6] After a speedy review of the first 100 retrieved articles it was estimated that at least 65% of the articles were not reporting health system or health services research.

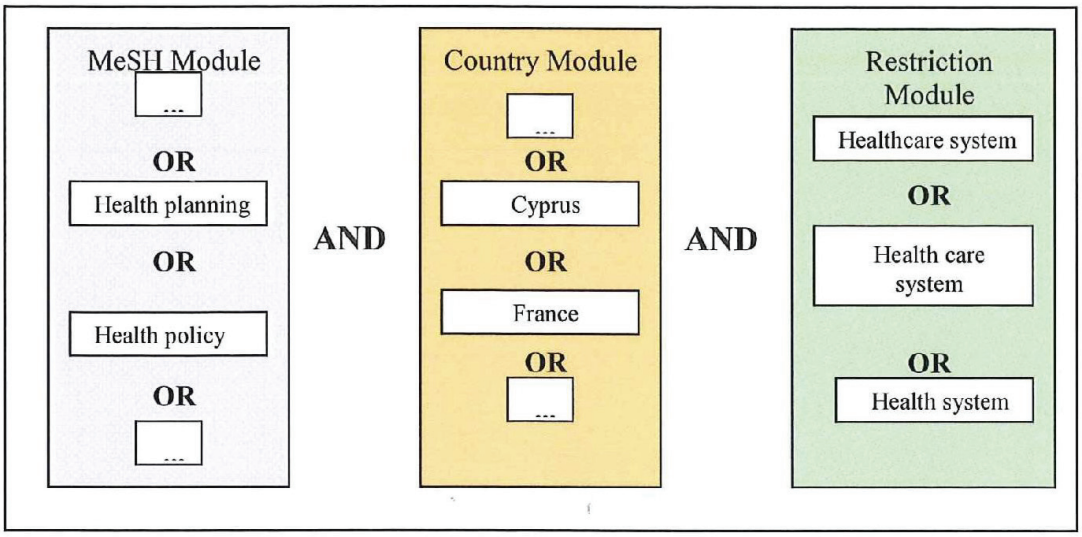

Figure 3.3 Illustration of search strategy

3.4.2.3 References Database

We built a bibliographic database containing the references retrieved from Pubmed and from EMBASE. The database was built with the software Reference Manager®. Duplicate references were removed both using the duplicate search function of the software and manually.

3.4.2.4 Bibliometric Analysis

Reference counts were performed with the search function of Reference Manager®. This function allows performing searches for single terms or combinations of several terms in both single database fields or in combinations of several fields. Combinations of search terms and fields to be searched are defined with the Boolean operators “AND”, “OR” and “NOT”. Data were entered in Excel® for analysis and production of graphical representations.

Time

We analyzed the number of references per year based on a search in the “year” field. Cumulative number of references was calculated for the period 2004-2009 (i.e. excluding references from 2010, since only some references from the first weeks of that year could be identified in the search).

Country

We analyzed the number of references per country based both in a search of the “address” field and in a search of a combination of the fields “titles”, “abstract” and “keywords”. The address field contains information regarding the authors’ institutional affiliation including the country where the institution is based. Searching only the address field provides an estimation of the research produced in a country, without consideration on which countries the research has focused. In contrary, searching the fields “titles”, “abstracts” and “keywords” allows to estimate research regarding a country, since in order to be counted, the country needs to be mentioned in either the publication’s title, in the abstract or as a keyword. Thus both searches represent different kinds of information. Assuming that both searches deliver reliable information (e.g. that all research on a country has been at least identified through keywords), we estimated the amount of research from a country having this country itself as topic by merging both searches with the Boolean operator AND.

Percentages were calculated for each parameter.

Besides absolute numbers of references per country the number of references per 1,000 population and per 1,000,000,000 (billion) USD gross domestic product (GDP) were also calculated. For these calculations, data from the World Bank (World Bank, webs site) were used. We calculated the average population and the average GDP for the period 2004 to 2008.

Language

The distribution of publication languages was estimated by searching the field Notes. This field contains – among other – information on the publication language. We searched for national languages spoken in Europe and report those being present in at least 1% of the publications.

Keywords

Analysis of the Keywords used to describe the publications was made using the Item Lists function of Reference Manager. Absolute numbers of all keywords contained in the database were calculated in order to identify the ten most frequent content keywords (i.e. referring to research topics and not to methods, specific drugs, countries, etc.). Following the framework presented in Box 3.2 we grouped keywords into thematic clusters in order to estimate which topics of health systems research have been studied most often (cf. Appendix 2D). Comparisons per country were made, reporting the proportion of publications "from" and "on" a country containing keywords of the identified thematic areas, for the countries of the EU, EEA and additionally Israel and Turkey.

3.4.2.5 Abstract Analysis

A random sample of 1000 publications (3.7% of the database) was drawn for more detailed analysis of the abstracts. The sample was stratified by years, i.e. the year distribution of the database was kept in the random sample. Random sequences were obtained for each year with an online Random Sequence Generator (www.random.org/sequences/?mode=advanced).

For the analysis of references we followed a similar approach as the one described for the SPHERE project (Delnoij & Groenewegen, 2007) classifying the abstracts according to its origin, whether they reported research and whether they reported research on health systems. The database entries (title, abstract, keywords, and address) of the sample were first classified according to its origin into one of the following categories:

- European research (research with an European country in Address field)
- European research focusing on non-European countries (research with a European country in Address field reporting research on other countries in the title or abstract)
- non-European research (research with exclusively non-European countries in the Address field).

In a second step, abstracts reporting European research (first two categories) were further classified depending on whether they reported research or not. We considered an abstract as reporting research when it reported the collection of quantitative or qualitative data, including systematic reviews, papers based on document analysis or descriptions of policies or reforms. We considered papers reporting the results of consensus conferences, guidelines or personal views on a topic as not being research.

Finally the papers reporting research where classified into health systems research or non health systems research. Health system research can be considered as the field in health services research which focuses on the macro-level (i.e. supra-national, national or regional level). We

considered abstracts as reporting health system research when they described supra-national, national or regional health system features or policies or analysed its effects (e.g. on population groups, on types of organisations) and addressed topics related to the ones listed in Box 3.2.

For the pool of abstracts reporting health system research, we analysed the topics addressed (according to keywords[7]), the scope (international comparison[8] or not), the type of research (descriptive or analytical[9]), the methodological approach (quantitative data, qualitative data, document analysis, literature review) and, if available, the type of dependent variable[10] (health outcomes, utilization or costs, satisfaction, quality of care).

3.4.3 Internet Search

Besides the literature analysis, we also conducted internet searches in order to provide an additional perspective for this assessment report. Two internet-based searches were conducted, one aiming at mapping health systems research in European countries through the internet and the other one aiming at identifying international health systems research projects.

3.4.3.1 Internet Google® Search

The Internet was searched using Google®. We used the advanced search tool (http://www.google.com/advanced_search?hl=en) introducing the search terms "health system research" and "health systems research" as exact phrases. In order to assess geographical distribution we conducted separated searches for each relevant country (see Box 3.1) using the search field "Region" of the advanced search tool for limiting the search according to the location of the websites. For each country two separated searches were conducted, one for each of the search phrases. The searches were conducted on 6th and 7th of October 2009.

Results are presented as counts of hits per country. In addition to the absolute numbers of hits for each country we also calculated the number of hits per 1,000 population and per 1,000,000,000 (billion) USD gross domestic product (GDP). For these calculations, data from the World Bank (World Bank, webs site) were used. We calculated the average population and the average GDP for the period 2004 to 2008.

3.4.3.2 International Project search

We conducted a search in the project database CORDIS. This is a web-based, searchable database containing the majority of projects funded by the EU since 1990 (Source: http://cordis.europa.eu/search/index.cfm?fuseaction=proj.advSearch). We searched this database from January 2000 till the date of search (October 2009). We used combinations of the search terms "health system", "health systems" and "research". The search was restricted to the period 1st of January 2000 to date of search.

The results were analysed in order to determine which topics and which countries have been object of study or have participated in EU funded health services research.

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[7] see above

[8] A study addressing more than one country was considered an international comparison.

[9] Descriptive: papers mainly reporting policies, policy developments, describing whole health systems or single aspects of them. Analytical: when attempts have been made to assess the effects of policies, of organisational features of the system, etc. on some type of indicator/outcome (e.g. health, costs, utilization, etc.).

[10] If any reported. In studies describing policies or features of health system without analysis of effects we do not expect any dependent variable reported.

3.4.4 Additional Information Sources

3.4.4.1 Country Experts Consultation

A questionnaire was sent to country consultants from all European Union Member States as well as Croatia, Iceland, Macedonia, Norway, Switzerland and Turkey. Among other the questionnaire included open questions relevant for mapping health systems research across Europe. Consultants where asked to list the research priorities regarding health systems which have been identified or discussed by local policy makers. They also were asked to identify institutions specifically dedicated to health systems research. Details on the selection of country consultants and on the contents of the questionnaire are provided elsewhere (see Chapter 2 and Chapter 7).

3.4.4.2 Online Survey

During the pre- and post-conference[11] period an online survey was active to gather the views from researchers and policy-makers. The survey included among others questions regarding the research priorities on health systems. Participants were asked to agree/disagree with proposed research areas and topics as priority areas. The list of topics used for health systems research was the one identified previously (see Box 3.2). Details on the online survey are provided elsewhere (see Chapter 2).

3.4.4.3 Workshop with health system researchers

The framework for health systems research and the results of the bibliometric analysis were presented at the Health Services Research Working Conference in Den Haag (8th and 9th of April 2010) and discussed with the participants in working sessions. For the working session on health systems, three specific areas for discussion were identified previously based on the results of the bibliometric analysis and on the abstracts submitted by participants[12]. The three areas of discussion identified previously were: methodological aspects of health systems research, evaluation of privatization and market competition in the health systems and issues of workforce planning and professional mobility.

3.5. Results

3.5.1 Literature Analysis

3.5.1.1 References Pool

The database search resulted in a total of 27994 hits in the Pubmed database and a total of 2935 hits in the EMBASE database. Although we limited our search to European countries in the address fields, papers from non-European countries are still possible to be retrieved. For example, it has been previously reported, that searching for “Wales” may result in the identification of publications from Australia (namely from New South Wales) (Delnoij & Groenewegen, 2007). Similarly, searching for Georgia or England may result in the identification of publications from the USA (i.e. from Georgia State or New England). Additionally the address fields may include European country names as part of an institution’s name outside Europe (e.g. Beth Israel Hospital). Thus, we removed papers indicating Australia, Canada or the USA in the address field without a European nation. After excluding publications from these countries and removing duplicates a final pool of 26945 remained for the bibliometric analysis.

[11] Health Services Research European Working Conference, Den Haag, 8th and 9th of April 2010.

[12] Participants in the conference had had the opportunity to submit abstracts on their research. However, during the conference, the abstracts were not orally presented but served as a tool to identify emerging topics.

A total of 197 references had a false publication year coded in the year field, but could be corrected manually since this data was available from other fields (e.g. Notes field). A total of 663 references had an empty address field, which could not be repaired.

A sample of 1000 (3.7% of the total pool) references was drawn from this pool for more detailed abstract analysis (see below).

3.5.1.2 Bibliometric Analysis

The per year number of publications on health systems research increased yearly between the years 2004 and 2008 at an average growth rate of 5.2%. However, there was a decrease between 2008 and 2009 of 18% (see Table 3.1). This negative difference between 2008 and 2009 could be due to an incomplete documentation of the 2009 publications in the databases at the time we conducted the searches (beginning of 2010). The cumulative number of references between 2004 and 2009[13] is presented in Figure 3.4). The overall number of references in 2009 is nearly 7-fold the number of references published in 2004.

Table 3.1 Distribution of publications over time

Year	No. of publications	% of database	Absolute difference to previous year	% difference with previous year
2004	3922	14.6%	-	-
2005	4017	14.9%	95	2.4%
2006	4630	17.2%	613	15.3%
2007	4994	18.5%	364	7.9%
2008	5116	19.0%	122	2.4%
2009	4169	15.5%	-947	-18.5%
2010	97	0.3%	-	-
	26945	*100%*	-	-

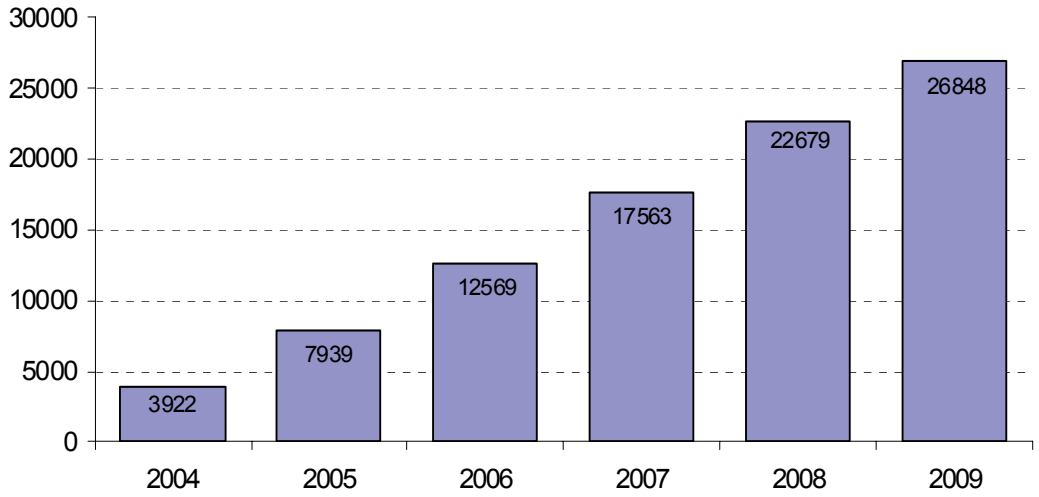


Figure 3.4 Cumulative number of references 2004-2009

[13] The year 2010 was excluded because only a few weeks were included in the literature search and only for the EMBASE search, since for this database it was not possible to define the time period as accurately as with Pubmed which allows to entry day and month to limit searches.

Regarding the absolute number of references per country for all the member countries of the WHO European Region we considered the address field to estimate the number of citations from a country and the title, abstract and keywords field to estimate the number of papers reporting research on a country. A summary of these results is provided in appendix 2E. There were 3 countries (Andorra, Monaco, San Marino) which neither had produced any research nor had been object of any research. Four countries, all of them republics of the former Soviet Union (Belarus, Kyrgyzstan, Tajikistan, Turkmenistan), had produced no research but at least had been object of some research. Among the countries which had produced research, the amount of published papers differs largely, ranging from 1 to 9979 (median 44). There are also major differences regarding the number of papers reporting research on a country, ranging from 2 to 7894 (median 64.5). According to absolute numbers the biggest producer of research on the topics of our literature search was the UK, which was mentioned in the address field of 37% of the publications. The UK was also the country which was object of research most frequently: 29% of the publications mentioned this country either in its title, abstract or keywords. The wide ranges for both research produced and research focusing on a country remain after correcting for population or GDP (see Appendix 2E).

However, adjusting for population and GDP leads to several shifts in the ranking of the first ten countries, especially regarding research on a country (see Figure 3.5). Only four countries rank among the ten highest for all parameters (UK, Israel, Netherlands and Sweden). Germany, France and Spain, which show high absolute numbers for both “research from” and “research on” the country, rank much lower when adjusting for population or GDP.

There is a moderate correlation between the number of publications from a country and its GDP (r= 0.62) and between the number of publications addressing a country and its GDP (r=0.74). The correlation of both publication parameters with the country population is much lower (r= 0.33 and r=0.41 respectively).

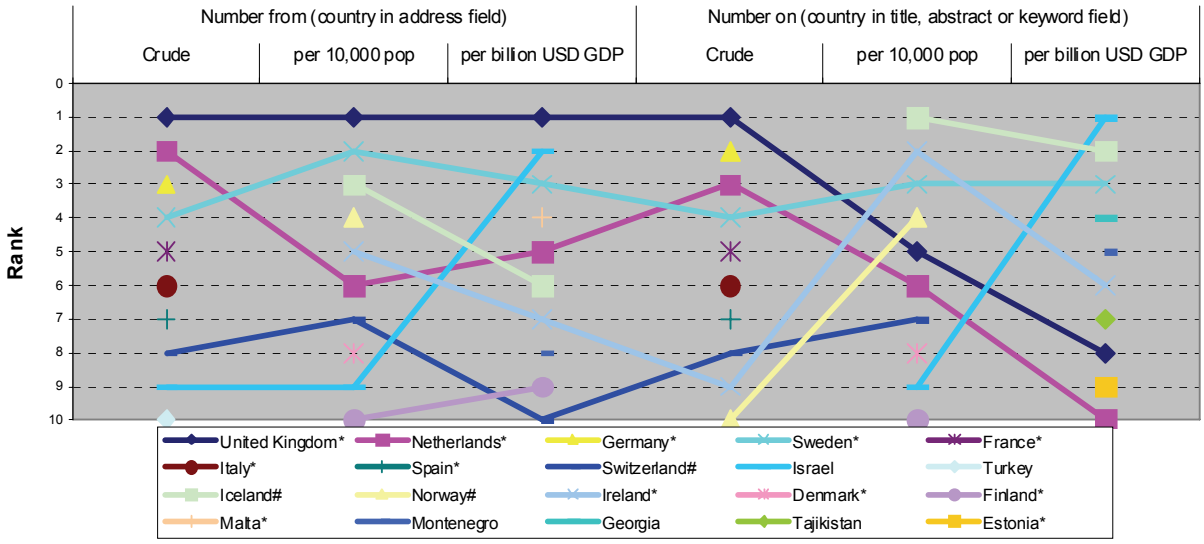


Figure 3.5 Rankings of top 10 countries, crude and adjusted for population and GDP

For the majority of countries (27 out of 46 producers of research), it was estimated that all the research produced addressed at least the own country (i.e. it cannot be ruled out that these were comparative studies of the own country with others). For additional 16 countries it was estimated

that more than 90% of research addressed at least the own country and only 10% or less focused exclusively on other countries. Most of the countries in the top ten group are member of the EU or the EEA. The number of references from a country was lower than the number of references mentioning a country in the title, abstract or keywords for all countries with the exception of Malta and UK. Research produced in UK addressed UK itself only in 62% of the publications, indicating that a considerable amount of research from the UK has other countries in its scope. A similar pattern was observed for Malta (see Figure 3.6).

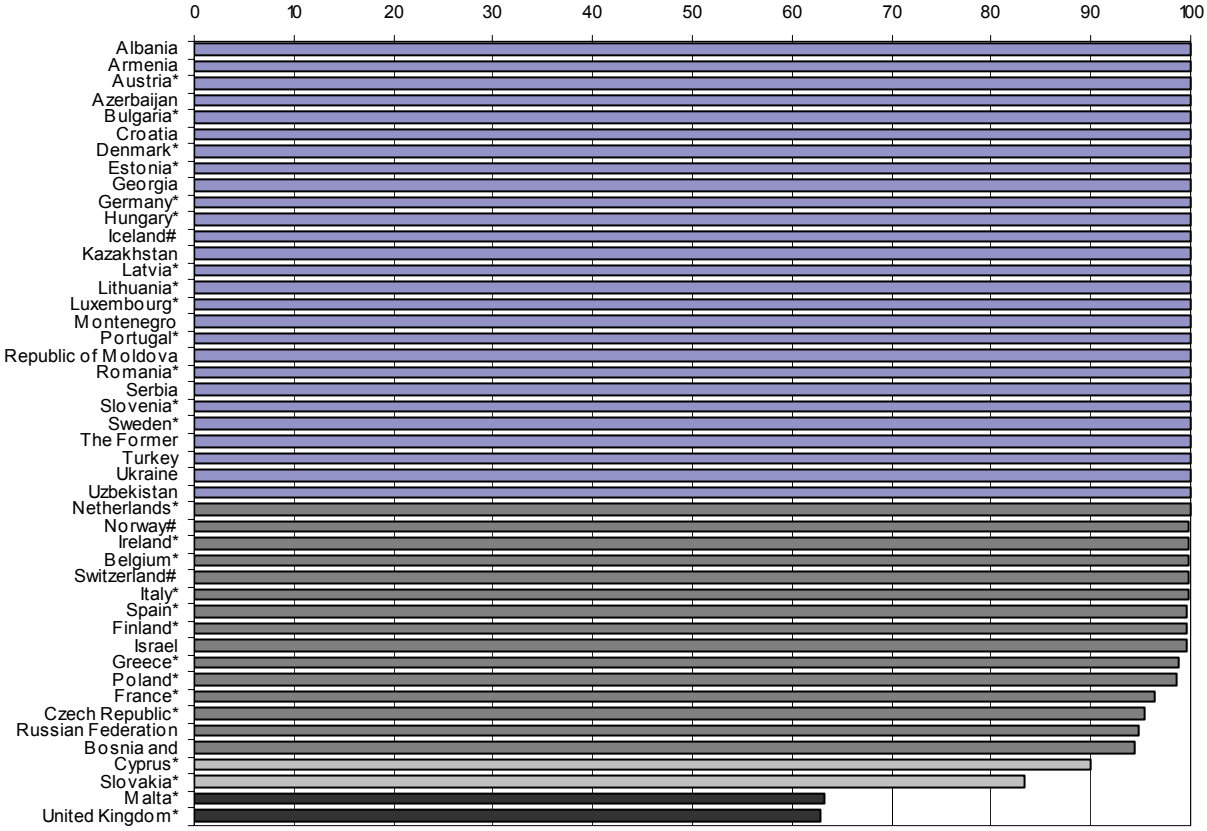


Figure 3.6 Proportion of papers from one country dealing with the same country

Also of interest is the estimation of the proportion of publications addressing one country produced in that country itself. This analysis is presented in Figure 3.7. The figure can also be read in a complementary way: the white part to the right of the bars represents the proportion of publications addressing a country but produced by researchers working in institutions outside that country. At least to some extent, each of the European countries has been targeted by research not produced in that country, although there are considerable differences among countries. Particularly, research on the countries from the former Soviet Union has been produced in other countries. For example, less than 10% of the publications addressing Russia had been produced at least partly in research institutions from the Russian Federation. For some of these countries, none of the publications identified as reporting research on them had been produced locally. In contrast, most of the research on Sweden has been produced there and less than 10% has been produced without Swedish involvement.

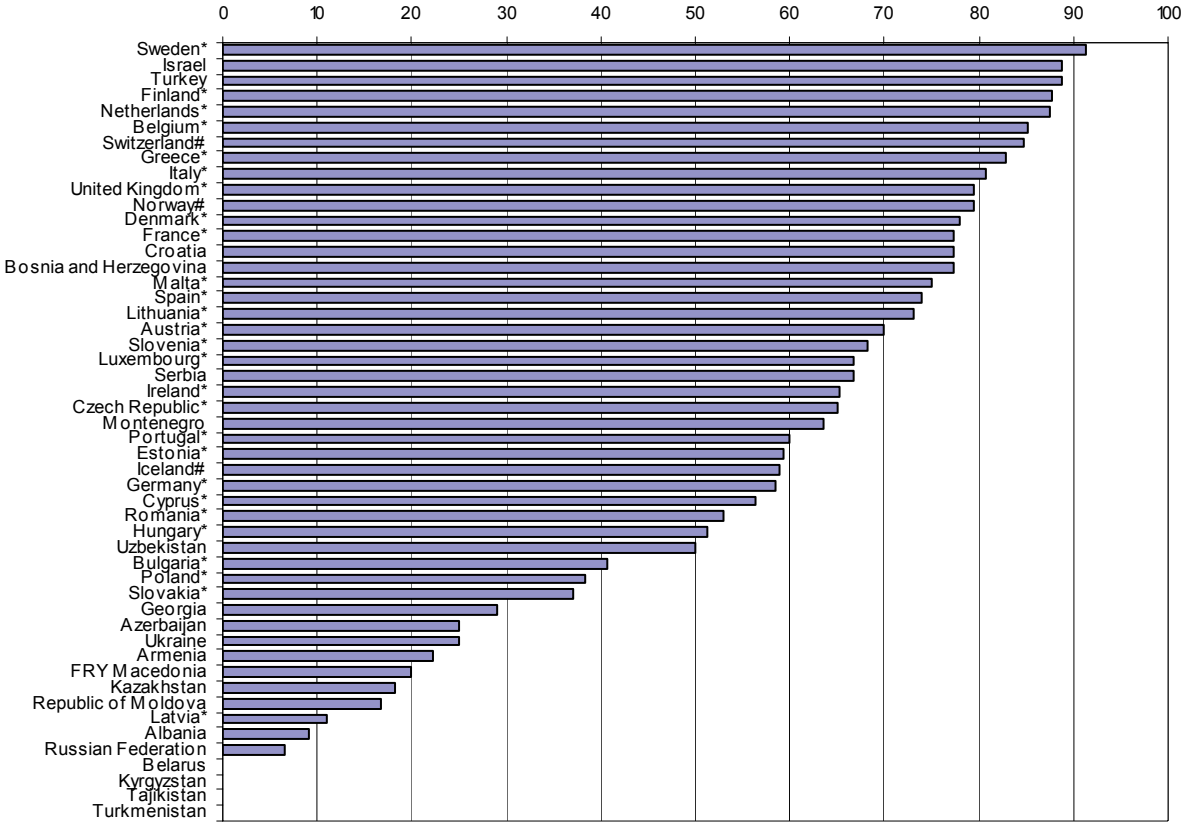
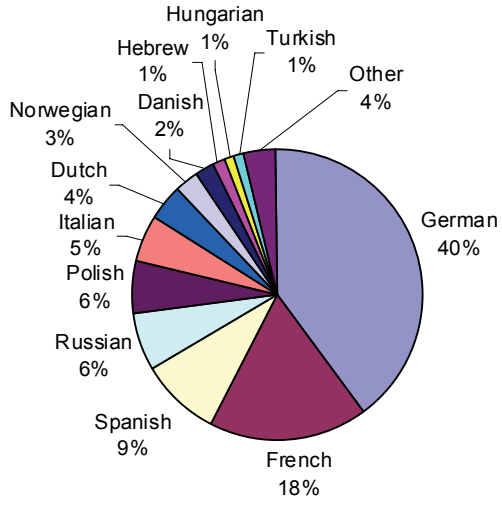


Figure 3.7 Proportion of research on a country having been produced in that country

As it can be expected, the vast majority (88%) of the publications was written in English. Occasionally (n=74; 0.3% of all publications), an additional language is reported. The language distribution of non-English publications is shown in Figure 3.8. Publications in German language account for 40% of the 3341 non-English publications, representing the second publication language for this topic.



Language Distribution non-English publications (n=3341)

Figure 3.8 Language Distribution (non-English publications) (n=3341)

The evolution of the number of references over time for each country is presented in Appendix 2G for the 20 countries with the highest number of references and for the period 2004 to 2009. Most of the countries show a similar pattern with growing number of references between 2004 and 2008 and a decrease in 2009. The steepest increase was observed for Portugal (300%). Increases of around 100% between 2004 and 2008 are observed for Norway and Ireland. The pattern was similar when analysing the number of publications referring to each country (i.e. mentioning the country in the title, abstract or keywords).

The following Table 3.2 lists the top-20 content related keywords mentioned in the pool of references. As in the SPHERE project, we focused on the keywords referring to the subject of the publication and not to the methods, discipline or drug names. Almost half of the references included the keyword "patient", additionally 27% of the references included the keyword "patient satisfaction".

Table 3.2 Top 20 keywords

Keyword	n	% of all references
Patients	13237	49
Patient Satisfaction	7400	27
Organization & Administration	6117	23
Education	5027	19
Attitude of health Personnel	3555	13
Risk	3040	11
Prevention & Control	3017	11
Utilization	2900	11
Health Services Needs and Demands	2805	10
Public Health	2644	10
Nurses	2529	9
Patient acceptance of health care	2406	9
Health Services accessibility	2396	9
Hospitals	2317	9
Drug Therapy	2227	8
Delivery of health care	2158	8
Needs assessment	2118	8
Health knowledge, attitudes, practice	2047	8
Communication	2017	7
Attitude to health	1947	7

In the SPHERE project, there were other keywords identified among the top ten. The following Table 3.3 reproduces the top-10 keywords from the SPHERE project (Delnoij & Groenewegen, 2007) comparing its former frequency with the frequency in current actual publications pool. As in the SPHERE project, the keyword most frequently mentioned in the publications was "patient", although the proportion of references mentioning it was higher in the present study than in the SPHERE one. The proportion of publications mentioning "patient satisfaction" among its keywords is considerably higher in the present study pool. On the other side, the proportion of references including "hospital" or "general practitioner" among its keywords is considerably lower in the present

study than in the SPHERE results. The discrepancy regarding the key word “general practitioner” is likely to be largely explained by the fact that “general practitioner” was included as a search term in the literature search strategy of the SPHERE project but not in our literature search strategy.

The references counts differ between Table 3.2 and Table 3.3. This is due to the fact that Table 3.3 has been constructed based on the list function of ReferenceManager. This function delivers a list of all key words and the number of references including the keyword. In the output every single keyword is listed. For example if “patient” and “patients” are keywords, the output would include an entry for each of them and report the corresponding number of references including each of them. In contrary to produce Table 3.3 we searched the “keywords” field entering the words truncated with a wildcard in order to better capture the actual number of references reporting the concept in its keywords. For example we entered “patient*” which identifies both the keywords “patient” and “patients”.

Table 3.3 Top-10 keywords from SPHERE project and its placement in the current reference pool

	SPHERE project*		Present project		Difference
Top-ten Keywords in SPHERE	**n**	**%**	**n**	**%**	**%-points**
Patient	19369	60	17752	66	+6
Hospital	11644	36	4530	17	-19
General Practitioner	5061	16	1395	5	-11
Patient Satisfaction	4674	15	7400	27	+12
Risk	4612	14	4108	15	+1
Education	4385	14	5698	21	+7
Physician	3401	11	3759	14	+3
Public Health	3371	10	2844	11	+1
Cost	3297	10	2071	8	-2
Drug	3203	10	3365	12	+2

* Delnoij & Groenewegen, 2007.

Database keywords were grouped into thematic clusters following the framework reported in Appendix 2C.

Table 3.4 reports the frequency of each cluster. Satisfaction is the topic which according to the keywords has been studied most. It can also be estimated that issues of service delivery and supply of health care have been studied relatively frequently. According to keywording, the topics of privatization and licensing and accreditation can be considered to be under-researched areas. Expanding the search for the cluster topic keywords to the other relevant fields (title and abstract) leads to higher number of references for all thematic clusters, the greatest change being observed for the cluster of “administration/ management” which increases from 3.5% to 17.4% (see Table 3.5). After this expansion, the topic “satisfaction” is still the most researched one. Other topics change its rank, most prominently “administration/management” which shifts from 11th to 3rd rank.

Table 3.4 Frequency of Thematic Clusters

Thematic Cluster	Keyword field only		Expanded to title and abstract	
	N (rank)	% of references in database	N (rank)	% of references in database
Satisfaction	7410 (1)	27.5%	7908 (1)	29.3%
Service Delivery	6002 (2)	22.3%	6045 (2)	22.4%
Utilization	2988 (3)	11.1%	3000 (8)	11.1%
Manpower	2945 (4)	10.9%	4459 (4)	16.5%
Policy/Reform	2790 (5)	10.4%	3795 (6)	14.1%
Professional Education	2741 (6)	10.2%	2852 (10)	10.6%
Access	2689 (7)	10.0%	4293 (5)	15.9%
Acceptance	2406 (8)	8.9%	3142 (7)	11.7%
Finance/Expenditure	2220 (9)	8.2%	2924 (9)	10.9%
Planning	1200 (10)	4.5%	1970 (11)	7.3%
Administration/Management	934 (11)	3.5%	4714 (3)	17.5%
Privatization	436 (12)	1.6%	500 (13)	1.8%
Waiting lists	431 (13)	1.6%	689 (12)	2.6%
Licensing/Accreditation	234 (14)	0.9%	261 (14)	1.0%

In the following figures we present the analysis per country for the topic clusters “satisfaction”, “service delivery”, “utilization”, “manpower”, “policy/reform”, “administration/management” and “access” (i.e. the clusters ranking 1st to 5th in either of the countings presented in Table 3.5). The figures also include the overall percentages reported in Table 3.5 as reference. Analyses are based on the respective pool of references containing the thematic cluster keywords in the keyword, the title or the abstract field.

There are considerable differences by country regarding the topics of research (see Table 3.5 and Figures 3.13 to 3.19 and Table 3.6).

Table 3.5 Summary of emphasis on thematic clusters in EU, EEA (+Israel and Turkey).

Thematic Cluster	References from (Address field)			References on (Abstract, Titles, Keywords fields)		
	Range	*Median*	*Mean*	*Range*	*Median*	*Mean*
Satisfaction	0.0%-52.5%	31.4%	30.0%	11.1%-48.2%	28.9%	26.8%
Service Delivery	0.0%-100%	20.4%	23.3%	4.8%-43.8%	21.9%	22.7%
Utilization	0.0%-25.0%	10.5%	10.5%	0.0%-27.8%	12.1%	13.0%
Manpower	0.0%-40.0%	12.6%	13.9%	0.0%-31.3%	12.5%	14.1%
Policy/Reform	0.0%-45.5%	13.6%	15.1%	4.3%-38.9%	17.9%	19.2%
Admin/Management	0.0%-40.0%	15.5%	16.6%	6.3%-37.5%	13.9%	16.5%
Access	0.0%-34.6%	16.0%	17.2%	8.4%-38.8%	17.8%	19.4%

The majority of countries concentrate a considerable amount of research in the thematic cluster of satisfaction (28 countries report keywords related to this topic in >20% of their references). Satisfaction has been a topic in more than 50% of research from Austria and Turkey. When considering research focusing on these both countries, the thematic cluster still is considered in more than 40% of the publications. In general, there are no major differences in the proportion of publications addressing satisfaction between the publications from and the publications on a country. Only four countries show differences of more than 10 %-points between both parameters: The proportion of publications from Bulgaria, the Czech Republic and Slovakia is >10% higher than the proportion of publications "on" those countries addressing satisfaction. For Latvia, the opposite is the case (see Figure 3.9). Taking a look at research on delivery of services, the opposite picture is seen, with all references from Latvia addressing this topic whereas less than 20% of Austrian or Turkish references refer to this thematic cluster (Figure 3.10).

Issues of policy and reform account for an important percentage of references from or on newer EU Member States like Bulgaria, Romania and Estonia (over 30%) (see Figure 3.11).

Some countries, like UK, Ireland, Switzerland or Hungary show more balanced distribution of research across thematic clusters than the other countries, which tend to have significantly higher percentage of research in one or two topics (see Appendix 2E for the whole data on each country, and for a graphical presentation of other thematic clusters

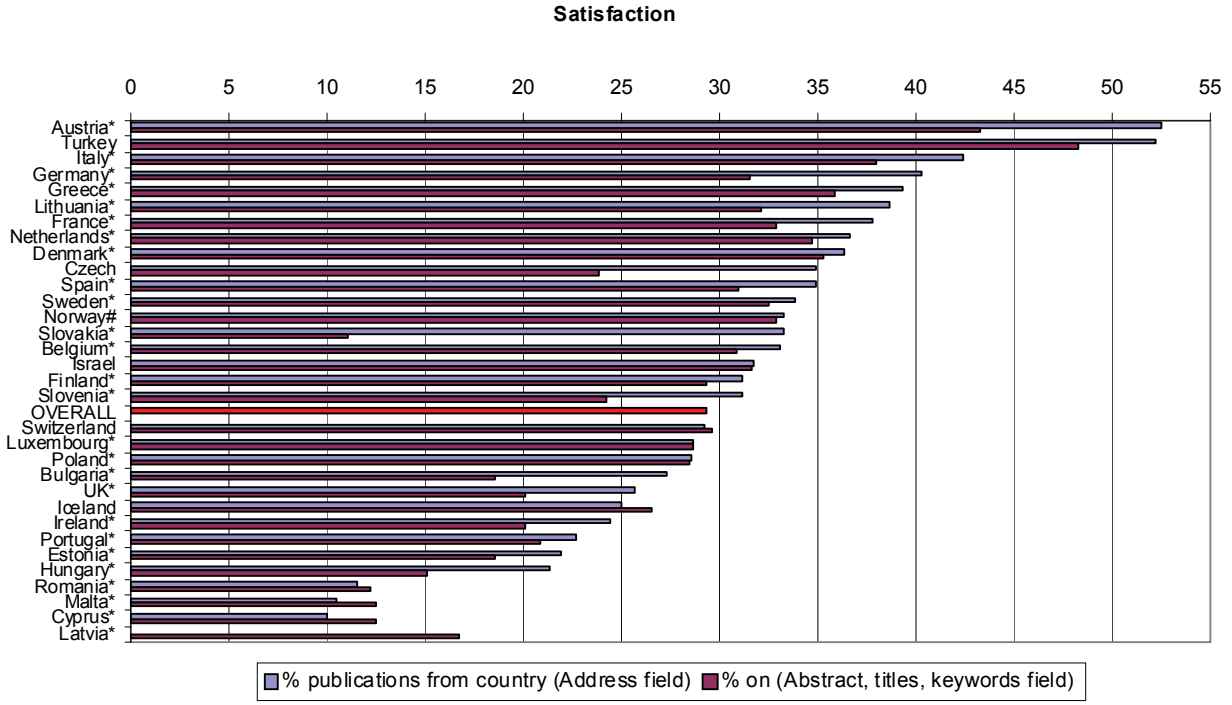


Figure 3.9 Satisfaction as percentage of the number of references per country

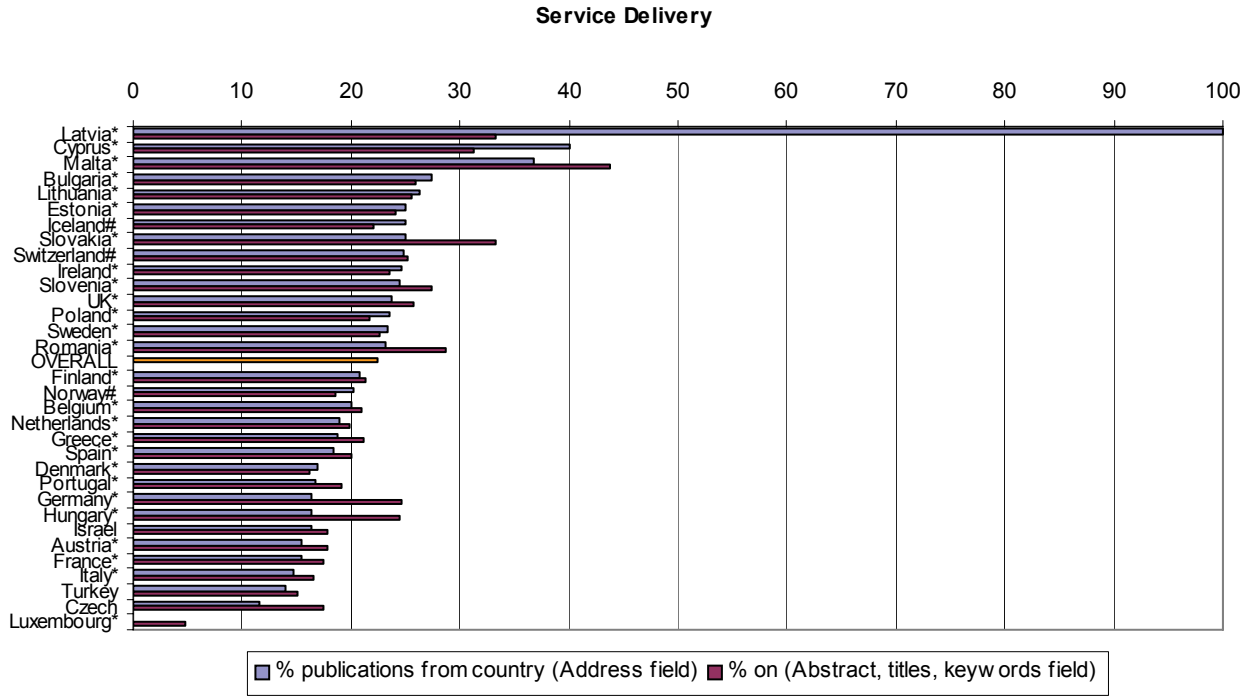


Figure 3.10 Service delivery as percentage of the number of references per country

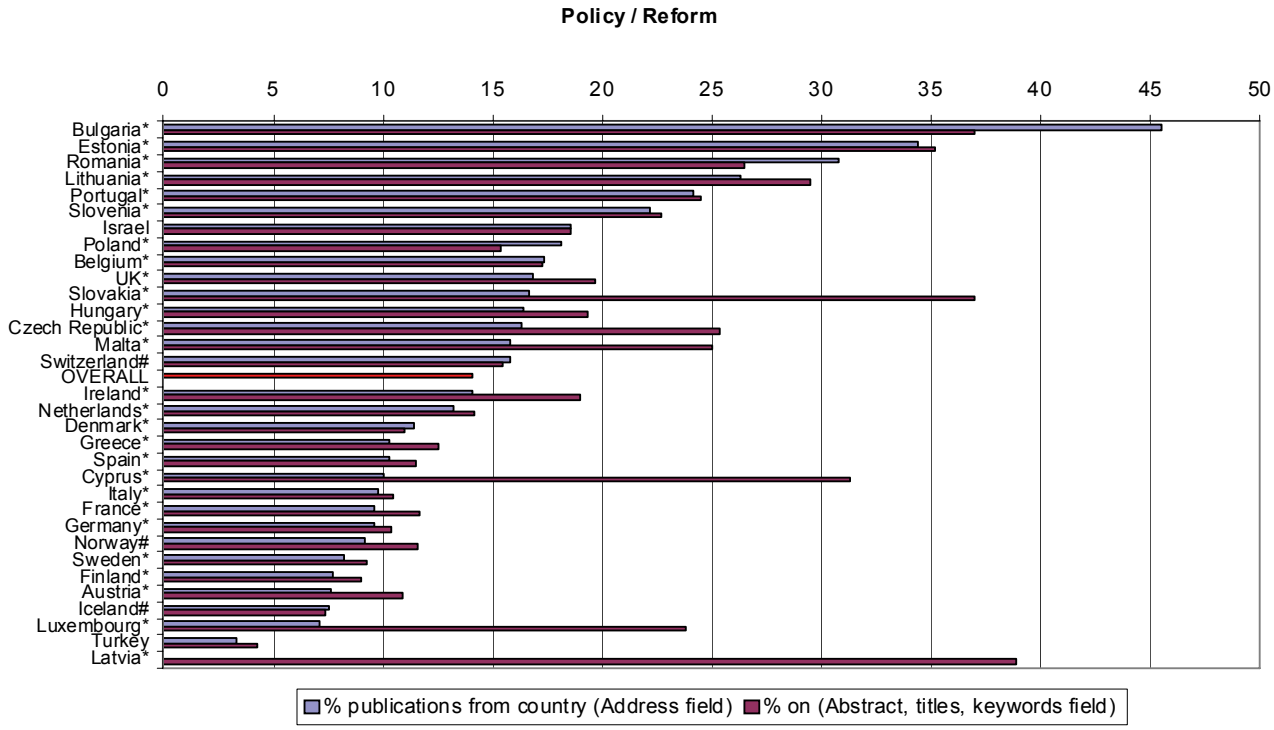


Figure 3.11 Policy/Reform as percentage of the number of references per country

3.5.1.3 Analysis of Sample of Abstracts

The sample of 1,000 abstracts (3.7% of the literature database) consisted of 91.8% abstracts from Europe, 4.4% abstracts from Europe addressing countries outside Europe and 3.8% abstracts from non-European countries, the latter being excluded from further analysis. Overall 80% of the abstracts reported health services research in the wide sense (i.e. macro-level, organisations, professional groups, etc.), whereas only 24.1%[14] of the European abstracts were considered to report research on health systems *sensu stricto* (i.e. with a macro-level focus). Of the abstracts reporting health systems research, 9% had a non-European focus but had been produced with at least some participation of researchers based in Europe.

The following Table 3.6 lists the top-20 content related keywords mentioned in the set of references classified as health systems research. As for the whole database, "Patients" is the most frequent keyword. However, patient satisfaction, which ranked in the second place of the whole sample, does not appear among the first 20 keywords of this subset. Similarly "risk" or "drug therapy" are missing in the subset of health systems research. Keywords like "policy" or "health policy" which did not appear among the top 20 of the whole sample are relatively frequent in the subset of health systems (19.8% and 15.5% respectively).

Table 3.6 Top-20 Keywords in Health Systems Research set of references (n=232)

Keyword	n	% of sample
Patient(s)	105	45.3
Organization & Administration	80	34.5
Hospital(s)	71	30.6
Health service(s)	52	22.4
Health Services accessibility	47	20.3
Policy	46	19.8
Utilization	46	19.8
Education	39	16.8
Health policy	36	15.5
Cost	33	14.2
Delivery of health care	30	12.9
Public Health	29	12.5
State Medicine	29	12.5
Training	28	12.1
Health services needs and demand	27	11.6
Organization	27	11.6
Work	27	11.6
Primary Health Care	25	10.8
Government	24	10.3
Nursing	24	10.3

As with the whole sample, analysis of the frequency of the thematic clusters was done with the keyword counting tool. The results are presented in Table 3.7. The thematic cluster with the highest

[14] Excluding research from outside Europe leaves a total of 962 abstracts in the sample.

frequency is ”Policy/ Reform“, which is a topic in around 30% of the references. This contrasts with the much lower frequency of this cluster in the overall database (10%, see Table 3.5). In contrast with the whole sample, “Satisfaction” seems to be a topic of less importance in this subset of references and is mentioned in less than 10% of the subset compared to 27.5% in the whole database.

Table 3.7 Frequency of Thematic Clusters in sample of references

Thematic Cluster	Keyword field only		Expanded to title and abstract	
	N (rank)	% of references in sample	N (rank)	% of references in sample
Policy/Reform	72 (1)	31.0%	73 (1)	31.5%
Service Delivery	69 (2)	29.7%	69 (2)	29.7%
Administration/Management	53 (3)	22.8%	55 (4)	23.7%
Access	50 (4)	21.6%	67 (3)	28.9%
Finance/Expenditure	46 (5)	19.8%	49 (5)	21.1%
Utilization	46 (6)	19.8%	46 (6)	19.8%
Manpower	39 (7)	16.8%	42 (7)	18.1%
Professional Education	25 (8)	10.8%	27 (8)	11.6%
Satisfaction	23 (9)	9.9%	25 (9)	10.8%
Acceptance	20 (10)	8.6%	25 (10)	10.8%
Planning	18 (11)	7.8%	18 (11)	7.8%
Privatization	11 (12)	4.7%	14 (12)	6.0%
Waiting Lists	10 (13)	4.3%	10 (13)	4.3%
Licensing/Accreditation	3 (14)	1.3%	3 (14)	1.3%

The results of the sample analysis regarding scope, type of research, methodological approach and type of dependent variable are summarized in Table 3.8. The *scope* of 18.1% of the references was international (i.e. research comparing at least two countries). Regarding the type of research, 25.4% of the abstracts were considered to be descriptive, i.e. mainly focusing on the description of health system features (e.g. regulations, policies, educational programs, etc.). The rest was considered to be analytical (i.e. including some degree of analysis of effects or of influencing factors).

The most common *methodological approach* was quantitative (50.1%), including both primary data collection as well as analysis of data collected for purposes other than research (e.g. routine statistics, administrative data). The literature review approach was reported only in 9.5% of the abstracts. A total of 51 (22%) references were classified as having conducted document analysis, the vast majority of them were descriptive studies in which we assumed[15] that the main source of information were documents. Only 4.1% of the abstracts classified as analytical actually reported a document analysis as its methodological approach.

[15] Many did not explicitly report the information sources.

The most frequently reported *dependent variable* was "utilization/costs", which was reported in 14.2% of the abstracts. Satisfaction was assessed in 4.7% of the abstracts. However, for the majority of abstracts (65.9%) it was either not possible to identify a dependent variable or the variable was neither health outcomes, utilization/costs, satisfaction or quality of care.

Table 3.8 Abstract analysis

Attribute	Value	Percentage of abstracts (n=232)
Scope	International	18.1 %
	National/Regional	81.9%
Type of Abstract	Descriptive	25.4%
	Analytical	74.6%
Methodological approach	Quantitative	50.1%
	Qualitative	10.8%
	Literature review	9.5%
	Document analysis	22.0%
	More than one	6.9%
Dependent variable	Health outcomes	3.9%
	Utilization/Costs	14.2%
	Satisfaction	4.7%
	Quality of care	2.2%
	Combination of the above	9.1%
	Other or none	65.9%

3.5.2 Internet Search

3.5.2.1 Google Search

The internet search results are summarized in Appendix 2F for all the member countries of the WHO European Region, for each of the two searches. The internet search identified no websites containing neither of the search terms for six countries (Albania, Andorra, Monaco, San Marino, Tajikistan and Turkmenistan). For all other countries at least one of the two searches yielded at least one hit. The number of hits varied considerably, ranging from 1 to 11400 for the search term "health system research" and from 1 to 5580 for the search term "health systems research". The results of this approach are similar to those of the bibliometric analysis. According to the absolute number of hits, UK ranks first. There is a major overlap of the group of countries producing the highest number of internet hits for health system(s) research with the group of countries identified in the bibliometric analysis as producing the bigger share of literature.

There is a moderate correlation between the number of internet search hits from a country and its GDP (r= 0.65 for the first search and r=0.58 for the second search). The correlation of the number of hits for both search terms with the country population is much lower (r= 0.34 and r=0.29 respectively).

3.5.2.2 International Project Search

The search in the CORDIS project database yielded a total of 141 hits for the different search term combinations. After removing duplicates a total of 103 potentially relevant projects remained.

After screening title and abstract of the projects, 60 (i.e. 58 %) were considered to be health systems research projects or actions aiming at developing health systems. All but two projects were coordinated by institutions from European countries (with the two exceptions coordinated by institutions from Cuba and Thailand respectively). However, less than half of the projects where targeting European nations (n=29; 48 %), the rest targeted either African, Asian or Latin-American countries or developing countries from several regions simultaneously (see Figure 3.12).

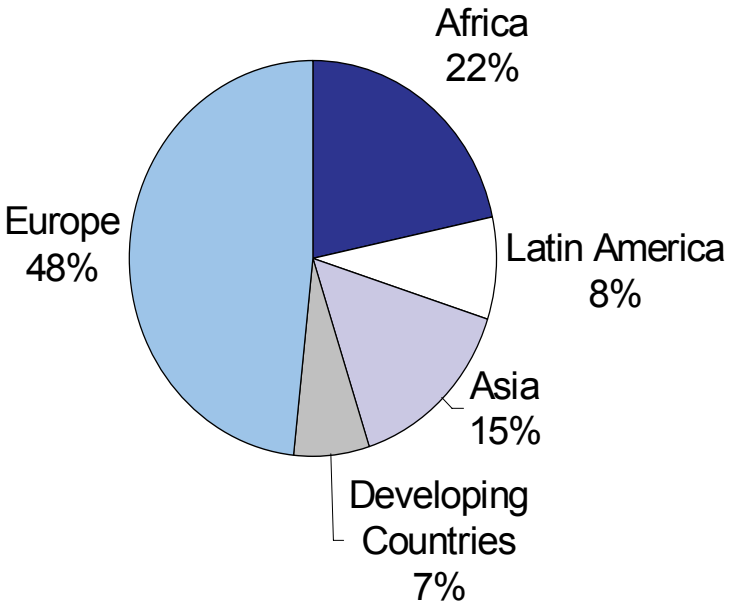


Figure 3.12 Target countries of EU-funded health systems research projects

Regarding the EU-funded projects targeting European countries, 20 (69 %) had been completed and 9 (31 %) were under execution at the time the search was performed (i.e. by October 2009). Table 3.9 shows the number of projects for which an institution from a country was reported as project coordinator and the number of projects for which at least one institution from that country was reported as participating (according to information from CORDIS). The last column shows the number (%) of projects in which a country is represented by at least one institution. A total of 37 countries are represented in EU-funded health systems research projects targeting European countries. Five countries (UK, Italy, Germany, France and Spain) are represented in more than one third of the projects. These countries act as project coordinators in 62% of the projects. Very few countries from outside the EU participated in more than two of these projects (Switzerland n= 9, Croatia n=5).

Table 3.9 EU-funded Health Services Research – geographical distribution of 29 projects

Country	Coordinator in n (%)		Participant in n (%)		Coordinator or participant in n (%)	
	n	%	n	%	n	%
United Kingdom	4	13.8%	10	34.4%	14	48.3%
Italy	4	13.8%	9	31.0%	13	44.8%
Germany	3	10.3%	8	27.6%	11	37.9%
France	3	10.3%	7	24.6%	10	34.5%
Spain	4	13.8%	6	20.7%	10	34.5%
Switzerland	2	6.9%	7	24.1%	9	31.0%
Belgium	2	6.9%	5	17.2%	7	24.1%
Austria	2	6.9%	3	10.3%	5	17.2%
Croatia	1	3.4%	4	13.8%	5	17.2%
Greece	2	6.9%	3	10.3%	5	17.2%
Ireland	1	3.4%	4	13.8%	5	17.2%
Slovenia	1	3.4%	4	13.8%	5	17.2%
Netherlands	-	-	5	17.2%	5	17.2%
Denmark	-	-	5	17.2%	5	17.2%
Finland	-	-	5	17.2%	5	17.2%
Sweden	-	-	4	13.8%	4	13.8%
Portugal	-	-	4	13.8%	4	13.8%
Poland	-	-	4	13.8%	4	13.8%
Hungary	-	-	4	13.8%	4	13.8%
Bosnia and Herzegovina	-	-	3	10.3%	3	10.3%
Slovakia	-	-	3	10.3%	3	10.3%
Estonia	-	-	2	6.9%	2	6.9%
Serbia	-	-	2	6.9%	2	6.9%
Macedonia	-	-	2	6.9%	2	6.9%
Albania	-	-	2	6.9%	2	6.9%
Georgia	-	-	2	6.9%	2	6.9%
Russia	-	-	2	6.9%	2	6.9%
Moldova	-	-	2	6.9%	2	6.9%
Czech Republic	-	-	2	6.9%	2	6.9%
Norway	-	-	2	6.9%	2	6.9%
Turkey	-	-	2	6.9%	2	6.9%
Luxembourg	-	-	1	3.4%	1	3.4%
Belarus	-	-	1	3.4%	1	3.4%
Kazakhstan	-	-	1	3.4%	1	3.4%
Ukraine	-	-	1	3.4%	1	3.4%
Lithuania	-	-	1	3.4%	1	3.4%
Bulgaria	-	-	1	3.4%	1	3.4%

According to our assessment of the abstracts and keywording of the projects provided by CORDIS, there were areas not addressed in this set of projects: access, acceptance, privatisation, waiting lists, planning and accreditation/licensing (see Table 3.10).

Table 3.10 Areas of health systems addressed in EU-funded projects.

Thematic Cluster	Projects	
	n	%
Admin/Management	12	41.4%
Policy/Reform	12	41.4%
Professional Education	8	27.6%
Service Delivery	5	17.2%
Manpower/ Workforce	4	13.8%
Finance/Expenditure	2	6.9%
Utilization	1	3.4%
Satisfaction	1	3.4%
Acceptance	0	-
Privatisation	0	-
Waiting lists	0	-
Planning	0	-
Accreditation/licensing	0	-
Access	0	-
Some projects were considered to address more than one topic		

3.5.3 Additional Information Sources

3.5.3.1 Country Experts Consultation

There was information available from 26 countries. Responses were lacking from Estonia, Greece, Hungary, Iceland, Latvia, Luxembourg and Sweden.

The existence of institutions specifically committed and specialised in health systems research was reported for Bulgaria, Cyprus, Czech Republic, England, Finland, France, Germany, Ireland, Italy, Lithuania, Netherlands, Norway, Poland, Slovenia and Spain. The number of institutions reported varied across countries.

Research regarding financing and sustainability of the health system and the health services has been reported to be a priority area for policy makers across almost all countries. A special interest in insurance models is reported for some countries in Eastern Europe. Other topics which raise interest across several countries are systems for *provider payment*, (particularly for hospitals), *information technologies* in the health system, assessment of the *impact of reforms*, models for service organisation and provision (incl. *commissioning/contracting/purchasing*), or *integration/coordination of care* (see Appendix 2F). An interest on comparative health systems research (i.e. international comparisons) emerges from the answers to the questionnaires too.

3.5.3.2 Online Survey

The survey was answered by a total of 411 stakeholders, including researchers and decision-makers in the field of health. 19 % declared to be involved or interested in health systems research (for more details on the general results of the survey cf. to Chapter 2).

The participants involved or interested in health systems research were asked to identify the main topics of health systems research which require to be prioritised among a given list. The area of governance and management was the most frequently mentioned as requiring prioritisation among responders (70%), whereas the area of workforce issues was the most frequently considered as not requiring prioritisation (77%). The results of this question are presented in Figure 3.13.

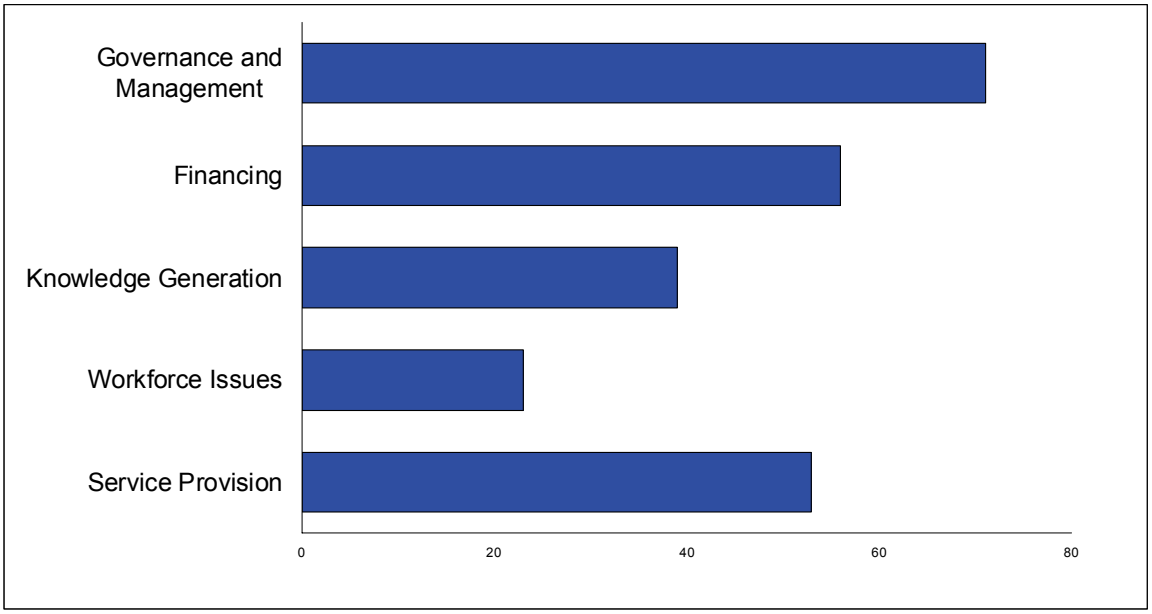


Figure 3.13 Priority Areas for Health Systems Research (% of responders)

The fields of service provision, financing and governance/management were mentioned as priority areas by more than 50% of the responders with an interest in health systems research. The following figures give a deeper insight in the topics considered by responders to be priority within each of these three fields.

Within the field of service provision, responders identified the topics access, *coverage/ basic benefit package* and *responsiveness* (i.e. satisfaction) as the ones of highest priority (see Figure 3.14).

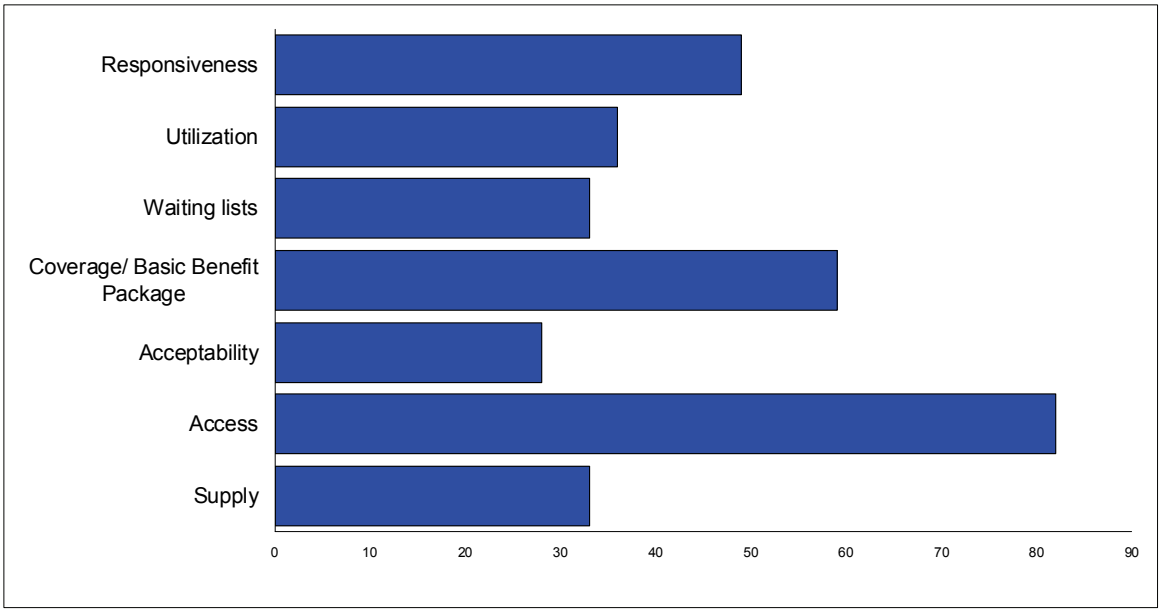


Figure 3.14 Priorities within the thematic field of Service Provision (% of responders)

Within the field of financing, the most mentioned priority for research was *equity/fairness of financing* (76% of responders interested in health systems research). Financing systems in general including financial sustainability of the health systems was also identified as a priority issue by most of the responders (74%) (see Figure 3.15).

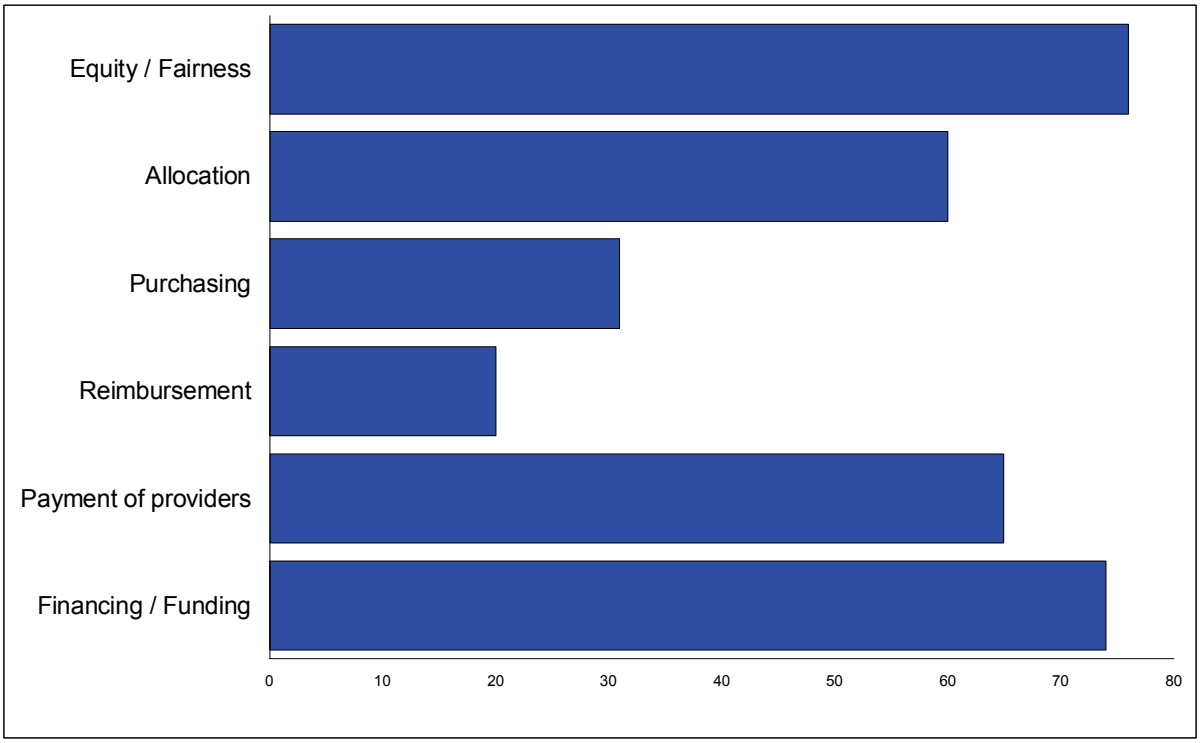


Figure 3.15 Priorities within the thematic field of Financing (% of responders)

Within the research field of governance and management, the priority is clearly the assessment of health care reform (87% of responders, see Figure 3.16). This quantitative finding is underlined by the answers to open questions, which mentioned the need to assess the impact of reforms on population health.

In addition, open answers mentioned a need for addressing cross border care and circulation of patients as well as issues related to the tension between private and public sector, market and state.

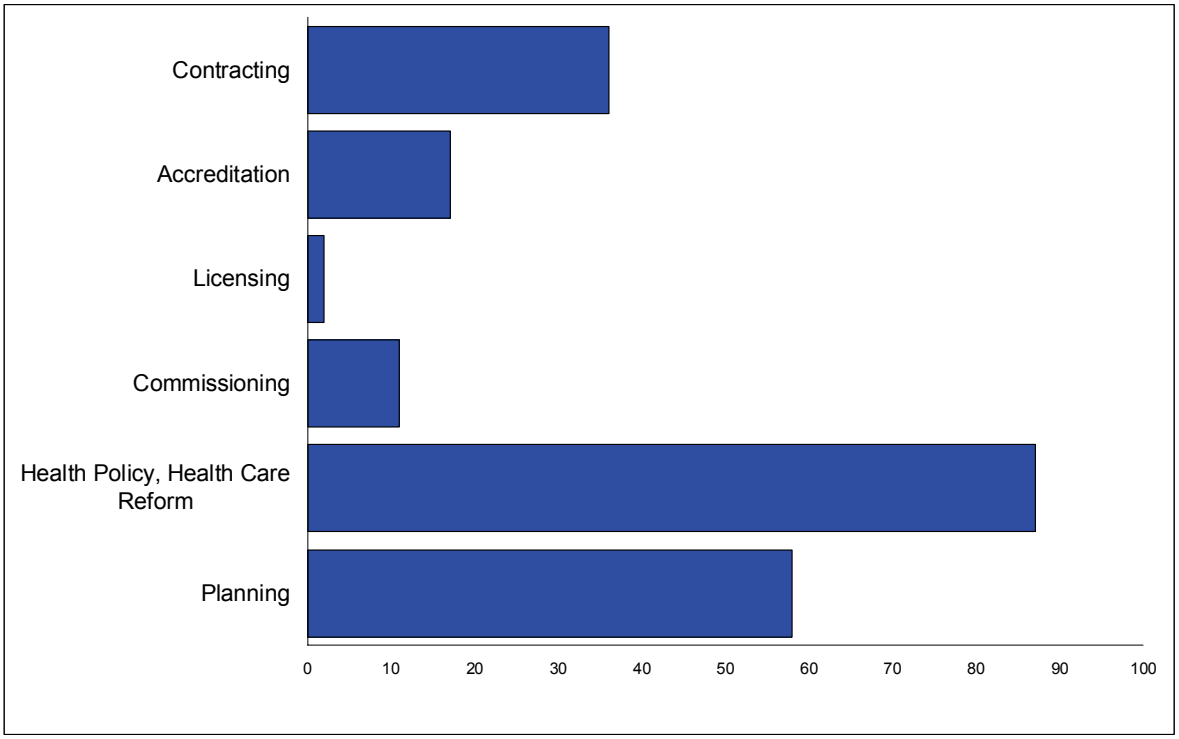


Figure 3.16 Priorities within the thematic field of Governance and Management (% of responders)

As figures 3.14-3.16 show the share of respondents within each main topic area, we have also summarized the same listing of priorities in comparison to all responders to the survey section on health systems. Figure 3.17 provides an overview of the 12 most often mentioned priority areas, sorted in descending order compared to the total sample. E.g. the number one priority in that case remains the area of 'health policy / health care reform: 86 percent of those who consider 'governance and management regard this as an important area, which is equal to 60 percent of all responders.

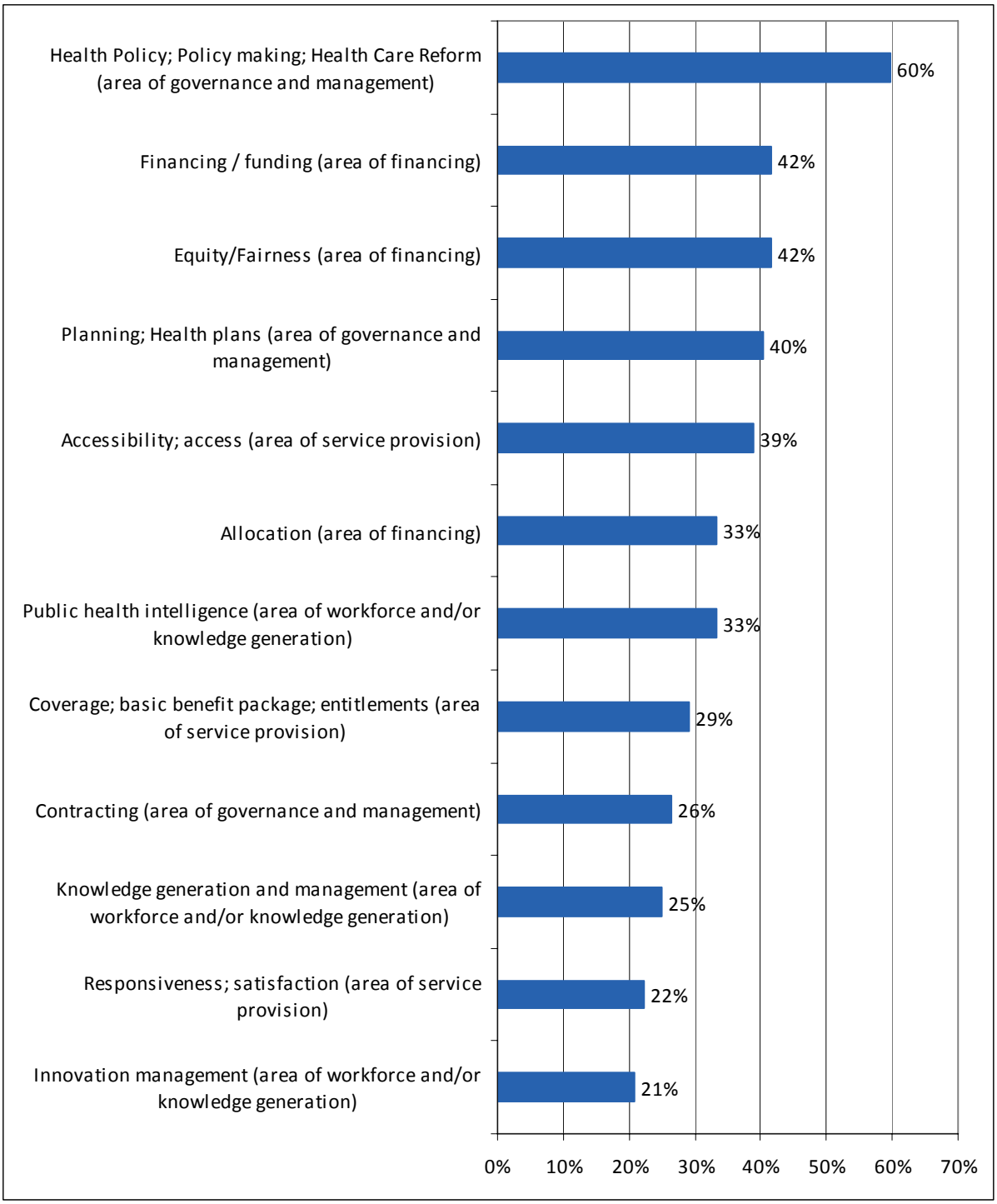


Figure 3.17 Priorities overarching all thematic fields (% of all responders on health systems)

3.5.3.3 Workshop on health systems research

As described before the framework for health systems research and the results of the bibliometric analysis were presented at the Health Services Research Working Conference in Den Haag (8th and 9th of April 2010) and discussed with researchers and users of research in working sessions. In the working session on health systems, three specific areas for discussion were identified previously: methodological aspects of health systems research, evaluation of privatization and

market competition in the health systems and issues of workforce planning and professional mobility. A set of topics to address in future research on health system emerged from the structured discussions in the working sessions (see Box 3.3).

Box 3.3 Topics discussed in European Health Services Research Conference (The Hague, 8th - 9th April 2010).

a) Methods to evaluate health care reforms and health system performance

- Finding a common set of performance domains (health status / outcomes, responsiveness / satisfaction, financial protection and sustainability, equity ...) including role of potential intermediate domains (e.g. access, quality, efficiency).
- Indicators: selection and definition of indicators for performance domains, comparability of indicators across countries, potential to aggregate to create indices etc.
- Data sources and their combination for measuring indicators (i.e. routine data, data from research, etc.).
- Implementation of interdisciplinary research.
- Concept of best evidence (definition of acceptable study designs).
- Implementation: types of incentives (incl. financial), research on the period between reform inception and full implementation etc.
- Assessment of health care reform: against specific explicit aims/goals vs. assessment of all intended and unintended effects vs. effects on health system performance in general.

b) Regulation vs. markets and competition / Role of private sector

- Markets and competition in health care: objectives and effects (both intended and unintended) on accessibility, quality, health outcomes, responsiveness etc.
- Privatisation: definitions and conceptual issues (e.g. privatisation = commercialisation?; privatisation = one way street?), objectives and effects (both intended and unintended) on accessibility, quality, health outcomes, responsiveness etc.
- Performance comparisons: private vs. public providers.
- Regulation in health care: objectives to meet societal goals of welfare systems, implementation and effects.

c) Workforce planning and professional mobility.

- Migration of health care workforce.
    - Effects on country of origin and on target country (e.g. impact of weekend migration on quality of care).
    - International management of health care workforce migration: Needs? Tools? Experiences?
- Changing definitions of professional tasks (e.g. delegation of physician activities to other professionals, delegation across disciplines).
- Management of workforce.
    - Needs based planning of workforce (and workplaces).
    - Forecasting.
- Gender issues of the above.

3.6 Discussion and Conclusions

3.6.1 Main findings

Both the bibliometric analysis and the internet searches (Google and CORDIS) indicate that especially in the eastern European countries there is a need to develop health systems research capacity. There are few publications from institutions based in these countries, there are also few internet hits, and finally these countries are underrepresented in EU-funded projects.

Both analyses (the bibliometric of the whole database and the in-depth of a sample of abstracts) suggest that the topics of waiting lists, accreditation/licensing and privatization might be under-researched. The limited research on the effects of privatization of health services provision seems particularly relevant, since in many European countries privatization of health services has been ongoing in the past years.

The additional information sources underline the need to prioritize research on financing issues. Country experts reported financing models and financial sustainability as major interest topics for decision and policy makers. The online survey also suggests financing / funding issues as a priority research topic. In addition, the assessment of health care reforms effects emerges as a priority topic both in the expert consultation as well as in the online survey. In discussions with health systems research experts and users based on these preliminary findings, methodological issues of health systems research as well as issues on privatization of health services were identified as priority fields of research.

3.6.2 Strengths and Limitations

In this report, a bibliometric analysis was conducted in order to assess the status of health systems research in Europe. Besides this approach, internet searches were performed to complete the picture of health systems research. Additionally, data from a survey among researchers and policy makers in the field of health systems were taken into account. Finally, the preliminary findings where presented at the Health Services Research Working Conference in The Hague (8th and 9th of April 2010) and discussed with the participants in working sessions. This variety of approaches allowed us to address the topic from different perspectives and to increase the validity of our findings.

Regarding the topics of health systems research, the main results are those of the bibliometric analysis constructed with the aim of identifying health systems research. The main question here is whether the literature search was able to identify health systems research with a high degree of specificity. Although the analysis of keywords and of thematic clusters suggests that the database includes an important amount of research on health systems, the in-depth analysis of the abstracts suggests a low specificity for health systems research. The more detailed analysis of the sample of abstracts indicates that the search strategies mainly identified health services research in general (i.e. on different levels of the health system) and lacked on specificity for research on the macro-level. Less than a quarter of the abstracts of the in-depth-analysis sample addressed the macro-level. Thus, the findings of the bibliometric analyses have to be interpreted with caution. The bibliometric analyses probably give a good impression of the coverage of *health services research* in general in the publications. Since only a few of the publications identified in the search could be considered to be *health systems research* (according to the analysis of a sample), we think that the findings of the bibliometric analysis apply mainly to the broader field of health services research. Health systems research seems difficult to be identified with a high level of specificity using this kind

of approach. However, the analysis of a subset of references selected after assessing the abstracts in detail allows describing the field of health systems research more accurately.

3.6.3 Implications and Recommendations

Regarding the shaping of the research agenda on health systems in Europe, our findings reveal a need to address the consequences of health reforms in a sound methodological way, which allows to identify the relevant effects of health policy on health, equity and financial sustainability of European health systems. Both European and national policies need to be evaluated. Since there have been important privatization movements in many European countries and the health sector has been increasingly opened to market forces (either in an incremental way or within major privatization waves), there is a need to evaluate the effects that the growing shift from public to private sector is having on health systems and on the outcomes of health systems.

Sound assessments of health care reform require the refinement of methodological approaches. For comparative health systems research, indicators of health systems performance need to be further developed and refined. There is also a need to further develop multidisciplinary study methods to address the variety of questions related to health systems functioning and performance. In addition, there is also a need to define criteria to identify high quality research (i.e. research with high validity) in health systems in a similar way as it has been done for clinical research by the evidence based medicine movement.

Finally our findings clearly point out the need to develop health systems research across Europe, and particularly in the countries of former Eastern Union and former Soviet Union. The health systems of that countries have been object of major reforms in the past years (cf. Health Systems in Transition series (European Observatory for Health Systems and Policies) shifting from classical Semashko health systems to different models of health system organization and financing while at the same time being under enormous financial pressures derived from the transition of socialist economic order to market oriented economic system. EU Member States have also implemented major reforms of their health systems or are in a state of continuous incremental reform. The purpose of those reforms being the achievement of financial sustainability, more equity, higher quality of care, etc. (with changing weights of each of the aims). The assessment of these reforms and policy processes require the availability of researchers and of institutional and political environments which foster research on health systems. Thus capacity building on health systems research reveals as a major priority. Capacity needs to be build on the side of researchers (i.e. education of researchers from different disciplines to conduct health systems research) as well as on the side of potential users of health systems research. The latter is of major importance, since without the convincement of key policy makers of the need to rely on sound health systems research, it will not be possible to develop sustainable research capacity.

According to our findings, it can be recommended that in future European (EU) funded research priority is given to projects that address the effects of health care reform, particularly the effects of privatization and commercialization of health services and that gather researchers from a broad range of European countries including researchers from EU Member States as well as from accession candidates and even from the former Soviet Union.

In our view, these issues should be taken into account when formulating the European research agenda on the short and medium term.

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4 Health care organisations and service delivery

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4.1 Introduction

Health care organisations are a crucial component of health care, operating at the meso level between the health care system at the macro level and the interactions between patients and health professionals at the micro level. Within as well as between European countries, health care organisations differ considerably in size and structure, varying from large structures, like general or specialised hospitals to small primary care units or health centres (McKee & Healy, 2002; Grol et al, 2006). A common element is that they are the place where supply and demand meet and interact: users or patients seeking care for a health problem and health care professionals providing health services in response (Delnoij & Groenewegen, 2007). In order to develop evidence-informed policies that can improve the health care sector in Europe, empirical evidence is needed about the structures, care processes and performance of organisations (Donabedian, 1966). For that purpose we set out to contribute to the European research agenda by focusing on two questions:

1. What types of research on health care organisations have been conducted in the past decade or are currently being conducted and does this differ between European regions?
2. How does this research match with future priorities as seen by experts in Europe: which domains have been studied extensively and which are under-researched at a European level?

We focus on health care for *individuals* and exclude public health organisations, concerned with collective disease prevention and health promotion. In addition, our review excludes studies of purchasers/commissioners (sickness funds, insurance companies and governments). Focus is on two sectors that are generally considered key elements of all European health care systems, namely primary care and hospitals. Primary care organisations provide care that is described by the World Health Organization as care that is essential, universally accessible and at an affordable cost (WHO, 1978; 2008). As it is often seen as the linchpin of effective health care delivery, many EU Member States, new and old, emphasise the need to develop their primary care system (Kringos et al, 2010). Hospital care provides specialised care and is the largest component of European health care systems in terms of health care spending: the hospital sector typically absorbs 35–70% of countries' health care budget (Rechel et al, 2009). Especially in a period of economic stagnation, this highlights the need for more evidence on better ways to configure hospital services or change the way hospitals operate.

Moreover, in response to changing patterns of morbidity (increase of long term conditions) and the preferences of patients, both primary and hospital care are in constant development, with new organisational forms developing on the interface between both sectors, ranging from loose cooperation to integrated care chains (Goldsmith, 1994; Saltman & Figueras, 1999; De Blesser et al, 2006). As a result of such developments patients move through organisations in different ways: through referrals (e.g. between less and more specialised hospitals), co-operation (e.g. between day care centres and long-term care institutions) or care chains (to provide integrated care over different episodes).

In the next section we provide a conceptual framework to define the domain of health services research covered in this chapter and go on to describe our study methods. Then, a bibliometric analysis provides an overview of published research, while a review of research projects at European level offers an indication of current or already finished research that may not yet be published. To identify priorities for the future, expert consultations were held on-line, followed by discussions at conferences. These inputs are used for setting an agenda for health services research at the organisational level.

4.2 Framework and Methodology

4.2.1 Conceptual Framework

As research on health care organisations can include a wide variety of issues, a framework is required to classify types of research. Following Lammers (1978) and Delnoij & Groenewegen (2007) we have distinguished between four major areas of research on health care organisations. It provided a structure to guide the literature searches and expert consultations. It is loosely based on Donabedian's (1966) framework, distinguishing between the structure of organisations, the care processes within organisations and their outcomes or performance. The four areas are:

Intra-organisational control

This area focuses primarily on how organisations arrange their work internally, such as by differentiation or specialisation (Sochalski et al, 1997). Topics include workforce and skill- mix (e.g. Sibbald et al, 2004), creation of multidisciplinary teams (Ouwens et al, 2005), and reconfiguring services (Spurgeon et al, 2010). For a complete list of topics, see Box 4.1.

Inter-organisational relations

As organisations relate to their environment and are part of organisational networks, they have to organise their relationships to other organizations. Topics include the continuity of care between organisations (e.g. Haggerty et al, 2003), the transfer from secondary to primary care (Atun, 2004); and the spatial distribution of services, including cross-border health care (Joseph & Philips, 1984; Dussault & Franceschini, 2006).

Patient relations

The performance of organisations can either be understood narrowly as the performance of the clinical process or more widely in the context of patients. An organisation's relationship with patients is considered important as they are connected to the organisation's central goals. It deals with topics such as patient involvement and participation (O'Connor et al, 1999), patient compliance (Van Dulmen et al, 2007), patient delay (Richards et al, 1999) and demand management (Jack & Powers, 2008).

Governance and accountability

Health care organisations have their own governance structures and also function within health systems where they are subject to governance and regulation, for instance on labour conditions, patient safety and their level of autonomy and market exposure. Topics include assessment and improvement of quality and safety (see chapter 6), the relationships between professionals and managers (Dückers et al, 2009), and the regulation of professions or provider organisations (Trubek et al, 2008).

4.2.2 Bibliometric analysis

We provided an overview of European literature on health care organisations published between January 2000 and December 2009 by a search of the scientific databases Pubmed and Embase. Thirty-three countries were selected, all being EU Member States, candidate Member States and members of the European Economic Area (EEA). Relevant keywords were selected from the thesaurus of Medical Subject Headings (MeSH), used in Pubmed. Manually selecting keywords has proven to be a highly sensitive method with a fairly low specificity (Delnoij & Groenewegen, 2007). Therefore the selection of keywords was started with a manual scan of all abstracts between July 2007 and July 2009 (n= 506) of BMC Health Services Research. A selection of articles that could be

considered to describe research on health care organisations led to the identification of relevant MeSH terms which were then tested in the MeSH database on a volume of another journal (Health Affairs, 2008). Next, keywords were added or removed until the search led to a list of articles, which resembled 90% of the articles which were manually selected. The final list of keywords was also translated into a list of relevant keywords for Embase. Further inclusion criteria were that the article needed to address human health and contain an abstract, published in English. All search keywords and criteria are listed in detail in Appendix 3. Results yielded 19,624 articles from Pubmed and 8,806 articles from Embase. Titles, authors, keywords, publication dates and abstracts were downloaded for further analysis. Duplicates (1,426) as well as references on non-European research (in particular "New South Wales" and "New England") were excluded, which led to 23,617 articles.

To determine how often keywords occur in the bibliometric analyses, each keyword was first analysed, together with all relevant sub-keywords, that sometimes ran in two or three layers. Some keywords were clustered together based on the keywords from two databases and on the topic. For example Patient Education, Participation, Satisfaction (PEPS) is a combination of 6 keywords from the results of two databases (PubMed and Embase), that together form one keyword. In total 27 keywords used from PubMed and Embase were counted. As for country differences in knowledge production, an overview is provided for the total number of references per country. A special case is the United Kingdom, as four countries fall within the UK. To cover this, keywords were combined for references on the UK, England, Scotland, Wales, Northern Ireland, Great Britain and London.

4.2.3 Classification of a sample of studies

As keyword searches only provide limited information about an article's contents, a random sample of 1,010 articles was drawn for further analysis. The sample was stratified per country: from all 33 countries a minimum of 30 articles were included. For countries with less than 30 articles in the databases, all articles were selected. Each article was scanned to determine if it dealt with health care organisations. If so, each article was then classified regarding the following dimensions:

- Domain: Each article was assigned to one or more of the following domains: 1) Intra-organisational control, 2) Inter-organisational control, 3) Patient relations or 4) Governance and accountability;
- Topic: Based on a first scan of the literature a number of topics were identified. Each article was assigned to one or more topics. If the category 'other' contained a frequently occurring theme, it was reclassified into an extra topic. In total 35 topics were distinguished (see Box 4.1).
- Sector: primary care, hospital care or both.
- Type of data collected: 1) 1= Quantitative data, 2) 2= Qualitative data, 3) Administrative data, 4) Documents, 5) Literature review, 6) Clinical data, 7) Combinations/ other.

Box 4.1 Overview of topics used for classification of past and current research and future priorities

Domain 1 Intra-organisational control

1. Workforce skill−mix; professional boundaries; training
2. Creation of multidisciplinary teams
3. Increasing scale of health care organisations
4. Continuity of care across professional boundaries
5. Chronic disease management
6. Integrated care
7. Changing services provided by health care organisations
8. Other

Domain 2 Inter-organisational control

9. Shifting from secondary to primary and community care
10. New and (entrepreneurial) health care organisations
11. Continuity of care across organisational boundaries
12. Cross-border health care
13. Scale differences between health care organisations
14. Reconfiguration of services
15. Regionalisation
16. Inequalities and distribution
17. Other

Domain 3 Patient relations

18. Demand management (e.g. pre−authorisation)
19. Balancing needs and demands (e.g. evidence−based versus patient-centred care)
20. Patient delay/waiting
21. Patients' reasons for help seeking/lay referral
22. Patient involvement and participation (e.g. expert patient; co−production of health)
23. Use of eHealth (e.g. telemedicine; telehealth)
24. Patient compliance and patient adherence to treatment guidelines
25. Enhancement of public information on the quality of providers for informed choice
26. Other

Domain 4 Governance and accountability

27. Assessment and improvement of quality and safety
28. Balancing efficiency and quality
29. Regulation of professions
30. Regulation of provider organisations
31. Planning/commissioning/purchasing services (e.g. funding methods; reimbursement methods)
32. Treatment guidelines
33. Treatment effectiveness or outcomes
34. Relationships between managers and clinicians
35. Other

Of the 1,010 articles selected, 459 (45%) articles could be considered to deal with research on health care organisations. This low specificity is quite similar to results found by Velasco and Busse (see chapter 3) and Delnoij & Groenewegen (2007).

4.2.4 Inventory of EU-funded projects

Neither form of literature search can give an overview of current or recently finished research that has not yet been published. Subsequently, European research projects were selected in databases of the European Commission, namely the project database of the Executive Agency for Health and Consumers (EAHC), which implements the EU Public Health Programme by the Directorate General for Health and Consumers and the project database of Cordis, the information service on

current and past EU research Framework Programmes. Projects were first selected based on two keywords: 'primary care' and/or 'hospital'. In addition, a manual scan took place of all projects in the pillar "Optimising the delivery of health care to European citizens" within the current Seventh Framework Programme. A first scan limited to currently running EU projects only led to the identification of 29 relevant projects. We therefore extended the search to all projects in the period 2000-2010. We first identified 36 projects in EAHC and 637 projects in Cordis. Next, all project titles were manually scanned to eliminate clinical or biomedical research. Based on this selection, 93 projects were investigated further by evaluating their project descriptions. Two thirds, in total 62 projects, addressed HSR at an organisational level. These projects were then classified based on the same areas used for the sample of articles.

4.2.5 Online stakeholder survey

An online stakeholder survey for the overall HSR in Europe Project was carried out among researchers and decision makers in order to assess views on upcoming HSR priorities and to explore options for improving the translation of HSR into policy and practice. A general description of the survey and its responses is provided in chapter 2. The survey contained a section on health care organisations which was filled in by 82 of all 295 respondents (28%). Of these 82 respondents, 26% could be considered decision makers and 71% researchers (plus 4% had another role). As for geographical coverage, a distinction is made between respondents from the EU's initial 15 Member States (70 %), its new Member States (21%) or from other European countries (10%), mostly from an EEA country. Experts were also invited to answer an open question as to which HSR topic they considered the top priority for the next two to five years and why.[1] Of the 218 responses, 167 (77%) related to health care organisations though some overlap with other domains of HSR covered in other chapters, in particular on health care systems and benchmarking and performance indicators.

4.2.6 Country Experts Consultation

A questionnaire was sent to country consultants in 33 European countries, aimed to identify the activities in HSR in each country and to assess how this research is used to inform policy-making. The questionnaire included open questions relevant for mapping research on health care organisations across Europe, including the priorities as identified by policy makers and/or funders at national level. Details on the selection of country consultants and on the contents of the questionnaire are provided in chapter 2.

4.2.7 Verification of the survey responses

More detailed discussion took place with experts at a working conference of HSR Europe in The Hague (April 2010), organised as part of the project. About 90 participants working in three groups of 30 each discussed research priorities with regard to three topics that had been selected beforehand. Follow up discussions were held at the annual conference of the European Health Management Association (EHMA) (June 2010) and the biannual conference of the European Forum for Primary Care (EFPC) (August 2010), in order to verify the topics identified and to suggest additional topics to be incorporated. The former involved experts in health management and policy at an organisational or national level and the latter provided an opportunity to test findings among experts in primary care. In addition to workshop discussions, the EHMA meeting also incorporated a replication of the online survey, providing additional findings especially among decision makers, 40% of all EHMA respondents belonging to that category.

[1] In a first version of the online survey, respondents were asked to provide a top five of topics. In a later version, experts were invited to select one topic, plus provide an explanation why it was relevant. To compare both, only number one priorities are analysed, unless the number one priority did not address health care organisations but another part of HSR (e.g. HTA). In that case the first relevant organisational topic was selected, if present.

4.3 Results

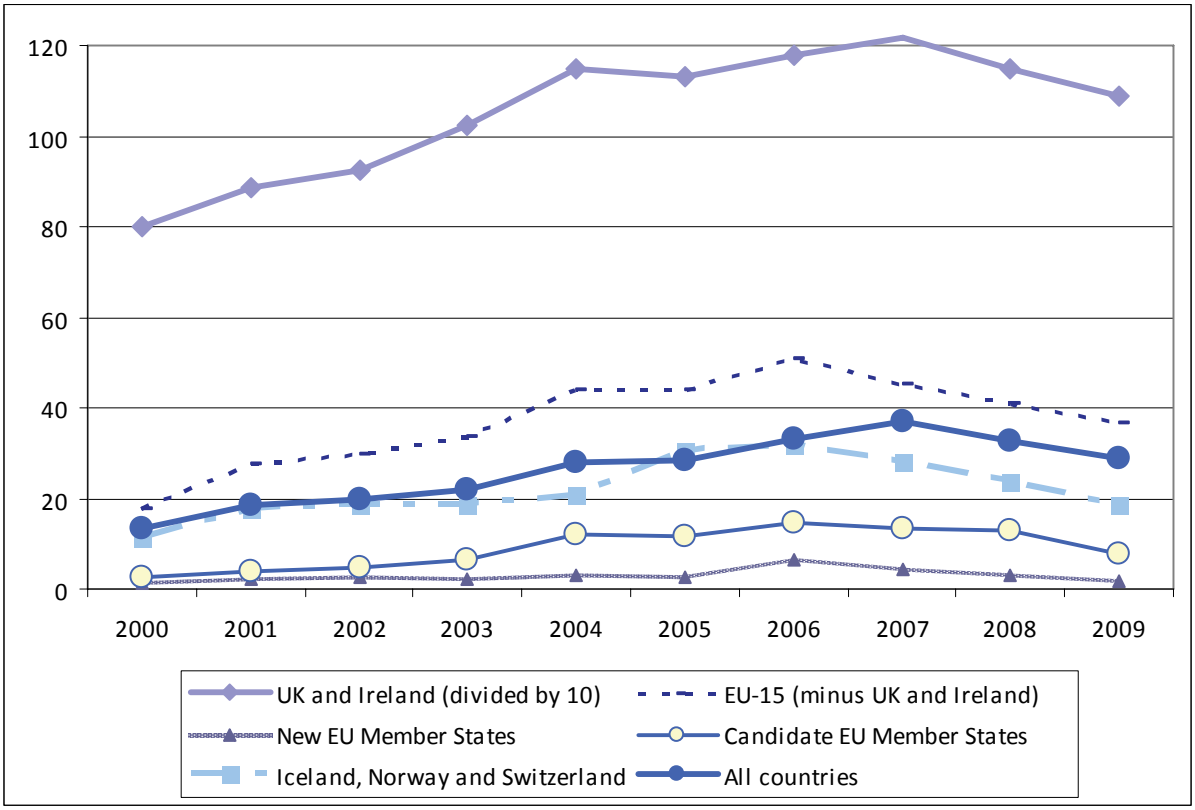
4.3.1 What has been done in the past decade?

Research output in Europe

Bibliometric analyses indicate that over 23,000 publications have been published in the last decade with keywords indicating topics that address health care at the organisational level. Figure 4.1 shows the increase in the number of publications per year in a specific country, summarised for Europe as a whole and for five different clusters of countries: the UK and Ireland, the other EU-15 countries, new EU Member States, EU Candidate Member States and other countries. As the amount of research on the UK and Ireland is far higher than in the other countries, the number of publications for these countries is divided by 10 in order to fit it on the graph.

On average, the number of HSR publications shows a steady increase between 2000 and 2007 for all groups of countries, with an average growth rate of 10% per year. After 2007 this reversed, with an average decline of 11% a year. For 2009 this may be due to the fact that MeSH terms might not yet have been assigned to all articles, but this wouldn't explain the drop in 2008. Indeed, some delay in assigning MeSH terms to articles may play a role as the same count was done at two times: when the count of articles was done in April 2010 instead of November 2010, the number of publications for 2009 was much lower, while those for 2007 and 2008 remained almost unaltered. While this accounts for part of the drop, there still appears to be a reduction in research production, similar to that found in chapter 3, addressing health care systems.

Comparison of regions shows the UK and Ireland have by far the highest production. HSR production on new and Candidate Member States is far lower than in the European region as a whole. In part these differences are caused by language bias in Pubmed and Embase, as not all non-English journals incorporate an English abstract and are included in one of the databases.



*EU-15 = Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden (minus UK and Ireland) ** New EU Member States = Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovenia and Slovakia *** Candidate MS = Croatia, Macedonia, and Turkey

Figure 4.1 Average number of publications per year for all 33 European countries and by cluster of countries

International variation in research output

To get a view of country differences, a distinction is made between countries as a keyword and countries in researchers' addresses. The first provides an overview of studies *on* different European countries, while the second indicates studies *from* each of the countries. The numbers of publications differ considerably between countries (Table 4.1). The United Kingdom is both the biggest producer of research and most often the subject of study. In contrast, new or candidate Member States score much lower, also compared to older Member States. Overall, more research is produced on a country than from a country, reflecting in part that studies address multiple countries. It also indicates the co-authorship of many publications, in part by researchers who move from one country to the other, for example, researchers from 'low research output' countries working in 'high research output' countries. The ratio between the numbers differs between countries: Luxembourg and Slovakia are far more often the subject of studies in other countries than Turkey or the Netherlands, where knowledge is mostly produced domestically.

Table 4.1 Total number of publications on a country (keywords) and from a country (address field), for full table see Appendix 3

	No. of publications on a country	No. of publications from a country	Ratio on / from a country
Macedonia	7	2	3.50
Malta	7	3	2.33
Latvia	12	3	4.00
Luxembourg	12	1	12.00
Cyprus	13	4	3.25
Slovakia	20	2	10.00
Czech Rep.	24	7	3.43
Lithuania	26	14	1.86
Romania	26	8	3.25
Estonia	29	17	1.71
Bulgaria	30	14	2.14
Iceland	30	12	2.50
Slovenia	47	28	1.68
Hungary	48	22	2.18
Portugal	52	17	3.06
Croatia	67	45	1.49
Poland	105	72	1.46
Austria	124	63	1.97
Greece	193	125	1.54
Finland	239	177	1.35
Belgium	240	150	1.60
Turkey	254	216	1.18
Switzerland	315	226	1.39
Norway	316	252	1.25
Denmark	344	260	1.32
Spain	350	226	1.55
Sweden	529	398	1.33
France	543	372	1.46
Italy	544	393	1.38
Germany	728	490	1.49
Netherlands	921	742	1.24
Ireland	1411	678	2.08
UK	19060	9706	1.96
Average	**808.1**	**446.8**	**1.81**
Average excl UK+Ir	**199,8**	**140,7**	**2,58**

Differences in the numbers of publications between countries can reflect in part their population size and their wealth. There is a positive but weak correlation between the number of publications on a country (country as one of the keywords) and its population (r = 0.34) and its Gross Domestic

Product (GDP) (r= 0.44).[2] Figure 4.2 provides an overview for the number of publications on a country per 10,000 inhabitants (2000-10) and per $ 1 billion GDP (in 2008, source: Eurostat). On both dimensions, the UK and Ireland are off the chart, with more than 3 publications per 10,000 inhabitants and more than 7 publications per billon $. Shown in this manner, it is apparent that it is not so much 'old versus new Europe' that makes the difference. Instead, countries such as Estonia and Croatia are relatively more often the subject of study than some large Member States such as France and Germany, corrected for their GDP per capita.[3] This illustrates that language is a strong factor, as the search was limited to papers with an abstract in English. While in absolute numbers France and Germany have high HSR production, the availability of knowledge on these countries in English is relatively low for their size and GDP.

Extent of multi-national research

The international component in HSR is another element that can be distilled from looking at countries' representation. A key element of most research, amounting to 90% of all studies, is that it appears to be based on one country, containing only one country name in the list of keywords (Table 4.2). About 8% include two countries, while the remainder makes a comparison between three or more countries. Studies on six or more countries are rare. At the same time, some articles may address Europe in a more general manner. About 2% of papers use the keyword 'Europe'. In part, this referred to studies addressing two or more countries, but also studies based on one country but considering the wider context of Europe.

[2] Correlations of both dimensions with numbers of publications being produced on a country, using country as one of the keywords, are almost identical.

[3] A similar pattern would emerge if one would take the number of publications produced in a country.

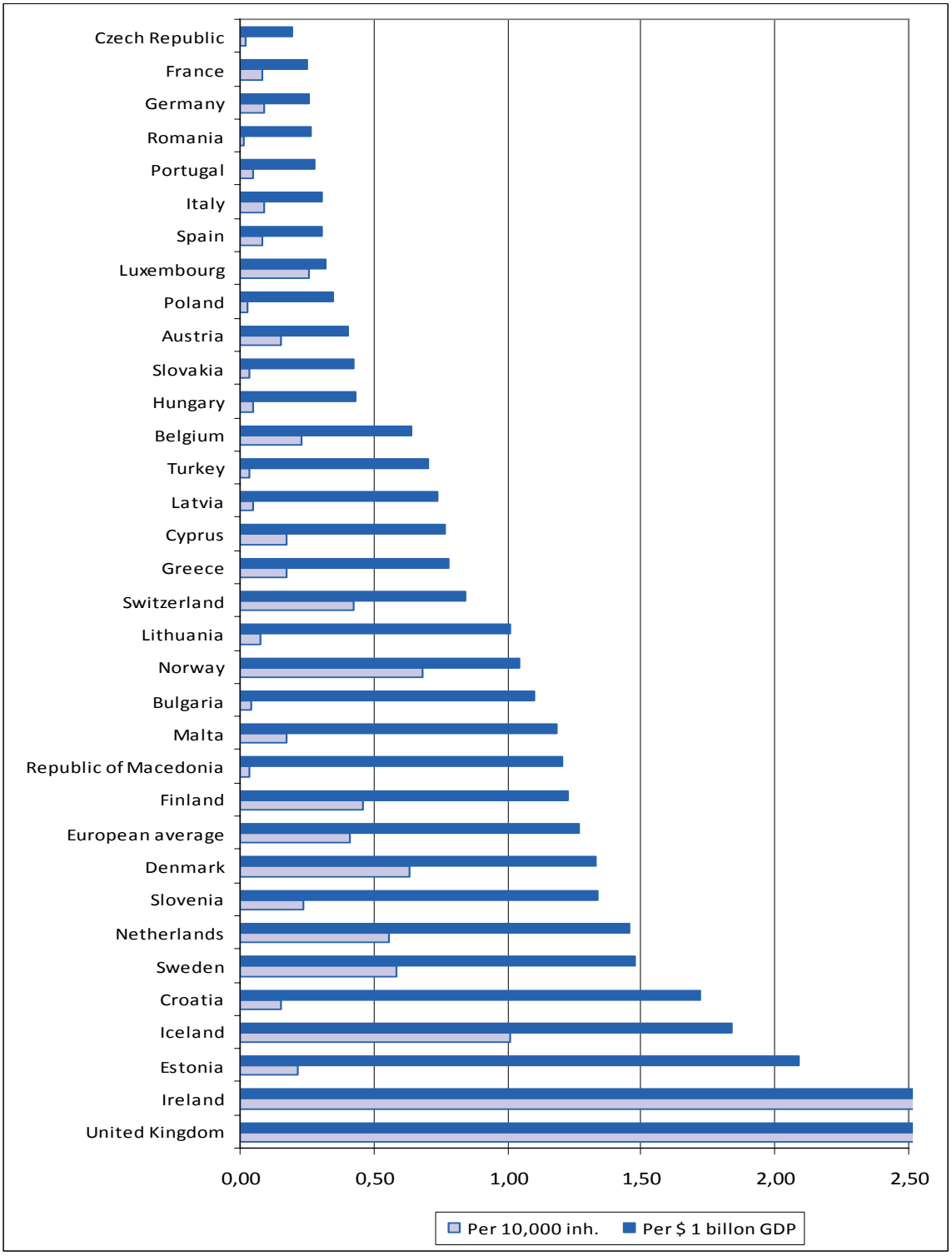


Figure 4.2 Publications per country per 1000 population (average 2000-2010) and per $ 1 billion GDP (2008, sorted on publications per $1 billion GDP)

Table 4.2 Numbers of countries (keywords) per publication

Number of countries	Number of publications	Share of publications (%)
One country	21197	89.8%
Two countries	1933	8.2%
Three to five countries	270	1.1%
Six or more countries	78	0.3%
No country listed	139	0.6%
Total	23,617	100%
With keyword 'Europe'	476	2.0%

Main research topics

To give a general view of the types of research topics investigated, an overview is provided of the ten most common keywords (Figure 4.3). An explanation of keywords is provided in Appendix 3. About half of all articles were on 'professional practice', which refers to professional activities and performance of duties for the provision of health care (with keywords such as 'group practice', 'nursing' or 'referral and consultation'). The second most common topic is 'physicians' (30%), indicating the historically strong emphasis on the supply of care rather than the demand for care. Other keywords such as 'patient education, participation and satisfaction' (15%), 'patient care management' (14%) are far less common.

Regions differ somewhat in the topics studied. For example, in studies on EU-15 countries a larger share is related to 'physicians', 'health facilities' and 'guideline adherence' than in candidate member states. In contrast, articles that address these latter countries more often contain keywords on 'professional practice', 'patient care management' and 'patient safety'. Additional results show large differences in the occurrence of specific keywords between individual countries (Appendix 3). For example, research in Macedonia and Malta is completely accounted for by four of the ten selected keywords, while in countries like Ireland, Greece and the UK all ten selected keywords can be identified.[4]

[4] Such a country comparison also compensates for the fact that overall patterns in keywords are largely dominated by the UK (as 71 percent of all references refer to the UK).

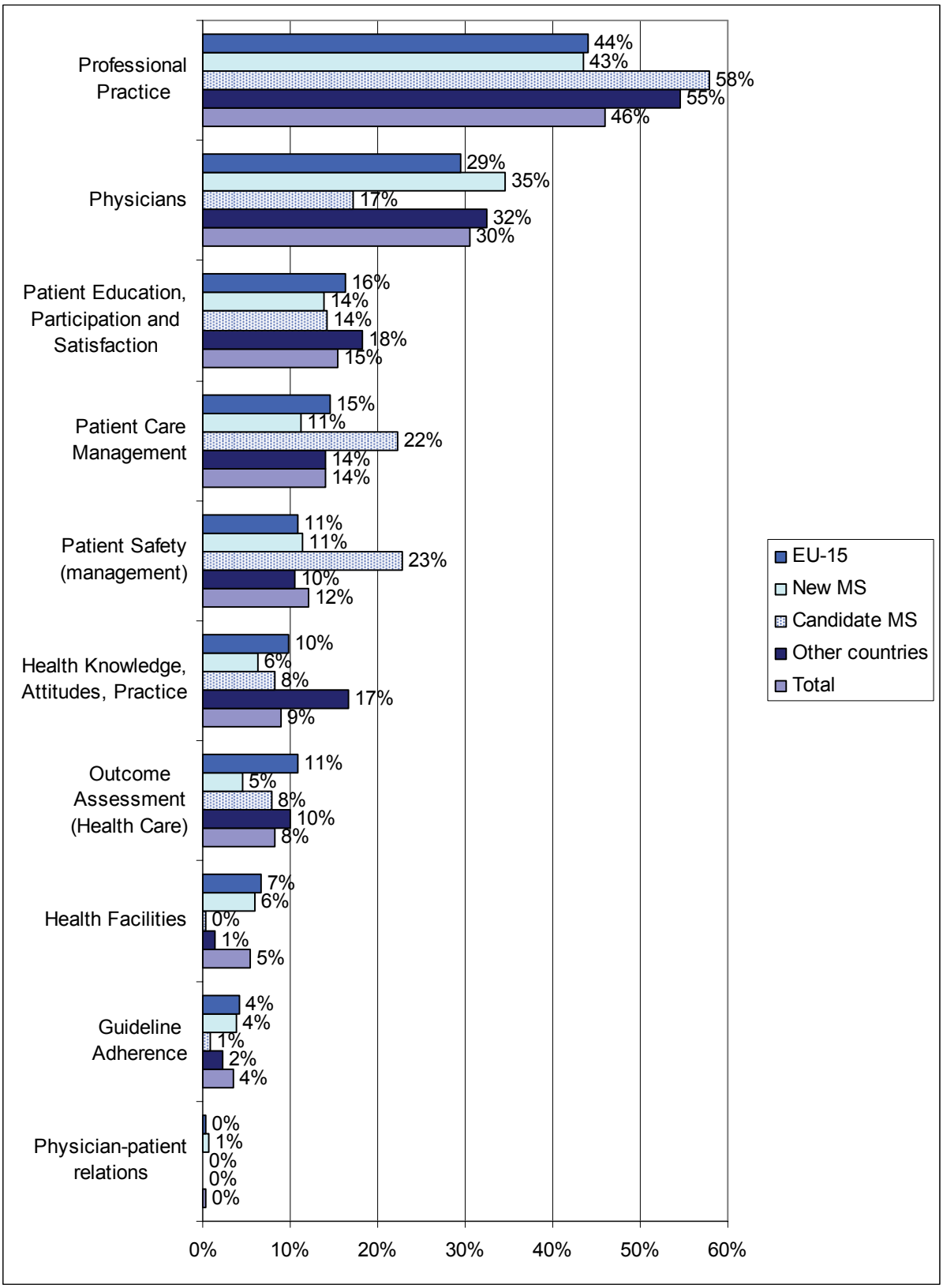


Figure 4.3 Ten most frequently occurring keywords in published research in the period 2000-2009 by cluster of countries (as keywords)

Research areas studied

To provide a better picture of the topics addressed, we reviewed a sample of 1,010 HSR article abstracts, 45% of which dealt with research on health care organisations. Of these selected articles, the largest proportion (41%) addressed the area of governance and accountability, which includes topics such as treatment effectiveness and regulation of professions (Figure 4.4). About a third of articles (31%) were related either to intra-organisational relations (for example the internal workforce or changing service provision) or to patient relations (28%). Only 11% were on inter-organisational relations possibly because it deals with phenomena that are relatively new on the policy agenda, such as continuity of care. Differences between European regions are fairly small.

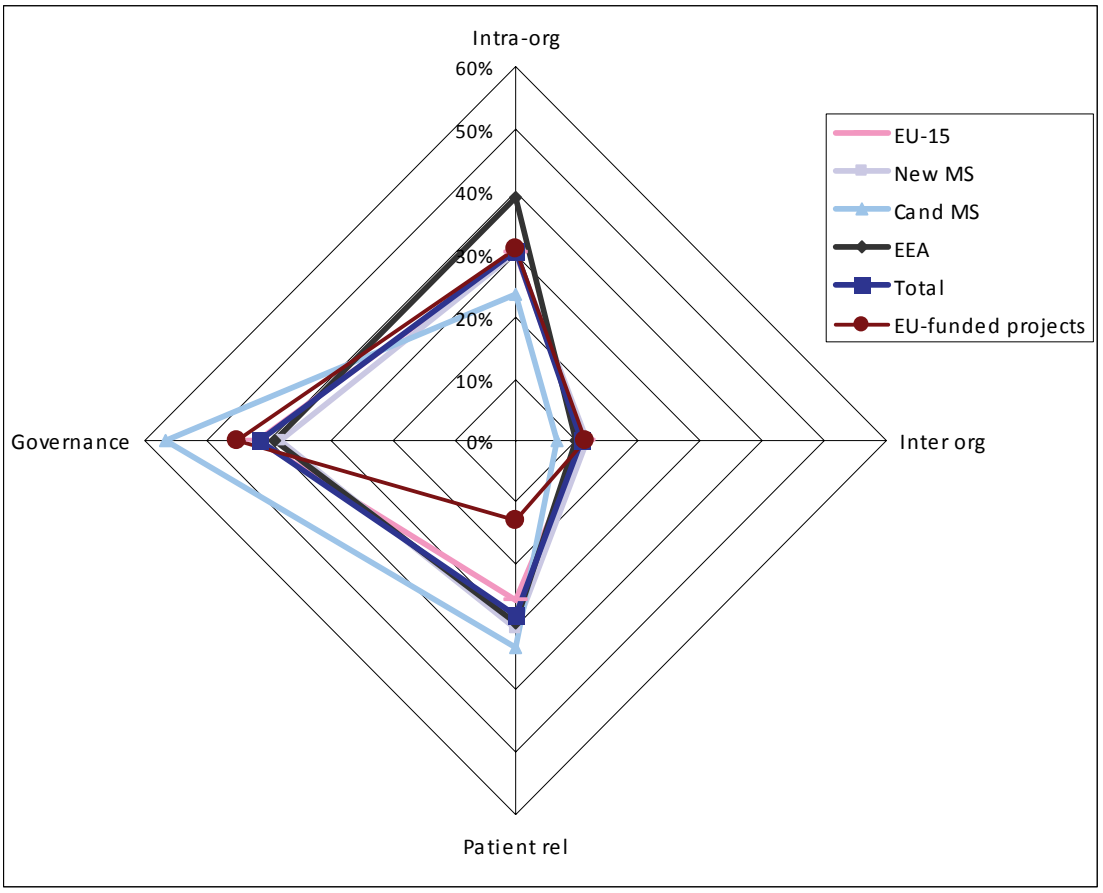


Figure 4.4 Radar chart with share of publications in each of the four research areas by cluster of countries

When it comes to the health care sector addressed, a similar share of articles relate to primary care (32%) as to hospital care (28%). Another 19% deals with both sectors, although in most cases it does not involve studies on the relationship between both sectors but health care in general, such as physician behaviour (Figure 4.5). Regional differences are small: primary care is studied slightly more often in new and candidate Member States, while hospital care is investigated slightly more in EU-15 countries than in other regions.

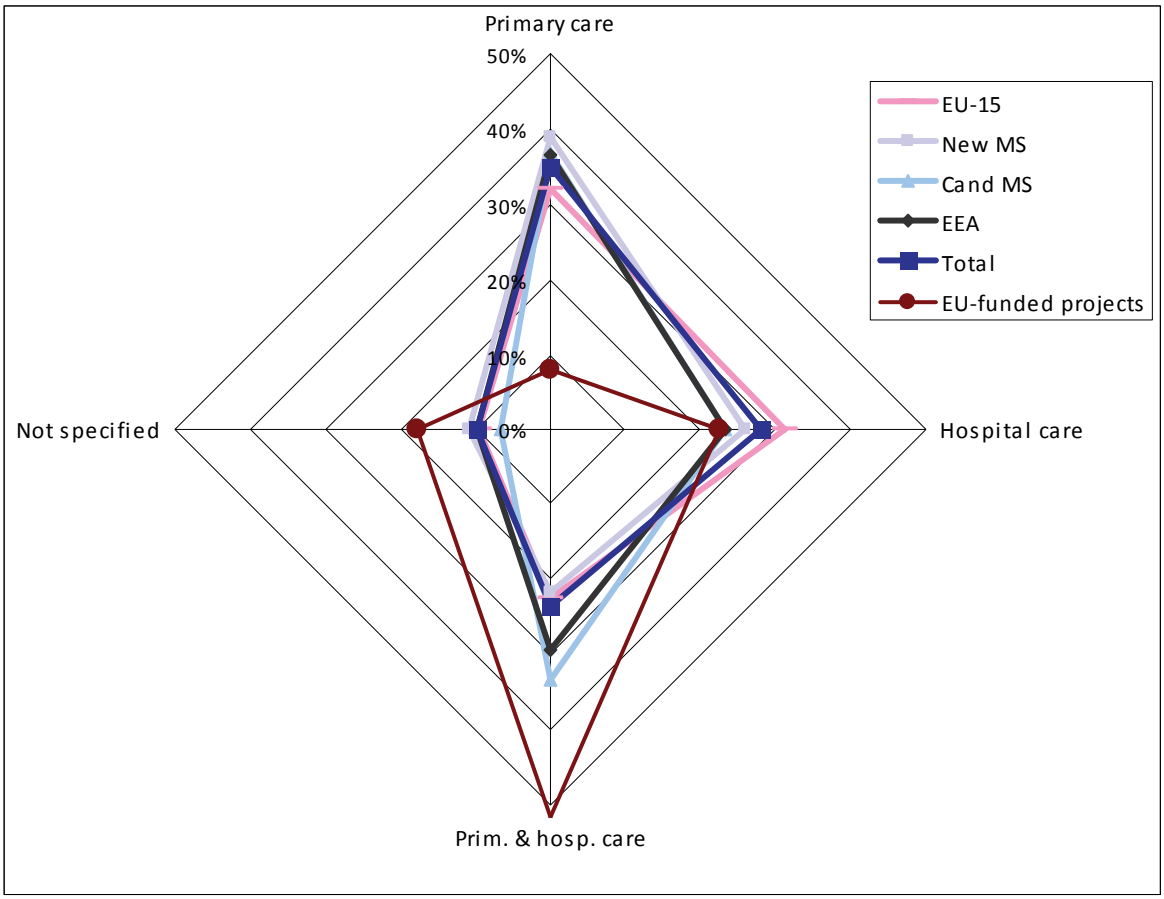


Figure 4.5 Radar chart with share of publications per health care sector by cluster of countries

As it is not so much region per se that explains a country's research focus on primary and/or hospital care, we examined whether the type of health care system relates to the type of studies covered. A distinction was made between National Health Service (NHS) systems versus Social Security Health care systems. While both systems differ mostly in type of funding (general tax versus earmarked), they also differ somewhat in referral, with access to hospital care in NHS-systems often dependent on a referral from a GP (gate-keeping), while in the second system there is often parallel access to primary and specialised care (Van der Zee & Kroneman, 2007). We considered 17 countries, 10 classified as NHS system and 7 as SSH system (Figure 4.6).[5] On average, in NHS countries, 58% of research addresses primary care and 56% addresses hospital care. In SSH countries, both figures are lower, with 42% on primary care and 43% on hospital care. It is therefore not so much type of health care system that explains differences in focus (t-tests not significant). For articles it was also possible to classify their source of information. A majority of all studies makes use of quantitative data, mostly referring to survey studies. About 15 percent makes use of qualitative data (interviews), documents or previous literature, while 10 percent uses either administrative or clinical data (e.g. patient records).

[5] Based on Van der Zee and Kroneman (2007) the following distinction was made: NHS systems are Denmark, Finland, Greece, Ireland, Italy, Norway, Portugal, Spain, Sweden and the UK. SSH systems are Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland.

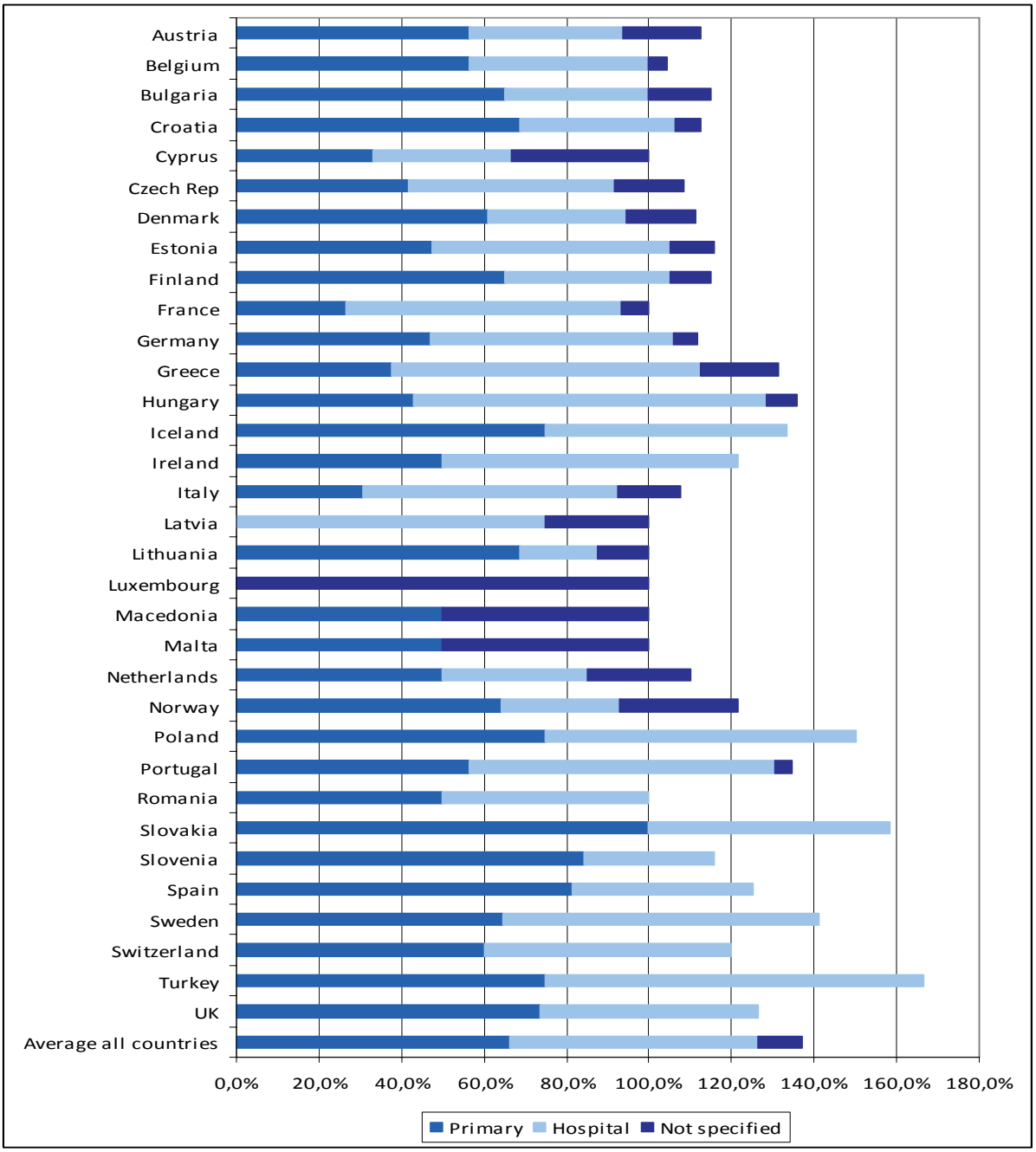


Figure 4.6 Horizontal bar chart with share of publications per health care sector for all countries

4.3.2 What research is being done at European level?

Our search for EU-funded research projects on health care organisations led to the identification of 62 projects. Overall, this current research very closely resembles the topics addressed in the past (Figure 4.4). For example, the largest proportion of EU-funded projects deals with 'governance and accountability', while 'inter-organisational relations' are covered least often. The largest difference is in 'patient relations', being commoner among published research (28%) than in EU-funded projects (13%).

When it comes to which health care sector is addressed (Figure 4.5), EU-funded projects differ from past publications. At European comparative level, research addressing primary care is uncommon (8%), whereas about half of all projects cover both sectors (Appendix 3).

Table 4.3 shows the geographical distribution of EU-funded projects. The right column contains the number of projects in which an institute from a particular country is involved, either as coordinator or as participant. Four countries are involved in more than half of all projects (the UK, Spain, Germany and Italy). The UK is also the country with the highest share of project coordinators: for almost one in four of the 62 projects (23%) the coordinating institute is located in the UK. There are also countries that are hardly involved in EU-funded projects. This refers among others to countries such as Malta, Croatia, Macedonia, Latvia and Iceland. Despite this discrepancy, a clear element of EU-funded projects is that they are internationally comparative in nature. On average, about 8 countries are involved in an EU-funded project. This can refer to both European and non-European countries: about one in five projects (19%) incorporates one or more non-European countries in its project team. It refers to a variety of mostly neighbouring countries, such as Israel, Russia as well as several African countries.

Table 4.3 EU-funded Health Services Research – geographical distribution of 62 projects, sorted based on number of participant and/or coordinator projects

Country	Coordinator		Participant		Coordinator or participant	
	n	%	n	%	n	%
United Kingdom	14	23%	36	58%	50	81%
Spain	4	6%	33	53%	37	60%
Germany	8	13%	27	44%	35	56%
Italy	7	11%	27	44%	34	55%
Greece	3	5%	28	45%	31	50%
Netherlands	8	13%	21	34%	29	47%
France	5	8%	22	35%	27	44%
Belgium	7	11%	17	27%	24	39%
Poland	0	0%	22	35%	22	35%
Sweden	0	0%	20	32%	20	32%
Finland	0	0%	20	32%	20	32%
Austria	2	3%	14	23%	16	26%
Ireland	3	5%	12	19%	15	24%
Denmark	0	0%	14	23%	14	23%
Portugal	0	0%	12	19%	12	19%
Switzerland	0	0%	11	18%	11	18%
Czech Republic	0	0%	8	13%	8	13%
Slovenia	0	0%	7	11%	7	11%
Slovakia	0	0%	7	11%	7	11%
Luxembourg	0	0%	7	11%	7	11%
Lithuania	0	0%	6	10%	6	10%
Estonia	0	0%	6	10%	6	10%
Cyprus	0	0%	6	10%	6	10%
Norway	1	2%	4	6%	5	8%
Hungary	0	0%	5	8%	5	8%
Romania	0	0%	4	6%	4	6%
Bulgaria	0	0%	4	6%	4	6%
Turkey	0	0%	3	5%	3	5%
Malta	0	0%	2	3%	2	3%
Croatia	0	0%	2	3%	2	3%
Macedonia	0	0%	1	2%	1	2%
Latvia	0	0%	1	2%	1	2%
Iceland	0	0%	0	0%	0	0%
Other non-European	0	0%	12	19%	12	19%

4.3.3 What research should be done in the future?

Online stakeholder survey

An online survey among experts in Europe focused on priorities for future research. Of the four main research areas, the one most frequently prioritised was inter-organisational relations (71%) followed by patient relations (50%). The other two areas each attracted 43% support (Figure 4.7). Decision makers tended to be more selective than researchers, prioritising fewer areas. Decision makers often selected only one area as a priority.[6]

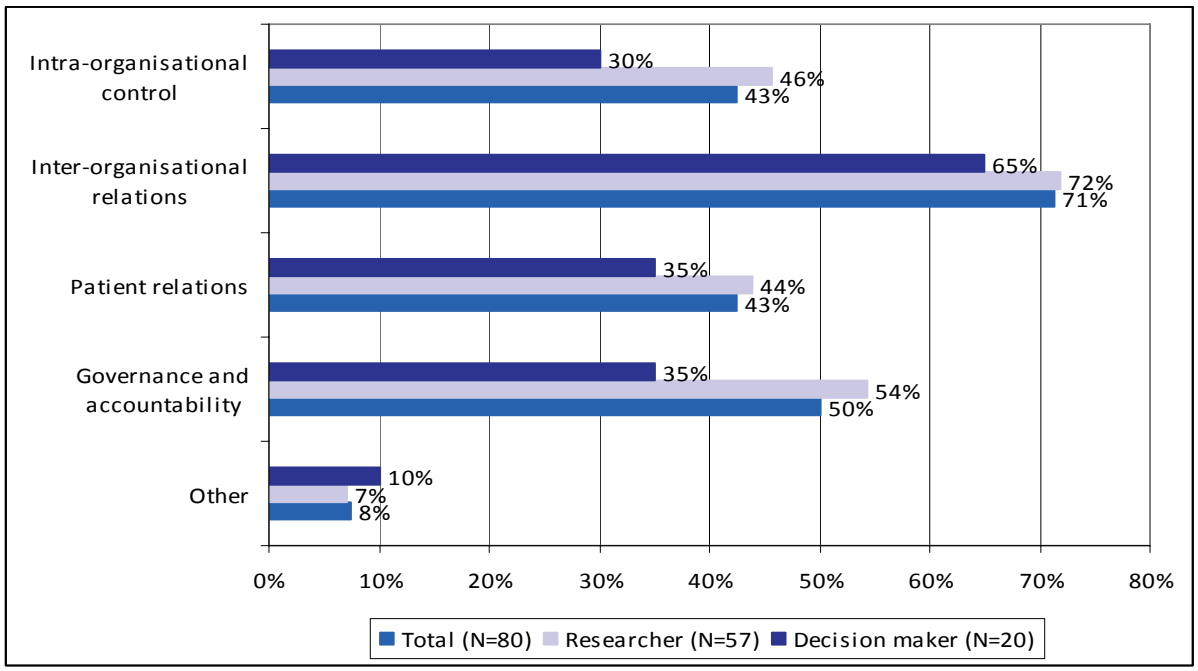


Figure 4.7 Research areas prioritised for the next two to five years by researchers and decision-makers

When looking at regional differences, it is noteworthy that some areas are prioritised in all four regions (inter-organisational and patient relations) while for others there is less agreement. Governance and accountability is considered one of the key topics for new Member States, while other countries (mostly EEA members) regard it as less important (Figure 4.8).

[6] One in ten experts filled in the category 'other'. This included topics such as "financial flows", "service utilisation", "logistics", "implementation of biomedical and clinical knowledge in routine healthcare delivery" and "developing an understanding of the desperate need for action on Medically Unexplained Symptoms".

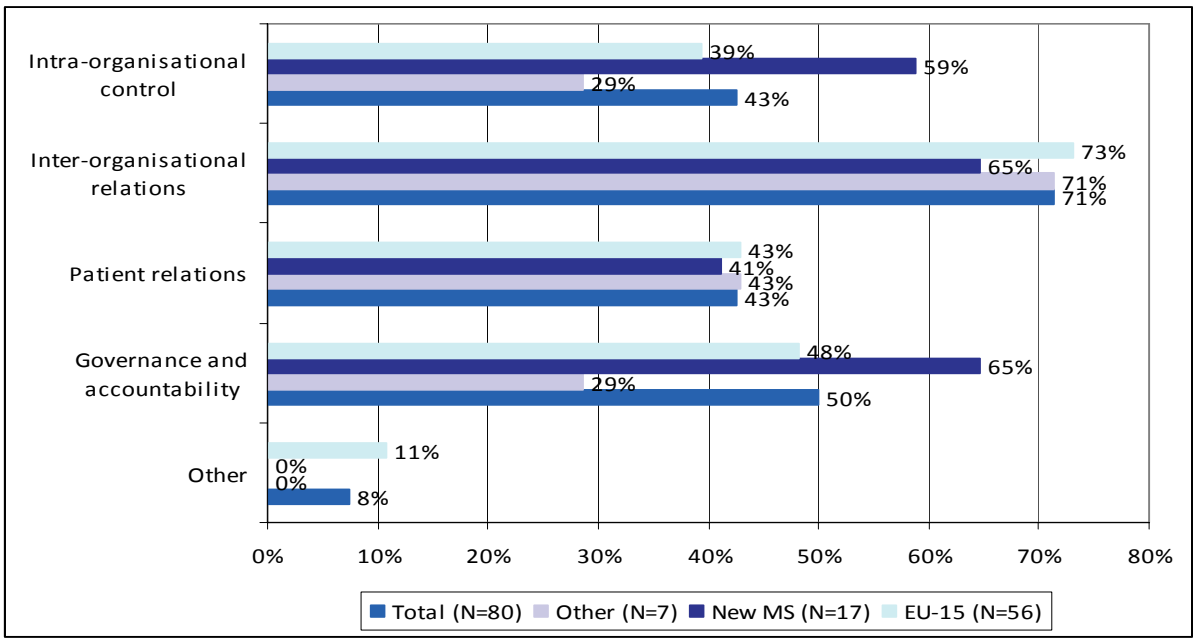
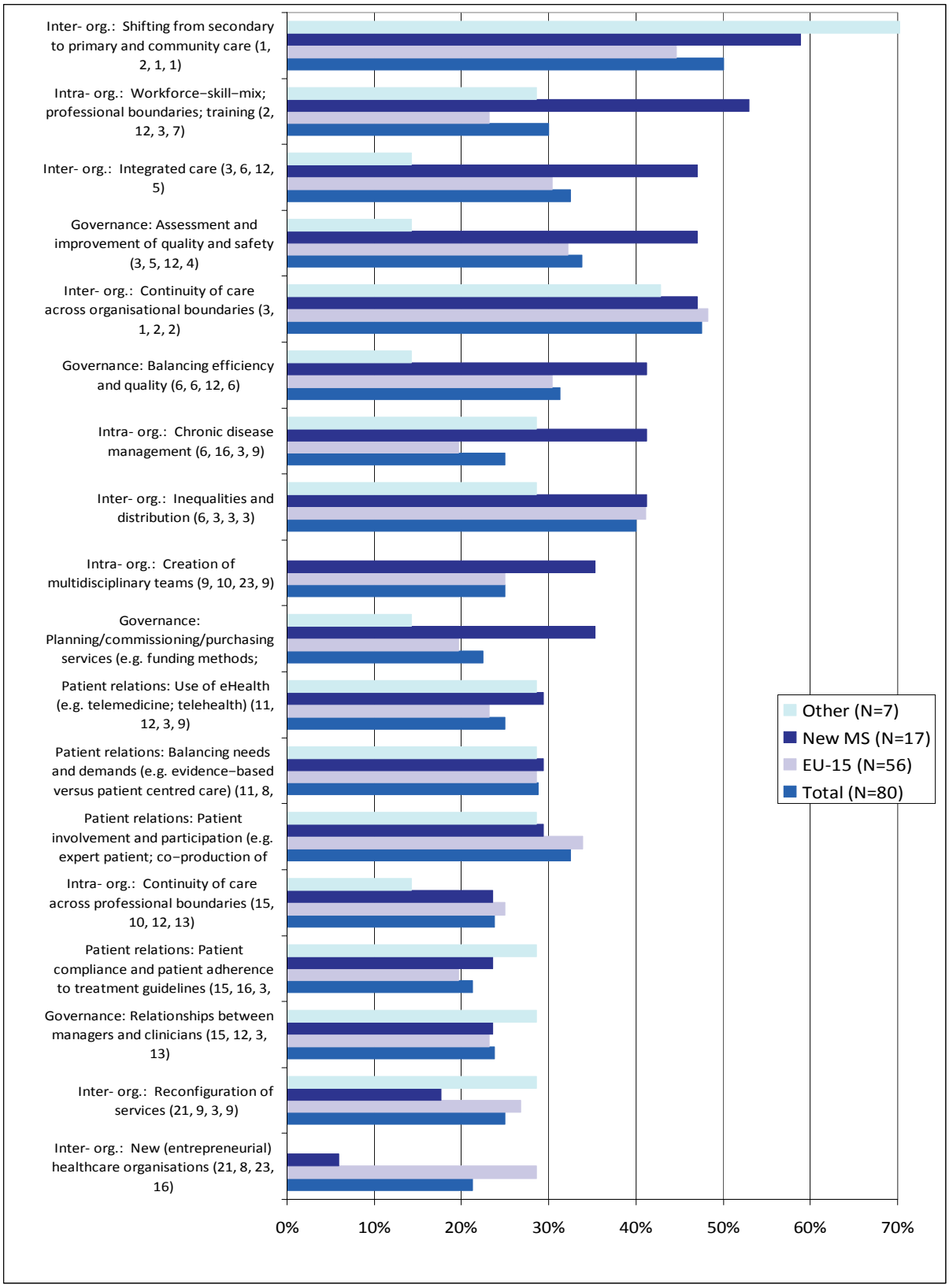


Figure 4.8 Research areas prioritised for the next two to five years by cluster of countries

Figure 4.9 considers research topics within each of the four research areas. It includes the 13 topics receiving the most support. They are ranked in descending order based on decision makers' views, though there is considerable concordance with the views of researchers (correlation 0.84). Sorted in this manner it appears that the two most important topics take an integrative perspective of both primary and secondary care, which should ideally be studied in combination.

A listing of priority topics for each of three regions (EU-15, New Member States and other countries) reveals the relationship between primary and secondary care to be an even higher priority in new Member States and other countries than in EU-15 countries. Moreover, the same experts from new Member States consider workforce issues a higher priority than other countries, in part perhaps because they are often the source of workforce migration (Buchan, 2007).

Figure 4.9 Research priorities most frequently listed (total share more than 20%) by cluster of countries, sorted in descending order based on new Member States' ranking (with rank scores between brackets: new MS, EU-15, other, total)



Working conference discussions

Greater detail about future research needs was obtained through a half-day workshop at the project working conference in April 2010. The most mentioned topics within three topic areas were selected for discussion in more detail. This choice was made based on the bibliometric analyses as well as preliminary survey outcomes. Only in the domain of governance and accountability was no topic selected, because of its inclusion in another part of the conference, namely health systems research. These discussions led to the identification and refinement of a large number of ideas, summarised below:

1. Integration of care across organizations

What integration of services, organisations or professions entails varies between countries, thus hampering international comparison. Conference participants also pointed to a clear lack of data and evidence as to whether integration improves patient outcomes and experiences, preferably at reduced cost. We should therefore learn more about drivers and success factors for integration of care, and which forms of integration are suitable for which types of patient groups, under which conditions. Can integration also be achieved in new organisational forms, such as care networks? The topic would also benefit from a comparison with the two other main fields of discussion, patient-centred care and skill-mix.

2. Patient-centred care and patient involvement in health care settings

Many policy documents refer to the importance of patient-centred care, which can be studied at the level of the health system as a whole, at the organisational level, and at the level of individual patients. From an international perspective, the use and interpretation of the concept can vary due to differences in cultural backgrounds. Policy can benefit from international comparisons, aimed at understanding how incentives for patient-centred care vary due to effects of the (regulatory) environment of the health care system and how tensions can arise between professional guidelines and patient-centred care. From a patient perspective, more insight is beneficial about the overlaps and discrepancies between patient needs and their expectations, and the most suitable type of patient-centeredness for chronically ill versus other patient groups. Further research can facilitate the use of patient-centred care in practice, by means of an evaluation of strategies, interventions and incentives that aim to empower patients or that raise professionals' awareness of patient-centred care. A final theme that emerged is the relationship between patient-centred care and technology, both positive and negative. Do new technologies indeed work for all patient groups?

3. Evaluating the skill-mix, organisation and delivery of care

Although international comparisons are considered difficult, there is a clear need for more insight into variations across Europe into the tasks and specialisation of professionals and their consequences for the quality of care. Linked to this are several factors, including the role and use of guidelines, their implementation, and the shift from secondary to primary care: which elements, such as training, type of organisation, leadership and skill-mix are required to meet future health needs, in part when transferring health care to primary care settings? In addition, not much is known about the effects of team climate and composition on their performance, as well as on the limitations and possibilities that professional roles and (inter)professional education impose on skill-mix utilisation. Understanding is also often lacking as to which interventions, both technological and organisational, have improved the quality of care. What are the core factors of such interventions and to what degree are they applicable independent of the (national) context?

Follow-up meetings

The domain of interorganisational relations was confirmed as a priority area in discussions held at two follow-up meetings during conferences organised by EHMA and EFPC. In the online survey EHMA respondents emphasised governance topics more often than other respondents, in particular the relation between managers and clinicians and the regulation of professionals and provider organisations. This was shared in the EHMA workshop discussions, as leadership and management are considered especially important in times of change. At the EFPC meeting, the emphasis was on primary care, leading to the identification of similar topics to those identified earlier, such as the importance of integration of care, and the role of primary care in reducing health care inequalities and health care costs. Moreover, both EHMA and EFPC conferences highlighted a number of shared views, one being the importance of determining which research needs to be addressed at national level and which at European level. Other topics mentioned in both settings were the importance of human resource issues and the role of community care in relation to primary care.

Online survey open answers

The online survey incorporated an open question as to which HSR topic experts considered the top priority for the next two to five years and why. Respondents suggested a wide variety of topics, though there were some underlying patterns. Some suggested a particular health care field, most often primary or hospital care, while others focused on an area of need such as mental or palliative care. Others followed a disease oriented perspective, focusing on specific illnesses such as cancer or diabetes. Mostly, experts suggested some aspect of organisational functioning such as 'performance', 'human resources' or 'patient safety'. All answers were graphically represented in a word frequency analysis, using the free software 'Wordle' (with font size being proportional to frequency of occurrence; see Figure 4.10).

Figure 4.10 Word cloud of open answers regarding key priorities identified in the online survey, using wordle

Country expert consultations

Country experts from 26 countries identified key priority areas which were used in their countries. One very broad priority area which was mentioned regularly was the assessment of new and innovative ways to organise the delivery of health care, e.g. in England, Denmark, Estonia, Finland and France. In addition, country experts from Germany, Italy, the Netherlands and Norway identified continuity of care as a priority area in their countries, and in particular the implementation of chronic disease management programs. Other experts listed research into the hospital sector (e.g., Bulgaria, Austria) or collaboration between hospital and primary care (e.g., Denmark, Czech Republic) as main research priorities in their countries. Similar to the results in chapter 3 on health care systems, a number of consultants also referred to the growing attention for privatisation and financing of (hospital) care (e.g., Austria and Macedonia) or the emergence of public-private partnerships (Denmark). Two other main topics most frequently mentioned were the growing recognition of patient orientation and patient empowerment (e.g. in Denmark, Finland or Italy), and various aspects of the health workforce (e.g. attractiveness of the health sector in Finland, deployment of the NHS workforce in England and workforce planning and forecasting in Slovenia). Overall, the responses not only showed a large overlap in priorities between countries, but also a clear similarity with the online survey results.

4.3.4 Comparing past and current research with future priorities

Overall, future research priorities compared with past publications and EU-funded projects (Figure 4.11) reveals that inter-organisational relations has received much less attention than respondents suggest it should in the future.

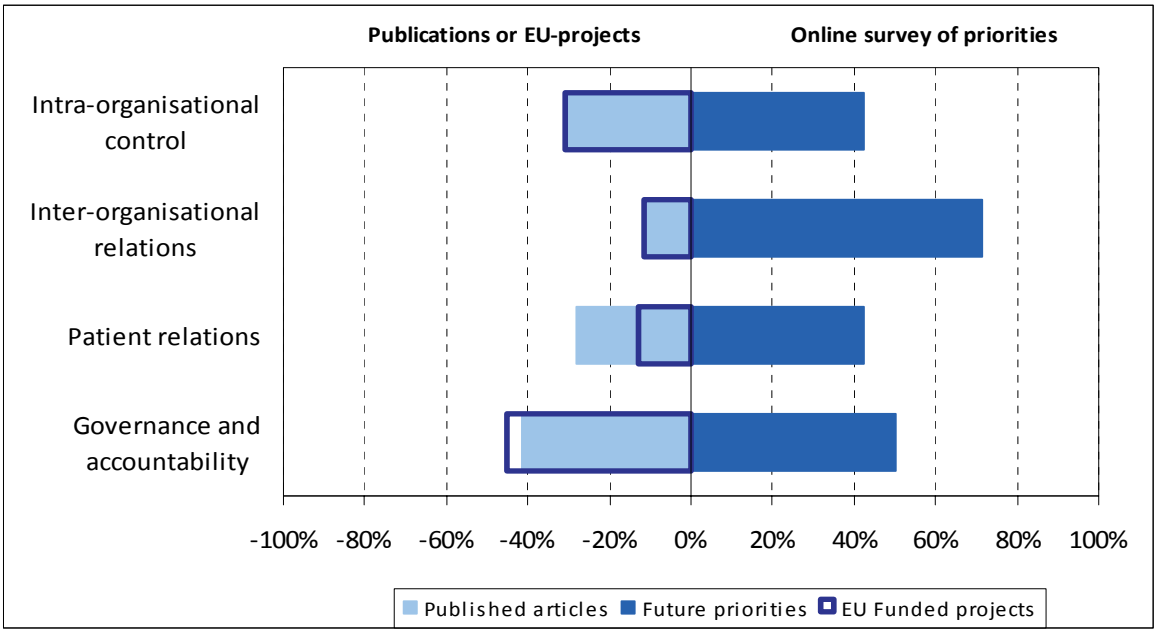


Figure 4.11 Comparison of past/current research areas with perceived priorities for the next two to five years

Comparison at the level of topics in rank order of expert views of priorities is shown in Figure 4.12. Regarding 'inter-organisational relations', all three topics that are considered priorities are so far hardly addressed in past or current research. This applies for example to the questions how organisations in primary and secondary care relate to each other and how patients move through

both sectors. The fourth most prioritised topic, 'assessment and improvement of quality and safety', is the only topic already regularly studied, both in past research and especially in EU-funded projects. Similarly, some other topics, such as 'workforce', 'e-health' or 'patient involvement' appear to be receiving increasing attention and are seen as important for the future. Additional topics such as 'chronic disease management', 'continuity of care' and 'creation of multidisciplinary teams' are also considered priorities while they are hardly being addressed at present. The topic of chronic disease management is already catching up at the level of European funded projects, which in turn may serve as a driver for more knowledge being developed by other (nationally funded) research initiatives.

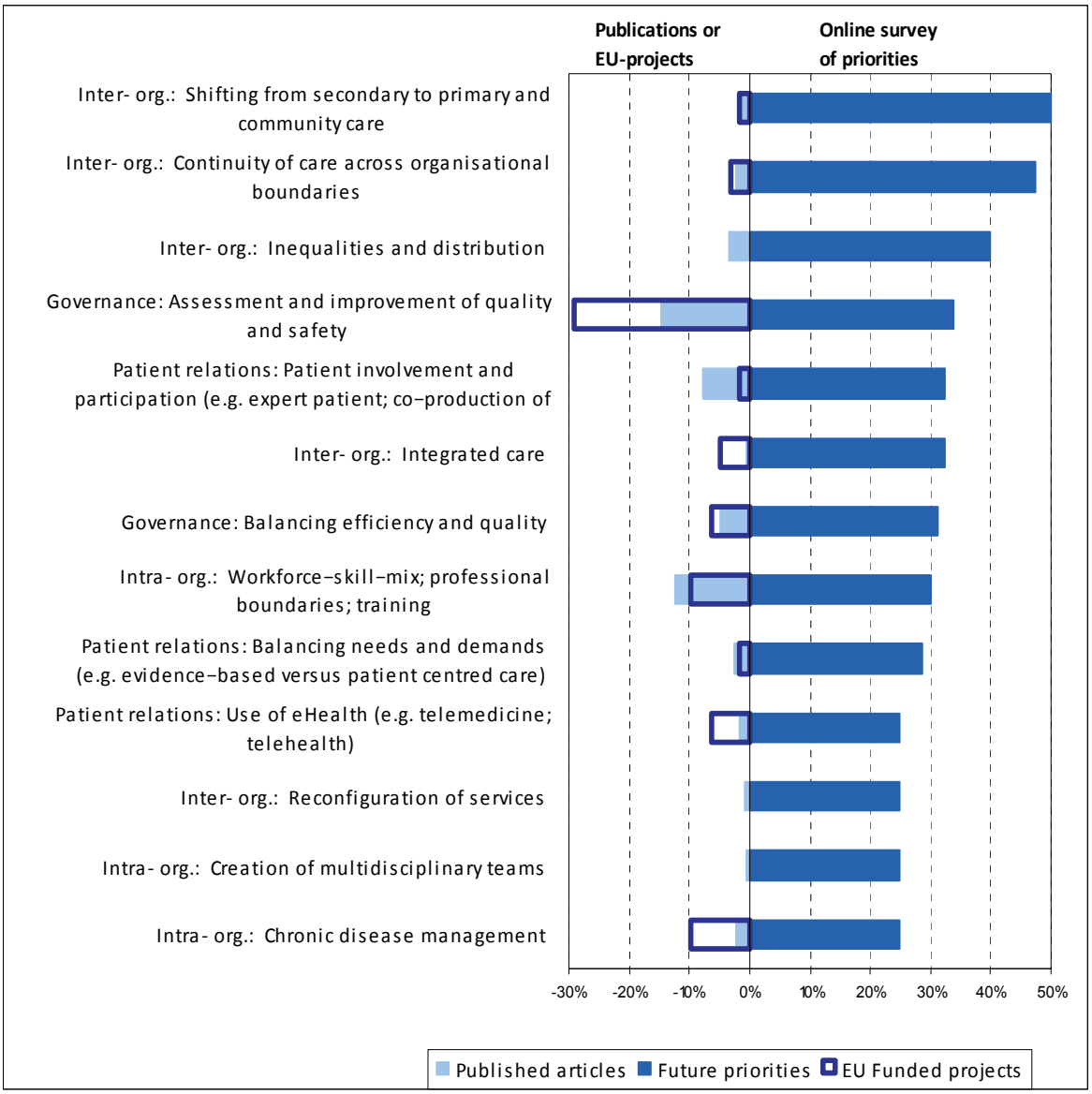


Figure 4.12 Comparison of past/current research topics with perceived priorities for the next two to five years (25% or more)

4.4 Discussion

4.4.1 Main findings

After a period of growth from 2000-2007 when the number of publications on health care organisations increased by 10% a year, the research area appears to have had to retrench with 11% annual declines in the following two years. The reason for this trend is not apparent given that we are not aware of a substantial drop in research funding over that period. Research activity varies dramatically across Europe, with a particularly high share in the research databases of UK and Ireland based studies. As selected publications at least incorporate an abstract in English, this may underestimate the output from countries that have non-English language journals as an outlet. It is also apparent that only a small share of studies addresses more than two countries. This lack of comparative studies limits the possibilities for better understanding of the effects of certain health care interventions or policy measures in different settings. Can their effectiveness or ineffectiveness be explained by certain contextual factors, such as the way the health care system is organised or financed? (Gonzáles-Block, 1997)

The large variation in research topics having been studied between countries reflects differing concerns and interests. Overall, the area with the highest proportion of publications is governance and accountability (41%) followed by intra-organisational relations (31%) and patient relations (28%). The fourth category, inter-organisational relations is the focus of only 11% of publications.

Comparison of past publications with EU-funded research suggests there has been no recent alteration in priorities or interests. There is, however, evidence that past and current research do not reflect experts' views of future priorities. The clearest discordance is research on inter-organisational relations, the area that 71% of experts viewed as a priority yet traditionally only representing 11% of research activity.

There was considerable homogeneity in views between experts, regardless of their role in the health care system or their geographical background. In a few cases, differences occurred, such as between new and old Member States on the importance of workforce issues, continuity or integrated care and the need for information on quality of care. New and candidate Member States have a larger need for information than old Member States, also reflecting the difference in availability of research funding and research capacity.

Based on the various search strategies a general picture emerges for the further development of organisational research priorities. One overarching element is the clear need for more information in all four research areas. There is a need for taking a comparative perspective on how to configure hospital and primary care services, and to change the way both sectors operate (see also Hofmarcher et al, 2007; Frenk, 2009; Curry and Ham, 2010). Such a comparative perspective is already being taken up in much current research funded at the European level. This is far less the case for another topic identified namely patient involvement. In an era where health care is argued to become more and more patient-centred, it appears that EU-funded research is not yet following this approach.

This theme also emerged in at least two similar priority setting studies, that of Academy Health in the United States in 2006 and the Canadian study 'Listening for Direction' in 2008. In the former, it was mostly providers and consumer advocates who listed this as a major priority area (AcademyHealth, 2006). Another topic identified, workforce and skill-mix is strongly related to the

need for more efficient allocation of human resources, given the declining workforce in health care (DG EC-FIN, 2009). In a large variety of studies the same topic area was regarded a priority theme, including the above mentioned studies, as well as recent scoping exercises for the EU Presidency of Belgium in 2010 (Dussault et al 2010) and for the World Health Organisation (Jimba et al 2010).

In a way, this need for broad themes is reflected in the emerging method of priority setting at European Commission level, with more and more emphasis being placed on so-called two-stage priorities. In such cases, a more general topic field is identified, allowing for more degrees of freedom for project proposals to develop specific directions of research than is the case in single stage projects, where the specific research topic is more well-defined. Broadly speaking, any of the top priorities as identified in the survey and subsequent discussions would be suitable for such a two-stage approach, especially in the cases where EU-funded projects so far have been rare. At the same time, one needs to be aware of the limitations of comparing past research activities with future priorities, as a high scoring on both may not indicate that future research is no longer necessary, but rather that this balance in past and future attention shows the continuing importance of this theme for the improvement of health for citizens. It also calls for the need that future research indeed makes use of such previous findings in an optimal manner. How to resolve this recurring problem of utilising the research that is already available will also be addressed in chapter 7 on research and policy interactions.

4.4.2 Limitations of the study

Our focus was limited to primary and secondary care, excluding other areas of the health care sector. The bibliometric research was restricted to two databases, though we believe they include the vast majority of relevant journals. We made no attempt to encompass grey publications. Limiting our research to publications that included an English language abstract will have meant that a substantial amount of research in some countries may have been excluded. In addition, only analysing MeSH terms from databases implies a low specificity of studies that indeed address organisational topics. It is for this reason that an additional classification of a smaller sample of articles was made to get a better view of the real topics addressed. Finally, our attempt to obtain information on the subject of current or recently finished research was limited to EU-funded studies which represent only a small proportion of all relevant research.

When reflecting on the strategies used, it is clear that each has its pros and cons. It is therefore the combination and triangulation of methods that provides the most stable impression of future priorities. One cannot depend on surveys per se as a discussion platform provides more insight into the specific directions to be taken (Lomas et al, 2003). Results found are in part dependent on presenting the right classification to respondents. To avoid this problem of steering respondents' views, a broad selection of topics was provided together with the opportunity to provide open answers. It also illustrates the need to provide more room for detail and specificity in research questions to be developed, among others by providing an (online) platform for discussion.

4.4.3 Implications and recommendations

Our review of past and current research on health care organisation and service delivery suggests that research so far does not reflect the views of European experts on future priorities. So far much research has either focused on the hospital sector or on primary care. In contrast, the relationship between both sectors has been under-researched despite being in constant development. This discordance illustrates the need to monitor priorities for research on a regular basis. At the same time, the strong similarity in the priorities identified in this study compared to those in previous

studies illustrates how the same challenges and priorities are shared throughout the EU and in other countries. Differences in intensity of health care developments, the context of the health system and the strategies for change make cross-border learning important.

There remains a clear geographical component in HSR, with new and candidate Member States having a larger need for information than older Member States. In part this is a reflection of the availability of research funding as well as research capacity. Comparative studies should involve these countries in order to make European research relevant to their specific context and to future HSR capacity. While each country can study the organisation and delivery of services in their own system, there is much to be gained from comparative studies. For single country research this calls for the need to extract lessons of international comparability by using a methodological framework similar to that in other countries or by following a comparative approach. Ideally, studies are international in nature, as the wide variety of ways of organising services in different countries provides Europe with an interesting natural experiment to assess and determine the impact of different models of care. The opportunity this presents needs to be exploited if the benefits that could accrue from research on the organisation and delivery of care are to be realised.

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5 Health Technology Assessment

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Contents

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5.1 Introduction

5.1.1 Health technology assessment (HTA)

The development of health services in Europe is strongly influenced by new technologies that can potentially improve population health through more effective care. However, not every technological innovation results in health gains. Many technologies have not produced the expected benefits or have even proved to be harmful. Further, technologies that prove to be effective create a challenge, since applying them may require additional money and other resources or require redistributing existing resources. Innovative technologies also challenge the existing organisational framework of health services by introducing e.g. individualised drugs or new opportunities for treating people in their homes supported by information and communication technologies. These trends emphasise the necessity of ensuring that health technologies are evaluated properly – both to analyse the consequences of using specific technologies and to become aware of the prerequisites of applying the technologies and the required adaptation of organisational structures, work processes and culture. HTA has been created to ensure that health technologies are thoroughly assessed and to provide direct input for decision-making on introducing technologies into health services (Velasco Garrido et al., 2008).

The International Network of Agencies for Health Technology Assessment defines *health-care technology* as: '…prevention and rehabilitation, vaccines, pharmaceuticals and devices, medical and surgical procedures, and the systems within which health is protected and maintained'. *Technology assessment* in health care is defined as: '…a multidisciplinary field of policy analysis. It studies the medical, social, ethical and economic implications of development, diffusion, and use of health technology' (www.inahta.org). The EUnetHTA Project has added the following explanatory clarification that emphasizes the process and aims of an assessment: 'Health technology assessment (HTA) is a multidisciplinary process that summarises information about the medical, social, economic and ethical issues related to the use of a health technology in a systematic, transparent, unbiased, robust manner. Its aim is to inform the formulation of safe, effective, health policies that are patient focused, and seek to achieve best value. Despite its policy goals, HTA must always be firmly rooted in research and the scientific method' (www.eunethta.net). The practice of HTA within this definition varies considerably across national settings. It informs policy- and decision-making in specific political, economic, and institutional contexts. In order to be useful, HTA has to be designed with processes and outputs that fit the relevant context.

5.1.2 HTA and Health Services Research

HTA is a field that connects clinical research with health services research (HSR) in order to provide a broad based input to policy-making, and to the development of an evidence-based health care practice. According to the theoretical background of HTA, it is not in itself research, but is building on both existing clinical research and on HSR. However, it is now frequently seen that HTA includes primary data collection, and analysis within the fields of clinical research, and/or HSR to answer policy questions satisfactorily, and HTA can therefore be seen as policy oriented research.

The working definition of HSR used in this report is:

> *HSR is the multidisciplinary field of scientific investigation that studies how social factors, financial systems, organisational structures and processes, health technologies and personal behaviours affect access to health care, the quality and cost of health care and, ultimately, the health and wellbeing of citizens (Lohr and Steinwachs, 2002).*

In the field of HSR, HTA is obviously related to analysis of health technologies, but with strong links to the full field of HSR in order to analyse different prerequisites for, and consequences of, the use of health technologies.

5.1.3 Objective

This chapter provides an overview of health services research (HSR) in relation to HTA in Europe. Based on a review of published research, we identified the trends in health services research in relation to HTA so far. In addition, we provide input to a future research agenda by describing the research called for in the existing literature. Besides, this chapter discusses new directions for HTA based on the demands for future research.

In order to give an overview over existing research and an input to a future research agenda, we focus on development of: 1) the content of analysis in HTA (e.g. analysis of economy, organisation, ethics, legal aspects and social aspects), 2) the 'HTA products' developed to adequately meet the needs of policy-makers (e.g. early warning/horizon scanning, rapid assessment, mini-HTA, core HTA), 3) life-cycle perspectives in relation to assessment of technologies, 4) themes/topics which challenges existing HTA methodology, and where HTA should be developed to be able to address the themes more comprehensibly in future (e.g. public health interventions, and information and communication technologies, 5) development of HTA capacity and of HTA programmes; and 6) links between policy and HTA. To give input to a future research agenda, we discuss the need for development in relation to theoretical approaches and research methodologies in relation to HTA. Basically the themes concerns two different contributions:

- HSR as part of HTA methods to analyse the consequences of the use of technologies, e.g. health services research concerning the economic, ethical, legal, organisational, and social consequences of the use of technologies
- HSR to develop the HTA methodology as a tool to provide input to policy-making, e.g. development of HTA methodology to assess public health interventions or development of new HTA products to avoid duplication of assessments across Europe.

The chapter is not per se an evaluation of all the HTA studies in Europe, but looks at them from a meta level, in order to get an overview over trends in research and in future research priorities within HSR in relation to HTA.

5.2 Methods

This section describes the methods we applied in this literature review, presenting existing research and input for a future research agenda.

5.2.1 Literature review

In this section, the methods used in the literature review concerning HSR in relation to HTA are summarised, including search strategies, and inclusion/exclusion criteria used for the selection of relevant literature.

Initially we piloted different search strategies to find the strategy with the largest sensitivity and specificity. In general it was difficult to define a strategy which captured relevant articles without losing too many. Based on these pilot literature searches, we decided to search exclusively in PubMed. This decision was made since the search seemed to catch a large majority of the relevant

literature. However, the consequence of this strategy is that we have not specifically searched in specialised databases for articles concerning the 'HTA disciplines' e.g. health economy, organisation, and ethics, and we therefore risk losing the specialised research within each discipline. To compensate for this, we decided that the only Mesh term used for the literature search was 'technology assessment'. This ensured a high sensitivity, but a low specificity of the search, and therefore allowed us to find the large majority of relevant articles included in the rather broad search. The search was conducted on the 19th February 2009, and was limited to include articles dating back ten years. The Literature search included 3360 references. These references were scanned at title/abstract level by two researchers, and were in this process reduced to 555 articles. The next step was to review each article and to decide whether to include or exclude the article according to our selection criteria (see below). This process reduced the number of relevant articles to 188 articles. The systematic literature search was supplemented with reports/books from the EUnetHTA Project, and articles from a recent volume of International Journal of Technology Assessment in Health Care (vol.25, 2009, SUPPL. 2) which contain articles summarising the findings from the EUnetHTA Project. These reports and articles were selected because they are examples of the most recent research within HTA including HSR and because they specifically address the need for development within HTA including need for research. Altogether, 22 reports/books/articles were included. The included literature from the EUnetHTA project is listed in appendix 4A. A table with a summary of results of the literature review is available in appendix 4B, and a more detailed overview over included literature is available in appendix 6.

In total, the literature review was based on 210 references. 189 references reported specific studies, and were relevant to provide an overview of the current research activity in Europe. 21 references were debating articles only. 100 references pointed to areas for further research.

Criteria to select the relevant articles were the following:

Inclusion:

Articles containing HSR in relation to HTA, or debating future needs for HSR in relation to HTA. All languages included.

Exclusion:

Articles which did not include HSR in relation to HTA (e.g. clinical research, health impact assessment, assessment of specific technologies, priority-setting within health care not specifically concerning HTA).

Articles from outside Europe were excluded from this systematic review, but some were still used to show the state-of-the art, to put the European HSR into perspective, and to give input to the section on future research agenda. Additionally, articles from outside Europe were included if they addressed HTA in a European setting. Within HTA, the European and non-European research is closely related, and it is useful to take the non-European research into account when providing input to a future research agenda.

The articles and the EUnetHTA literature were analysed and distributed into relevant categories reflecting the following themes:

- The content of analysis in HTA
  - Economic evaluation
  - Assessing the wider impacts of health technologies

    - Best practice in undertaking HTA
- HTA products (all described as additions to the 'classic' HTA report)
    - Horizon scanning/early warning
    - Rapid assessment
    - Mini-HTA
    - Core HTA
    - Adaptation toolkit
- Life cycle perspectives of technologies
- Challenges to HTA methodology
- Development of HTA capacity and HTA programmes
    - HTA capacity
    - HTA programmes
    - Priority setting within HTA programmes
- Links between policy and HTA.

5.2.2 Carousel rounds

The carousel rounds of the HTA parallel session at the HSR Europe working conference focused on the following three topics: (1) Assessing the wider impacts of health technologies (e.g. organisational aspects), (2) improving the links between HTA and policy, and (3) assessing technologies which challenge the common HTA methodology. These discussions have provided an input for the future research agenda concerning HTA. For further description of the carousel rounds see chapter 2.

5.2.3 Online survey

Also, an online stakeholder survey was carried out to assess what experts across Europe think about HSR priorities in their country, and in Europe as a whole. In total, 34 European stakeholders (24 researchers, and 7 decision makers) shared views concerning HTA. The results of the surveys relevant to HTA in relation to HSR are reported in this chapter. For further description of the surveys see chapter 2.

5.3 Results

5.3.1 Overview of the literature

This part of the chapter provides a descriptive, graphical overview of the literature included in the literature review in relation to selected variables (only the 189 articles which reports existing research are included, among these are also. reports, book, and articles from the EUnetHTA project). The variables chosen for classifying the articles included in this review were: 1) the country of the institution of the first author, 2) the number of nationalities involved in the research, 3) the type of institution(s) involved in the research, 4) the topics of the research, 5) the journal where the research was published, and 6) the distribution of articles in the decade 2000-2009. Overall, this overview intends to provide a visual overview of characteristics of the body of research undertaken in relation to HTA.

Figure 5.1 provides an overview of which countries are active in publishing research in relation to HTA, and it is a clear tendency that British researchers are very active within HSR/HTA. Also, it is shown that a large number of European countries are involved in this field. The Canadian, US, and Australian articles are included, because there are European co-authors or because they include

studies of HTA in Europe.

Figure 5.2 shows to what extent the research is based on collaboration between researchers from different countries. Even if most research is based in one country, it is still clear that collaboration between researchers from different countries is established. This is partly due to a long tradition of (EU-supported) projects among HTA institutions in Europe.

Figure 5.3 provides an overview of the scientific environment in which the research was undertaken. Mixed scientific environment was identified in 81 of 188 cases. Even if the universities are most active, it is remarkable that research in relation to HTA is characterised by involvement of other actors – primarily HTA institutions. However, also private consultancies and industry has published relevant research.

Figure 5.4 provides an overview of the research topics identified in the analysis of the literature. The figure shows that especially research in health economics and in the links to policy have been conducted during the last ten years. However, a broad field of topics has been covered.

Figure 5.5 provides an overview of the publishers of HSR in relation to HTA. Not surprisingly, the International Journal of Technology Assessment in Health Care is the most used journal for publication of HSR in relation to HTA, but also other journals or programmes are represented in the list of publishers.

Figure 5.6 provides an overview of the number of articles published, and the year of publication of HSR in relation to HTA. The number of identified articles varies between 11 and 29 per year.

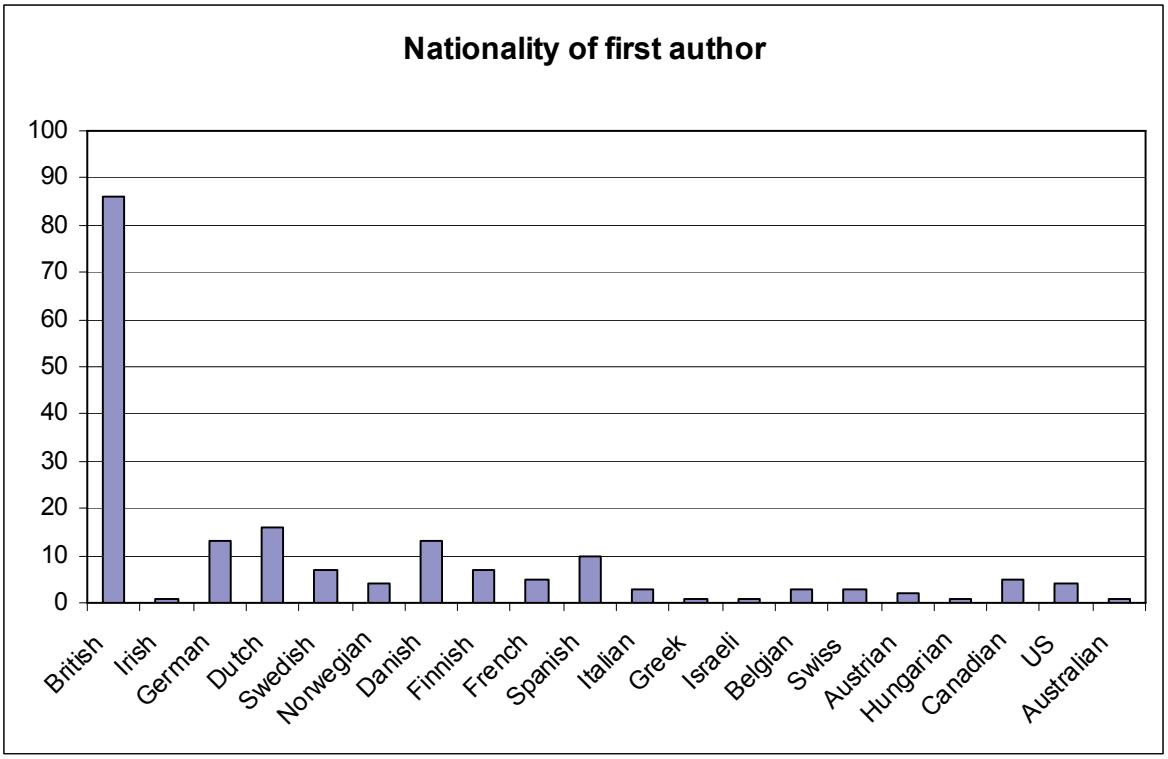

Figure 5.1 Nationality of first author of all studies on HSR in relation to HTA

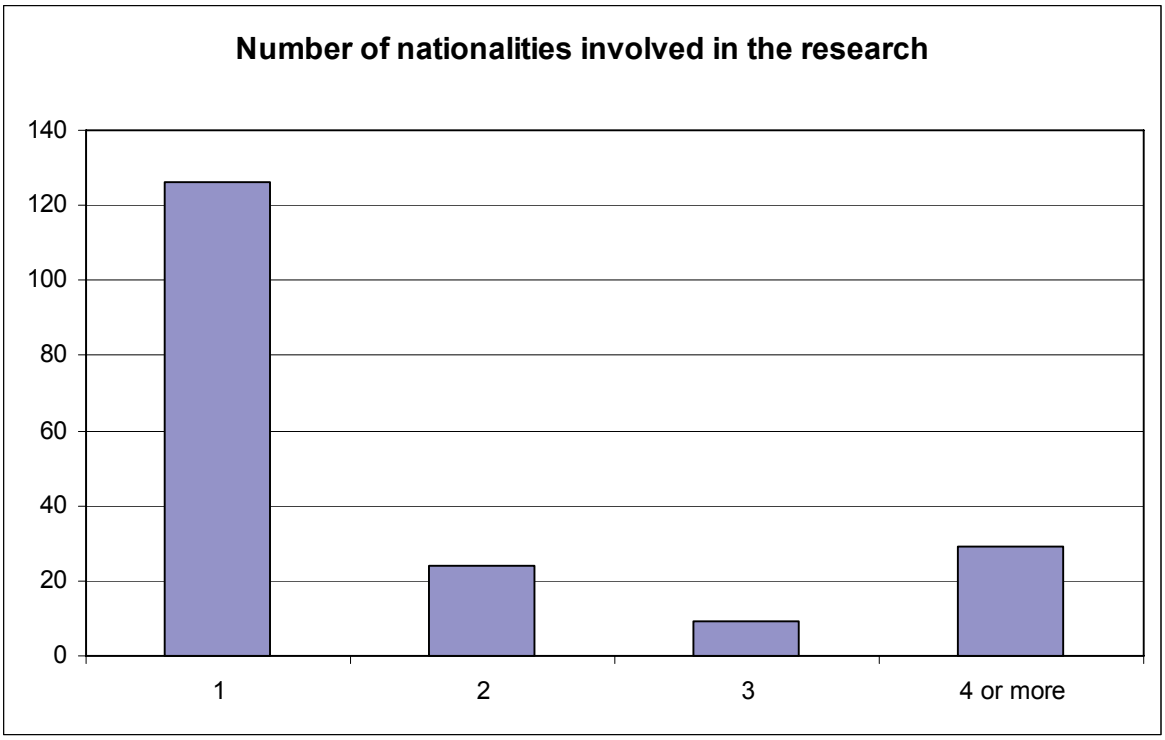

Figure 5.2 Number of nationalities involved in HSR in relation to HTA

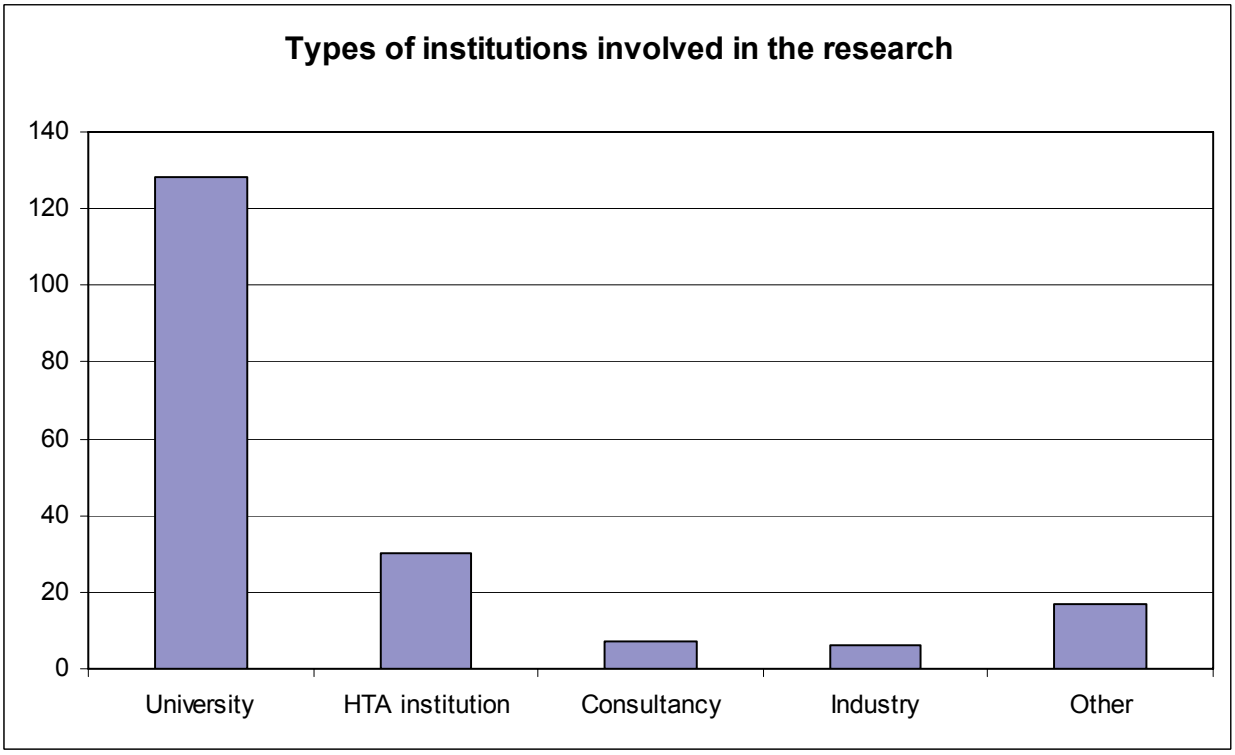

Figure 5.3 Types of institutions involved in HSR in relation to HTA

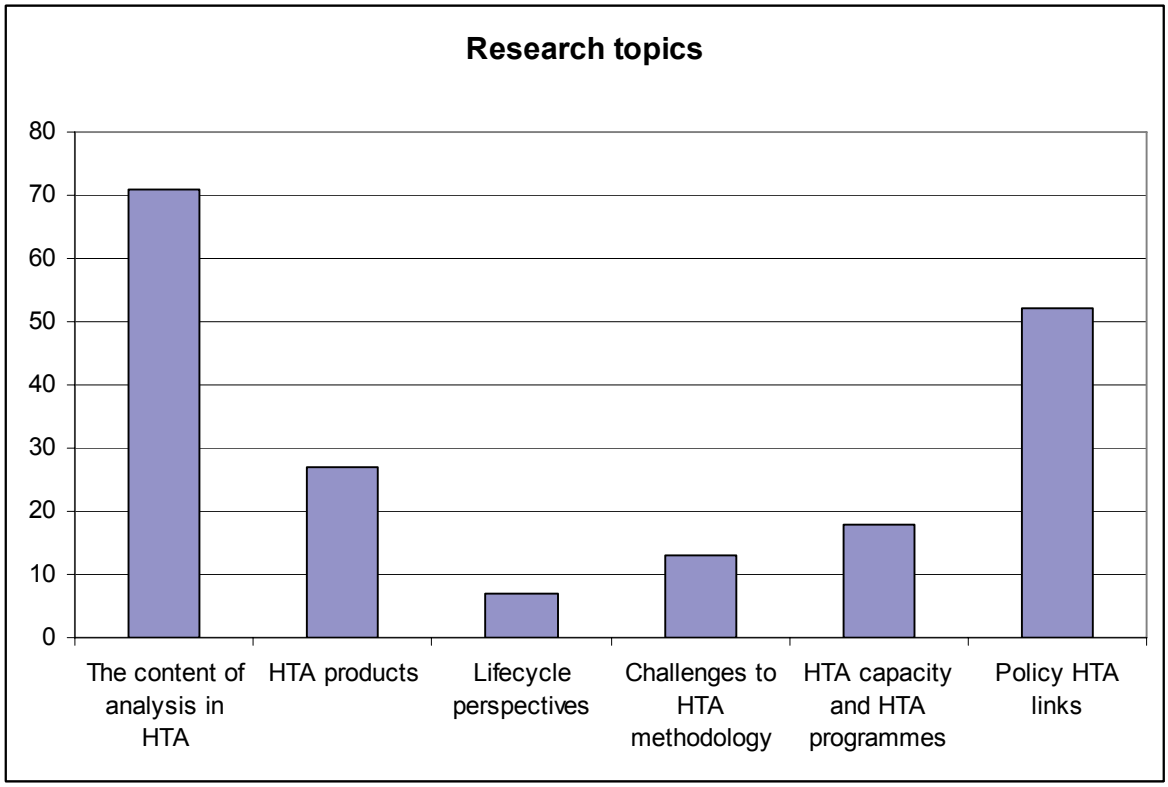

Figure 5.4 Overview of research topics in HSR in relation to HTA

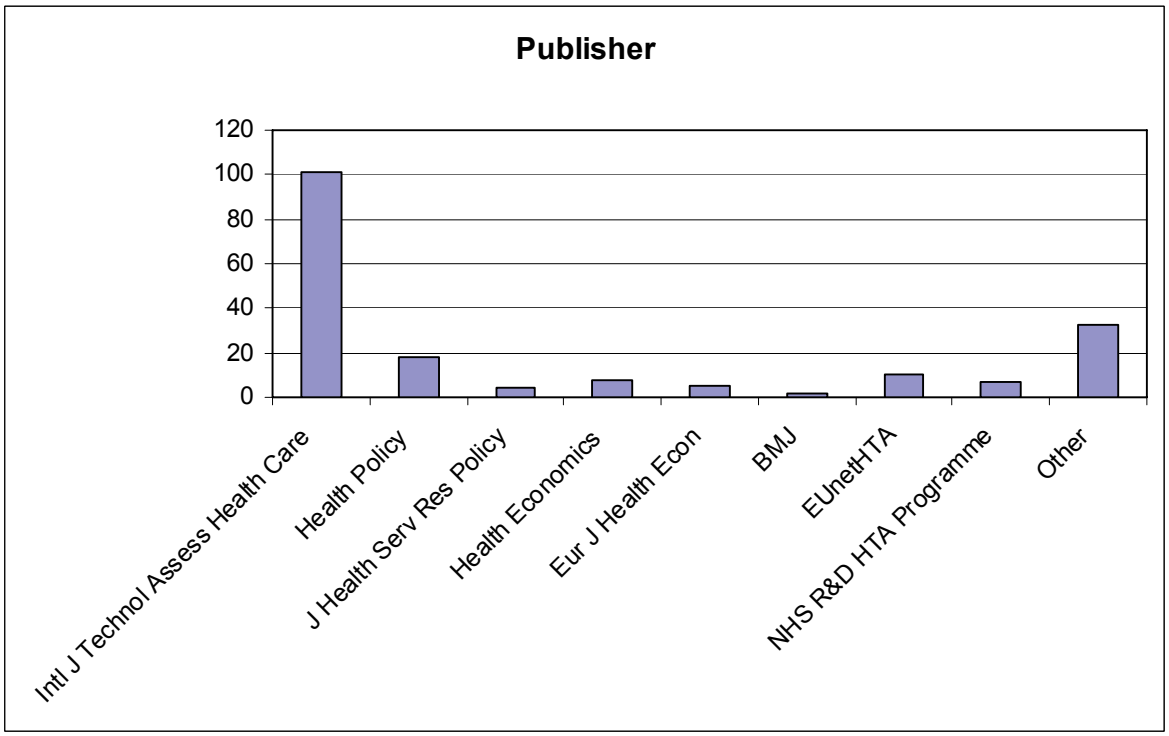

Figure 5.5 Overview of publishers of HSR in relation to HTA

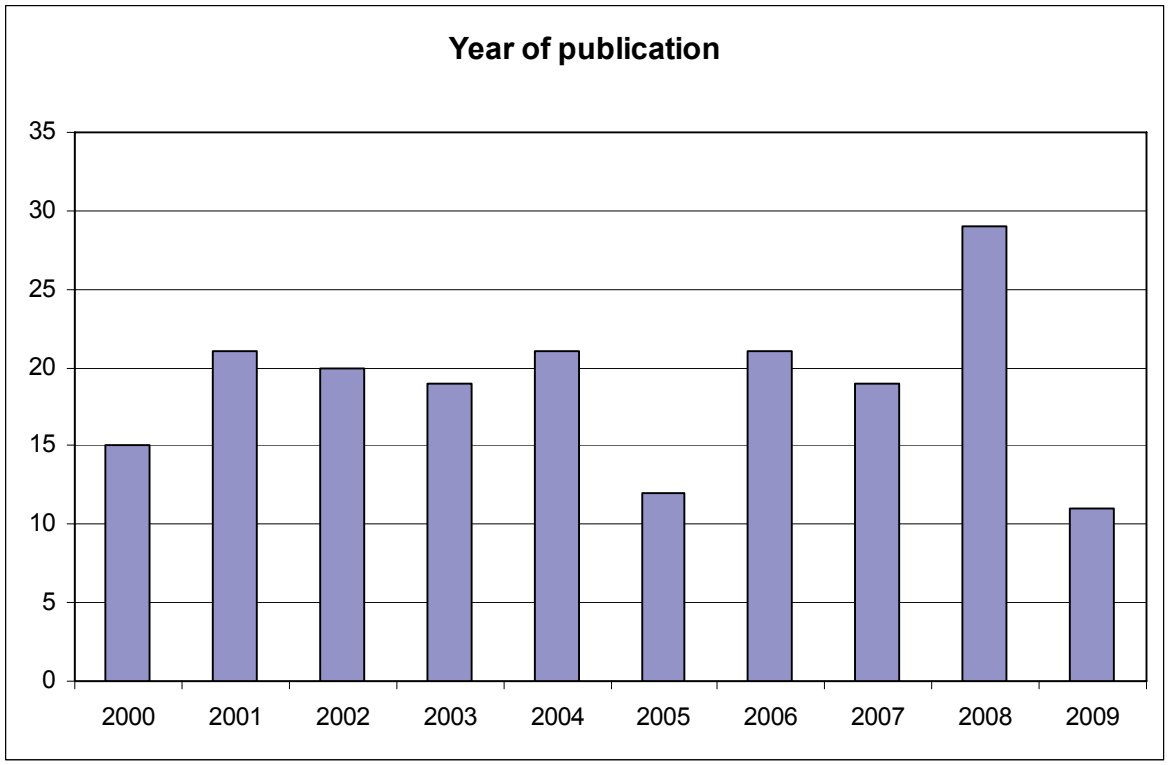

Figure 5.6 Number of studies per year on HSR in relation to HTA

5.3.2 Literature review - existing research and research agenda

This part of the report has the purpose of presenting the content of the existing research and the demands for future identified in the literature. As earlier indicated, the research is categorized into different topics of relevance to HSR in the area of HTA. The figure below shows the percentage of references addressing each topic.

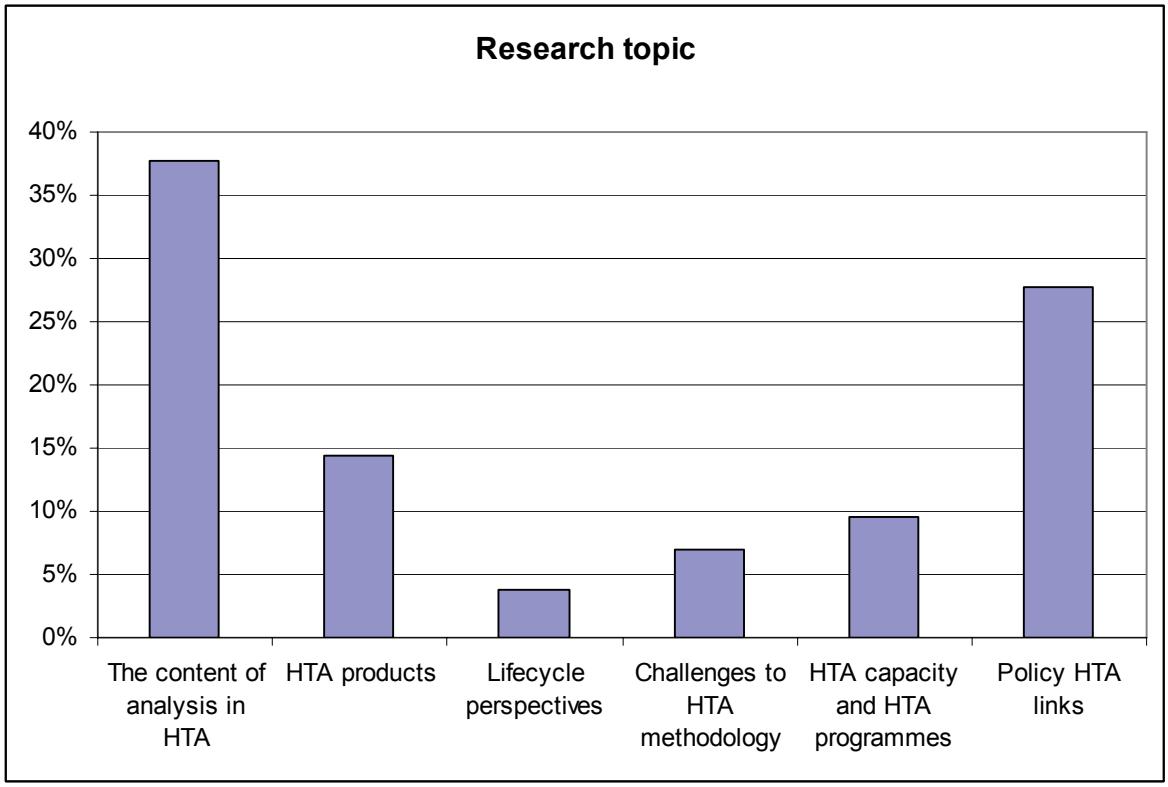

Figure 5.7 Percentage of references on each topic of HSR in relation to HTA

5.3.2.1 The content of analysis in HTA

This part includes research within the 'HTA disciplines', and articles concerning best practice in undertaking HTA.

A. Economic evaluation

Economic evaluation is the comparison of two or more alternatives courses of action in terms of both their costs and consequences. Economists usually distinguish several types of economic evaluation, differing in how consequences are measured:

- Cost minimisation analysis (CMA)
- Cost benefit analysis (CBA)
- Cost effectiveness analysis (CEA)
- Cost utility analysis (CUA) (Drummond et al., 2005)

Economic evaluation is a well established research discipline with a broad spectrum of different methods available. This literature review revealed that a lot of research is being done in the area of health economics in relation to HTA, as this was the area in which the greatest body of literature was identified. In total 52 articles reported specific studies, and were relevant to provide an overview of the current European research activity in this area. Additionally, several articles were debating articles that pointed to areas of future research. The research articles dealt with several themes in relation to economic evaluation, e.g. guidelines, cost-effectiveness analysis, the effects of learning curves, estimation of effect and utility, the use of economic evaluation, and influence on decision making.

Five studies concerned cost-effectiveness analysis (CEA), or different aspects of such analysis (Fenwick et al., 2001; Adam et al., 2003; IJzerman et al., 2003; Kristiansen et al., 2003; Fenwick et al., 2006). Two studies illustrated how to construct and interpret a cost-effectiveness acceptability curve (CEAC), and considered the relationship with decision making, concluding that CEACs are useful, as they provide a measure of the decision uncertainty surrounding the choice, and encouraged to a greater use of CEACs (Fenwick et al., 2001; Fenwick et al., 2006). Adam et al. (2003) explored the sources of variations in CEAs, and the possibility of reducing these variations. They found variations in methods due to variations in guidelines, lack of methodological guidance in guidelines, and lack of compliance with these guidelines, and thus raised questions about the validity of results, and pointed out, that this issue makes it difficult to compare the results of different studies. Also, Kristiansen et al. (2003) compared CEAs to other analytical methods, and concluded that variation in results stems from variable factors. Finally, IJzerman et al. (2003) found that pre assessment was useful step in designing a CEA, as it helps meeting the needs of decision makers at local levels.

Four studies concerned the assessment of effects. Two studies concerned the assessment of utility. One study compared the assessment of QALYs based on the SF-6D and the HUI3 utility scoring systems, and found them to differ markedly, and concluded that the challenge is to develop an understanding as to why these classification based utility instruments differ (O'Brien et al., 2003). Another study reviewed the methods applied by the English National Institute for Health and Clinical Excellence (NICE) to obtain utility weights, and concluded that greater transparency and consistency is needed due to methodological variations. Also, one should be careful to compare the results of different CUAs (Stein et al., 2005).

One study concerned assessments of willingness to pay, a method for estimating the perceived benefits in monetary terms, and compared the bidding game format with the open-ended and payment scale format. Again, the estimates vary considerably depending on the formats applied (Frew et al., 2004). Finally Ratcliffe and Longworth (2002) investigated the structural reliability of discrete choice experiments, a stated preference technique for establishing patient and public preferences, by comparing the results of two types of questionnaires with varying levels of some of the attributes included in the questionnaire. The questionnaires were distributed to two samples of women who had just given birth, in order to determine preferences for alternative modes of management and delivery of care to women in labour. Attributes included e.g. continuity of contact with the same medical staff, and location of delivery. They found that the women placed greater importance upon specific attributes as the number of levels for these attributes increased, indicating that the greater level of categories, the higher preference scores will be obtained from such questionnaires.

21 studies concerned different aspects of economic modelling. Five of these articles reported studies on Bayesian modelling (Spiegelhalter et al., 2000; Claxton et al., 2001; O'Hagan and Stevens, 2002; Griffin et al., 2006a; Vallejo-Torres et al., 2008). The studies aimed to demonstrate the usefulness or the benefits of applying this approach, or reviewed the application of this method. Two studies showed that the Bayesian approach incorporates more data that other models, and is thus suited for informing decisions at all stages of a technologies lifecycle (Griffin et al., 2006a; Vallejo-Torres et al., 2008). However, two other studies concluded by pointing to areas of further development of the approach, e.g. how to incorporate expert knowledge (Spiegelhalter et al., 2000; O'Hagan and Stevens, 2002).

Nine articles dealing with economic modelling compared different modelling approaches, or guidelines and/or presented guidance for economic modelling (Hjelmgren et al., 2001; Soto, 2002; Grieve et al., 2003; Karnon, 2003; Barton et al., 2004; Philips et al., 2004; Brennan et al., 2006; Philips et al., 2006). The studies that compared guidelines showed that some harmonization of methodological requirements and recommendations exists (Hjelmgren et al., 2001), however, other studies concluded that some disagreement, especially regarding how to incorporate data into models, and how to assess uncertainty, exits (Philips et al., 2004; Philips et al., 2006). Finally, one article presented a systematic process for choosing methods of economic modelling, developed by the authors, and concluded that application of this process would increase transparency of economic evaluations, which is helpful for decision makers (Grieve et al., 2003). Also in relation to guidelines, von der Schulenburg et al. (2007) reviewed international standards in relation to a legislative framework in Germany, and concluded by providing recommendation of a detailed assessment-process specific for the German way in implementing cost-benefit ratios within regulatory decision making in Germany.

Three articles dealt with the importance of considering decision uncertainty, pointing to the fact that this is an important part of economic modelling. Two articles dealt with probabilistic sensitivity analysis, and concluded that analysts should consider the dual requirement of both estimating expected net benefit, and characterizing decision uncertainty (Claxton et al., 2005; Griffin et al., 2006b). One study developed an alternative approach to dealing with uncertainty based on 'option pricing techniques', that takes the fact that costs might vary over time, making investments dependent on time, into account (Palmer and Smith, 2000).

Other aspects dealt with in relation to economic modelling were the quality of the evidence the models are based upon (Cooper et al., 2005), discrete event simulation (Rodriguez Barrios et al., 2008), Markov models (Rodriguez Barrios, 2004), and the dynamic modelling approach (Boas et al., 2001). Generally this literature review shows that several modelling techniques exits, and that there is quite disagreement between the authors about the most appropriate method to apply, how to apply it, and the benefits of the models.

Two studies addressed the importance of the systematic search for data as part of an economic evaluation. Drummond et al. (2008a) assessed the extend to which the systematic review of the clinical literature informs the economic evaluation in NICE technology assessment reports (TARs), and concluded that much of the relevant data for estimating QALYs are not contained in systematic reviews, and that the chosen method for summarizing the clinical data may inhibit the assessment of economic benefit. Problems would be reduced if data requirements are discussed at an early stage. Also, Hanratty et al. (2007) concluded that a structured search for the highest quality information on clinical effectiveness is essential to improve the quality of economic methods.

Three studies concerned methods of how to estimate learning effects, that is the consequences of increasing effectiveness over time (Ramsay et al., 2000; Ramsay et al., 2001; Ramsay et al., 2002), and concluded that learning curves are rarely considered formally in HTA. Also, these studies found methods for estimation of learning effects in other statistical fields, demonstrating the value of considering other fields when addressing methodological issues in HTA.

Two studies explored ways of identifying economic evaluations for reviews (Nixon et al., 2004; Alton et al., 2006) and found, that a search in NHS Economic Evaluation Database, by means of the Cochrane Library, or the Centre for Reviews and Dissemination, along with a supplementary search

in PubMed, is generally an appropriate, cost-effective strategy (Alton et al., 2006). However, they found time lags between the publication of economic evaluations, and the appearance of abstracts relating to them in the database (Nixon et al., 2004). Also in relation to reviews, one article provided a criteria list for assessment of the quality of economic evaluations in order to make future reviews more transparent, informative, and comparable. The criteria list was developed by the Consensus on Health Economic Criteria (SHEC) project using a Delphi panel consisting of 23 international experts (Evers et al., 2005).

Two studies compared evaluations submitted to NICE by manufacturers and other assessment groups (e.g. university based)(Miners et al., 2005; Chauhan et al., 2007), and found that results from economic evaluations addressing the same question diverge, and that the estimated incremental cost effectiveness ratios submitted by manufacturers were on average significantly lower than those submitted by other assessment groups. Additionally, two more studies concerned NICE, the methodological challenges encountered in producing an independent economic evaluation, the exact factors considered in NICE assessments, and their relative importance and trade offs (Dakin et al., 2006; Griffin et al., 2008). Finally, one article investigated the consequences of type of sponsorship statistically, but did not demonstrate such a relationship. However, they concluded that it is necessary to improve the quality of studies sponsored by industry (Hartmann et al., 2003).

Seven studies concerned the use of economic evaluations, and the influence on decision making. One study examined decision makers' views on different reporting formats, concluding that decision makers require both an initial screen of study content plus more detail should they find the study relevant or interesting (Thurston et al., 2008). Four studies concerned the use of economic evaluations in the UK decision making, concluding that the evaluations should be more charged, and the constraints of the local decision making environment should be reflected. Also, the accountability in policy decisions necessitated that the information, upon which decisions are based, were accessible (Bryan et al., 2007; Williams and Bryan, 2007; Williams et al., 2007; Williams et al., 2008). Another study examined the influence of economic evaluations on decision making in relation to the EUROMET survey, and found several barriers, e.g. transfer of results, and practical relevance (Hoffmann and Graf von der Schulenburg, 2000). Finally, Cookson and Hutton (2003) summarized the concerns at a European level in relation to reimbursement decisions regarding pharmaceuticals and medical devices, and concluded that there is considerable scope for improvements of decision making without damaging incentives to innovate, e.g. the national purchasers themselves could become more transparent and accountable. Additionally, one Italian article provided an overview of the relationship between health care costs and HTA, and an overview of the use of HTA between 1980 to 2006 in nephrology in Italy (Lettieri and Masella, 2007).

In addition EUnetHTA has contributed to analysis of how to provide core elements of an economic analysis which can be used to adapt to different settings (FinOHTA, 2008; Lampe et al., 2009; Pasternack et al., 2009; Lampe and Pasternack, 2008; Lampe and Mäkelä, 2008).
In summary, this literature review showed, that economic modelling, guidelines, cost-effectiveness analysis, the effects of learning curves, estimation of effect and utility, the use of economic evaluation, influence on decision making, and the use of economic analysis in different settings were some of the themes that make up the majority of the current research activity dealing with economic evaluation in relation to HTA. However, in spite of the great amount of research, there is still disagreement concerning the methods to apply when conducting an economic evaluation as

part of an HTA. Hence, even though the economic aspect might have well established methodologies available, there is still lack of clarity about recommendations and best practice concerning economic evaluation in relation to HTA.

The studies primarily applied quantitative methods, or reviewed quantitative methodology. Those studies, that concerned the use of economic evaluations, and the influence on decision making, were the only studies that applied qualitative methods, or a combination of qualitative and quantitative methods. The studies were predominantly conducted in university environments. Also, the research activity was most prevalent in the United Kingdom.

Research agenda

In relation to economic evaluation in HTA, 27 articles pointed to areas of future research.

First of all, several authors pointed to the fact that there is no current agreement of several measurements in economic evaluations, e.g. how benefit should be measured, how health related quality of life should be described and valued, how QALYs should be aggregated, and if QALY is an appropriate measure (Stein et al., 2005; von der Schulenburg et al., 2007; Brazier, 2008). Also, when preferences are measured, it should be explored what factors influence these choices, and if these measures are reproducible (Ratcliffe and Longworth, 2002). Also, in relation to future estimates, how both future costs and future resources should be estimated is still disagreed upon. In relation to level of analysis, it is questioned whether national unit or local unit costs should be used when producing national guidance (Miners, 2008). In relation to modelling, questions such as how the model structure is decided upon, what methods are appropriate to identify evidence, how to integrate data it into the models, how to incorporate expert knowledge, and how modelling is best performed and reported are posed (O'Hagan and Stevens, 2002; Philips et al., 2006; Cooper et al., 2007; Spiegelhalter et al., 2000). Three articles addressed learning curves, which is curves describing the increased skill levels after introduction of a technology. It should be explored what influence learning curve effects have on economic evaluations, how they should be estimated, and how they should be incorporated into economic evaluations (Ramsay et al., 2000; Ramsay et al., 2001). One study found that there were a number of more sophisticated statistical methods that could be used to model the learning curve effect during HTA. Now, the relative performance of these methods requires assessment before general recommendations can be made (Ramsay et al., 2002).

In general, there is still a disagreement concerning the most appropriate perspective to apply in economic evaluations (Stein et al., 2005; von der Schulenburg et al., 2007). It should be explored which alternative structures, processes, and mechanisms in the health care systems organisation that are best suited for technology coverage decisions (Williams et al., 2008). Also, Hoffmann and von der Schulenburg (2000) questions if the health care system provides an optimal framework for use of economic evaluation studies in making decision about the provision of health care services.

Finally, it is debated how decision uncertainty is to be properly addressed in economic evaluations (Philips et al., 2004; Claxton et al., 2005). All of these concerns, related to the design of economic evaluations, emphasize the fact that even though several methods are available in economic evaluation, there is still disagreement concerning best practice.

Taking the decision makers' views into account, Williams et al. (2008) pointed to the fact that further assessment of the feasibility and value of a formal process of clarification of the objectives, which

we seek from investments in healthcare, is needed. Also, it should be explored which designs of economic evaluations, are best suited to take into account the needs of the decision makers both in terms of evidence requirements and the way complex evaluations are presented (Hoffmann and von der Schulenburg, 2000; Bryan et al., 2007; Williams et al., 2008). Also in relation to decision makers, further studies of the use and utility of economic evaluation in the decision making process is needed (Stein et al., 2005; Kulp and Greiner, 2006). Also, further research into how to ensure transparency, and the consequences of lack of transparency, is needed (Hoffmann and von der Schulenburg, 2000; Claxton et al., 2005; Cooper et al., 2005). Finally Cookson and Hutton (2003) inquire research into how national purchasers can become more transparent in the way they use evidence.

In relation to international standards and guidelines, Jönsson (2008) questions the entire purpose of using such standards in economic guidelines, and von der Sculenburg et al. (2007) questions if it is even possible to set international standards for economic evaluation . One point is that international standards needs to be continuously developed (Jönsson, 2006). Also in relation to methodological guidelines for economic evaluation, Adam et al. (2003) requests more detailed guidance in the guidelines to ensure that their recommendations are appropriately followed, as this would reduce the variability between studies.

Other topics discussed in the literature concerning economic evaluation were the case of rare diseases (Griffin et al., 2008), orphan drugs (McCabe et al., 2007), availability of data relevant for economic evaluation (Jönsson, 2007), and the consequences of time lags between product launch and routine use (O'Hagan and Stevens, 2002).

B. Assessing the wider impacts of health technologies

The wider impacts of HTA include assessment of the ethical, legal, organisational, and social aspects of health technologies. In total, nine articles reporting studies concerning the wider impacts of HTA were identified in the literature search. Four of these articles pointed to areas of further research. Additionally, EUnetHTA included the wider aspects of HTA in the Core model, and the Adaption toolkit.

Ethics

The ethical domain of HTA deals with prevalent morals, values and behavioural models of the society relevant for the technology. It has been argued that ethics should be part of HTA since its inception in the beginning of the 1970'ies. A variety of methods to integrate ethics in HTA exits. Both qualitative methods taken from existing research disciplines, and methods developed specifically for the integration of ethics in HTA have been applied. Also, working groups within both INAHTA and HTAi have tried to come to some agreement of which methods are most appropriate to approach the ethical issues, and most recently EUnetHTA developed methodology to address the ethical domain as part of the Core model. However, still only few HTAs address these issues in depth.

Eight of the nine articles identified were relevant for the ethical domain, which implies that the ethical domain is the one most studied among the wider impacts in relation to HTA.

Four articles were methodological articles that provided and addressed specific methods of how to include the ethical issues in HTA (Møldrup, 2002; Hofmann, 2005; Autti-Rämö and Mäkelä, 2007; Saarni et al., 2008). The model presented by Saarni et al. (2008) was developed within the

EUnetHTA Project. The authors argued, that the model is easy and flexible to use in different organisational settings, and concluded, that integrating the ethical considerations into HTA can improve the relevance of HTA in both developed and developing countries. Autti-Rämö and Mäkelä (2007) explained the eclectic approach developed by the Finnish HTA office, and concluded, that the ethical domain is an important part of an HTA, as it helps decision makers realize the consequences of implementing a new healthcare technology in many aspects. Hofmann (2005) presented an approach for integrating moral issues, and argued that the approach both had a broad theoretical foundation, and had shown to be useful in practice. Also, he pointed to the fact that the inclusion of this domain in HTA is of great value to policy makers. Finally, Møldrup (2002) proposed an 'Internet Citizens jury' as a method to explore, among other domains, the ethical implications of pharmacogenomics from a citizen's perspective, and recommended incorporation into the common methodology of HTA.

Three articles analysed and discussed why ethics should be part of HTA, and the reasons for the lack of its inclusion (Lehoux and Blume, 2000; ten Have, 2004; Hofmann, 2008). Hofmann (2008) analysed ten arguments for making ethics part of HTA, in order to explain why it has taken so long to include ethics, and why there is no standard methodology, even though it has been argued that ethics should be part of HTA since its inception. The author concluded that health care is a moral endeavour, and the vast potential of technology poses complex moral challenges. Thus, a thorough HTA would include reflection on these moral aspects. A reason why the lack on inclusion of ethics in HTA might be, that it is still not clear what is meant by "integrating ethics", and that the goal of its integration is not made explicit. Ten Have (2004) also analysed why ethics still play a minor role in HTA, and concluded that ethics in HTA should go beyond issues of application in clinical practice, and focus also on the definition of problems, the demarcation of technical and nontechnical issues, and the morally problematic implications of technologies. Lehoux (2000) compared the professed objectives of HTA with typical practice, and explored the possible explanations for the discrepancies involved, and concluded that the ability of HTA to more fully address important issues from a public policy point of view would increase if the socio-political nature of health care technologies were made more explicit.

Finally, van der Wilt (2000) explored the ethics of technologies where broad consensuses regarding valued and disvalued outcomes were lacking, and concluded, that if HTA aims to enhance the accountability of the decision making process, regarding funding and use of health technology, it is a major challenge for HTA to deal adequately with existing value pluralism.

All of the studies either applied or discussed qualitative methodology. The research was mainly undertaken at universities.

In EUnetHTA, ethics were included in the Core model (FinOHTA, 2008; Lampe et al., 2009; Pasternack et al., 2009; Lampe and Pasternack, 2008; Lampe and Mäkelä, 2008).

Several articles addressed ethics, and discussed the opportunities and challenges in relation to specific technologies that are considered controversial or ethically complex (e.g. genetic screening).

Legal aspects

The legal aspects of HTA address legislation and regulatory questions concerning the technology under assessment. For an issue to be considered a legal one, one must be able to point out the legal source (stipulation, convention, or agreement) that makes the issue legally relevant. Also, this

is what separates the legal domain from domains concerning ethics, social issues and safety.

No articles explicitly focusing on the legal aspects in relation to HTA were identified in the literature review. Only Møldrup, C. (2002) addressed the role of legal aspects in relation to genetic screening as part of the Internet citizens' jury. EUnetHTA included legal aspects in the Core model (FinOHTA, 2008; Lampe et al., 2009; Pasternack et al., 2009; Lampe and Pasternack, 2008; Lampe and Mäkelä, 2008).

Organisational aspects

The organisational aspects in HTA focus on the delivery modes of the assessed technologies. These include aspects of e.g. the management, financing and controlling issues, and can thus contribute to assessments by clarifying challenges and barriers in implementing health technologies.

Only one article identified in the literature search addressed the organisational aspects of HTA (Fulop et al., 2003). The authors aimed to make a case for a greater emphasis in research on how health services are managed, organised and delivered, and discussed the theoretical differences between and within disciplines, and discussed their implications for research methods (Fulop et al., 2003). They concluded, that the challenge for researchers from various disciplines is to see how far they can work together to carry out research in this important field. The challenge for this research is that the findings are valued and used by health service professionals, managers, and users.

In addition, organisational issues are incorporated into the EUnetHTA core model (FinOHTA, 2008; Lampe et al., 2009; Pasternack et al., 2009; Lampe and Pasternack, 2008; Lampe and Mäkelä, 2008), and the adaptation tool kit (Rosten et al., 2009; Turner et al., 2009a; Turner et al., 2009b; NCCHTA, 2007; Chase et al., 2008).

Social aspects

The literature revealed a great deal of mixing of different concepts such as social aspects, and patient perspective under this heading. According to EUnetHTA, the social domain of HTA takes the patient as a point of departure in the analysis of the manifold social implications of a health technology. The analysis should reveal the resources needed when using a technology, and the consequences of its use in the life of the patients.

No articles focusing explicitly on the assessment of social aspects were identified in the literature review. Again, only Mølldrup, C. (2002) addressed the role of social aspects in relation to genetic screening as part of the Internet citizens' jury that aims at exploring both ethical, social, and legal implications.

EUnetHTA included social aspects as part of the core model, and introduced a broader range of literature on this topic, which has not been included in this review (FinOHTA, 2008; Lampe et al., 2009; Pasternack et al., 2009; Lampe and Pasternack, 2008; Lampe and Mäkelä, 2008).

Research agenda

Four articles pointed to areas of further research within the area of assessing the wider impacts of health technologies.

In relation to ethics, it should be explored what role it should play in HTA (e.g. as a separate domain

or incorporated to all domains). Also, it should be explored if it is possible to agree on any common standards and develop methodological guidelines for the inclusion of the ethical aspects (Hofmann, 2008). In relation to the EUnetHTA core model, it should be explored whether it represents and promotes a "western", individualistic perspective that fits only certain types of health care organisations, and whether the methods and issues of ethics is transferable between countries and cultures (Saarni et al., 2008). In relation to assessment of ethical, legal and social implications, Møldrup, C. (2002), based on the experiences of HTA in Denmark, proposed the application of an internet citizen's jury, consisting of a randomly selected and demographically representative panel of citizens that fill out an online questionnaire, and recommended the incorporation of the method into HTA methodology.

In relation to organisational aspects, the stakeholders involved in the day to day organisation of health care need to be involved, if organisation research is to have an impact on policy and practice. Also, a wide range of disciplines and methods need to be considered (e.g. sociology, organisational studies, policy analysis, economics and history). The major obstacle is that researchers from the various disciplines that can contribute to assessment of organisational aspects operate in different paradigms both within and between theoretical approaches. So, it should be explored, how multi-disciplinary research can be encouraged. Also, researchers themselves need to take responsibility for thinking outside their own paradigms (Fulop et al., 2003). Additionally, one article underlined the future need for inclusion of organisational analysis in HTA due to demand from policymakers (Battista and Hodge, 1999).

In general, very few articles dealing with assessing the wider impacts of health technologies were identified in this literature review. This shows that there is a lack of research into the methodology of these domains in relation to HTA in general and there still is a need for methodological development. However, the lack of identified research in this literature review might be due to search strategy that only included a search for literature in the database PubMed.

C. Best practice in undertaking HTA

Best practice in undertaking HTA is both related to methodology of HTA, and the reporting of HTA. In total, 11 articles identified in the literature search reported studies on the best practice of HTA. This included studies on harmonization, transparency, inclusion of qualitative data in HTA, and international comparisons of HTA practice. Of these 11 articles, seven articles pointed to areas of further research.

Four studies focused on harmonization and best practice of HTA. Velasco Garrido et al. (2002) developed and disseminated best practice in undertaking and reporting HTA as part of the ECHTA/ECAHI project. They concluded by identifying needs for methodological developments, e.g. methodology for assessing the wider impacts of technologies. Additionally, Drummond et al. (2008b) discussed and proposed a set of fifteen key principles that can be used in assessing existing, or establishing new HTA activities, focusing on HTA activities that were linked to, or included a particular resource allocation decision. They concluded that there were no single way to conduct HTAs that would meet the needs of all decision makers, stakeholders, and societies. However, application of the proposed principles could potentially improve the process as the quality and credibility of HTA would be enhanced. Perleth et al. (2001a) attempted to define 'best practice', and proposed a framework for the classification of information on maintaining or improving effectiveness and efficiency in health care systems. They concluded that none of the activities to organize research findings, disciplines, methods, and tools provided an all embracing concept to

maximise value to health, and that each activity had to be supplemented with others. The choice of combination of methods depended on the nature of the problem, the perspective of the decision, and the availability of evidence. Finally, Hutton et al. (2008) reviewed advantages and disadvantages of standardization of evidence requirements for HTA, taking into account the views of multiple stakeholders. They drew on experiences from recent initiatives intended to promote the harmonization of HTA, and experience from related fields. They concluded, that there was considerable uncertainty among stakeholders regarding the benefits of harmonization of HTA, and that a more desirable target might be to be able to justify differences in decisions by reference to evidence, values, and priority, and that transparency is essential.

In addition the EUnetHTA products – mainly the core model – can be seen as a further implementation of the conclusions from the ECHTA/ECAHI project, and contributed to developing a more standardized form for reporting HTA (FinOHTA, 2008; Lampe et al., 2009; Pasternack et al., 2009; Lampe and Pasternack, 2008; Lampe and Mäkelä, 2008).

Two studies focused on the inclusion of qualitative data and methodology in HTA. Leys (2003a) focused on how qualitative research findings could be useful as an additional source of information, or as 'evidence', in HTA. He concluded, that qualitative findings could obtain a greater status as 'evidence' by improving the knowledge of the nature of qualitative research, if researchers themselves respected methodological prerequisites, and if researchers clarified their theoretical perspectives, research aims, and use of research methods. Additionally, Leys (2003b) illustrated why social scientists and qualitative researchers should contribute more to the HTA debate, and why health care professionals and policy makers could learn from experiences and debates in social sciences, and concluded that the data-driven scientific culture in HTA needed to be broadened by approaches and methods giving insight in data that cannot be quantified easily, such as the wider impacts of technologies.

Three articles reported international comparisons of HTA practice. One article described the time-trends in health technology assessment from 1989 to 2002, and thereby gave an overview of the content of HTA reports, focusing on type of technology, type of assessors, and applied methods. The authors concluded that there were increases in the number of published HTA reports during the time period, but no major developments in the methodology. Also, applied methodology depended on the type of assessors (e.g. outsourcing to external partners) (Draborg and Gyrd-Hansen, 2005). A further article gave an international comparison of the definition and practical application of HTA, and found that generally the HTAs focused on the clinical aspect of health technologies, leaving economic, patient-related, and organisational aspect less analysed (Draborg et al., 2005). Finally, Draborg and Andersen (2006) performed an analysis of the factors that influenced assessment methods in HTA, and found no major developments in the assessment methods between 1989 and 2002.

The studies were mainly undertaken in university settings, and analysed literature, except the international comparisons that applied primary data analysis.

Transparency

As part of the discussion on best practice, a lot of attention has been given to transparency issues – both in relation to use of methods, and to reporting of HTA. An example of this is the INAHTA checklist which promotes different requirements for creating increased transparency in the reporting of HTA (Hailey, 2003).

As the implementation of HTA in EU member states increased, this led to a series of EU funded projects from 1993-2002, including EUR-ASSESS, and the ECHTA/ECAHI. The recommendations of these projects are currently being implemented through the EUnetHTA Project, and include a core model of HTA reports, and an adaption toolkit to expand proper sharing and production of information – including promoting transparency.

Furthermore, two articles identified in the literature search reported studies dealing with issues of transparency. However, several articles dealing with best practice in general had concluding remarks on the importance of transparency, and several articles were debating articles focusing on this subject.

Porzolt et al. (2005) compared two HTA reports on the same topic in order to address issues of transparency, and variations in HTA methods. The authors concluded, that efforts to guarantee transparency in the original studies, and in the HTA reports themselves, needed to be taken, as such lack of transparency may affect policy decisions. Schlander (2008) explored the robustness of NICE assessment methods when addressing a complex clinical problem, and used the evaluation of Attention Deficit/Hyperactivity Disorder (ADHD) treatment strategies as an example of such. He concluded, that NICE assessment of ADHD treatment strategies were incomplete, and likely prone to bias, which may cause implications for the generalizability.

Another article reviewed and discussed the issues associated with standardisation, taking into account the perspectives of multiple stakeholders (Hutton et al., 2008), while two articles debated issues of transparency in NICE technology assessments in the case of drug evaluations (Maynard, 2007; Poole et al., 2007).

Three reports debated and critiqued the lack of transparency in HTA reports in general, and opted for more focus on transparency issues (Sorenson et al., 2007; Sorenson et al., 2008; Kanavos et al., 2009)[1] .

Research agenda

9 articles pointed to areas of research in relation to best practice in undertaking and reporting HTA.

In relation to harmonization, the possibility of benefit from harmonization of HTA evidence requirements with those of related decision making processes is worthy of further exploration. In relation to the economic domain, there are potential benefits of more standardization. However, as the wider impacts of HTA are generally under researched, these issues must be considered before the value of harmonization can be considered (Hutton et al., 2008). Also, in relation to the wider impacts Leys' articles addressed how qualitative research findings could be useful as an additional source of information or as 'evidence' in HTA. However, it should be explored how qualitative research could obtain a greater status as 'evidence', and what criteria that should be set for judging the qualitative research, and overall, how qualitative research can be improved, and become more trustworthy (Leys, 2003a; Leys, 2003b). Finally, in relation to best practice, resources should be devoted to increase quality and quantity of both primary and secondary research as well as the establishment of networks to synthesise, disseminate, implement, and monitor 'best practice' (Perleth et al., 2001a).

[1] This work related to the three reports was done with financial support from Pfizer Inc.

In relation to an international comparison of the characteristics of HTA reports that found several variations in how HTA is performed, a future topic for research could be to analyse whether these characteristics affect the influence HTA has on decision making (Draborg et al., 2005).

In relation to transparency, two debating articles concerned the NICE procedure. A current practice, when external assessment groups perform assessments, is that NICE provides the results of an assessment in a read-only version. A general view is that the procedure lacks transparency which is unacceptable to stakeholders (Maynard, 2007; Poole et al., 2007). According to Poole et al. (2007) the cost effectiveness models could be produced by consensus under the joint direction of NICE and industry, reducing costs, and hasten access to health technologies that all agree are good value for money.

5.3.2.2 HTA products

Besides 'classic' HTA reports, where the elements of HTA typically are thoroughly analysed, a variety of different types of HTAs have emerged, typically from the work of HTA agencies. A lot of literature addressed HTA production in general. However, a more limited literature addressed specific 'HTA products' which have been developed to meet the needs of users of HTA.
Studies addressing mini HTA, rapid assessments, and horizon scanning/early warning were identified in the literature. Additionally, Core HTA and an adaptation toolkit for 'translation' of foreign HTA reports has been develop as part of the EUnetHTA Project. These HTA products will be addressed in the following.

A. Horizon scanning/early warning

Health technologies in an early stage of its life cycle sometimes spread rapidly in a health care system despite lack of convincing evidence. Also, new technologies exist, that may be underused, resulting in lack of benefit for patients.

Horizon scanning/early warning is a method evolved from the work of HTA agencies. The International Information Network on New and Emerging Health Technologies (EuroScan) is an international collaboration established in 1999. EuroScan defines the focus of horizon scanning as those technologies that are not yet adopted by the healthcare system, and those that are in the phase of adoption. The purpose of horizon scanning is to provide input to decision making that is timely and relevant.

The members of EuroScan have agreed on a common terminology, classification, and understanding of their activities. Their activities consist of five main components which are the identification and filtering of technologies, prioritization, early assessment, dissemination, and monitoring the assessed technologies.

Nine articles concerning different aspects of horizon scanning were identified. One article provided an overview of processes and practices of horizon scanning, and concluded that EuroScan has played an important role in the harmonization process so that effective collaboration, reduction of duplication, and further development of procedures have become possible. Because of the common understanding, there is a certain stability and integration across the functions of horizon scanning (Wild and Langer, 2008). Another article reported from a workshop that reviewed the achievements and progress of EuroScan, reaffirming the benefits of collaboration (Simpson et al., 2008). Four articles evaluated different aspects of what constitutes proper horizon scanning and/or how horizon scanning could be improved. This includes the use of selection criteria, the sources to search in the

process of identifying technologies, and the effectiveness and accuracy of horizon scanning. (Douw et al., 2003; Simpson et al., 2004; Douw and Vondeling, 2006; Murphy et al., 2007). Douw and Vondeling (2006) found a lack of consistency and transparency in the processes where technologies are selected for assessment, and Douw et al. (2003) found variations between the approaches to the use of the internet as a source of evidence. Finally, Simpson et al. (2004) concluded that the HSS itself has an influence on the impact of a health care technology as helping to control adoption and diffusion is their main purpose. Also, the use of imperfect gold standards may bias results. Two articles explored aspects of adaption of established programmes to Danish horizon scanning, as part of the establishment of horizon scanning activities in Denmark, and found that a health care perspective should be applied, technologies should be prioritized on the basis of marginal benefits, marginal costs, budget impact, impact on access to care, and additional criteria with an impact on health policy, such as the educational needs, and organisational changes associated with the new technology. A decision to introduce horizon scanning was made based on these findings (Douw et al., 2004; Douw et al., 2006). Finally, one article explored the intra-scientific citation (bibliometric impact) of the Swedish early warning reports (SBU Alerts), and the science base of these reports, and found that publications, used as sources in a SBU Alert, also were highly cited within the scientific community, which increases the appropriateness of using bibliometric indicators in evaluations of clinical research, and suggests that decision makers through SBU Alert are getting scientifically sound advice (Lundberg et al., 2008).

In relation to horizon scanning, EUnetHTA produced a newsletter on new and emerging health technologies for European policy makers in collaboration with EuroScan (Simpson and Wild, 2008). The process was reported in an article, which described the process of producing this newsletter. In conclusion, the dissemination of an EU-wide newsletter would be feasible, but time-consuming. Although a newsletter appeared to fulfil a need for information on emerging and new health technologies, it was not considered the right tool to avoid duplication of effort in the present international constellation of horizon scanning for new health technologies (Wild et al., 2009).

B. Rapid assessment

Rapid assessment is another tool to produce input to decision making in a timely fashion. The rapid assessments are typically carried out by HTA agencies within a timeframe of six months or less. A number of programmes exist. However, they vary in scope and methods. At this point, no common definition and methodology of rapid assessment exists, and the quality of the assessments varies.

The literature review identified only three European articles concerning rapid assessments. One German article compared different rapid assessment programmes with respect to scope, methods, and time to complete assessments, and introduced and discussed a model for processing rapid assessment in the German context. In conclusion, no common definition of “rapid assessment” existed (Perleth et al., 2001b).

Two British articles compared two different types of rapid assessments. However, they were not specifically labelled as such. One study described a method for the rapid appraisal of new interventional procedures that classified requests for funding within 48 hours using a BUPA algorithm, and compared its results with those derived from a slower, more thorough method. They found the outputs derived from the different methods to be similar (Warren, 2007). The other British study compared and contrasted NICE single technology reports, with no comparator, to full HTA reports, and concluded that there remained uncertainty concerning the extend to which single technology assessments adequately address the specific decision problem (Kaltenthaler et al.,

2008).

C. Mini HTA

Mini HTA is a tool mainly used in hospital settings when making decisions about the uptake of new technologies. It typically consists of a form containing a number of questions corresponding to the domains of a thorough HTA. This tool aims at providing input to decision making within few weeks adjusted to the local settings.

Only two articles concerning mini HTA were identified in the literature search. Both studies were Danish studies undertaken by Danish University Hospitals. Both studies evaluated the use of mini HTA, and the attitudes of decision makers towards the tool. The studies revealed that different versions of the tool, and with varying quality, are commonly used in hospital settings in Denmark. However, despite the varying quality of assessments the mini-HTA still had a positive influence on the administration of costs, transparency in decision making, quality if the decision making process, rational prioritization, and increased dialogue between the management level and employees (Ehlers et al., 2006; Folkersen and Pedersen, 2006).

D. Core HTA

Core HTA has been introduced by EUnetHTA and bBuilt on recommendations from previous European HTA projects, EUnetHTA introduced Core HTA as a specific structure for undertaking and reporting HTA. Core HTAs are intended to serve as a basis for local HTA reports. Core HTAs do not contain recommendations on technology use. The main aim was to avoid duplication of HTA reports in Europe since there are many examples of reports on technologies produced synchronically across Europe – and also across the rest of the world.

The core model was reported in five different publications. One model for medical and surgical procedures (Lampe and Mäkelä, 2008), and one for diagnostic technologies Lampe and Pasternack, 2008) was developed. A handbook introducing the model was published (FinOHTA, 2008), and two articles presented the idea behind the core model (Lampe et al., 2009), and the testing of the model during the development phase (Pasternack et al., 2009). These articles concluded, that the HTA Core Model enables effective international production and sharing of HTA results in a structured format, and that the HTA Core Model can be developed into a platform that enables and encourages true HTA collaboration in terms of distribution of work and maximum utilization of a common pool of structured HTA information for national HTA reports. The face validity of the Model was confirmed during the project (Lampe et al., 2009; Pasternack et al., 2009).

An article reporting the work of ECHTA working group 3 was also identified in the literature search. They aimed to identify possible joint assessments, and to coordinate findings and existing resources within the community to support joint assessment. One of the conclusions were, that the informal network among HTA agencies, that had already been collaborating for several years, offered - already in 2002 - an invaluable opportunity for future collaboration at the European level. However, at that time difficulty of project management and inadequate funding were the two most important barriers (Estrada et al., 2002).

E. Adaptation toolkit

EUnetHTA also developed an adaptation toolkit. This product was a further development of an already existing activity among the HTA agencies, which used foreign HTA reports, and ‘translated’ them into the relevant setting. The aim was to avoid as much duplication of work as possible by

reusing e.g. the systematic review from the foreign report. EUnetHTA worked to structure the activity by publishing a glossary of HTA adaption terms (Rosten et al., 2009; NCCHTA, 2007). Also, the adaptation toolkit itself Chase et al, 2008), and three additional articles, described the development of the toolkit and the glossary (Rosten et al., 2009; Turner et al., 2009a; Turner et al., 2009b).

Research agenda

In relation to HTA products, 13 articles pointed to areas of future research.

In relation to horizon scanning, Simpson et al. (2008) reported the discussions at a EuroScan workshop. Some of the questions that were discussed were if EuroScan should continue to focus on both identification and early assessment, if subgroups focusing on methodological topics and development should be created, if closer collaboration was possible, and the possible benefits of creating a common horizon scanning centre. Even though EuroScan has played an important role in harmonizing horizon scanning activities, and in the establishment of an international network, activities still differ, e.g. in terms of size, resources, and operational level, which results in differences in methodology applied. Especially regarding the priority setting process, which should be made more transparent, e.g. in relation to the sources used (Douw et al., 2003; Douw et al., 2006; Wild and Langer, 2008). Also, the outcomes of horizon scanning activities should be investigated in order to evaluate the accuracy (Simpson et al., 2004). The recent cooperation between EuroScan and EUnetHTA aimed at further development of information sharing. However, even though the aim of wider dissemination of information on new and emerging technologies still remains, the methods for doing this in a way that satisfies intended audiences still need further development. Two options were posed. One would be to investigate the various interests through a consensus method, and the other to pursue EuroScan's earlier idea of developing a core set of early awareness information in a database (Wild et al., 2009).

In relation to rapid assessment, Perleth et al. (2001b) inquired exploration into how the full HTA could be made shorter in order to produce input to decision making in a timely fashion. Today, there is no common definition of this type of HTA product, and the quality and detail vary. Both quality and process should be considered (Kaltenthaler et al., 2008).

The mini-HTA is also a product that varies greatly in quality. The process of evaluation varies, and mini-HTAs are rarely subject to peer review. Further studies exploring the quality of the mini-HTA are needed (Ehlers et al., 2006).

In relation to the ECHTA/ECHAI project, it was concluded that information on the factors, that make joint projects fail, is of key importance when planning future joint assessments, but further collaboration at a European level is recommended (Estrada et al., 2002). The developers of the EUnetHTA Core model stated, that further testing and refining of the model is needed to ensure optimal usefulness and user-friendliness. Also, even though the model is useful, clear scoping and good coordination in timing and distribution of work would help improve applicability, and avoid duplication of work (Lampe et al., 2009; Pasternack et al., 2009).

Finally, the adaption toolkit, also developed by EUnetHTA, is the first of its kind, and future work is required to address quality assurance of the tool (Turner et al., 2009a).

5.3.2.3 Life cycle perspectives of health technologies

Many existing healthcare interventions diffused before the establishment of the current assessment and evaluation procedures. Assessment of ineffective or inappropriately applied practices is growing as a priority for international health policy, both for improved quality of care, and for sustainability of resource allocation.

The literature review identified four articles related to life cycle perspectives. One article introduced a method of constructive medical technology assessment that aim to change the development and diffusion of a medical device to improve its later clinical effectiveness, illustrated by the case of heart assist devices, and concluded that the method is reliable (Hummel et al., 2000a). One article concerned coverage with evidence development (CED) as a specific approach to cover promising new technologies for which the evidence remains uncertain. The aim of the article was to carry forward the debate on the use of CED as well as highlight areas that warrant further research. They concluded that CED might provide a better way forward than current procedures in securing most benefit from existing and emerging health technologies. However, the involvement of patients on CED should be further investigated (Hutton et al., 2007). One article was specifically related to drugs, focusing on how the different paradigms of pharmaceutical regulators and healthcare authorities creates uncertainty for pharmaceutical companies planning their research and development investment, as licensing is no longer a guarantee of market access (McCabe et al., 2008). Finally, one article reviewed the work of NICE in the area of cancer treatments, and how the recommendations have an impact on treatment uptake of new cancer treatments (Summerhayes and Catchpole, 2006).

In addition, EUnetHTA also focused on the life cycle perspective in relation to assessment of technologies, but so far concentrated on the earlier stages of the life cycle by focusing on evidence generation on promising health technologies. A web based toolkit for evidence generation was developed (Quentin et al., 2008). Two articles reported the results (Carbonneil et al., 2009; Quentin et al., 2009). However, the core model encouraged that new technologies should always be compared to existing technologies, and the model can also be used to assess possible obsolete technologies.

Research agenda

Five articles pointed to and debated areas of future research in relation to coverage with evidence development (CED) and disinvestment.

In relation to NICE and CED, it is a general concern how to set the limits of how much uncertainty there should be before a recommendation is issued, that a technology only is to be used in the context of research. It is also a concern whether the focus should be solely on the quality of the evidence, or if the potential budgetary impacts and clinical importance also should be considered. Such decisions should be made transparent (Chalkidou et al., 2007). Also in relation to CED, the involvement of patients in the decision making should be further investigated (Hutton et al., 2007).
In relation to a NICE disinvestment programme, some of the debated issues were the priority setting process, the data availability, and the organisation of such a programme (Pearson and Littlejohns, 2007). Maynard et al. (2004) stated that NHS needs better information from NICE on the equity implications of both new and existing technologies. Walker et al. (2007) stated, as an area to develop research, that disinvestment programmes to help local decision makers is a key step in improving the allocation of NHS resources and removing geographical inequalities.

5.3.2.4 Challenges to HTA methodology

Even though HTA methodology is not one single well-defined entity a degree of common understanding of basic characteristics has been develop over the years. However, the literature review revealed that a number of different themes/topic challenges HTA methodology and require development of the methodology.

In the review 20 articles addressed the different challenges. Two articles address challenges in relation to assessment of public health interventions, and assessment of health promotion/disease prevention, and describes difficulties in relation to lack of evidence and to focus on the broad perspective of optimisation of health rather than on individual clinical care (Dauben et al., 2002; Holland, 2004).

Three articles describe challenges in relation to assessment of information and communication technologies, in particular telemedicine. Myhre (2000) describes the lack of HTA reports concerning telemedicine and the need for assessments of cost-effectiveness in this area. Two articles comment that HTA has set the standards for acceptable facts related to assessment of new technologies and emphasises that literature on evaluation of telemedicine has been developed apart from the HTA environments. Therefore there are normative differences between HTA and evaluation of telemedicine, and there is a need to accept that assessment of telemedicine needs different models than conventional health technologies (Williams et al., 2003). Finally, May et al. (2003) describe two case studies of HTA of telemedicine and points out the normative difficulties related to application of HTA in a field where the technology differ from traditional technologies within healthcare.

Two articles depict issues related to assessment of organisational interventions. The first article points out that the 'classic' HTA report has to need to develop due to customer needs and mentions assessment of organisational impact of technology use as one area, which needs development (Milne et al., 2003). The second article supports this statement and emphasises the demand for assessment of how health services are organised and delivered (Battista, 2006).
Equity issues are raised in two articles which discuss the lack of focus on impact of technology use on health inequities of access and outcome, and the lack of focus on this issue in the HTA methodology (Milne et al., 2003; Williams and Cookson, 2006).

The need for development of methodologies to ensure a stronger social embedding of HTA practices are studied in one article. Webster argues that HTA needs to become more open to alternative sources of information and expertise in order to ensure embedding of HTA practices in wider society. The article points out that this exercise would strengthen policy-making, but also the science and methodology of HTA itself, because HTA would become more reliable and socially resilient (Webster, 2004).

Two articles discuss the need to improve methodology to be able to assess fast evolving technologies or technologies in development. Two studies present the methodology of 'constructive technology assessment' - an approach which take the dynamics of technology development into account - as a complementary approach to traditional HTA (Hummel et al., 2000b; Douma et al., 2007).
Seven different articles document challenges in relation to specific types of technologies or situations. Drummond et al. (2007) illustrate challenges in relation to orphan drugs, where the market is small and the drugs often expensive. Typically the drugs cannot prove to be cost-effective under the standard methods of HTA, and therefore adequacy of standard HTA methods is

discussed. Similar issues are raised in relation to expensive cancer drugs which have proven to be effective, but not cost-effective (Waugh, 2006). Two articles concern assessment of medical devices. One article emphasis a number of methodological considerations, e.g. timing of assessment, and selection of patient population, and states that HTA can be useful if it takes the specifics of the technology into consideration, if the process is appropriate and fair, and if the HTA is done under full participation of industry (Siebert et al., 2002)[2] . The other article examines EU and member state regulation of medical devices including HTA growing role as a tool for market approval (Altenstetter, 2003). Malone and Maceneaney (2000) examine the need for a simplified model for assessment and a phased evaluation of interventional radiology to overcome the lack of RCT's in early stages of technologies. Photodynamic therapy is discussed as a case of a technology which is introduced in NHS prior to full evaluation. The role of NICE in the process is examined, and the article shows challenges for HTA in relation to playing a part in decision-making related to technologies that are introduced in daily practices within healthcare without thorough assessment (Foot et al., 2004). The last article describes the current state of evaluation of health interventions in EU (including HTA) in 2003 and describes different methodological challenges, e.g. the need to expand the methodology to include assessment of the wider impacts of technology use, and the need to consider broader dimensions such as comparative effectiveness (McDaid et al., 2003).

Finally one article briefly examines the need to focus on impact on patients related to technology use (Milne et al., 2003).

Research agenda

The areas that are included in description of the future research agenda is closely linked to the existing research since many of the articles examined above aim to identify and discuss challenges rather than to come up with concrete solutions. However, seven articles more specifically point to and debate areas of future research in relation to challenges to the HTA methodology.

In the area of public health interventions, it is recommended that HTA agencies need to pay more attention to disease prevention and health promotion in their assessment activities, and to consider strategies addressed to broader communities such as community prevention and action related to health promotion. Also assessment methods in this area need to be broadened to include side effects, cost-effectiveness, and ethical and social implications. More HTAs need to be done (Dauben et al., 2002). Methods should include assessment of health status rather than only clinical services (Holland, 2004).

In relation to equity more research is needed into methods for managing equity-efficiency trade offs, in particular in relation to wider public health interventions (Williams and Cookson, 2006).

Concerning assessment of medical devices it is emphasised that development needs to take place in relation to harmonisation of requirements for the information to be submitted and the procedures applied in HTA in Europe (Siebert et al., 2002)[1] . Concerning assessment of e.g. orphan drugs more research is required into the methods of assessing the societal value of health technologies (Drummond et al., 2007)

Two articles take a broader look at HTA and give an overall assessment of needs for research in relation to HTA methodology. One article states that many challenges await the further development

[2] Authors of this article are experts from medical device industry. The article is based on debates with an HTA expert group.

of HTA. In relation to HTA methodology two areas are emphasised – adaptation of HTA to an evolving analysis object, e.g. fast evolving technologies and information and communication technologies, and assessment of how health services are organised and delivered (Battista, 2006). The other article underlines the need for research concerning ways of measuring and summarising evidence about patient impact, organisational impact and the impact of equity of new technologies (Milne et al., 2003).

5.3.2.5 Development of HTA capacity and HTA programmes

An always important issue for the HTA community is to build capacity, and develop existing programmes, to ensure sustainability of HTA in Europe. Related themes are 1) how to ensure that an HTA programme prioritises assessment of the right technologies to ensure as much benefit of HTA as possible, and 2) how to improve the links between policy and HTA to improve the impact of HTA.

A. HTA capacity

Internationally there is a growth in HTA activities. However, despite this growth, many European countries have none or only limited HTA capacity, especially low and middle income countries.

There are several obstacles to the introduction of HTA. In many countries, there is a general lack of awareness of HTA, and the manpower to conduct assessments is insufficient. Hence, an important aspect of capacity building is the establishment of educational programmes to promote training and knowledge in HTA. Moreover, data availability in many countries is low and the quality and validity of morbidity and mortality data is questionable. For these reasons, HTA-developing countries are usually dependent on studies carried out in other countries. However, while some data might be transferable to some extend, such as clinical data, other data, such as resource utilization, costs, cost-effectiveness data, prices, ability, and willingness to pay, vary from country to country.

These issues are particularly relevant due to the recent uptake of several new member countries in the European Union. The literature review revealed, that some efforts, European and international, are undertaken in areas of capacity building. Furthermore, one of the main goals of the EUnetHTA Collaboration is to increase transparency and transferability of HTAs.

The literature review revealed that European initiatives of capacity building are undertaken in the case of Romania (Corabian et al., 2005) and Estonia (Gibis et al., 2001). In Romania, an initiative group was mentored by representatives from a Canadian HTA agency, assisting in the promotion of HTA. However, they found that success in implementing a programme depend on essential factors such as local political, economical, and educational support for the initiative (Corabian et al., 2005). In Estonia a SWOT analysis was performed to identify the strengths, weaknesses, opportunities, and threats to introducing a HTA programme. Also, in this case, they found that the future shaping of HTA depends on the local environment, and that further assessment is necessary in the future (Gibis et al., 2001).

EUnetHTA published a handbook on capacity building to support the development of HTA in Europe. The handbook aims to provide practical guidance on how to establish HTA in countries with limited capacity (Moharra, 2008b). Also, in this work, it was concluded, that setting up organisational structures and establishing effective HTA programmes that guide key policy decisions is a challenging task, and that there are no standard models or pathways (Moharra et al., 2009).

As a part of the ECHTA/ECHAI project, Working Group 5 provided an overview of current HTA education and training programmes in Europe, revealing that education programmes are limited in the EU12 countries. Additionally, the working group developed a curriculum of a European Master of science in HTA (Antes et al., 2002). Likewise, the Ulysses Program, a training programme developed in corporation between Canadian, Spanish, and Italian HTA agencies, aimed at evaluators who will produce HTA and decision makers who will use HTA. They concluded that because there is a growing need for human resources with special training in HTA, further efforts need to be devoted to strengthening the international research capacity in HTA (Lehoux et al., 2005).

B. HTA programmes

The description and analysis of different organisational aspects of HTA programmes also seem to be of increasing interest. The particular organisational features of the body producing HTA reports may influence the diffusion of knowledge, and the effect of those activities on policy making.

The literature search revealed two European articles concerned with the performance and description of HTA programmes. One article focused on the differences and similarities of HTA agencies, and found that governmental agencies had a profound impact on the prescriptiveness of their assessment (Martelli et al., 2007). The other article discussed the challenges facing HTA in Europe, and found that the primary concerns of European health care policy makers were expenditure control or cost containment, efficiency, and equity (Cookson and Maynard, 2000).

Also, EUnetHTA published a survey on characteristics of existing HTA organisations to provide information on how to develop vigorous HTA organisations in Europe. The survey revealed that HTA organisations had not changed significantly in the past ten years. Also, common aspects and barriers were experienced by HTA agencies regardless of their geographical setting and years of experience. Finally, networking among HTA organisations play an important role in development and sharing of HTA activities (Moharra et al., 2008a).

As part of the ECHTA/ECHAI project, a system for routine exchange of information concerning ongoing or planned evaluation, and their findings, priority setting, and emerging technologies, was developed (Hagenfeldt et al., 2002). Additionally, EUnetHTA explored the state of development in relation to information sharing, finding that most HTA agencies had professionals dedicated to information management (Kubesch et al., 2008), and further developed a programme for effective international and external communication of an international network (Neikter et al., 2009).

C. Priority setting

The resources for HTA within existing HTA programmes fall short of that needed to evaluate all health care technologies. For resources to be used cost effectively, priorities are set by the HTA agencies concerning which technologies to assess. Several methods exist to make this prioritization, and some are more transparent and systematic than others. Different HTA agencies apply different methods for priority setting.

In total seven articles concerning different aspects of priority setting were identified in the literature search dealing with both the evaluation of applied methods, and development of new methods.

Two articles evaluated the methodology of two priority setting approaches in UK, and the Netherlands respectively (Oortwijn et al., 2002; Shepherd et al., 2007). Shepherd et al. (2007)

evaluated a speciality mapping approach that was based on the principles of a systematic review, and included a stakeholder model. They found that specialty mapping could make a positive contribution to the policy agenda, with several research and policy gaps being fed into existing prioritization channels. However, adequate time, resources, and capacity are required, particularly in engaging stakeholders and developing a care pathway. Oortwijn et al. (2002) illustrated the application of theoretical principles to priority in The Netherlands to an alternative process. The procedure consisted of three steps, choosing, rating, and weighing criteria, and they found that the procedure could be further developed.

One article described and evaluated the relative importance of the different sources used for priority setting by the NHS HTA programme. They found that the largest source for setting priorities was widespread consultation that also had a low success rate. The second largest source was systematic reviews that had the best success rate (Chase et al., 2000). Another study developed an economic prioritization model for ex ante evaluation of HTA to assist those involved in the selection and prioritization of HTA topics, using decision analytic techniques, also applied to the NHS HTA programme. The main conclusion was that ex ante assessments of the value for money were feasible. However, substantial work was required to ensure that valid reliable, consistent, methods were used, to ensure efficient use of valuable research time (Davies et al., 2000). Additionally, two of the references were reports from the NHS HTA programme. One report demonstrated the benefits of applying decision theory and value of information analysis (DA-VOI) to inform a prioritization process of the NHS HTA programme. They showed that the method could be applied even within short timelines (Claxton et al., 2004).The other report developed a method (PATHS) for economic evaluation at the stage of research prioritization, and concluded that the model had a useful part to play in the research prioritising process alongside existing criteria (Townsend et al., 2003). Finally, one article reported the work of the ECHTA/ECHAI project that developed a system for routine sharing of information in HTA, partly to assist HTA programmes in the process of setting priorities. However, they found that because of the various contexts in which HTAs were undertaken, no single procedure could be recommended (Hagenfeldt et al., 2002).

Research agenda

17 articles pointed to future areas of research in relation to the development of HTA capacity and HTA programmes.

Debating the challenges that face HTA in Europe, Cookson and Maynard (2000) outlined two policy challenges that are particularly pressing. First there is the need to broaden the focus of HTA beyond clinical technologies and toward the wider “technologies” for organisation and delivery of care, and second there is the need to start evaluating the implications of health technologies for equity and inequality as national governments realign policy toward equity goals.

In relation to capacity building, further research is needed in the area of transferability of assessments to provide immediate help to decision makers. Often crude economic models are not available in countries with limited resources, and in many cases the cost effectiveness might actually be lower in these countries affecting the transferability of results. Furthermore, the requirements for reimbursement should be more simple and realistic, as well as more straightforward and strict, as these are major obstacles for decision makers (Gibis et al., 2001; Gulacsi et al., 2004; Gulacsi, 2007). In relation to HTA programmes Martelli et al. (2007) claimed that further assessment of the impact of HTA on policies and technology diffusion is an interesting issue. Also, strong HTA networks do exist, but there is still a need to strengthen the link to policy,

especially taking into account the countries with limited resources and experience in HTA. These issues should become a shared responsibility between HTA producers and the various types of users. A recommendation from the ECHTA/ECHAI project was on Clearinghouse activities, providing functions related to the exchange of information on ongoing HTA projects, HTA results, and functions related to priority setting for HTA, claiming that added value can be achieved by comparative research among countries, and by bringing together a wide variety of different national methodological approaches (Hagenfeldt et al., 2002). The EUnetHTA Project state, that better coordination and communication among HTA programmes is needed. Collaboration is especially important for countries without institutionalized HTA programmes, and particular support for introducing formal HTA should be dedicated to Eastern and Central Europe to address the growing interest in HTA. Furthermore, collaboration could help overcome resistance to barriers such as training staff (Moharra et al., 2008b; Moharra et al., 2009). In relation to the development of education and training programmes in HTA, the overall research capacity should be increased in this area. Also, in developing such programmes, attention should be paid to the collaborative processes both between research disciplines, HTA institutions, and EU countries (Antes et al., 2002; Lehoux et al., 2005; Moharra et al., 2009).

In relation to information units in HTA programmes, further research should be undertaken to generate more detailed information on the organisation on which the information unit is situated, in order to get a more complete picture of the context and scope of work in HTA information units (Kubesch et al., 2008).

In relation to priority setting, the literature revealed need for further development of the different methods presented. Generally, the methods should be further refined, their constructs validated, the impact of different ways of defining weighing factors, and their impact on the final priorities, should be evaluated, and the methods should be valued across a variety of topic areas (Oortwijn et al., 2002; Townsend et al., 2003; Claxton et al., 2004; Shepherd et al., 2007). Further research is also needed to determine why some sources of information contribute more to the priority setting process than others. Finally, research is needed into the actually established procedures of different HTA programmes (Chase et al., 2000). There is also a need to compare ex ante and immediate ex post assessment of implementation with long term follow up of actual implementation (Townsend et al., 2003). In relation, Davies et al. (2000) claimed that the value of providing decision makers with quantitative estimates of pay back of HTAs needs to be compared with softer qualitative approaches to prioritization of research portfolios for HTA projects.

5.3.2.6 Policy-HTA links

Studies found within this area address two different themes. On part of the literature concern broad issues in relation to policy processes where HTA is involved. The other more specifically concern stakeholder involvement in HTA processes.

A links between policy and HTA

The development of links between policy-making and HTA has been a built-in theme in relation to HTA since the first HTAs were produced in the 1970ties. This was a result of the fact that HTA was 'invented' to give input to policy-making at different levels. Thus, development of and research in the policy loop - 'policy-HTA-policy' - is an important theme since the utilisation of HTA is necessary to justify the use of resources on production of HTA. In short…. if policy-makers do not see the benefit of HTA, and find it useful when making decisions, HTA is not viable. Therefore, researchers and HTA institutions has shown a growing interest in developing HTA so that it is useful to policy-

makers, and in documenting the impact of HTA on policy-making.

44 contributions (articles, reports, and one book) were identified which deal with the links between policy and HTA.

A total number of 11 publications addressed the policy-HTA links in a UK setting. In one comprehensive report, the impact of the NHS HTA programme was assessed (Hanney et al., 2007). The overall conclusions were that the programme has had considerable impact on knowledge generation, perceived impact on policy, and to some extent on practice. One article evaluated the impact of a technology appraisal process in the South and West Development and Evaluation Committee by measuring awareness, influence, and quality of reports among clinical and managerial staff, and concluded that the process was perceived to have an impact on policy decisions among the staff. However, impact on practice could not be identified with routine data (Dixon et al., 2003). Another article debated the use of evidence (mainly economic evidence) in the development of local health policies, and based their conclusions on an in-depth study of Health Improvement programmes in England. The questionnaire based study concluded, that the main ways of increasing the use of evidence were to produce more evidence-based national guidance, and to disseminate summaries to local decision makers (Weatherly et al., 2002). In addition to these three publications, a total of eight articles analysed the policy-HTA links specifically in relation to NICE processes. Two articles analysed the implementation and impact of NICE guidance. One looked at impact on GP prescribing and found only little impact unless the guidance coincided with information from other sources (Wathen and Dean, 2004). The other studied the extent and pattern of implementation, using multiple methods, and concluded that implementation of the guidance has been variable. However, guidance was more likely to be implemented when there was strong professional support, a strong, stable evidence base, no increased or unfunded costs in organisations with good systems for tracking guidance implementation, and where the professionals involved was not isolated (Sheldon et al., 2004). Two article discussed the general procedures of NICE (Buxton, 2001; Paul and Trueman, 2001), while two other article analysed the use of cost-effectiveness analysis/economic appraisal, and discusses the consequences for the use of NICE appraisals (Towse and Pritchard, 2002; Williams et al., 2007). One examined concerns from patient groups in relation to NICE decision-making processes (Devlin et al., 2003), and finally did one article analyse NICE's use of cost effectiveness as an exemplar of a deliberative process which include both scientific context-free evidence about the general clinical potential of a technology, scientific context-sensitive evidence about particular evidence in realistic scenarios, and colloquial evidence to a context, and to supply the best evidence short of scientific evidence to fill in any relevant gaps (Culyer, 2006)

A series of articles analysed HTA, and its influence on health-care priority setting, based on case studies in England/Wales, France, the Netherlands, and Sweden (Berg et al., 2004; Carlsson, 2004; Orvain et al., 2004; Stevens and Milne, 2004). The overall conclusion on this 2004 overview was that translating HTA into policy is a highly complex business, and that its influence on policy making remains marginal (Oliver et al., 2004).

Two articles investigated the usefulness and impact of HTA in hospital settings in France and Italy, and the French article concluded positively that HTA has had significant impact on the implementation of technologies (Bodeau-Livinec et al., 2006; Lettieri et al., 2008).

Six different articles addressed the questions of impact (Britton and Jonsson, 2002; Oortwijn et al.,

2008), priority setting for adoption of health technologies (Shani et al., 2000), integration of HTA recommendations into organisational and clinical practice (Gagnon et al., 2006), needs of decision makers (Andradas et al., 2008), and lessens learnt from a user perspective in relation a HTA programme. These studies took place in different European countries.

Furthermore seven articles investigated different themes in relation to the policy HTA-link (Drummond and Weatherly, 2000; van der Wilt et al., 2004; Hutton et al., 2006; May, 2006; Packer et al., 2006; Moret-Hartman et al., 2007; Hartz and John, 2008).

A series of articles, letters, and replies debated the links between policy and HTA by focusing on why HTA reports building on the same methods and material in relation to PET in oncology led to different conclusions and policy decisions (Højgaard, 2003; Van Tinteren et al., 2003; Kristensen et al., 2004). Further the authors discussed the requirement for documentation in relation to future HTAs of diagnostic methods.

Finally, EUnetHTA published a book containing eight separate chapters analysing the policy-HTA-links in Europe. This included reviews of e.g. the impact of HTA on policy-making, the needs and demands of policy-makers, and an overview of the producers of HTA in Europe (Velasco Garrido et al., 2008).

B Stakeholder involvement in HTA

Five European articles concerned stakeholder involvement in HTA processes. Two articles specifically focused on the involvement of consumers. One article gave an overview of consumer involvement in processes of INAHTA member organisations (Hailey and Nordwall, 2006), while the other described consumer involvement in the NHS HTA programme (Royle and Oliver, 2004). Both articles described current status of involvement, and particularly the second article emphasized the need for explicit, inclusive, and reproducible methods for supporting consumer involvement. The same theme was dealt with in a Canadian article which identified what consumer organisations considered meaningful involvement, what the current practices in Canadian HTA processes were, and developed a model for involvement based on priorities and needs (Pivik et al., 2004). Two articles analysed stakeholder involvement more generally in NICE processes (Culyer, 2005; Milewa, 2008). The articles analysed the processes where NICE was created, and discusses the unique way of involving stakeholders, but also concluded that there is a need for more flexible approaches to stakeholder involvement in order to ensure legitimate and transparent processes. Two Canadian articles also analysed stakeholder involvement – one as a means to improve the impact of HTA (McGregor and Brophy, 2005), and one in involving the values and judgements of stakeholders in policy coverage decisions (Abelson et al., 2007). The final article described the processes developed in the EUnetHTA Project with the purpose of involving stakeholders in the further development of European collaboration in relation to HTA. The article focused on stakeholder involvement in common processes across a large number of HTA institutions, and included European umbrella organisations in the development of a stakeholder policy (Palmhøj Nielsen et al., 2009).

Research agenda

20 articles and 1 book pointed to future areas of research in relation to the links between policy and HTA. 19 of those deal with issues in relation to links between policy and HTA, e.g. impact of HTA on policy decisions, while 2 articles concern stakeholder involvement in HTA.

Concerning the links between policy and HTA four articles just briefly comments on future research needs. Oortwijn et al. (2008) state that there is a need for routinely evaluation of the impact of HTA and at the same time the methodology for this should be further developed. Maynard and McDaid (2003) points out the need for research concerning dissemination and implementation mechanisms in general, and Drummond and Weatherly (2000) state that research is required into several aspects of implementation. Finally Dixon et al. (2003) emphasises that more work is required in relation to looking at the impact of assessment and this research need to address the process of producing and implementing the evidence.

Other articles go into more detail. In 4 articles the impact of HTA is assessed in different settings in United Kingdom, and the articles all emphasises specific research needs. Hanney et al. (2007) state that further research should cover more detailed comprehensive case studies, as well as enhancement of a specific framework to assess the impact of HTA (the payback framework). Also it would be valuable to establish a project that collate health research impact studies in an ongoing matter and analyse them in a consistent fashion. Farmer and Chesson (2001) emphasis that it is important to evaluate the impact of HTA agencies, and this has to be done pragmatically rather than outcome based. Weatherly et al. (2002) point out that more efforts should be placed on understanding how local health policies affect cost-effectiveness and the ways in which local decision makers can better interpret economic study results in their own circumstances. Sheldon et al. (2004) analysed the evidence of implementation of NICE guidance in the early period and state that it would be interesting to see whether the results have changed due to the attention that NICE is giving to implementation. In general more research is demanded to understand the professional and organisational response to evidence based guidance and the relative contribution of various implementation strategies to practice patterns need to be evaluated.

One article analyse impact of HTA recommendations on organisational and clinical practice in Catalonia and concludes more generally that studies of the impact of HTA recommendations are needed to extend the validation of the framework used in the article and to develop an integrated method to assess the HTA adoption into practice (Gagnon et al., 2006). Another article looks at priority setting for the adoption of technologies in Israel and concludes that frequent assessment of previous decisions according to new clinical or economic data is important to have dynamic, efficient and transparent processes (Shani et al., 2000)

An article evaluates the connections between HTA and budgeting at hospital level, and concludes that further research is needed to understand the possible level of integration between HTA processes and budgeting processes (Lettieri et al., 2008).

Three articles concern relations between HTA and Industry (including reimbursement systems). Lothgren and Ratcliffe (2004) describes that HTA agencies are very much focused on assessment of pharmaceuticals and call for research that examines the marginal return of investment on HTA that arise from focusing so much on pharmaceuticals compared with non-pharmaceuticals. Schubert (2002) sees it as an important area to study the problem of demonstrating cost-effectiveness of a product before it is available for use and to introduce conditional reimbursement to allow for collection of real world evidence. This research could contribute to an better collaboration between HTA agencies and industry and improve transparency in assessment processes. Finally Hutton et al. (2006) develop a framework and classifies reimbursement systems in relation to health technologies. In that relation it is necessary to gain more experience with the framework and with finding a formal basis for comparison of reimbursement systems, and their

appropriateness for particular decision contexts.

Four articles and one book either analyses links between policy and HTA at a European level or as comparative studies including several European countries. Banta (2001) looks at the links between HTA and policies in the area of screening and concludes that it is necessary for HTA at European level to systematically develop and share information on assessment of screening to be able to give input to policy-makers in this field. Packer et al. (2006) studies international diffusion of technologies and concludes that producers of HTA need more knowledge concerning the usefulness of tools available to policy makers to control how diffusion of technologies operates. Oliver et al. (2004) investigate HTA's influence on priority setting in four European countries and concludes that HTA is not able to meet expectations from policy makers in relation to incorporating the necessary broad perspectives (e.g social, equity, and ethical considerations), and that HTA methodology therefore has to be developed. The report from the European HTA project, ECHTA/ECHAI, concerning HTA in policy and practice emphasises that there is a need for documentation of impact. Further, research in the organisation of European healthcare systems is needed, particularly with respect to their decision making structures (von Below et al., 2002). Building on these recommendations EUnetHTA published a book concerning HTA and policy-making in Europe including several studies of the theoretical links between policy and HTA: impact of HTA; links between health systems, health policy, and HTA; needs and demands of policy makers etc. All chapters address questions concerning research needs, and the general conclusion is that much more solid, theory based, comparative research is needed in relation to impact of HTA, decision making structures in different countries, the consequences of different ways of organising HTA organisations etc. (Velasco Garrido et al., 2008).

Only two articles focus on research needs in relation to stakeholder involvement. Coulter (2004) emphasises that a systematic attempt to engage the views of citizens is needed and research could contribute to finding ways of balancing interest groups. An article which reports experiences from the EUnetHTA project agrees and states that continued attention should be given to acquiring wide stakeholder representation to ensure balance between different stakeholder groups, and more research is needed to find ways of balancing stakeholder input into HTA processes (Palmhøj Nielsen et al., 2009).

These research issues illustrates a huge need for detailed studies of different aspects of links between policy and HTA and general policy processes in Europe where HTA is used as input. However, the research needs describes above also illustrates that studies of policy and HTA in different setting or in relation to specific technologies often results in research demands described in other parts of this chapter. Different methodological challenges and content of HTA reports are often core questions in relations between HTA producers and policy makers, and therefore the identified research needs are broader that just policy related research questions.

5.3.3 Online survey – research agenda

As part of the HSR-Europe project, an online survey was carried out to assess the HSR priorities of experts across Europe. In total, 34 European stakeholders (including 24 researchers and 7 decision-makers) shared views on HTA. The three areas most frequently given priority were the relationship between HTA and policy- and decision-making (71%), the impact of HTA (62 %) and incorporating consumer and patient aspects in HTA (50 %) (Figure 5.8). These priorities corresponded to the main research priorities of the European researchers. However, the seven European decision-makers in this survey stated that the relationship between HTA and innovation

processes is their main research priority (42%), and the relationship between HTA and policy- and decision-making was among the areas these decision-makers gave lowest priority (14%).

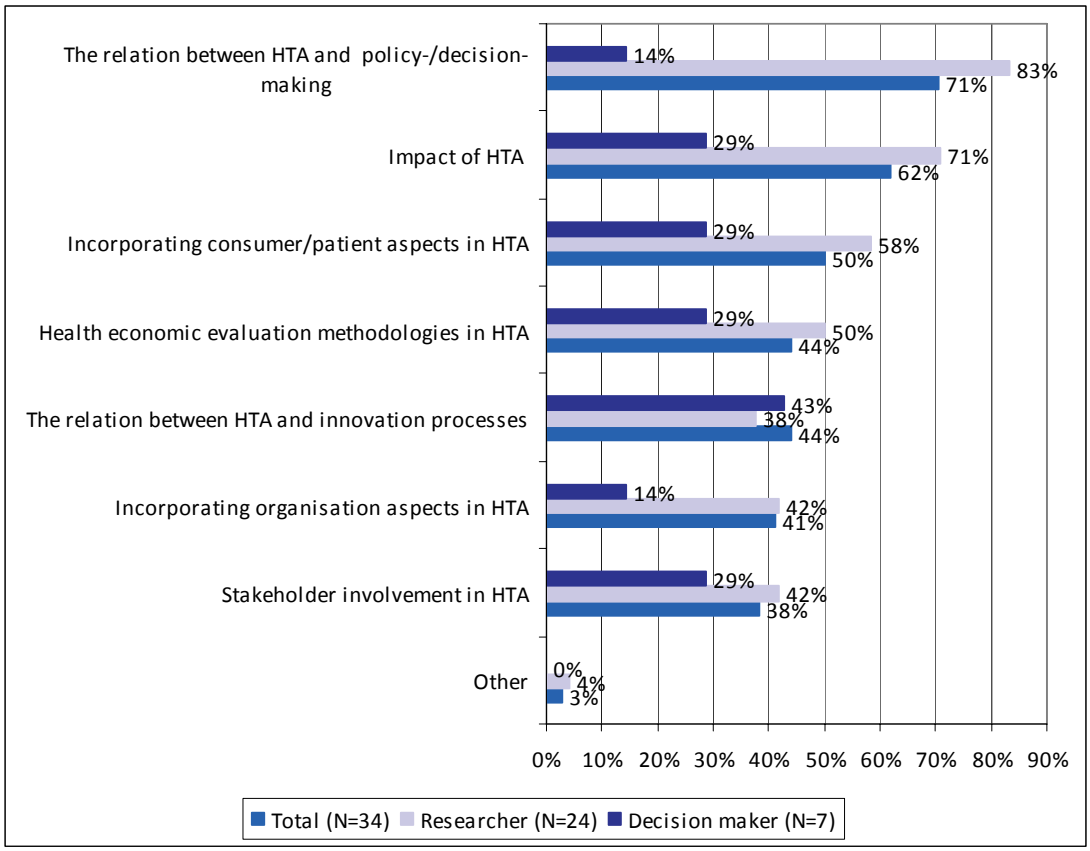

Figure 5.8 Future research agenda for health technology assessment

The research priorities emphasised in this survey correspond very well with the research needs found in the literature review. The articles included in the review addressed several research needs related to the six themes presented above.

5.4 A research agenda for the future

This chapter shows that HSR in relation to HTA can be categorised into six broad themes: (1) the content of analysis in HTA (such as analysis of economy, organisation, ethics, legal aspects and social aspects), (2) the HTA products developed to adequately meet the needs of policy-makers (such as early warning and horizon scanning, rapid assessment, mini-HTA and core HTA), (3) life-cycle perspectives in relation to analysis of technology use, (4) themes and topics that challenge existing HTA methods and for which HTA should be developed to be able to address the themes more comprehensively in the future (such as public health interventions and information and communication technologies), (5) development of HTA capacity and of HTA programmes and (6) links between policy and HTA.

The future research agenda for HSR in relation HTA can be categorised into the same areas and the main areas where more research are demanded are summarised below:

In relation to economic evaluation as part of HTA, the research needs called for in the literature generally reflected the fact that there is no current agreement on the best practices in economic evaluation. For example, it should be further explored how benefits should be measured, how health-related quality of life should be described and valuated and how quality-adjusted life-years should be aggregated and whether this is an appropriate measure (Brazier, 2008). Further, the appropriate methods for measuring and valuating preferences, future costs and resources are still disagreed on (Ratcliffe and Longworth, 2002). Several research needs were also addressed in relation to modelling, such as appropriate modelling techniques, how to identify appropriate evidence and how to incorporate expert knowledge (Cooper et al., 2007). In conclusion, despite major research activity on economic evaluation in HTA, there is disagreement on the best practices in undertaking and reporting economic evaluation in HTA. In addition, when new methods are identified, the researchers call for empirical testing and further development of these methods.

The general disagreement on the most appropriate methods to apply in economic evaluation in HTA might reflect an essential issue of HTA: that decision-makers have different needs. Variety in the research questions posed therefore requires different methods. The health technologies that have been assessed are at different stages of the life cycle. The availability of data therefore varies, which might also require different approaches. These issues are reflected in the fact that major issues discussed in the literature are also related to international standards and guidelines. Jönsson questions the entire purpose of using international standards in economic guidelines (Jonsson, 2008), and von der Schulenburg questions whether setting international standards for economic evaluation is even possible (von der Schulenburg et al., 2007). One point is that international standards need to be continually developed as methods develop (Jonsson, 2006). However, the literature generally reflects a call for transparency, which is a major goal for guidelines.

In relation to assessment of the wider effects aspects of HTA, the fact that very few articles deal with these aspects reflects a need for primary research into the organizational, social, legal and ethical effects of using health technologies. HTA methods also need to be developed to ensure that these aspects are included. In relation to ethics, it should be explored whether agreeing on common standards and developing methodological guidelines for including the ethical aspects are possible. However, a major question is whether ethics should be a separate domain of HTA or be incorporated into all domains (Hofmann, 2008). In relation to organisational aspects, numerous disciplines and methods need to be considered in developing HTA methods, such as sociology, organisational studies, policy analysis, economics and history. In the literature review it is concluded that a major obstacle is that researchers from the various disciplines who can contribute to assessing organisational aspects operate in different paradigms both within and between theoretical approaches. It should therefore be explored how multidisciplinary research can be encouraged. Further, researchers themselves need to take responsibility for thinking outside their own paradigms (Fulop et al., 2003). To include qualitative research as a source of evidence, it should be explored how qualitative research could be placed higher in the hierarchy of evidence, what criteria should be set for judging the qualitative research and, overall, how qualitative research can be improved and become more trustworthy (Leys, 2003b). The latter could be viewed as a call for a bridge between the qualitative and quantitative research paradigms, a topic which is both addressed in the literature review and discussed at the carousel rounds on HTA at the working conference. The review calls for including social and legal aspects in HTA, but the literature discusses the needs in these areas

less extensively. In conclusion, there is a general call for primary studies and methods of assessing the wider effects of HTA. Increased effort is needed to bridge the research paradigms contributing to HTA.

In relation to the best practices in undertaking and reporting HTA, the possible benefits from harmonising HTA evidence seem to be the potential benefits of more standardisation. However, as the wider effects of HTA are generally underresearched and often more context-specific, the value of harmonisation must be more carefully considered (Hutton et al., 2008). In relation to best practices, resources should be devoted to increasing the quality and quantity of both primary and secondary research and establishing networks to synthesise, disseminate, implement and monitor best practices (Perleth et al., 2001a).

Several HTA products have been developed to meet the needs of policy-makers: Horizon scanning, rapid assessment, mini-HTA, Core HTA and an adaptation toolkit. The efforts of EuroScan have generally resulted in common agreement on the definitions of horizon scanning. Further effort could be focused on methodological topics and more close collaboration (Simpson et al., 2008). Future effort should be given to the priority-setting process, which should be more transparent in relation to the sources used (Douw and Vondeling, 2006). The recent cooperation between EuroScan and EUnetHTA aimed at further developing information-sharing. However, even though the aim of more broadly disseminating information on new and emerging technologies remains, the methods for doing this that would satisfy the intended audiences still need to be developed further. Two options were posed. One would be to investigate the various interests through a consensus method, and the other would be to pursue EuroScan's earlier idea of developing a core set of early awareness information in a database (Wild et al., 2009). In relation to both rapid assessment and mini-HTA, the literature review revealed that both the quality and the process of the two methods should be explored further (Perleth et al., 2001b; Ehlers et al., 2006).

Further collaboration and sharing of information is continually required at the European level. EUnetHTA represents the major effort so far. The developers of the EUnetHTA core model state that further testing and refining are needed to ensure the optimal usefulness and user-friendliness of the product. In addition, even though the model is useful, clear scoping and good coordination in the timing and distribution of work would help improve the applicability and avoid duplication of work (Lampe et al., 2009; Pasternack et al., 2009). The adaptation toolkit, being the first of its kind, requires future work to address quality assurance (Turner et al., 2009a).

The life-cycle perspectives of technologies are related to both coverage with evidence development and disinvestment (assessing established technologies). The call for further research in this area mainly concerned how to set the limits of how much uncertainty there should be before issuing a recommendation that a technology only be used in research. It is also a concern whether the focus should be solely on the quality of the evidence or whether the potential budgetary effects and clinical importance should be considered (Chalkidou et al., 2007). In relation to disinvestment, some of the major issues that are debated are the priority-setting process, the data availability and the organisation of such a programme (Pearson and Littlejohns, 2007).

Assessing technologies that challenge HTA methods also requires more research in relation to assessing complex technologies, such as public health interventions, organizational interventions and rapidly evolving technologies. First, more experience needs to be gained in relation to broad assessment of these technologies, but HTA methods also need to be developed to include the

experiences obtained.

Further research is also needed on the development of HTA capacity and HTA programmes. In relation to capacity-building, further research is needed on the transferability of assessments to provide immediate help to decision-makers. The literature review shows that crude economic models are often not available in countries with limited resources, and in many cases the cost–effectiveness might actually be lower in these countries, affecting the transferability of results. Further, the requirements for reimbursement should be simpler and more realistic, straightforward and strict, as this is a major obstacle for decision-makers (Gulacsi et al., 2004). Strong HTA networks do exist, but the link to policy still needs to be strengthened, especially considering the countries with limited resources and experience in HTA. These issues should become a shared responsibility between HTA producers and the various types of users (Martelli et al., 2007). An article showed that better coordination and communication are needed among HTA programmes. Collaboration is especially important for countries without institutionalised HTA programmes, and particular support for introducing formal HTA should be dedicated to eastern and central Europe to address the growing interest in HTA. Further, collaboration could help to overcome the resistance to barriers such as staff training. The overall research capacity should be increased in the development of education and training programmes in HTA. In developing such programmes, attention should be paid to the collaborative processes between research disciplines, HTA institutions and EU countries (Moharra et al., 2009).

The literature review shows that research on the links between policy and HTA needs to be strengthened in four different areas. First, using HTA in policy-making needs to be explored in much more detail – preferably in comparative studies to provide more knowledge on the characteristics of policy-making processes in European countries. The impact of HTA on policy and practice also needs to be studied to provide more insight into the conditions for disseminating and using HTA. Good practices for involving stakeholders and an overview of European practices for involving stakeholders need to be obtained to improve the legitimacy of HTA as part of policy-making processes and, finally, knowledge on HTA as a tool for changing the clinical practices of various categories of specialists is requested to gain insight into the practices of behavioural change within various specialities (Velasco Garrido et al., 2008).

A last area in which a need for research is identified concerns comparative and relative effectiveness. This topic was not prominent in the literature review but is a growing activity within HTA, and is a growing interest due to fiscal investment in comparative effectiveness in the United States. The methods of assessing the effectiveness of technologies and the relationship between practices in the United States and Europe generally need to be clarified.
Within all areas there is a need for more knowledge as described above. At the same time a number of newer research areas, which were not distinctly present in the review of existing research, were identified. Examples of demands for future research are: research concerning assessment of the wider effects of using technologies; research concerning coverage with evidence development and disinvestment; research concerning assessment of public health intervention, organisational interventions, and of information and communication technologies; research on the links between policy and HTA; and research on relative effectiveness.

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6 Health Services Research related to performance indicators and benchmarking

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Contents

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6.1 Introduction

Benchmarking and performance indicators have become key challenges in health care policy in European countries. Accountability and transparency are central notions in today's ideas about health system governance and stewardship (Commonwealth Secretariat, 2000; WHO, 2000; Arah et al, 2006).
The notion of stewardship and governance through performance indicators has been endorsed by ministers of health in the WHO/Euro region in the Tallinn declaration in 2009 and more recently ministers of health of OECD countries (which include the majority of the EU member states) stated in the final communiqué of their ministerial meeting in Paris on October 7 and 8th the following:

> *We welcome the development of a set of indicators which help us to compare the quality of health care across countries and we look forward to them being further improved in the future. However, this will require better health information systems, and more effective use of the data that are already collected. The Forum on Quality of Care held before our meeting shows that we must reconcile the legitimate concerns of our citizens to protect their privacy with the need to monitor health care episodes involving multiple care providers. In addition, we must use information on quality of care to improve health sector performance. If all health care providers match the quality achieved by their better-performing peers, the gains would be of benefit to all health system users and funders. Although quality of care has improved in some areas, we need to address remaining barriers which stop us from realizing gains in the quality of care.*

Whether looking towards health care from an economic perspective, a public health perspective, a medical perspective or a legal perspective; in all cases the actual performance of health care services and systems needs to be made explicit and used as the basis for optimization strategies. This assumes that the performance of health care services (meso level) and health care systems (macro level) should be measured by valid, reliable and relevant performance indicators (performance measurement) (Kelly & Hurst, 2006) and that this information is interpreted correctly to assess the relative position of health services or health care systems towards each other (benchmarking) (Zairi & Leonard, 1994; Camp, 1989; Benson, 1994) thus resulting in appropriate decision making to improve and optimize the outcome of health services and health systems. Measuring and managing performance is thus not only essential for policies that aim to improve the quality of health care (defined in this paper as effectiveness, safety and patient-centeredness) but is also a pre-condition for policies focusing on increasing efficiency and value creation.

Health Services Research in the countries in the European Union is related to the enrolling agenda of benchmarking and performance indicators in many different ways. The emphasis seems to be on performance measurement; trying to validate measures that tell us something about the performance of specific services or health care systems. These lines of research are closely linked to available health care statistics. Other lines of HSR focus on the actual embedding of performance measurement in policy making and health care management. These lines of research are closely linked to the wider agenda of implementation research in health care and the application of theories and methods developed in other industrial and public sectors to the health care sector.

The aim of this paper is not to give a complete overview of all ongoing Health Services Research activities in Europe related to benchmarking and performance indicators. It rather tries to identify the

main themes and focuses on the opportunities to improve the HSR evidence base behind the policy developments indicators. On the bases of that information priorities identified and recommendations provided for setting the research agenda in the field performance indicators and benchmarking.

Two limitations of this paper should be noted:

- When we operationalize performance the emphasis will be on quality (effectiveness, safety and patient centeredness) and, although to a lesser extent, on costs. These two domains, quality and cost, were chosen because these are the terms used in the definition on Health Services Research that is used in the EU project for which this paper is written and they cover the area of expertise of the lead author. As a consequence the paper does not address performance related to equity or access to health care.
- Emphasis will be put on the possibilities to improve the information infrastructure for measuring performance. Mortality statistics, specific registries, administrative data-bases, electronic health records and systematic population and patient surveys are essential data sources for indicators. National governments and international organizations such as the EU can play an important role in assuring that these data-sources are actually fit for performance measurement and consecutive benchmarking.

6.2 Concepts and method

6.2.1 Concepts

Which type of research questions are asked in HSR related to performance indicators and benchmarking?

In the Dutch handbook on Health Services Research, based on the work of AD de Groot, five types of questions are identified in Health Services Research; descriptive questions, explorative questions, instrument building related questions, hypotheses testing questions and theoretical/inter-pretative questions (Plochg et al, 2007). When we look at HSR related to performance indicators and benchmarking it seems fair to state that at present a lot of the work in Europe can be grouped under the heading of “research to build instruments cq measures”. Performance indicators are in essence measures and instruments for measurement. Thus research on performance indicators often addresses issues as validity (does this indicator actually measures what it is supposed to measure), reliability (quality of data-sources and thoroughness of data-collection methods) and relevance (usefulness for managers and policy makers). Especially when dealing with outcome indicators on effectiveness, research tends to focus on the need for case-mix –adjustments and ways how to present the indicator information in an easy to interpret way to policy makers (i.e. funnel plots, scoring systems). Descriptive research also takes place when performance in a specific area still needs to be operationalized. Deciding on concepts, definitions and categories forms an important part of this work. Different HSR methods are used to develop common descriptions of quality of care for example focus groups, nominal group techniques and concept mapping. An important lesson here is that for performance indicators to be useful the subjects being measured and/or the subjects being the potential users of the indicators should be actively involved in the process of indicator development. In all countries descriptive research efforts seem to be going on to develop commonly agreed on sets of performance indicators.

As part of the validation of indicator sets, research is also exploring the relations between measures on structure, process and outcome in health care. The type of HSR questions addressed here could be labelled as explorative.

HSR really focusing on hypotheses testing in the areas of performance indicators and benchmarking is rarer. It usually related to the evaluation of the effectiveness of specific strategies in which the use of indicators is embedded and thus related more to the overall area of implementation research in health care.

Theoretical interpretative work is also ongoing, and focuses mainly on the various concepts behind operationalizing (sets of) performance indicators and reflection on the normative and ethical aspects of trying to govern health care services and systems through performance measures.

In short, most HSR work related on performance indicators and benchmarking seems to address instrumental, descriptive and explorative research questions. Hypotheses testing research questions are less common.

Which kind of research methods are used in HSR related to performance indicators and benchmarking?

As a consequence of the type of research questions that should be addressed the appropriate methodologies focus on systematic group processes to identify relevant themes, reaching agreement on definitions, development of data collection instruments (surveys, strategies to derive specific data-sets from existing administrative data bases, registries or medical records), statistical analyses to validate indicators and establish their discriminative power, determine the necessity of case-mix adjusters, exploring relations between various sets of indicators (structure, process, outcome) and evaluation of the effectiveness of strategies to use indicators for performance improvement (experimental with or without control groups). The competences to do this type of Health Services Research are quite distinct from the research competences needed for bio-medical research. The methodological research qualities needed for this type of research asks for a mix of (clinical) epidemiological and social-sciences skills. Furthermore a high sensitivity for application of findings in practice is needed as performance indicators and benchmarking should primarily be owned by the users, manager and policy makers, themselves. HSR can help them to develop the tools but health services researchers in this area should be aware of the various interests of parties in the outcome of their work. Thus the need to integrate the opinions and wishes of the subjects of measurement and the subjects who are going to use the measurement, in the research activities, this sensitivity for the use of research results in practice is a generic competence that all health services researchers should have.

6.2.2 Methods

Different information sources were used to receive a broad picture of ongoing research activities in EU countries.

6.2.2.1 Database search

In order to identify the main themes and opportunities to improve evidence behind health services research related to performance indicators and benchmarking, we conducted an iterative search. Firstly, we searched for literature on the basis of key authors in the field. Expertise of the key authors was determined by expert opinion as well as impact of their studies on European policy in health care. From these scientific publications more specific search terms were derived and subsequently enrolled in a snowball search strategy using the Pub med search database

www.pubmed.org, provided by the US National Library of Medicine. Doing so further identified search terms and relevant literature.

In order to be as thorough as possible within the chosen approach, we checked whether a systematic search would add any significant literature that had not been identified yet. Therefore search terms derived from the already identified literature were used in the Thesaurus of Medical Subject Headings (MeSH) Database in Pub med. Unfortunately, the relatively low number of articles that were identified suggests that the search terms we used (e.g. quality indicator) were too specific for the relatively young and developing HSR field. However, broadening the MeSH term decreased specificity in such a way that analyzing the data was not feasible within our detailed approach. See Appendix 5 for a detailed description of all the search terms used.

The time span of the search period ranged from the 1st of January 2000 to the 1st of January 2010. References on research not from the EU (identified through manual scan), were removed. In a later step articles were further analyzed on their content. Doing so eight different subtopics could be identified by our research team (HSR on mortality based indicators, cancer care related indicators, hospital care related indicators, patient safety indicators, primary care related indicators, indicators based on patient experiences, research on concepts and performance frameworks, research on benchmarking and performance improvement.

6.2.2.2 Project search

- A search was conducted in the project database CORDIS, the information service on current and past Framework Programmes. (http://cordis.europa.eu/search/index.cfm?fuseaction=proj.advSearch). The search reached from January 2000 till January 2010. The search terms benchmarking, quality indicator and research were used in different combinations.
- The database of the EAHC- executive agency for health and consumers (http://ec.europa.eu/eahc/projects/database.html) was searched from the period of January 2000 until January 2010. The combination of the search terms ”quality indicator” and “benchmarking” was used.
- Internet search engine “Google” was used with the terms “quality indicator” and “benchmarking”.
- Websites of European organisations were consulted in search for projects.

All projects identified were classified based on the topic areas of the sample of articles as described in Appendix 7.

6.2.2.3 Expert meeting/ conference discussion

At the working conference Health Services Research in the Hague in April 2010 participants discussed in a carousel format the future direction on health services research related to benchmarking and performance indicators. In particular the validity of performance indicators, their use and misuse and the requirements needed for national information structures came up as points of discussion. This led tentatively to lines of research: research on the validity of indicators and research on the use of indicators through embedding in governance, monitoring and management structures and linkages to other quality strategies.

6.2.2.4 Online Stakeholder survey

As an additional source of information a stakeholder survey among researchers and decision makers was performed. The survey was conducted with the aim to collect and evaluate current opinions on upcoming Health Services Research priorities and to study ways to improve the

translation of Health Services Research into policy and practice. Country consultants and identified experts through the country consultants from the European Member States as well as the countries, Croatia, Iceland, Macedonia, Norway and Turkey, were contacted per e-mail and were asked to fill out a questionnaire. More detailed information on the country stakeholder survey can be found in chapter 2.

6.3 Results

6.3.1 Database and project search

A total number of 1.448 articles were identified and used to draw conclusions on overall research activities in the last ten year period in EU countries. Table 6.1 illustrates that the number of publications increased annually on average by 17,3%. Figure 6.1 presents the cumulative number of references between 2000 and 2009. The year 2010 was not taken into account in the calculations because the literature search was conducted only on the first month of 2010.

Identified articles were screened on the main focus, which resulted eventually in eight categories. Those are presented below in Figure 6.2 in percentages of references per topic category. In a further step of analyzing the articles in some categories (performance indicators and benchmarking related to mortality and cancer, performance indicators on care delivered in hospitals, patient safety indicators), subthemes could be identified (see figure 6.3).

Table 6.1 Publication distribution over time (2000 - 2010)

Year	Number of publications	Absolute difference to previous year	Difference to previous year in %
2000	61		
2001	67	6	9,8%
2002	80	3	4,5%
2003	98	18	22,5%
2004	126	28	28,6%
2005	141	15	11,9%
2006	141	0	0%
2007	176	35	24,8%
2008	240	64	36,4%
2009	281	41	17,1%
2010	27		
	1448		

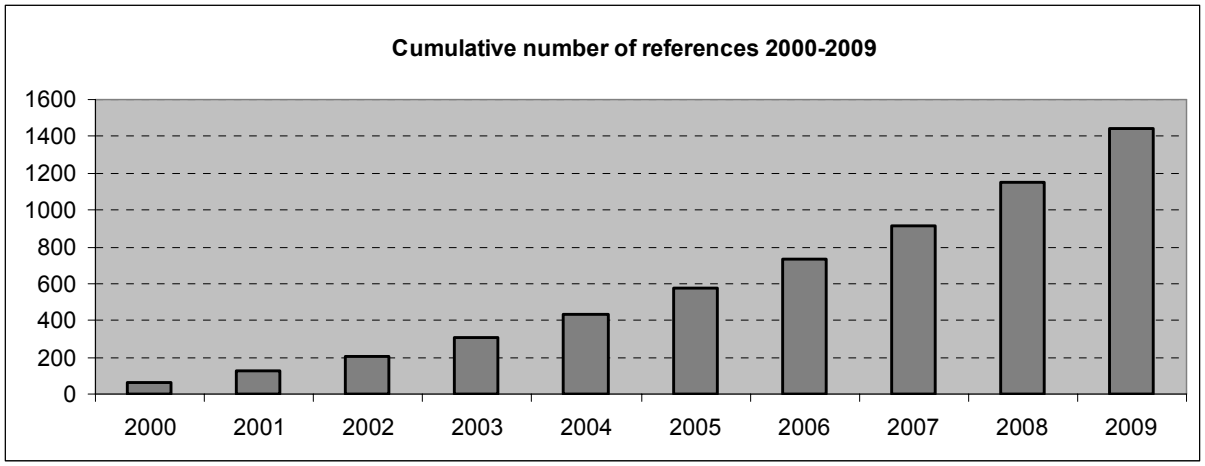

Figure 6.1 Cumulative number of references 2000 – 2009

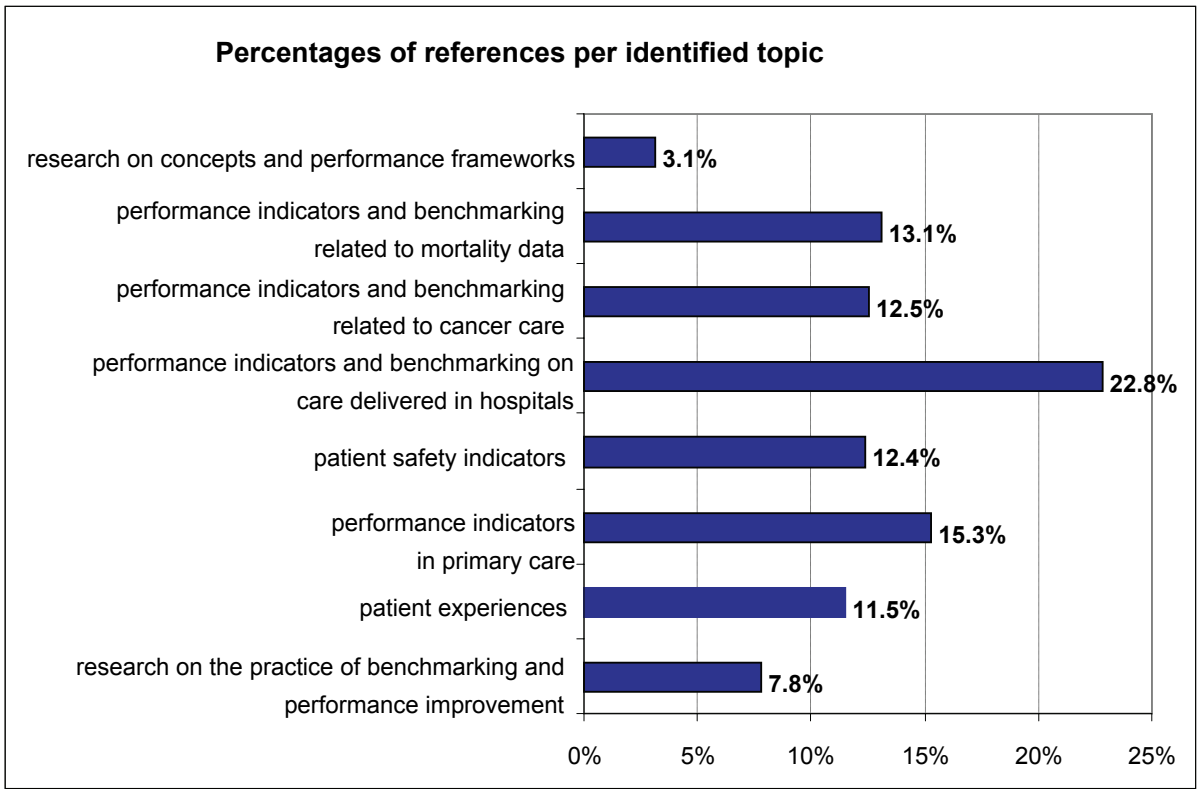

Figure 6.2 Percentages of references per identified topic

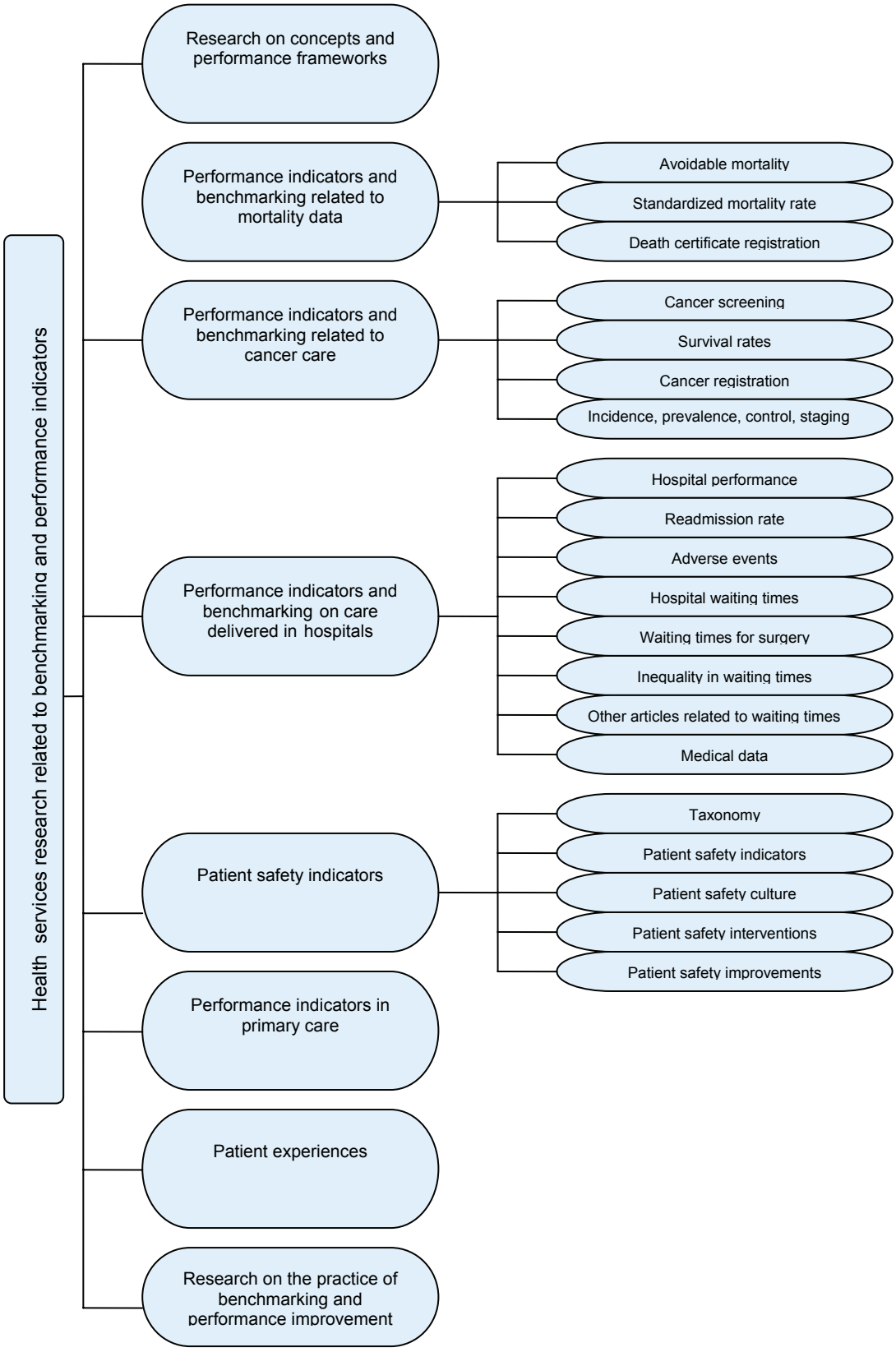

Figure 6.3 Identified themes and subthemes in health services research related to performance indicators and benchmarking

The following paragraphs describe in more depth the identified eight fields of Health Services Research related to performance indicators and benchmarking.

6.3.1.1 Research on concepts and performance frameworks

Performance indicators are never a goal in itself but derive their meaning from the management cycle and context they are part of. As a consequence one should be very careful to assume that an indicator that is useful for one goal (selective contracting, public accountability) can also be useful for another goal (internal quality improvement). As such, performance indicators are not, as in bio-medical research, aiming for universal truths, but for truths within a specific context and setting fro a specific goal. This also explains why it is often difficult to get HSR studies published in mainstream journals as they are often considered as less relevant for a broad international audience, or, erroneously so, considered less scientific because of the(intentionally created) limited generalisability.

Given this dependency on context and goals, the work of performance measurement has become embedded in a growing body of research work on concepts and frameworks used for performance measurement and benchmarking. One obvious line of research here is linking specific quality aspects to specific sets of indicators (what is a balanced set), another line of research looks at how sets of indicators can be grouped in broader conceptual frameworks to keep an overview over the performance on all aspects and being able to derive strategic meaning from developments on performance on various domains and aspects at the same time. Frameworks from industry, such as the Balanced Score Card are taken as examples. This type of frameworks can be found for assessing the performance of whole health care systems and quality of health care (i.e. OECD, WHO) but also for individual services such as hospitals (PATH/WHO). Theoretical and explorative HSR can underpin the policy need to develop and test conceptual frameworks that are consistent with the management and governance goals policy makers have with using performance indicators. Strengthening this line of thought and research remains necessary to enhance appropriate embedding of performance indicators and prevent dysfunctional use and bureaucratization.

A specific area of research seems to be the linkage between quality and costs, as two domains of health services and health systems performance they are most of the time considered separately. The measurement of costs has its own processes of standardization, often materialized in (national) accounting schemes and international efforts such as the 12 systems of health accounts work of OECD, EU and WHO. Linking quality and costs as part of overall performance management seems less common although work in this area has been reported (Ontario). On health services levels quality/cost methods from industry have been applied (Custers et al[1]) but were in the reported cases not congruent with the external financial incentives; i.e. in many cases there does not seem to be a business case for quality. This notion has already been recognized by policy makers and performance indicators on quality are at present increasingly used in Pay for Performance schemes and (selective) contracting. Evaluation research on these policy interventions, although quite prevalent in North America, is in Europe still limited. It should, however, be a promising area for future HSR given the increased interest by policy makers and health care managers. Thus the present more theoretical and explorative work might be extended to hypotheses testing research on experiments with financial incentives and contracting.

[1] References of the authors, documents and projects addressed in the text as well as further supporting literature can be found in Appendix 7 under the corresponding topic section.

6.3.1.2 Performance indicators and benchmarking related to mortality data

Historically death statistics have been the basis for assessment of the performance of health care systems. Life expectancy and perinatal death are in many international reports still used to compare the relative performance of health care systems e.g WHO and World Bank (WHO, 1995; WorldBank, 2010) and several adjustments have been made to refine the measures (for example the use of Disability Adjusted Life Years).
With respect to performance indicators and benchmarking the following two research lines are interesting to note.

After initial research in the eighties by Holland et al. recently avoidable mortality has become again a topic of interest. Following research done by Nolte and Mc Kee, at present an EU funded project (AMIEHS) is looking again at the avoidable mortality lists and refining the measurement methodology and the international comparability. Several European countries seen to be using this method for comparison of performance within their country and the OECD has recently started to look into the opportunities of reporting on avoidable mortality rates as part of their international comparative work.

A second line of mortality statistics based research is the growing popularity of the Hospital Standardized Mortality rates. Initially developed by Jarman, this methodology to compare the performance of hospitals based on adjusted hospital mortality rates has been taken up in a series of countries. Methodological debates are focusing on the (lack of) international comparability of these data given the differences in hospital systems and recording. However, policy interest is substantial.

Possibilities to use mortality statistics for performance indicators and benchmarking seem to be hampered by still existing differences in coding practices around causes of death but also in the varying possibilities in countries to link for example mortality statistics from hospital administrative data bases (in hospital mortality) with the overall death statistics. Possibilities for using Unique Patient Identifiers and linkage of data-bases are the key for making further progress in this area.

6.3.1.3 Performance indicators and benchmarking related to cancer care

Apart from becoming the major cause of death in EU countries, cancer is also the area were relative complete statistics are available for the performance of cancer care for various types of cancer such as beast cancer, cervical cancer and colon cancer. Quite often these “outcomes” are related to discussions to have national screening programs when valid screening methods are available. Recent work of the CONCORD group has reported on cancer world–wide (Coleman) but also the EU (Eurocare) and the OECD are active in improving the measures for the international comparability on the performance of cancer care. For this work to progress, the quality of the (national) cancer registries is of key importance. As long as countries don’t have cancer registries that cover their whole population, valid performance data are difficult to produce. Furthermore for cancer data to be useful for benchmarking, apart from mortality data the cancer staging data are essential. And, as with mortality data, linkages between cancer registries and administrative-data bases such as on hospitals are essential to do meaningful research on the relation between the quality of cancer care and the use of services and resources. Although the coding practice in this field, in comparison with other disease areas has already been internationally standardized, further standardization is warranted to increase the potential for benchmarking.

6.3.1.4 Performance indicators and benchmarking on care delivered in hospitals

A lot of indicator development work is undertaken in the field of hospital indicators. Indicators are developed and tested (i.e. Spain, Italy, Portugal, France, Germany, UK, Netherlands, Belgium, Denmark). Popular categories for indicators are 30-day case fatality rates (for example in AMI and Stroke), re-admission rates, complication rates in surgery, hospital infection rates, bedsores, volume of specific treatments, waiting times, systematic measurement of patient experiences, systematic measurement of experiences of hospital staff).Most of the HSR research in this area focuses on the development and testing of indicators. Sources for indicators are mainly administrative data-bases and medical records. Generic problems identified in these projects and international comparative work of the WHO (PATH project) and the OECD (HCQI project) with respect to administrative data bases seem to be:

- Quality of coding practices for administrative data-bases (ICD9-10)
- Lack of (internationally) standardized procedure codes
- Lack of coding of secondary diagnoses
- Lack of coding whether a certain condition was present at admission
- Lack of opportunities to link the administrative data bases of individual hospital with other data bases; for example by using a Unique Patient Identifier

Apart from the present limitations with using administrative-data bases for doing HSR on performance indicators and benchmarking, deriving the appropriate data from medical records also poses problems. Although the techniques of doing audits based on medical and nursing records have been improving, methodological flaws are still reported. The approach taken in the US by McGlynn et al in their study on the quality of care for adults holds important lessons for Europe. Furthermore, progress made with the implementation of Electronic Health Records is in most countries not developed enough to use these as a prime source for data to calculate performance indicators. Most of the problems around optimizing EHR's for population based statistics are not technical but political. Privacy legislation and insufficient focus on standardization of data-requirements from a public information perspective seem to hinder further growth of HSR in this area. If the potential of the EHR for helping monitoring quality of care is to be fulfilled, Health Services Researchers should keep on addressing policy makers with the message that the performance data they want can only be acquired when they make sure the necessary legislation on minimal data requirements and privacy is in place. Given the fact that some countries in Northern Europe seem to have overcome these problems, there is potential for mutual learning.

6.3.1.5 Patient Safety Indicators

Patient Safety has become a major focus point of health policies over the past ten years. The EU, after the US report To Err is Human, has initiated several activities to coordinate policy development and research in this area. In 2007 a meeting was held in Porto to provide an overview of the ongoing research efforts. At present the EU funded EUNEtPass project tries to coordinate various national efforts. Also WHO, on a global scale has launched programs which include inventories of ongoing research. Many European countries have executed studies to assess the magnitude of adverse events in their country, mostly based on detailed audit studies on medical records. Also several countries have set up national patient safety agencies that are mostly also involved in running adverse event reporting programs. Furthermore a growing body of knowledge has been created on studying safety culture, the implementation of safety systems and implementation programs for specific safety project on topics such as handovers, medication-errors and reduction of hospital infections. In the area of patient safety indicators, the example of the PSI reporting

system of AHRQ in the US has been broadened to 17 other counties, including many European one's, in the work of OECD's Health Care Quality Indicator program.

The type of Health Services Research applied in all these efforts is not fundamentally different to the types of questions and methods discussed earlier in this paper and focuses of measurement of risks, adverse events and errors and their contexts as well as implementation research evaluating the effectiveness of interventions.

With respect to data collection similar problems as with data collection for quality indicators on hospital care can be identified:

- Many studies depend on the quality of medical records
- Electronic Health Records are often an insufficient source for the necessary data
- Administrative systems often don't have sufficient secondary diagnoses coded to calculate Patient Safety Indicators
- Administrative data bases often don't record whether relevant conditions (i.e. infections, bedsores) where present at admission
- linking with other data bases within the hospital (i.e. laboratory, pharmacy) or outside the hospital (data bases in primary care) is often not possible or not allowed.

When these data-availability problems are not solved the possibilities and impact of HSR in the area of patient safety will remain limited with respect to performance measurement and benchmarking.

6.3.1.6 Performance Indicators in Primary Care

Traditionally the design and functioning of primary care is, alongside hospital care, an important focal point of health policies. A well functioning primary care system is considered to help contain costs and improve the quality of care. HSR on the organization of primary care is discussed in a separate paper elsewhere. As a part of the assessment on HSR related to performance indicators and benchmarking, it suffices to state here that monitoring data on the quality of primary care are still relatively scarce and heterogeneous. This is partly due to the fact that the information infrastructure in primary care is often still patchy and less developed then the administrative data-bases and (electronic) health record availability in hospital care. Although there are notable examples of countries that have some part of there PHC information infrastructure more developed for governance purposes, an assessment made by the OECD in 2007 showed that national data bases were not developed and comparable enough to merit cross national collection and comparison of performance indicators on primary care. As a conclusion the OECD is at present assessing the quality of primary care by looking at the rates of avoidable hospital admissions derived from the hospital administrative data bases. Despite the limitations of the data systems, a lot of HSR is going on in primary care, often focusing on specific diseases (especially chronic diseases) and the related care arrangements (i.e. disease management) or implementation of guidelines. Reported benchmarking studies in primary care seem to be rare.

6.3.1.7 Patient Experiences

The systematic measurement of patient experiences has become a fundamental element of assessing the performance of health care services and systems. Health Services Research in this area consists of methods to determine the domains and topics that are considered to be important for performance (methods such as focus groups, interviews, concept mapping) and all types of questionnaire development and testing. Instrumental research on valid methods to assess and report on patient experiences seems to be the core of the HSR in this area. After the example of the

US (CAHPS) and UK (Picker) a growing number of European countries is standardizing and institutionalizing the systematic measurement of patient experiences. Apart from the validation of patient questionnaires, work has been reported on population based surveys to measure the experience and opinions of citizens on health care (i.e. Eurobarometer, Common Wealth Fund surveys, WHO). Apart from the ongoing validation of sets of questions, work is going on the use of vignettes to capture opinions. Overall this seems a fruitful area for further exchange of instruments and methods on a 11

European level as this area of performance measurement and management is at the core of the EU values to create transparency in the health care markets and strengthen the position of the health care consumer.

6.3.1.8 Research on the practice of benchmarking and performance improvement

Although HSR specifically focusing on the technique and methods of industrial benchmarking in health care is still rare, the body of evidence on implementation and innovation in health care is substantial. It seems wise to take the implementation of strategies to use performance indicators not as a separate research topic, but consider the use of indicators as one strategy alongside others to improve the quality of health care. The EU funded Marquis Project demonstrated in a group of 489 hospitals the synergy between strategies to use indicators, measure patient experiences, perform audits, clinical guidelines, patient safety systems and TQM. HSR on benchmarking and the use of performance indicators could therefore borrow and become complementary to the already existing theories and study results on quality improvement.

6.3.2 Expert meeting/ conference discussion

On the working conference HSR Europe in April 2010 conference participants discussed in a carousel format at a workshop three predefined topics in the field of benchmarking and quality indicators, which are summarized below:

6.3.2.1 Research on the validity of indicators

Conference participants discussed the underlying data for calculating indicators as an essential component of constructing performance indicators. The way of collecting data as well as for which reason that is happening needs to be assessed in terms of validity issues. A further discussed topic was the low or rather lacking number of secondary data in most clinical registries and administrative data-bases. A great variation of available secondary diagnoses can be found nationally, international comparison seems thus to be hampered. A lot of uncertainty seems to exist in the amount of variation in the interpretation of definitions of indicators and related coding practices, which therefore must be studied more in detail.

In this context of the validity of indicators, used research models and techniques to assess indicators lead to the conclusion that a lot of cross sectional design are currently used. The participants agreed that more longitudinal data based on sound databases are needed to study the validity of indicators. The discussants agreed that indicators can be used for very different purposes (accountability, selective contracting, choice, quality improvement) and that the ultimate use of the performance indicators should be taken into account when studying their validity.

6.3.2.2 Requirements for national information infrastructures

Conference participants agreed that information sharing is hampered by a great European-wide difference in information infrastructures. For example, only a few countries allow the linkage of patient level data through Unique Patient Identifiers, which is of great importance for a comprehensive picture of quality of care. There is a clear need for uniformity of registration software

to allow data linkage. At this moment a great variance in software systems and software providers is present. Participants also concluded that the evaluation of the quality of electronic databases for deriving population statistics is an area that is underresearched. On a regional level the ownership of data (e.g. Germany) and the interregional differences of coding can be a problem. More EU involvement in supporting the (international) comparability of information on health care through data infrastructures was considered useful (e.g. coherent definitions, similar software systems and coding system)as well as on policies to balance privacy and data-protection concerns with availability of data for calculating population based performance indicators.

6.3.2.3 Use and misuse of performance indicators

There is a broad experience of misuse (e.g. league tables, gaming) or non-use of indicators among the conference participants, leading to the observation that research on use/misuse is rare and in its infancy in Europe. There are doubts on how far performance indicators are used by patients. The meaning as well as well as the indicators embedding in governance and managerial structures and processes must be known to be able to identify misuse of an indicator. For enhancing the use of indicators, the indicator should be integrated in an established system thus the linkages with other quality strategies such as practice guidelines, accreditation, audit and quality systems should be sought.

6.4 Discussion

Health Services Research can help both in the development of performance indicators and the actual use through benchmarking. Literature study and expert consultations identified a large number of existing research initiatives within the EU although the distribution of research initiatives over the EU member states seems quite uneven.The discussions during the The Hague conference on Health Services Research confirmed that on performance indicators and benchmarking:

- Research should focus on the development of indicators (validity, reliability, relevance) as well as on the actual use (effective embedding in policy and management).
- As a consequence of the above, health services research on these topics should always involve participation of the potential users
- Both scientific approaches from bio-medicine/epidemiology and the social sciences are needed

Further progress of HSR on performance indicators and benchmarking is hampered by data-availability. Experts agreed that the following issues need addressing:

- use of Unique Patient Identifiers to facilitate linkages between separate data-bases
- further standardization of coding
- use of present-at admission codes in administrative databases
- recording of secondary diagnoses in administrative data-bases
- facilitate secondary data use from Electronic Health Records
- facilitate standardized measurement of experiences by patients and citizens
- continued collaboration between Eurostat, WHO and the OECD to facilitate the availability of international comparable performance information

HSR research on benchmarking and performance indicators on European level would benefit from strengthening the clearinghouse function on research findings, training of researchers and appropriate scientific publication media. Results of HSR research on benchmarking and performance indicators should be systematically shared with policy makers and managers of health

services and systems to assure a fit with local contexts. Networking should be stimulated on European level between the research groups involved in this kind of work and the growing number of national/regional institutes involved in quality measurement and reporting.

6.5 Conclusion

Health Services Research providing the evidence base for Performance Indicators and Benchmarking is a field that has been expanding rapidly in EU countries over the past ten years. It is par excellence an area that would benefit from EU broad initiatives as this would enlarge the comparability between the member states and thus the potential of benchmarking between countries. Apart from policy initiatives to address the quality and comparability of national information infrastructures in health care through the kind of initiatives that are mentioned in this report, it also constitutes a potentially fruitful area for HSR in the foreseen 8th Framework. Research themes that could be addressed are European studies on the validity of performance indicators in various areas' (notably mortality, cancer care, hospital care, primary care, palliative care, mental health care, patient safety and long term care and social care). Furthermore European wide research could be conducted on how to embed effectively performance indicators in governance, monitoring and management structures and how to link them to (national) quality strategies and policies such as accreditation/certification, practice guidelines, audits, quality systems, patient safety strategies, national standards on volume and/or quality, public reporting, pay-for-performance and patient/consumer involvement.

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7 Health Services Research in Europe and its use to inform policy

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Contents

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7.1 Introduction

Health services research is a "multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being" (Lohr and Steinwachs, 2002; p. 16). This chapter aims to describe the state of development of health services research in countries in Europe and the extent to which this research is used to inform policy-making.

Health services are an established area for research in some countries (e.g. the United States, Britain and the Netherlands). However, in other countries this field of research is still emerging, illustrated by the fact that the term "health services research" does not exist in some languages or has only recently been created (e.g. "Versorgungsforschung" in Germany). Nonetheless, there may well be research activities that would be classified as health services research, for example, under the banner of a discipline that contributes to health services research, such as clinical epidemiology, medical sociology or health economics.

There is a general perception that the potential of health services research is not sufficiently brought to bear on health care policy and practice (Ham, 1995). This "research-policy gap" is not unique to health services and health care policy, and is not surprising given the complexity and 'messiness' of the policy-making process, linked to its legitimate exposure to public pressure and political influence. Yet from a public policy perspective, this also constitutes an under-utilisation of public resources, as most health services research is publicly funded, as are most health services in high income countries (WHO, 2004). Assuming that evidence from research can contribute to improving the quality (including effectiveness, safety, humanity and equity) and efficiency of health services, not using this information constitutes a waste of resources.

However, the relationship between policy and research – as sometimes promoted by proponents of "evidence-based policy-making" – is not straight forward. There is a growing body of research on the relationship between health services research and health policy, mostly from Canada, England and Scotland. In addition, there is substantial activity in some fields of health services research that span the research-policy interface. At the micro-level, health technology assessment (HTA) has become increasingly influential in informing decisions on health services coverage in publicly financed health care systems (Velasco Garrido et al. 2008). However, in the other two areas of health services research, health systems (macro-level) and the organisation and delivery of health services (meso-level), the links between research and policy are often not well understood. This chapter aims to provide the first map of the capacity and institutional infrastructure of health services research in Europe and to examine the links between health services research and policy-making in European countries. The chapter largely focuses on the use of research at the level of national and systemic policy-making, although it is acknowledged that there is a much larger group of potential users of research than national policy-makers, such as clinical practitioners and health care managers.

7.1.1 Conceptualising the research-policy relationship

There have been a number of approaches to conceptualising the relationship between research and policy (Nutley et al., 2007). In sum, these fall into three broad categories:

Linear-rational approaches assume that the relationship between research and policy is relatively straight-forward, emphasising the possibility of "transferring" research evidence from researchers to policy-makers. Research and policy-making are typically seen as distinct processes, with researchers and policy-makers forming separate communities (e.g. Caplan, 1979). This model is often associated with a "traditional" model of the policy process, built on the assumption that policy-making follows a number of distinct stages: Problem identification; assessment of policy options and decision-making; policy implementation; and monitoring and evaluation (e.g. Stone, 2001). Research, it is argued, can influence policy at any of these stages. Further developments have been able to integrate other models of policy processes, focusing, for example, on networks of drivers of policy processes (Nutley and Webb, 2000). Linear-rational models share an assumption that research can translate into policy, by providing solutions for policy problems. However, this approach has been criticised as reductionist, oversimplifying the nature of the policy process, the limitations and potential ambiguity of research findings, as well as the complexity of many policy problems (e.g. Black, 2001).

Multidimensional approaches, in contrast, emphasise the complexity of the research and policy relationship. Proponents of these models argue that evidence is often contested and not easily applicable in practice. Policy processes are "messy" and often unpredictable, shaped by the practices and interests of multiple stakeholders, of which researchers are only one group among many that are competing for the attention of policy-makers. The process of developing policy is further complicated by the fact that many problems policy-makers face do not lend themselves to simple answers and thus demand complex interventions that often involve policy areas outside the reach of health ministries. Multidimensional models tend to emphasise the importance of the linkages and continuous exchange between researchers and policy-makers. Huberman (1994), for example, developed a "dissemination effort model", outlining several factors that influence the use of research (in this case in education), including factors associated with the context of the producers and users of research, dissemination efforts of researchers, and linkage between researchers and policy-makers. Linkage and exchange have also been highlighted as the main factors in more recent work on knowledge transfer models (e.g. Mitton et al. 2007).

A third group of models emphasises *the role of context* in shaping the relationship of research and policy. In the extreme, contextual models question evidence from research as 'socially constructed', arguing that the meaning of research is contingent on its interpretation (e.g. Cousins and Simon, 1996), which is shaped by the local environment of the interpreter (i.e. the user of research). A model developed by Kitson et al. (1998) sees the use of research by clinical practitioners dependent on multiple contextual factors. Contextual factors may also be highly relevant in relation to health policy-making. Arguably, factors relating to the organisation and governance structure of the health care system, as well as to the institutions, rules, cultures and power dynamics within political systems strongly affect the behaviour and attitudes of policy-makers towards research. Therefore, one could expect that strategies that have helped to improve the uptake of research in policy in one country may not be equally successful in other countries, given the differences in national context.

7.1.2 The impact of research on policy

A further strand of research is concerned with conceptualising and studying the impact of research on policy. Weiss (1995) distinguished *instrumental*, *conceptual* and *strategic* uses of research in policy-making. "Instrumental" use largely assumes a linear relationship between research and policy, seeing policy-making as a rational activity in which evidence from research is a key factor. Although the idea of instrumental use rests on a range of assumptions, in practice, some types of

research may more easily lend themselves to application than others. Arguably, the growing utilisation of health technology assessments in informing coverage decisions provides an example of instrumental use, although some argue that decisions based on health technology assessments are as complex, context-dependent and multi-layered as other more macro policy decisions (Velasco Garrido et al., 2010). Concerns have also been voiced about the potential for researchers pursuing instrumental goals of research use to become too closely involved in policy at the expense of losing the distance required to comment critically on policy developments (Weiss 1995).

'Conceptual' use refers to situations in which research is used to shape policy-makers' perceptions of a policy problem, without necessarily providing a solution. Weiss argued (1979) that such 'enlightenment' was one of the key functions of research. However, she also warned that improper use of research can have the opposite effect, hence the risk of diffusing 'endarkenment' as well as 'enlightenment' (Weiss, 1979).

'Strategic' use of research occurs when findings are used as political ammunition or in support of decisions that have been taken before the research was being considered. There is debate whether strategic or selective uses of research always constitute misuse of research, with some arguing that the difference is situational and not clear-cut (e.g. Patton, 1996). This type of use is likely to resonate with the experience of many researchers. It also draws attention to the imbalance of power that often characterises the relationship between policy-makers and researchers. While researchers may see themselves as the ones that 'speak truth to power' their influence on policy is often limited if not marginal. Still, it may be essential for researchers to understand the political context of decision-making if research is to have a role in policy-making. There are efforts in some countries, notably Canada, to strengthen the uptake of research in policy by changing the policy process in ways that may give researchers greater opportunities to have influence. Research utilisation checklists for policy officials are an example of a tool developed to facilitate the integration of research in the policy process (Lomas and Brown 2009).

Measuring the impact of health research on policy-making is a further focus. Lavis and colleagues, for example, have developed a framework for assessing the outcomes of activities that aim to support the dissemination of research (research push), uptake of research by policy-makers (user pull), as well as linkage and exchange efforts (Lavis et al. 2003).

A growing body of research examines the factors that shape, enable and hinder the use of research in policy-making. Based on interview studies of policy-makers' perceptions, Innvær et al. (2002) identified a number of barriers (and corresponding facilitators, see Oxman et al., 2009), including the absence of personal contacts and mutual distrust between researchers and policy-makers, insufficient timeliness of research, doubts about the quality or relevance of research, power and budget struggles within policy organisations and high staff turnover among policy-makers. Similar barriers were identified by Brownson et al. (2006), who added the problem that policy-makers often have to manage vast amounts of information, the lack of data relevant to many policy questions and the frequent ambiguity of research findings. Although these factors play out differently in different health care and political systems, and in relation to different research or policy topics, they are likely to shape the relationships between research and policy to some extent in any given country.

Despite the extensive analytical literature, there are few studies in European countries on the relationship between health services research and policy making, and the use made of health services research. Most research on health (services) research utilisation originates in English

speaking countries, notably Canada. Even descriptive information on activities and institutional arrangements is lacking. For these reasons, there is value in undertaking a first survey of the field.
In what follows, a conceptual framework of knowledge transfer processes was used to inform collection and analysis of data from countries in Europe. This frameworks is based on recent work by Ward et al (2009a) that identified five broad components that shape the use of research and/or knowledge in policy-making: a recognition of a (policy) problem; the knowledge and research available relevant to the problem; contextual factors relating to barriers to and support of research utilisation; the use of research in the policy process; and interventions and mechanisms to support the use of research. Based on the review of 28 models which explain all or part of the process of research utilisation, this framework is 'empty', in the sense as is not associated with a particular context. The framework does not make assumptions about the type of knowledge transfer process, which the authors concede can be 'linear', 'cyclical' or 'dynamic/multidirectional'. The framework is thus generic enough to allow for the application to a variety of different situations and national settings, without making assumptions about policy processes and processes relating to the use of research, which lie beyond the scope of this study.

7.2 Aims and objectives

This chapter is part of the project "Health Services Research into European Policy and Practice", funded by the European Commission (EU-FP7 HSREPP). The project aims to identify, evaluate and improve the contribution of health services research to health policy-making in countries in Europe. The project involves the organisation of a conference, held in April 2010 in The Hague, with the purpose of this chapter being to provide an overview of health services research in Europe and its use in policy.

The specific aims of this chapter are:

- To examine the sources and scope of funding available for health services research and the extent to which research funding reflects the priorities and/or strategies of policy-makers and policy agencies in countries in Europe.
- To describe the landscape of health services research, including the types of organisations undertaking research, the type and level of training available for health services researchers, the journals that publish health services research, the existence of conferences, associations and networks, and the balance of domestically produced versus externally produced research available in European countries.
- To identify the main users of health services research for policy and to describe the mechanisms which support the dissemination of research findings, facilitate the use of research by policy-makers and promote 'linkage and exchange' between researchers and policy-makers in these countries.
- To analyse the barriers to using health services research evidence in policy-making and to examine the incentives and disincentives facing both researchers and policy-makers to produce and apply research findings to policy, and to outline how the relationship between health services research and health policy-making can be strengthened in future.

7.3 Methods

This chapter is based on a survey of health policy experts recruited specifically to act as informants in the 34 countries participating in this project. Countries are the member states of the European Union as well as Croatia, Iceland, Macedonia, Norway, Switzerland and Turkey. As this is a preliminary mapping exercise of activities in 34 countries we decided to use a broad framework as an initial analytical tool to guide questionnaire development and subsequent analysis of country responses. The framework takes a knowledge transfer perspective, based on the recent review by Ward et al. (2009a), mentioned above.

A brief review of the literature was also undertaken to inform the design of the survey questionnaire and the framework of analysis. Given the wealth of studies on research utilisation, knowledge transfer and evidence-based policy-making, we focused on reviews that bring together existing knowledge about the research and policy interface. Country informants were selected based on reputation and expertise, using the professional networks of the EU-FP7 HSREPP project consortium. Most country informants are members of the academic community involved in health services, health systems or health policy research. As a consequence, the views of policy-makers are likely to be underrepresented.

Country informants were asked to complete a detailed questionnaire, which they received in September 2009. Twenty-nine questions covered the following areas: funding and prioritising health services research; production and producers of health services research; health policy users of health services research; activities to promote the use of health services research; and barriers and facilitators to using health services research in policy-making (see appendix 1).

The questionnaire used a broad definition of health services research as a “multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being” (Lohr and Steinwachs, 2002; p. 16). We did not provide a definition of the term “use” in relation to policy-making. However, most questions included a number of detailed prompts to guide responses.

The analysis of responses was guided by the framework of the knowledge transfer process developed by Ward et al (2009a), which we have adjusted for the purpose of this chapter in several ways. As the scope of this mapping exercise does not allow an in-depth analysis of the problems and issues policy-makers face in individual countries, we decided to omit the dimension “Problem” suggested by Ward et al. (2009a). Likewise, we did not attempt to describe the extent and activities of health services research in Europe, which will be undertaken by other contributions to this project (see previous chapters). Instead, we describe the type of actors involved in producing health services research and the organisations using this research to inform policy-making. Finally, we have added the funding of health services research and approaches to priority setting as separate dimensions to highlight the importance of these influences on the links between all dimensions of this framework (Figure 7.1).

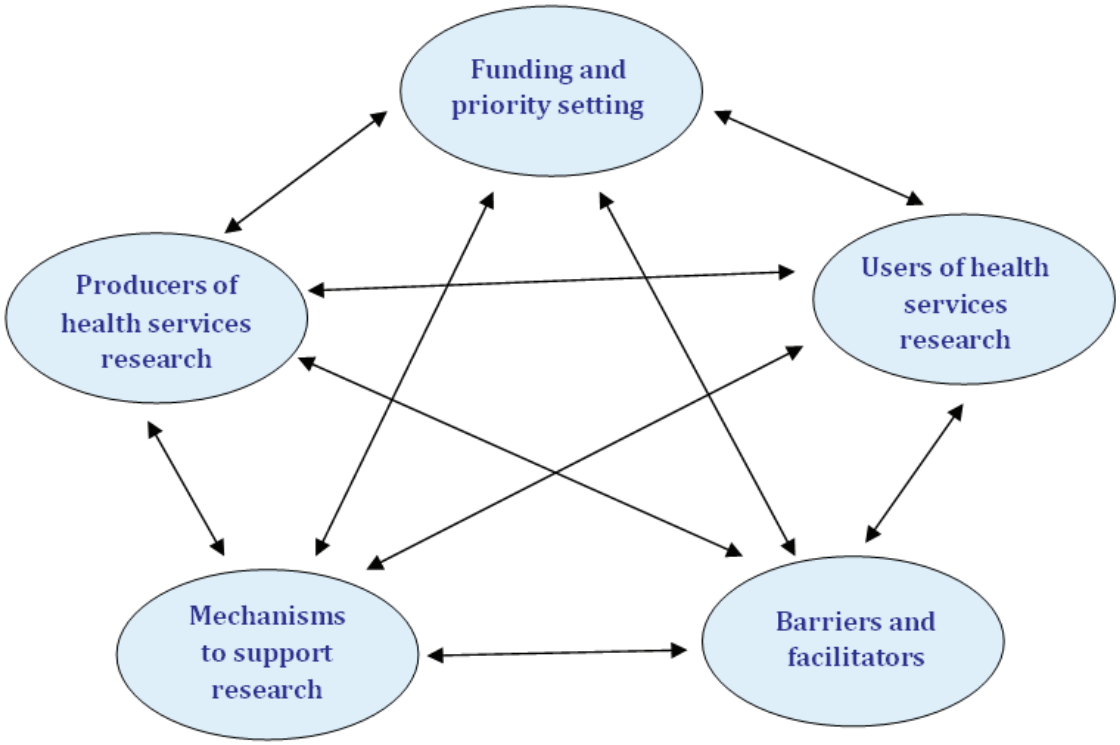


Figure 7.1 Framework for the analysis of the use of health services research to inform policy

7.4 Results

Information was returned by informants in 30 of the 34 countries approached (as of December 2010): Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, England, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Macedonia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Scotland[1], Slovakia, Slovenia, Spain, Switzerland and Turkey. Information was unavailable (or substantially incomplete) from Hungary, Iceland, Luxembourg and Sweden.

7.4.1 Funding of health services research

We begin to assess the scope and scale of health services research in Europe by describing the sources and level of funding available for research. The second part of this section examines the extent to which decisions to fund health services research are determined through strategic priority-setting.

The following main sources of funding were identified: (1) governments, (2) health system organisations, (3) the independent sector, and (4) international organisations. Health services research in Europe is predominantly publicly funded. However, the sources and level of funding varies substantially among countries.

1 In most countries, governments play a key role in providing funding for health services research. This role is typically exercised at central government level, although regional or local governments may also fund research in some countries (see below). There are generally two

[1] We here count Scotland and England as two separate countries, with two separate health systems and health policy mechanisms.

channels for government funding (a) through dedicate research funding bodies, and (b) through government ministries or agencies. Research funding organisations typically fund health services research as one area of research among others.

For example, in England, the National Institute for Health Research (NIHR) funds health services research through several programmes, in addition to funding clinical research. In Scotland, this role is exercised by the Chief Scientist Office that is part of the Scottish Government Health Directorates. In Denmark, the Danish Council for Independent Research (Det Frie Forskningsråd) and the Danish Council for Strategic Research (Det Strategiske Forskningsråd), both under the umbrella of the Danish Agency for Science, Technology and Innovation, are key funders of health services research. The Czech Science Foundation (Grantová agentura České republiky, GACR), the Swiss National Fund (Schweizer Nationalfonds) and the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) provide funding for a wide spectrum of research in science and humanities, including some limited funds for health services research (DFG, 2010; GACR, 2010)[2]. The Research Council of Norway (Forskningsrådet) has set up a funding programme for health and health care systems research (2006-2010, now extended to 2015) which includes funding for health services research.

In most countries, the ministry of health is directly involved in providing funding for health services research, as well as ministries of science or research (where they exist). In Spain, the Institute of Health Carlos III (Instituto de Salud Carlos III, ISCIII) is a major funder of health research. In France, the Institute of Public Health Research (Institute de Recherche en Santé Publique, IReSP) was formed in 2004, bringing together 24 public organisations involved in public health research (including health services research). The aim of the institute is to pool expertise and to co-ordinate funding for public health research. In Croatia, the Ministry of Education and Science is the largest funder of health services research. In some countries, typically those in which political decision-making is in part decentralised, regional or local governments provide some funding of health services research (e.g. Austria, Belgium, Finland, Slovenia and Spain, but not, for example, in England). In Norway, regional health authorities fund research into secondary health care, including funding for research positions at universities and hospitals. In Poland, in contrast, the ministry of health is prevented by law to directly fund research activities.

2 In a number of countries, health system organisations at national, regional and/or local level fund health services research, such as sickness funds in Austria, the Federal Chamber of Physicians (Bundesärztekammer, BAK) and sickness fund associations in Germany, the Norwegian Medical Association, the administration of the social security (Direction de la sécurité sociale) or the regional unions of self-employed doctors (Union régionale des médicins libéraux, URML) in France. Funding is often for single projects and small scale programmes only.

3 In a number of countries, the independent sector funds health services research, although mostly single, small-scale projects. These organisations are typically charitable and not-for-profit health or social research bodies. In England, for example, the King's Fund and the Nuffield Trust fund projects in this field, as do private foundations, research charities and patient-support organisations in Denmark, Ireland, Norway, Portugal, Romania, Scotland and Spain.

[2] Not all of these research funding bodies are government organisations, as some of them are accountable directly to parliament. The Czech Science Foundation, for example, is monitored by a supervisory board appointed by the Czech Parliament. Likewise, the Finish Innovation Fund (SITRA) is overseen by the parliament.

4 Funding provided by international organisations supports health services research in a number of countries, for example, Croatia, Cyprus, Greece, Lithuania, Macedonia and Malta, and Turkey. International organisations in this field include the World Health Organisation, the World Bank and the Open Society Institute. The European Commission is a key funder of health services research projects in many countries of the European Union (Box 7.1). Some governments or research councils actively promote applications for funding through the European Commission, such as the Research Council of Norway.

Box 7.1 Role of the European Commission in funding health services research

The European Commission (EC) funds health services research through its frameworks for research funding, such as at present FP 7.

Between 2007 and 2010, the EC, through its Seventh Framework Programme, spent € 275 million on research aimed at "Optimising the delivery of healthcare", of which € 67.5 million was spent on translating clinical research outcomes into clinical practice (supporting 28 projects), € 63.5 million on health systems research (63.5 million), € 47 million on health promotion and disease prevention (20 projects), and € 97 million on international public health and health systems research (35 projects). This compares to a total budget for health and life science research of € 2.5 billion (EC, 2010).

Themes of the work programme are informed through an internal and external consultation process. Internally, the Directorate General for Research liaisons with other directorates of the Commission, especially the Directorate General for Health and Consumer Affairs (DG Sanco) to identify priorities. Externally, the Commission invites inputs from a wide range of actors through formal and more informal channels (e.g. strategic research agendas of European Technology Platforms, as well as position papers from organisations and other interested parties).

A recent study by Ernst and colleagues (2010) found that the Community Research and Dissemination Services (CORDIS) of the European Commission does not provide complete and up-to-date information to facilitate access to all EC funded health research. The authors recommended that the European Commission could strengthen its efforts to improve the accessibility of EC funded health research.

Information about the level of funding available for health services research is poor and not available for most countries. Available data usually do not distinguish between funding for health services research and other health-related research. With the exception of England, no overview of the total funding for health services research could be identified. Even in England, provided data on funding was largely based on estimates (UK Clinical Research Collaboration 2006, 2007).

Data suggest that the level of funding varies dramatically among countries, with England likely to be the largest spender in absolute terms at £156 million in 2004/5 (€174 million; as of April 2004). Annual spending in Switzerland was estimated at SFr5 million (€3.4 million; as of January 2009); €6-8 million in Ireland (2008); over £15 million (€15.5 million; as of January 2009) in Scotland; €60 million in the Netherlands (2006) (RGO, 2008). Total funding for health services research in France is unknown; however, the IReSP made available €1.35 million for a call for health services research proposals in 2009. Data on total spending on health services research mostly does not provide

details about funding for different disciplines or areas of research.

Information about funding trends is also scarce and mainly based on personal reports. In a number of countries, spending on health services research appears to have increased in recent years (e.g. Cyrus, England, Germany, Ireland, Malta, Spain, Portugal, Turkey), with substantial growth reported from England. However, in other countries funding seems to have been stagnant (Croatia, Slovenia), fluctuated (Italy) or even decreased (Switzerland). In Latvia, health services research does not receive any funding, either public or private.

7.4.2 Strategic priority-setting for health services research

With few exceptions, countries do not appear to have developed a comprehensive national strategy for funding and developing health services research. In England, the government published "Best Research for Best Health" in 2006 setting out the strategic aims of government in funding health research, including health services research (Box 7.2) (DH, 2006). Likewise, the Scottish Chief Scientist Office, in 2009, published a comprehensive strategy for health research (CSO, 2009). Arguably, both countries share a long tradition of health services research, supported by government funding.

In some countries, funding for health services research is embedded in a funding strategy for science and research in general or health research in particular, with a (typically smaller) section devoted to health services research. In Ireland, for example, the strategic business plan 2010-2014 of the Health Research Board sets out four strategic goals of the Board, one of which is to build capacity to conduct population health sciences research and health services research (HRB, 2009). A review of government funding for health services research is currently underway. In France, the IReSP aims to co-ordinate funding activities of a range of public organisations, organised as a partnership. In Norway, a consortium of universities, regional health authorities and the Research Council have begun a process that aims to develop a strategy for the future of health services research in Norway. In Romania, a National Plan for Research 2007-2013 exists, which also covers health research and some aspects of health services research. A National Plan for Development (2007-2013) has been developed in Greece, which includes health services research as well as capacity building.

Box 7.2 Best research for best health – England's national health research strategy

In January 2006, the Department of Health in England published its new national health research strategy "Best research for best health". The strategy outlines the government's objectives for its research funding and describes how it intends to achieve them. Objectives are as follows: (1) to establish the National Health Service as an internationally recognised centre of research excellence, (2) to attract, develop and retain the best research professionals to conduct health research, (3) to commission research focused on improving health and social care (e.g. through several research programmes), (4) to manage knowledge resources (e.g. through an IT based management system), and (5) to ensure that public money is used for public good (DH, 2006).

Based on these objectives, the government, in March 2006, commissioned a comprehensive review of the use of government funding for health-related research in the UK, the so-called Cooksey Review, named after the chairman of the review team Sir David Cooksey (HM Treasury, 2006). The review concluded that progress had been made to spend public funding for health-related research more effectively, but also made a number of recommendations to improve the strategic direction and co-ordination of existing funding arrangements, for example, by establishing an Office for Strategic Coordination of Health Research (OSCHR). The role of the office is to co-ordinate the activities of the government's two main funding streams for health research, the National Institute for Health Research and the Medical Research Council, but also to communicate health research priorities to the health industries, such as for the development of new pharmaceuticals (HM Treasury, 2006).

In most countries, no structured process of identifying priorities for health services research was reported, mirroring the absence of a comprehensive strategic approach in these countries. In Belgium, the Court of Auditors (Rekenhof), in January 2010, published a report criticising the fragmentation of policy advice to government and parliament in relation to health policy. The Court recommended introducing a more strategic approach to research funding, more stringent project management and better communication on the part of research institutes, but also demanded more transparency of decision-making from health policy-makers (Rekenhof, 2010).

However, priorities may be set for specific research programmes or streams of research funding. In the Netherlands, for example, the Ministry of Health, Welfare and Sport defines the priorities for health (and health services) research for the ZonMW (Netherlands Organisation for Health Research and Development). These priority setting procedures are often indirect or ex post, for example through the selection, review and approval of research proposals after scientific review by members of the research community. These decisions are typically taken by committees or panels of senior researchers in a particular field of expertise.

Health technology assessment appears to be an exception in some countries, with processes of priority-setting often being more explicit and more clearly attuned to the preferences and interests of health system decision-makers.

7.4.3 Producers of health services research

The following section examines the production of health services research in countries in Europe, focusing on the type of organisations that undertake health services research, the associations and networks that represent and link health services researchers, the training available, and the opportunities for disseminating research through scientific journals and conferences.

Four groups of research producers have been distinguished: (1) institutions of higher education and research (i.e. universities), (2) government organisations, including research departments at ministries and governmental research institutes, (3) health systems organisations at national or regional level (such as sickness funds and professional bodies), and (4) independent sector organisations, including for-profit and not-for-profit organisations, such as consulting firms, charities, think tanks and foundations.

1 In almost all countries, researchers based at universities play a key role in conducting health services research. However, the number of organisations involved varies greatly among countries, ranging from one research unit at the University of Malta (the Health Services Management Division at the Institute of Health Care) to over 30 at universities in England and Germany, many of which are departments or large research units. For example, in England, the Department of Health Services Research and Policy at the London School of Hygiene and Tropical Medicine has about 60 academic members of staff (of whom 15 are senior staff); the Centre for Health Economics at the University of York comprises about 40 academic staff (14 senior). In addition, numerous research teams have received funding from the National Institute of Health Research to undertake health services research, despite the fact that they are not based within a dedicated unit. In other countries, research activities in health services research may be less organisationally formalised, with research conducted by individual researchers or smaller research teams. Health services research may also be embedded in multidisciplinary units, in which public health and health services research co-exist and collaborate (e.g. at the University of Tartu in Estonia). While the number of universities active in this field is potentially indicative of the scale of research activities undertaken, it does not allow conclusions to be drawn about the number of researchers or the quantity (or quality) of research produced (for which we would have had to analyse and compare, for example, papers published in scientific journals and reports in the 'grey' literature by researchers based in these organisations). No activities in health services research have been documented for Latvia.

2 In many countries, governmental research bodies play an important role in producing health services research; they also provide a direct link between the research community and policy-makers. Governmental research bodies include, for example, the National Institute for Health and Welfare (Terveyden Ja Hyvinvoinnin Laitos, THL) in Finland, the Health Research Board in Ireland, the National Institute for Public Health and the Environment (Rijksinstituut voor Volksgezondheid en Milieu, RIVM) in the Netherlands, Institutes for Health Research in the regions in Spain (e.g. Institut d'Estudis de la Salut in Catalonia), and the Norwegian Knowledge Centre for the Health Services (Nasjonalt kunnskapssenter for helsetjenesten). Many of these institutes undertake health services research as one of several research activities. The Belgian Health Care Knowledge Centre (KCE) is an independent organisation, established in 2003, that conducts studies and analyses to advice the Belgian government on decisions relating to public health and health care insurance. The Danish Institute for Health Services Research (Dansk Sundhedsinstitut, DSI) and the Danish Institute for Governmental Research (Anvendt KommunalForskning, AKF) are independent research organisations at arm's length from central government, which provides basic funding beyond which both institutes have to apply for

competitive project funding. In several countries, the ministries of health host research departments or teams that undertake health services research on behalf of government. Examples are the Directorate for Research, Evaluation, Studies and Statistics (Direction de la recherche, de l'évaluation, des études and des statistiques, DREES) at the Ministry of Health in France, the Health Analytical Services Division of the Scottish Government, the National Centre of Public Health Protection at the Ministry of Health in Bulgaria as well as ministries in Ireland, Italy, Macedonia and Slovenia.

3 In some countries, health systems organisations, usually those involved in steering functions, undertake health services research to some extent. This particularly applies to countries, in which some core steering functions are executed through corporatist actors, such as in France, Germany and the Netherlands. In Germany, the Scientific Institute of the General Regional Sickness Funds (Wissenschaftliches Institut der AOK, WIdo) funds and conducts health services and health systems research.

4 In several countries, the independent sector (i.e. non-governmental and not university related) also plays a role in health services research, both in form of commercial organisations (e.g. consulting firms) and not-for-profit organisations (e.g. charities, think tanks and foundations). In the Netherlands, NIVEL, the Netherlands Institute for Health Services Research is an independent research organisation, partly subsidised by the Ministry of Health. In England, a range of not-for-profit organisations contribute to the various branches of health services research, such as the Office for Health Economics, the King's Fund, the Nuffield Trust, Picker Institute Europe and RAND Europe, some of which have substantial own resources, while others entirely depend on project funding. Other examples include the Ludwig Boltzmann Institute (not-for-profit) in Austria, the International Healthcare and Health Insurance Institute (IHHII) in Bulgaria, the Praxis Centre for Policy Studies in Estonia, the Economic and Social Research Institute (ESRI) in Ireland, the Centre for Efficiency Evaluation of Health Services (Centro per la Valutazione dell'Efficacia Dell' Assistenza Sanitaria, CeVEAS) in Italy, the Lithuanian Free Market Institute, the Health Policy Institute in Slovakia and the Institute for Economic Research in Health Care (INERHC) in Slovenia.

5 In a few European countries, international organisations such as the World Health Organisation or the Open Society Institute are actively involved in undertaking health services research (Bulgaria, Macedonia).

7.4.3.1 Training

Universities in most countries in Europe offer some form of training in health services research and related disciplines, however, there are marked differences with regard to the comprehensiveness of training and the range of training options. It is not possible to enumerate all the training available, merely to indicate the range and types of activity.

Only a few countries offer bespoke multi-disciplinary training in health services research (Table 7.1). In England, several universities and (post-) graduate schools offer programmes that provide specialist training for future health services researchers. The University of York, for example, offers a one-year Master's programme in Health Sciences covering multidisciplinary research methods, applied biostatistics, epidemiology, health economics, randomised controlled trials and systematic reviews (University of York, 2010). The University of Newcastle runs a one-year programme in public health and health services research at Master's, diploma or postgraduate certificate level. The programme includes training in research methods, health statistics, health economics, applied

epidemiology and project management (University of Newcastle, 2010). The University of Malta offers an MSc in Health Services Management, with almost half of the course modules being dedicated to health services research (University of Malta, 2010).
In Finland, the Ministry of Education and the Academy of Finland jointly fund scholarships for postgraduate students at the National Postgraduate School in Social and Health Policy, Management and Economics. The school is a partnership of educational or development organisations in the field of social and health policy, management and economics (UKU, 2010). In the Netherlands, NIHES, a collaboration between the academic medical centres in Rotterdam and Amsterdam, the Netherlands Cancer Institute and the National Institute for Public Health and the Environment (RIVM), offers a number of Master's and doctoral programmes, as well as short courses and professional training courses, in health services research and its sub-disciplines (NIHES, 2010). Students at the University of Maastricht can take a two-year course leading to a Research Master's in Health Sciences.

Taught components include health measurement, health technology assessment, applied epidemiology, process evaluation and qualitative research methods (University of Maastricht, 2010). In Ireland, senior academics at the Royal College of Surgeons, Trinity College Dublin and University College Cork jointly offer a structured PhD programme in health services research, funded by the Health Research Board. The four-year programme includes several relevant taught components, ten weeks of specialist rotation in Irish health-related data collection agencies, a placement at an agency overseas and a PhD thesis (RCSI, 2010). In 2005, a School of Public Health was established in Switzerland by forming a partnership of six universities offering Master's and doctoral programmes, for example, in health economics, including modules on health services research and related disciplines.

The absence of bespoke specialist training in some countries, however, does not mean that there is no training available at all. Programmes in public health, for example, often include a health services research component or may integrate training in some of the skills required by health services researchers. Such programmes, both at Master's and/or doctoral level, exist, for example, in Austria, Belgium, the Czech Republic, Denmark, Estonia, Germany, Greece, Norway, Portugal, Romania, Slovakia, Slovenia and Spain.

Training in relevant disciplines is also available in most countries, such as Master's programmes in health economics, medical sociology or health (services) management (e.g. Belgium, Cyprus, Czech Republic, Denmark, England, Estonia, Germany, Greece, Ireland, Italy, Lithuania, Malta, Norway, Romania, Slovenia, Switzerland).

Training in health services research or relevant disciplines for health care professionals (e.g. doctors, hospital managers) is also available in some countries, including short courses in research skills, health technology assessment or training in hospital benchmarking (e.g. Belgium, Bulgaria, Cyprus, Germany, Italy and Romania).

Table 7.1 Training, associations, journals and conferences in health services research (HSR)[3]

Country	Academic training		National associations		Scientific journals		Conferences	
	HSR training	Related subjects and sub-disciplines	HSR association	Related subjects and sub-disciplines	HSR journals	Related subjects and sub-disciplines	HSR conferences	Related subjects and sub-disciplines
Austria	No	Yes	No	Yes	No	Yes	No	Yes
Belgium	No	Yes	No	Yes	No	Yes	No	Yes
Bulgaria	No	Yes	No	Yes	No	Yes	No	Yes
Croatia	No	Yes	No	Yes	No	Yes	No	Yes
Cyprus	No	Yes	No	No	No	No	No	No
Czech Republic	No	Yes	No	Yes	No	Yes	No	Yes
Denmark	No	Yes	No	Yes	No	Yes	No	Yes
England	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Estonia	No	Yes	No	Yes	No	Yes	No	Yes
Finland	No	Yes	No	Yes	No	Yes	Yes	Yes
France	No	Yes	No	Yes	No	Yes	Yes	Yes
Germany	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Greece	No	Yes	No	Yes	No	Yes	Yes	Yes
Ireland	No	Yes	No	No	No	No	No	Yes
Italy	No	Yes	No	Yes	No	Yes	No	Yes
Latvia	No	Yes	No	Yes	No	No	No	No
Lithuania	No	Yes	No	Yes	No	Yes	No	Yes
Macedonia	No	No	No	Yes	No	Yes	No	Yes
Malta	Yes	Yes	No	Yes	No	Yes	No	Yes
Netherlands	Yes	Yes	No	Yes	No	Yes	No	Yes
Norway	No	Yes	Yes	Yes	No	Yes	No	Yes
Poland	No	Yes	No	Yes	No	Yes	Yes	Yes
Portugal	No	Yes	No	Yes	No	Yes	No	Yes
Romania	No	Yes	No	Yes	No	Yes	No	Yes
Scotland	Yes	Yes	Yes*	Yes*	Yes*	Yes*	Yes	Yes
Slovakia	No	Yes	No	Yes	No	Yes	No	Yes
Slovenia	No	Yes	No	Yes	No	Yes	No	Yes
Spain	No	Yes	No	Yes	No	Yes	No	Yes
Switzerland	No	Yes	No	Yes	No	Yes	No	Yes
Turkey	No	Yes	No	Yes	No	Yes	No	Yes

3 This table distinguishes training, associations, journals and conferences that are bespoke and involve all the disciplines contributing to health services research, as opposed to training, associations, journals and conferences relating to either related subjects (such as public health research, biomedical research) that may include health services research as one area of research among others or disciplines that contribute to health services research (such as health economics, epidemiology, medical sociology).

7.4.3.2 National associations and networks

Professional associations, societies or networks devoted specifically to the promotion of health services research were only reported in a few countries (Table 7.1). The German Network for Health Services Research (Deutsches Netzwerk Versorgungsforschung e.V.) was founded in 2006 as a charitable organisation. The inter-disciplinary network comprises over 40 associations of health care professionals and other relevant disciplines, and aims to bring together researchers and practitioners, to promote health services research and to build capacity by supporting young researchers. The network was preceded by the Permanent Congress Commission for Health Services Research (Ständige Kongresskommission für Versorgungsforschung, DNVF), a committee formed at the first German congress on health services research in 2002 (DNVF, 2010).

In the UK, a Health Services Research Network was established as late as 2005, though the UK Society for Social Medicine founded in the mid-1950s has included health services researchers for many years. The HSR Network aims to bring together organisations with an interest in health services research, to promote and support the use of research in policy and practice, and to enhance the voice of health services research in health policy debates in the UK (NHS Confederation, 2010). The network is financially supported by the National Institute of Health Research (the government funding body for health research), the Nuffield Trust (a not-for-profit research institute) and institutional membership subscriptions. It currently has about 100 member organisations, predominantly universities, but also NHS bodies, professional and commercial organisations, charities and other not-for-profit organisations.

The Health Research Board in Ireland is planning to establish a network for health services research as part of its activities set out in its strategic business plan 2010-2014 (HRB, 2009). In France, no association or network specifically devoted to health services research has been established. However, some of its functions are carried out by the Institute for Public Health Research (l'Institut de Recherche en Santé Publique, IReSP). The Institute was established in 2007 and is based on a partnership of 24 public organisations involved in public health research (IReSP, 2010). Although the Institute only deals with health services research as a subset of public health research, it actively promotes collaboration and co-ordination in this field.

In Denmark, the Danish Forum for Health Services Research (Forum for Sundhedstjenesteforsk-ning) is a (relatively loose) network formed by university researchers involved in health services research. The Forum conducts an annual meeting, which in the past has focused on various aspects of health services research. Health Services Researchers in Norway can participate in the Nordic Network for Healthcare Management Research (NOHR), which also involves researchers from Denmark and Sweden.

Despite the paucity of HSR associations or networks, most countries in Europe have long established professional associations of researchers or research organisations in disciplines contributing to health services research, such as medical sociologists, health economists, health management, health policy or epidemiologists. Societies of social medicine or medical sociology, for example, are involved in promoting health services research in Austria, Bulgaria, the Czech Republic, Finland, Germany and Macedonia. In addition, associations for health technology assessment, a major category of health services research, exist in Finland, Germany, Italy and Switzerland.

Professional associations and networks typically provide opportunities for researchers to exchange ideas, share information, identify collaborators and present research at conferences and meetings. It is not clear from the data collected to what extent these organisations contribute to the future development of health services research. The presence or absence of a dedicated association or network is indicative of the state and level of development of this field of research. However, this can be misleading insofar as longer established, non-HSR-specific associations could be more active and thus more relevant than a HSR-specific organisation that is less active and less recognised. However, it seems that health services research networks, in those few countries where they exist, have been established in addition to a range of existing societies and associations covering a spectrum of disciplines relevant to health services research.

7.4.3.3 Journals

The publication of scientific journals is another potential indicator for the state of development of health services research in countries in Europe.

Scientific journals entirely dedicated to health services research are published in England (Health Services Management and Research and Journal of Health Services Research and Policy, both quarterly) and Germany (Das Gesundheitswesen, monthly).

Also, scientific journals in related disciplines may, routinely or occasionally, publish health services research papers, such as medical journals, journals of public health and of social policy. Examples are, among many others, the Bulgarian Journal of Public Health (Българско списание за обществено здраве), the Italian Journal of Public Health (published in English), the Portuguese Review of Public Health (Revista Portuguesa de Saúde Pública), the Dutch Journal for Health Sciences (Tijdschrift voor gezondheidswetenschappen), the International Journal of Public Health in Switzerland or the Journal of the Norwegian Medical Association (Tidsskrift for Den norske legeforening).

Countries have also reported a number of journals in disciplines that contribute to health services research, such as the Journal of Clinical Evaluation and Practice and the Journal of Health Economics in England, Health Economics and Quality Management (Gesundheitsökonomie und Qualitätsmanagement) and The Health Care System (Das Gesundheitswesen) in Germany, Society, Economy and Health (Κοινωνία, Οικονομία και Υγεία) in Greece, Management in Health (Management în Sănătate) in Romania, the Bulletin on Health Economics, Organisation and Informatics (Bilten Ekonomika, Organizacija, Informatika) in Slovenia, the Review of Quality in Health Care (Revista de Calidad Asistencial) in Spain and the Hacettepe Journal of Health Administration (Hacettepe Sağlık İdaresi Dergisi) in Turkey.

Health services research is also published in general medical and nursing journals, such as the British Medical Journal, the Archives of Hellenic Medicine or the Journal of the Finnish Medical Association, or in grey publications produced by universities or research institutes. There are also a number of periodic publications issued by health system organisations, such as Health System Watch published by the central association of sickness funds in Austria or Practices and Health Care Organisation (Pratiques et organisation des soins) published by the social health insurance fund for employees (La Caisse nationale de l'assurance maladie des travailleurs salariés, CNAMTS) in France.

7.4.3.4 Conferences

If it is difficult to map the existence of professional associations and networks, the opportunities for training and education, or the publication of scientific journals on health services research in Europe, it is almost impossible to describe activities with regard to conferences, workshops, seminars or meetings accurately or comprehensively.

A few countries host regular health services research conferences, such as the annual joint conference of the Health Services Research Network and the NIHR Service Delivery and Organisation Programme in England, the Health Services Research Meeting (Terveyden-huoltotutkimuksen päivät) of the Society of Social Medicine in Finland and the annual German Congress on Health Services Research (Deutscher Kongress für Versorgungsforschung). In France, the High Authority for Health (Haute Autorité de Santé, HAS), since 2007, organises an annual conference (Premieres Journées des rencontres de la HAS), which provides a forum for both researchers and representatives of the health system. In Denmark, as mentioned above, the Danish Forum for Health Services Research holds an annual meeting, covering a range of themes of health services research.

Health services research may also be a sub-section of conferences, for example, on public health or medicine (e.g. Austria, Czech Republic, England, Estonia, Greece, Italy, Malta, Portugal, Slovenia, Spain, Switzerland). At European level, the health services research section of the annual conference of the European Public Health Association (EUPHA), the annual conference of the European Health Management Association (EHMA), the European Conference on Health Economics (ECHE; every two years) and the annually organised European Health Forum Gastein are further examples for conferences that are, in part, devoted to health services research. International meetings include the annual conference of the International Society for Quality in Health Care (ISQUA) and the annual meeting of the International Society for the Promotion of Health Technology Assessment (HTAi).

In addition, countries reported a wide range of conferences, workshops and meetings on selected health services research topics. To some extent, the topics of these events tend to reflect specific national interests or priorities, often related to health system reforms or policy developments. For example, Bulgaria has hosted a number of conferences, meetings and round tables on health system financing, health insurance and hospital reform in recent years. Workshops and meetings have also been reported in the context of the final stages of research projects. These may be ad hoc and small scale, but they can provide a valuable opportunity for policy-makers and researchers alike. In Italy, a number of conferences in recent years have been devoted to health technology assessment. Health economics appears to be a particular focus in many countries (e.g. Bulgaria, Czech Republic, Denmark, England, Finland, France, Germany, Italy, Norway, Slovenia, Spain, Switzerland). There are few regular conferences that directly address policy-makers internationally, with the WHO/European Ministerial Conference on Health Systems, held in June 2008 in Tallinn, Estonia, being one example.

A number of countries reported hosting no conferences (e.g. Cyprus, Czech Republic, Ireland, Portugal, Slovakia). However, the data collected do not allow firm conclusions about the absence or precise number of activities. Rather, they provide an impression of the scale of activities in countries in Europe.

7.4.3.5 National and international health services research

Most countries report that health services research produced in other countries (in Europe) is of relevance to their policy-makers, such as research made available through the World Health Organisation (WHO), the Organisation for Economic Co-operation and Development (OECD), the European Commission or the European Observatory on Health Systems and Policies. However, countries vary with regard to the importance given to research that has originated externally (including systematic reviews and other forms of research synthesis) as opposed to research that has been produced nationally. Also, the role of international organisations differs with regard to the type of information they provide (e.g. country specific and cross sectional analysis provided by the European Observatory; comparative data on health systems and spending through the OECD), their mandate and the objectives of their activities.

Responses from several countries, including Cyprus, Greece, Ireland, Macedonia, Portugal, Romania, Switzerland and Turkey, indicate that external sources of health services research have a strong influence on policy making, perhaps stronger than domestically produced research. Responses suggest that a variety of reasons may be responsible for this, including the limited funding available for health services research in some countries, often reflecting larger macro-economic influences, the small number of research institutes and researchers working in this field and perceptions (justly or unjustly) about the standards, quality and relevance of local versus foreign research. However, there are also concerns that external research does often not sufficiently address the specific research needs and national context of (particularly smaller) countries.

In other countries, in contrast, policy-makers appear to largely rely on domestically produced research, for example, England, Finland, France, Norway and Malta. Policy-makers in these countries may also be interested in learning about research undertaken abroad but this tends to happen in addition to research generated locally, which appears to be more likely to be tailored to policy-makers' needs. Several countries reported that both external and national sources of health services research have been influential on policy-making (e.g. Bulgaria, Denmark, Germany, Slovenia, Spain).

Countries may also be involved in international organisations that generate international comparative research and syntheses. The governments of Belgium, Finland, Ireland, the Netherlands, Norway, Slovenia, Spain, Sweden and the Veneto Region in Italy, for example, financially support the European Observatory on Health Systems and Policies. The Department of Health in England funds a project that provides rapid-response, international policy comparisons for its policy-makers. OECD health data are widely used in all countries.

Arguably, some topics may also be more internationally applicable than others, perhaps especially those that are less dependent on national context. Health technology assessments, for example, typically draw on an international body of research and literature reviews. Conclusions are then adapted to national circumstances and preferences. National and regional agencies responsible for health technology assessment are internationally well connected, with many being members of the European Network for Health Technology Assessment (EUnetHTA 2010).

International experience may also feed into policy-making through channels other than international or national research bodies such as the media or policy-makers' own contacts to policy-makers abroad. In Germany, for example, experience from the United States, the Netherlands and

Switzerland were used extensively in political discussions around recent health reforms (Zentner and Busse, 2004).

As in previous sections, the data gathered for this project allow only limited insights into the balance of nationally and externally produced health services research.

7.4.4 Users of health services research in health policy

We here define "users" as organisations responsible for health policy-making (as opposed to individuals). Users of health services research in policy-making include: (1) governments, including ministries and agencies, (2) health systems organisations, (3) parliaments, and (4) independent sector organisations. The range of users largely reflects variation in political and health system governance (e.g. federalism, decentralisation of decision-making within the health system).

1 Policy-makers in governments and related agencies appear to be the key users of health services research. In almost all countries, ministry of health officials are the main "customers". In England, the Department of Health is a key user of health services research; occasionally other departments, such as the Treasury (ministry of finance), may use research, usually focusing on particular high-profile topics. In Finland, municipal councils use research to inform decisions, e.g. relating to the organisation of primary care. Government or state agencies are also potential users of health services research, such as, for example, the State Institute for Drug Control (Státní ústav pro kontrolu léčiv, SUKL) in the Czech Republic, the Social Insurance Institution (Kansaneläkelaitos, KELA) in Finland or the Health Insurance Institute (HIIS) in Slovenia. Agencies cover a range of different functions in relation to the health system and health services governance, and are often involved in funding and/or conducting research as well as in decision-making. However, agencies vary substantially with regard to their degree of involvement in decision-making. In England, the National Institute for Health and Clinical Excellence (NICE), for example, makes decisions about the availability of health technologies in the NHS, while the High Authority of Health (Haute Autorité de Santé, HAS) in France or the Swedish Council on Health Technology Assessment (SBU) provide decision-making support for policy-makers only.

2 Health system organisations involved in policy-making are another group of potential research users. These include, for example, social or national health insurance organisations that are organised separately from government (France, Germany, Poland). In Germany, many of the governance decisions are taken within the corporatist sector, with the Federal Joint Committee (Gemeinsamer Bundesausschuss, G-BA) being the main decision-making body representing the top associations of the social insurance funds, physicians and hospitals in addition to (non-voting) patient organisations. At regional level, strategic health authorities in the English NHS and hospital districts in Finland may use health services research. Locally, hospitals or health service managers as well as health care personnel can be users of research. In England, the NIHR has a range of mechanisms to try to get findings from its health services and clinical research programmes taken up and used within the NHS.

3 In several countries, parliament is a user of research during the process of developing legislation (e.g. Bulgaria, England, Finland, Lithuania, Slovenia, Switzerland), Parliamentary committees, such as the Health Select Committee in England, may also have an important role in reviewing and questioning the development and implementation of health policy, drawing on research and testimony from researchers and other experts. In France, this function is performed by the Court of Auditors (Cour des comptes), a constitutional body responsible for reviewing government

policy on behalf of parliament, in addition to the High Council for the Future of Health Insurance (Haut conseil pour l'avenir de l'assurance maladie) and the Inspector General for Social Affairs (Inspection générale des affaires socials).

4 Independent sector organisations include, for example, patient organisations (e.g. Czech Republic, Spain, Turkey), professional organisations (e.g. Ireland) and other interest groups that have a position (and perhaps influence) on policy-making, for example, by shaping public opinion. This includes private sector organisations, such as private health insurance companies.

7.4.5 Activities that aim to strengthen the use of health services research in policy-making

This section examines the links between health services research and policy, outlining some of the types of involvement of health services researchers in processes of policy development and the mechanisms that support the dissemination of research findings, encourage policy-makers to engage with research or promote 'linkage and exchange' between policy-makers and health services researchers.

7.4.5.1 Involvement of researchers in policy-making

In most countries, health services researchers are involved in policy-making in a number of ways. However, contributions of researchers to policy-making tend to be occasional and temporary; regular and routine involvement appears to be less frequent. Most commonly, researchers are commissioned to undertake research projects, for example, as part of a larger research programme or on a specific topic, by a government or health system organisation, in line with research and policy priorities identified by these organisations.

Occasionally, researchers are directly commissioned by government organisations, such as ministries of health or health agencies, to provide research reports to inform a pending policy decision (e.g. Cyprus, Denmark, England, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Macedonia, Netherlands provided examples). Sometimes, individual researchers are also invited to provide expertise in a personal capacity, for example, as a policy advisor in a ministry of health (e.g. England, Estonia, France) or as experts in parliamentary hearings as part of the legislative process (Estonia, Finland, Germany, Netherlands). Yet personal involvement appears to be relatively rare and mostly limited to senior researchers.

In some countries, health services researchers are also involved as members of advisory committees of governments or parliaments. For example, the Supreme Health Board (Oberster Sanitätsrat), an advisory body to the Federal Ministry of Health in Austria, includes at least one health economist. In Germany, the Advisory Council on the Assessment of Developments in the Health Care System (Sachverständigenrat zur Begutachtung der Entwicklung im Gesundheitswesen) is composed of seven senior members of the health research community, including an economist and another social scientist. The council reports on selected health system developments every two years. Membership of health services researchers in advisory committees was also reported from Italy (e.g. High Health Council, Consiglio Superiore di Sanità), Lithuania (National Board of Health, Nacionaline Sveikatos Taryba), Slovenia (Health Council, Zdravstveni svet) and the Netherlands (e.g. the Commission for Effectiveness studies, commissie doelmatigheidsonderzoek). In England, NICE's appraisal committees include researchers, especially health economists. Health services researchers are also involved in the Central Council

of Health, an advisory board to the Ministry of Health and Solidarity in Greece.

Other forms of involvement include the employment of health services researchers, temporarily or permanently, within policy-making organisations. In Slovenia, a number of junior researchers have been seconded as part-time experts to the ministry of health. The Ministry of Social Affairs in Estonia has recently created a department dedicated to information and analysis with the objective to perform rapid analyses and to support the uptake of research by ministry officials. The Department of Health and Children in Ireland is supported by a small research division, which includes several health services researchers. Increasing permeability of professional boundaries have been reported for the Department of Health in England, which in recent years has recruited growing numbers of non-civil service professionals, mostly NHS managers, but also economists and, occasionally, researchers (Greer and Jarman, 2007).

Arguably, researchers working in government agencies or research institutes are often most directly involved in shaping government policy. In Finland, for example, health services research is largely undertaken in government-owned research institutes, such as the National Institute for Health and Welfare (THL) or the Finnish Institute for Occupational Health (TTL). In the Netherlands, the National Institute for Public Health and the Environment (RIVM) provides expertise and decision support to the Ministry of Health, Welfare and Sport in the field of health, nutrition and environmental protection, including some health services research. Since 2006, the RIVM publishes the Dutch Health Care Performance Report on behalf of the ministry of health (Box 7.3). The National Institute for Health and Clinical Excellence (NICE) in England largely commissions research from universities, such as health technology assessments, but the Institute also undertakes its own research and modelling on a smaller scale. In Poland, the Agency for Health Technology Assessment advises the Ministry of Health on decisions relating to drugs and medical procedures.

Box 7.3 Researchers' involvement in developing a framework for health system performance indicators in the Netherlands

In the early 2000s, the Ministry of Health, Welfare and Sport in the Netherlands committed itself to monitor the performance of the Dutch health care system and to publish a range of performance indicators in a report every two years ("Dutch Health Care Performance Report"). The report assesses performance in relation to quality, accessibility and costs of health care, using 110 indicators (in 2008; 125 in 2006), some of which are benchmarked against international comparators.

The performance framework and indicators were developed jointly by researchers and ministry officials, involving a multidisciplinary academic research group (6 researchers) and ministry of health officials, forming a small strategic co-ordination group and a larger intra-departmental project group (comprising 30 MoH officials) (Ten Asbroek et al., 2004). The process was facilitated through numerous meetings between teams, including almost weekly meetings by the research team and regular meetings of researchers and the strategic co-ordination group at two-week intervals.

Although the process was largely initiated by the ministry, which at the time was interested in developing a system that allows the monitoring of changes in health care provision, researchers were involved from the onset. Both researchers and ministry officials had also been involved in earlier OECD work on performance measurement and quality assurance, with researchers, arguably, being in the role of promoters of performance indicators as a health system monitoring tool.

In those health care systems, in which decision-making is largely devolved to corporatist bodies, research institutes may be associated with these corporatist bodies, such as sickness funds or provider associations. In Germany, for example, some of the large sickness funds have established research institutes, such as the Scientific Institute of the General Regional Sickness Funds (WIdo). Other research institutes associated with corporatist self-governance are the Institute for Quality and Efficiency in Health Care (IQWIG), the Agency for Quality in Medicine (Ärztliches Zentrum für Qualität in der Medizin, ÄZQ) and the Federal Office for Quality Assurance (BQS Institut für Qualität und Patientensicherheit). In the Netherlands, some professional associations and health insurers have also built some research capacity, in-house or through collaboration with research institutes and universities (e.g. the Royal Dutch Society for Physical Therapy, Koninklijk Nederlands Genootschap Fysiotherapie).

Although researchers may be based in government organisations or government-funded research institutes or within the corporatist sector, this does not mean that they are directly involved in policy-making or that policy decisions necessarily reflect the research findings they produce. However, the institutional proximity of research and policy-making is likely to increase the chances that policy-makers are involved in setting the research agenda and are aware of the research in progress. This in turn has raised concerns in some countries with some suggesting that research produced in government-related environments may be less likely to critically question government policy (e.g. Slovenia).

In a few countries, health services researchers appear not to be involved in policy or only in a very limited capacity (Austria, Cyprus, Czech Republic, Switzerland).

7.4.5.2 Responsibility and accountability for promoting and using health services research

In most countries, responsibility for promoting the use of health services research is difficult to locate, with no organisation or individual being seen as responsible for promoting or ensuring the uptake of research. Most commonly perhaps, researchers are seen as being responsible for ensuring that research findings are distributed and accessible to interested parties, including potential users in policy and practice.

While the publication of research results in academic journals is an important step to assure the quality of research, this by no means guarantees that policy-makers are aware of these findings. Even if the information reaches policy-makers' desks it may well not be read. Thus, research funders in many countries, such as the research councils or the National Institute for Health Research (NIHR) in England or the European Commission, increasingly demand more sophisticated dissemination strategies, that include, for example, plain language policy briefs attuned to the reading habits of decision-makers, workshops for policy officials or systematic reviews commissioned on specific topics relevant to policy decisions (Allen et al. 2007).

In a few countries, the use of research evidence is understood as a responsibility of the policy-maker, although there are typically a number of important caveats to this. In England, for example, policy-makers in the Department of Health are responsible for ensuring that health services research (in so far as it is commissioned by the Department) is aligned to the needs of the NHS and is made available to potential users. However, despite good intentions there is no mechanism that ensures that civil servants and others use the resulting evidence from health services research to inform policy decisions. Although there may be an expectation that government decision-making takes research evidence into account, often reflected in substantial media and public scrutiny, for most policy decisions, policy-makers are not formally required to demonstrate that they have used evidence from research.

There are, however, a number of examples of decisions that are underpinned by a process that requires a formal appreciation of the available evidence, such as decisions regarding health service coverage in the English NHS, which are based on guidance developed by NICE, or the development of National Service Frameworks (which identify evidence-based standards of care in priority areas such as for the treatment of cancer, cardio-vascular disease or stroke to inform commissioners and providers of services) by the English Department of Health (DH, 2010). Similar requirements for coverage decision are in place, for example, in Estonia, France, Germany and the Netherlands. Also, the government is answerable to a Parliamentary committee, the House of Commons Health Select Committee, charged with the tasks of reviewing and scrutinising government health policy, for example, in relation to patient safety. Its reviews are mostly focused on high profile issues, based on ex post policy analysis. Researchers are frequently called to give evidence to the Health Select Committee.

In Germany, government officials are not formally required to use evidence from health services research in policy decisions. However, legislation requires the Federal Joint Committee (Gemeinsamer Bundesausschuss, G-BA), the highest decision-making body of the corporatist self-governance sector, to take evidence from research on effectiveness into account when making decisions about the coverage of health services through social health insurance (e.g. for

pharmaceuticals). The committee, however, is not required to follow the evidence and can give priority to other considerations (although in practice this is rare).

In Italy, decisions relating to service coverage (the Essential Level of Assistance), waiting lists and drug regulation are required to be based on evidence. Government officials in Slovenia are not formally accountable for using health services research, although there is an expectation that proposed legislation is supported by evidence, exposing the government to criticism if it fails to do so (e.g. in the case of the last Health Services Act, introduced in 2008). Switzerland also reported that evidence is most likely to be used in policy processes that involve the development of legislation through parliament.

In some countries, governments committed themselves to make better use of evidence in policy-making, for example, in England (Cabinet Office, 1999). The Finnish government is supported by an Advisory Board for Sectoral Research, comprising the permanent secretary of each ministry (deputised by the official responsible for performance management in research of each ministry) and five additional members chosen for their expertise in research and research utilisation. The main role of the Board is to steer and co-ordinate sectoral research between ministries (MoE, 2010). Advisory boards to governments, and more specifically ministries of health, with a general health care advisory role or with a specific mandate, also exist in Austria, Finland and Germany.

7.4.5.3 Mechanisms to support research dissemination

A number of countries reported that there were no specific mechanisms in place to promote the dissemination of research to make research findings more accessible to policy-makers (Austria, Cyprus, Czech Republic, Greece, Lithuania, Portugal, Switzerland, and Turkey).

National agencies in Italy are required to make all publicly funded research available through their websites. Government research institutes, such as the Institute of Health Carlos III in Spain, the National Institute of Public Health of Slovenia and the Health Insurance Institute of Slovenia operate databases of systematic reviews and summaries of research with the aim to make findings more accessible to a larger audience, including policy-makers. In England, the government, through the National Institute of Health Research (NIHR), funds a number of activities, including several research centres responsible for disseminating research findings, for example, through providing systematic literature reviews and plain language research reports (e.g. UK Cochrane Centre; Centre for Reviews and Dissemination at the University of York).

In Germany, databases for research are largely operated by universities, for example, through the Health Services Research Clearinghouse of North-Rhine Westphalia (Clearingstelle Versorgungs-forschung NRW), which is jointly run by a number of universities involved in health services research in this area. A database for health technology assessment is hosted by the German Agency for Health Technology Assessment (Deutsches Institut für Medizinische Dokumentation und Information, DIMDI). The Centre for Health Services Research (CHSR) at the University of Athens, Greece, facilitates the electronic dissemination of health services research findings.

The Norwegian Knowledge Centre for the Health Services (Nasjonalt kunnskapssenter for helsetjenesten) was established in 2004, merging the Norwegian Centre for Health Technology Assessment, the Foundation for Health Services Research and parts of the Division for Knowledge Management in the Directorate for Health and Social Affairs. The Centre's primary role is to provide HTA reports, systematic reviews and other research overviews to support the government, regional

health authorities and health care providers to use evidence in policy and practice (Kunnskapssenteret, 2010). In addition, the Norwegian Electronic Health Library provides access to health services research and other professional information for health care personnel and policy-makers (Helsebiblioteket, 2010). In Ireland, the Health Research Board is expected to take a role in research dissemination in future. The IReSP in France is also expected to facilitate the uptake of research through providing research syntheses as well as policy recommendations. In Denmark, an online publication database is available for the field of health technology assessment, operated by the Danish Centre for Health Technology Assessment (DACETHA, 2010). In the Netherlands, ZonMW (Nederlandse organisatie voor gezondheidsonderzoek en zorginnovatie, Netherlands Organisation for Health Research and Development) operates a database of all projects it has funded, as does the Royal Netherlands Academy of Arts and Sciences).

Databases of published research, reviews and guidelines can play an important role in making information available to a variety of audiences. While databases can be used to manage a variety of information, they seem to be particularly well established with regard to health technology assessments and clinical guidelines. However, research from the Netherlands has shown that databases may be much less influential in relation to decision-making in health policy, possibly because policy decisions often have complex information needs and thus require more flexible arrangements (de Bont et al., 2007).

7.4.5.4 Mechanisms to support the use of health services research by policy-makers

Only a few countries reported that there are mechanisms or initiatives in place to support policy-makers in using health services research, and these vary widely among countries, ranging from formal and/or routine mechanisms to occasional and/or singular initiatives. A number of countries reported that they have no mechanisms for promoting the use of health services research to influence policy (e.g. Austria, Croatia, Cyprus, Czech Republic, Greece, Macedonia, Slovenia, Spain, Switzerland, and Turkey). However, the absence of mechanisms is difficult to verify and may be subject to differences in interpretation.

Formal mechanisms include, for example, requirements on policy-makers stipulated in national legislation. In Germany, legislation has created the framework for decision-making in health care, which includes an appreciation of research evidence only in relation to decisions about health service coverage, quality assurance and performance measures as well as concerning disease management programmes. Within this framework, the appraisal of evidence has been delegated to the Institute for Quality and Effectiveness in Health Care (Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen, IQWIG), created in 2005 to support the corporatist decision-making bodies. Formal requirements to use health technology assessment to inform coverage decisions also exist in England and France; in a number of countries, requirements may not be formal, although there is an (increasing) expectation of evidence use (e.g. Finland, Italy, Slovenia).

Advisory boards to governments and parliaments, as well as research institutes and knowledge centres at arm's length from government often have a role in supporting the uptake of research by policy-makers. In Lithuania, for example, the National Board of Health comprises representatives from the academic community, the independent not-for-profit sector and health sector organisations. The board is accountable to parliament and required to prepare an annual health report about the state of health care and the health of the population in Lithuania, supported by findings from research. However, policy-makers are not required to follow recommendations made by the Board. In Belgium, since 2004, the Belgian Health Care Knowledge Centre (Federaal

Kenniscentrum voor de Gezondheidszorg, KCE) also provides evidence-based decision-making support based on health services research (including health technology assessment and the production of clinical guidelines) at arm's length from government. As noted earlier, in Germany, the Advisory Council on the Assessment of Developments in the Health Care System prepares a comprehensive report on selected health system issues every two years. These reports are considered influential, although it is difficult to establish a direct link between the findings in these reports and subsequent policy activities.

In Portugal, the use of health services research is mainly supported by specific initiatives, such as the creation of a government task force on a given policy topic. These occasional and perhaps more voluntary commitments are likely to be relevant in other countries as well. Arguably, they do not constitute formal mechanisms for research utilisation, although they are likely to have an important supporting function.

In the German corporatist sector, the Federal Joint Committee provides some support to members by providing training in research methods and appraisal in relation to coverage decisions. Some training in research utilisation for ministry officials is also available in Bulgaria.

7.4.5.5 Linkage and exchange between health services researchers and policy-makers

Mechanisms of linkage and exchange comprise activities that aim to promote interchange between researchers and policy-makers, both at organisational and personal level. Linkage and exchange strategies have received substantial attention in recent years, following the realisation that activities which either focus solely on research production and dissemination (research push) or on research uptake (policy pull) are of limited effectiveness (Mitton et al. 2007; Lavis et al. 2003).

Few mechanisms or initiatives have been reported to promote linkage and exchange between health services researchers and policy-makers. No linkage and exchange mechanisms were reported from Austria, Belgium, Croatia, Cyprus, the Czech Republic, France, Germany, Greece, Macedonia, Portugal, Spain, or Turkey. Yet, again, these differences in reporting may be associated with differences in interpreting the concept of 'linkage and exchange'.

In some countries, linkage and exchange are largely promoted through (multi-) professional networks that provide an organisational platform for both researchers and policy-makers. These networks, for example, organise meetings targeted at both users and producers of health services research. In Italy, for example, the Italian Society of Health Technology Assessment (SIHTA) has taken on the role of promoting the links between academic research and policy. A similar forum exists in Denmark through the Strategic Council for Health Technology Assessment (Strategisk Råd for Medicinsk Teknologivurdering), representing the Ministry of Health, the National Board of Health, the regions and municipalities and the medical faculties, and the Scottish Health Technology Group, comprising organisations of the NHS Scotland, as well as industry, academic and lay representatives. The Scottish Health Technology Group acts as an advisory body to the Scottish Government Health Directorates, with the aim of developing evidence-based guidance for policy and practice as it relates to the uptake of health care technologies in the Scottish NHS (SHTG, 2010).

In a number of countries, networks seem to be most established in relation to health technology assessment and, corresponding to this, coverage decisions (e.g. Denmark, Italy, Slovenia, Switzerland).

Other forms of linkage and exchange involve the creation of forums for both health services researchers and policy-makers, especially those that are ongoing and involve regular meetings. In the Czech Republic, in 2008, the government initiated a "roundtable" as a forum for discussion of the future direction of health policy, bringing together health care experts and policy-makers, representing four political parties. Over a one-year period, the "roundtable" produced a number of reports and managed to successfully raise the awareness of policy-makers of the contribution of research to policy. However, the roundtable was discontinued after one year due to lack of continued support from the Ministry.

Also, some policy staff in ministries or other organisations involved in decision-making may have a professional background in research, which may increase their propensity to use or encourage the use of research findings (Estonia, Germany). In England, professional mobility between academia and policy making roles appear to have increased over time in the field of health policy as the Department of Health has become more open to secondees, although the effects of this trend are not clear. Similar trends have been anecdotally observed in the Netherlands and in Finland.

There are few examples of brokerage roles of individuals. In the Netherlands, the RIVM is represented at the Ministry of Health through a liaison person, this person is physically based at the ministry and supported by a team. The Department of Health in England also employs a small number of research liaison staff, whose role it is to co-ordinate the multiple research needs of policy-makers and to maintain contacts in the research community.

7.4.5.6 Barriers to the use of health services research in policy

This section provides an overview of the barriers to the use of health services research in policy-making, identified by country respondents. In what follows, barriers are grouped into those associated with the production of research and those associated with the policy process; however, on occasion these overlap. Although questionnaire included an assessment of enabling factors of the use of research in policy, few informants reported on facilitators. Thus this section will focus on barriers only.

Barriers identified by respondents related to the use of research included:

1 ***Limited capacity in health services research***: Low levels of funding and limited institutional capacity were identified as a barrier in a number of countries, particularly in recent (and aspiring) members of the European Union. However, scarcity of expertise and research experience in the field of health services research was also noted in other countries, reflecting limited opportunities for training and employment. The problem of retaining qualified researchers was noted as an additional challenge in one country.

2 ***The relative slowness of the production of research***: The speed of the policy process often allows only small "windows of opportunity" for researchers to bring research to the attention of policy-makers; it was noted that research may not be available when it is needed or useful to policy-makers. Responses from some countries indicated that the different timelines in research and policy can prevent the use of research.

3 ***Mismatch of research and policy questions***: Research questions tend to be focused on specific (researchable) questions and are guided by theoretical frameworks. However, projects may not always produce findings that are relevant to policy-makers or can be straightforwardly

applied in specific situations. It was noted that many researchers are not aware of the possibilities and constraints of policy-making (i.e. limited time for preparation and reflection; consideration of other forms of evidence; need to reconcile conflicting interests; influence of values, ideas and ideologies).

4 ***Presentation of research***: Research is frequently presented in a format required for publication in peer-reviewed journals (e.g. with an emphasis on methods and the discussion of limitations), which is unfamiliar and difficult to follow for non-academic audiences and often too time consuming to be read by policy-makers. Many research organisations do not incentivise publication in "user friendly" formats, such as plain-language summaries and policy briefs, as academic careers are mostly built around publication in scientific journals.

5 ***Lack of career incentives for researchers***: As noted before, researchers often have few career incentives to publish for policy, because of the pressure to publish in peer-reviewed scientific journals rather than in professional and managerial publications. This may be particularly relevant in countries in which researchers (in universities) are public servants and do not need to prove that their work has an impact to progress professionally.

Barriers related to the policy process:

1 ***Decentralised decision-making and political fragmentation***, involving a larger number of actors and potential research users, both in relation to decentralised political systems (e.g. with states or provinces being responsible for health care policy) and corporatist systems. Political instability, such as frequently changing governments and high turnover of policy personnel, can also prevent policy-makers from developing knowledge in research use, and undermine efforts to establish links between research and policy communities. Fragmentation at the centre of government, for example, through involvement of a several executive bodies and agencies, can also contribute to the challenge of disseminating research effectively.

2 ***Unsupportive political culture***: Respondents from several countries indicated that the policy process is largely dominated by competition and bargaining between political parties. While research may play a role in policy-making, evidence is often used in political contest. It was noted that policy processes are not always entirely rational and transparent, thus not lending themselves to decision-making informed by research. In its most extreme forms, the absence of a supportive political culture creates a situation in which policy-makers entirely fail to appreciate the potential of health services research.

3 ***Absence of a supportive culture in policy organisations***, including government ministries: Capacity to produce, identify or synthesise research is often limited, insufficiently funded and poorly supported by organisational structures (e.g. in-house research teams; research liaison officers; research databases). Also, the expectations of policy-makers with respect to what research projects can achieve are sometimes incompatible with the realities of research production, indicating policy-makers' lack of familiarity with research methods and processes.

4 ***Absence of formal requirements to use research findings***: There are few examples of decisions for which the use of research is formally required. A number of countries increasingly use health technology assessments to support decisions about the coverage of health services in publicly-funded health care systems; however, these are not always mandatory. With a few

exceptions, formal requirements to use research are absent in other areas of health policy-making, although policy-makers in some countries appear to increasingly be expected to be aware of available research.

5 ***Lack of co-ordination of funding*:** The absence of priority-setting mechanisms means that policy-makers are often not involved in decisions on the allocation of research funding and their research 'needs' may not be linked to the research funding mechanism.

7.5 Discussion

7.5.1 Main findings

This chapter is the first attempt to describe the nature, and extent of the links between health services research and policy in European countries. Using a broad definition of health services research as a "multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being" (Lohr and Steinwachs, 2002; p. 16), this chapter has largely focused on policy-making at the national level, with little attention given to regional and local policy and decision-making (although as many respondents pointed out, health professionals and health care managers often constitute an even larger and more diverse group of potential research users than those working in ministries of health and national health care-related agencies). The chapter may also under-appreciate the role of the European Commission in funding and shaping health services research, yet the information available did not allow deeper insights into this area.

The most prominent finding is how little information is available about health services research, and the health services research and policy relationship. This is particularly true with regard to the amount of funding available for health services research, which is largely due to problems distinguishing funding for health services research from funding for other health-related research. Still, it is evident that the level of funding varies widely among countries. A comparison of spending would only be meaningful if related to a country's national income or total spending on health care. In most countries, a large proportion of funding for health services research is provided through public resources, mostly provided by national governments. To a lesser extent, private and external sources of funding play a role in some countries, although these sources of funding may be more relevant in countries with small public budgets for research in general and health services research in particular.

Most countries do not set priorities for health services research centrally, although there are typically a number of mechanisms in place to select research projects for funding (e.g. peer review and expert panels). Strategic priority-setting can provide a powerful link between policy and research, in particular if policy-makers are directly involved in the process (Hanney et al., 2003).

In most countries, universities play the major role as producers of health services research, yet institutional capacity to undertake research varies greatly. Government research institutes also produce health services research, often as part of a larger remit (e.g. public health). Due to the institutional proximity to policy-making, these research institutions may be crucial 'brokers', linking research and policy. This role appears to be particularly developed in relation to government organisations in the field of health technology assessment, with recent efforts in some countries to

widen the scope of assessments to include interventions such as health policies and policies addressing health determinants that lie outside the health care system (Velasco Garrido et al., 2010). However, the role and functions of these organisations are likely to vary considerably, as does the way they influence policy.

Although most countries offer some form of training in health services research (though with very variable capacity), this is often part of public health training programmes or training in particular sub-disciplines such as health economics or epidemiology. So far, only four countries out of 30 which responded appear to offer bespoke training in health services research (England, Malta, the Netherlands and Scotland). Health services research-specific journals are published in only three countries.

Overall, the picture that emerges is one of diversity with health services research being more comprehensively developed in England, Scotland, Germany and the Netherlands than in others, as judged by the extent of opportunities for funding, training, networking and publishing.

The range of research users at the policy level largely reflects the institutional governance structure of health systems, with central governments usually being the main users. In countries, in which health system governance has largely been devolved to corporatist bodies, professional and provider associations, are the principal users of health services research, such as the Federal Joint Committee in Germany. Likewise, in countries in which political decision-making is largely devolved to regions and/or municipalities, local or regional governments are important users of research, such as municipal councils in Finland. Decentralised policy-making increases the number of potential research users, thus creating a larger and more complex interface between research and policy. A larger number of users may create more opportunities for research uptake. However, these organisations are presumably smaller and may individually have less capacity to utilise research and liaise with researchers.

In most countries, health services researchers are involved in policy in a variety of ways, including through commissioned research projects, providing advice to ministries and parliament or involvement in government research institutes. Again, the degree and scale of involvement varies substantially between countries.

Only a few mechanisms and activities to support the use of health services research have been identified. This is not unsurprising, given the general scarcity of literature on interventions of knowledge transfer (Ward et al., 2009a). It appears that these mechanisms are both difficult to research and difficult to report, perhaps also because they are often not well recognised. Thus, it is hard to tell whether mechanisms are absent or only underreported, although we assume that in most cases the first option is most likely. On occasion, the distinction between mechanisms that support research dissemination (research push), update (policy pull), and linkage and exchange that was made earlier in this chapter, based on the conceptual literature, appears to be quite arbitrary, with informants mentioning the same mechanism in relation to all three functions.

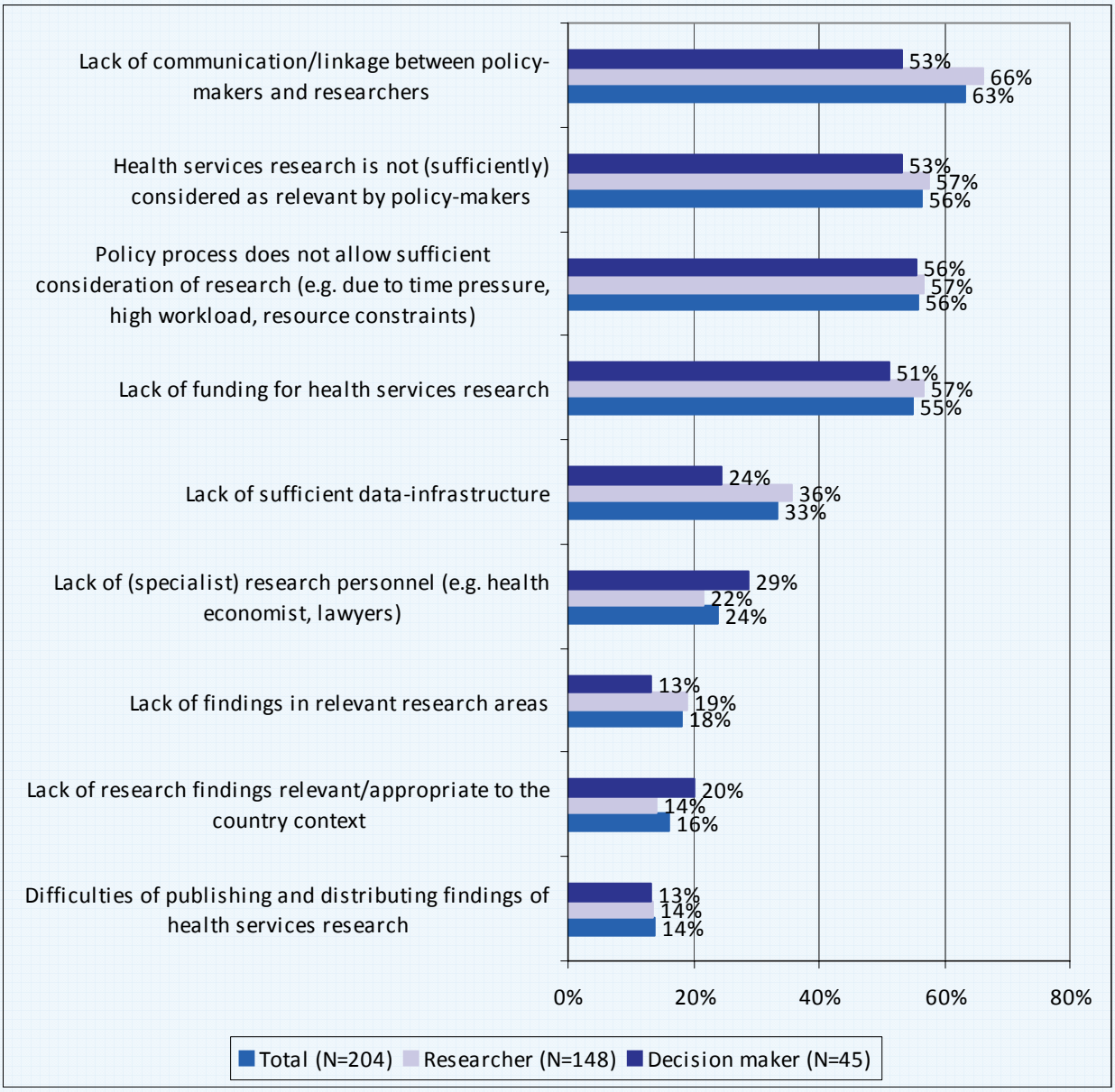
Government-related research institutes seem to have a major role in ‘bridging the gap’ between research and policy communities. Both as producers and users of research they are centrally placed at the research-policy interface and have the potential to maintain an essential brokerage role. However, the functions of government related research institutes are often complex, their roles as brokers requiring further exploration (e.g. Ward et al., 2009b).

The barriers to the use of health services research in policy reported in this study echo those identified in the literature, such as issues about timeliness, the mismatch of research and policy questions and the absence of appropriate incentives for researchers to engage with the policy process (Innvær et al., 2002; Oxman et al., 2009). While we assume that barriers vary among countries (most visibly perhaps with regard to differences in funding, priority-setting and research capacity), some of the obstacles to research utilisation for policy are similar in most countries. Findings from this study were also corroborated by a survey of decision-makers and health services researcher, undertaken as part of this project (Box 7.4). Reported barriers to research uptake may also be affected by what is known through previous research.

Box 7.4 Barriers to the use of health services research in policy – An online survey of decision-makers and researchers

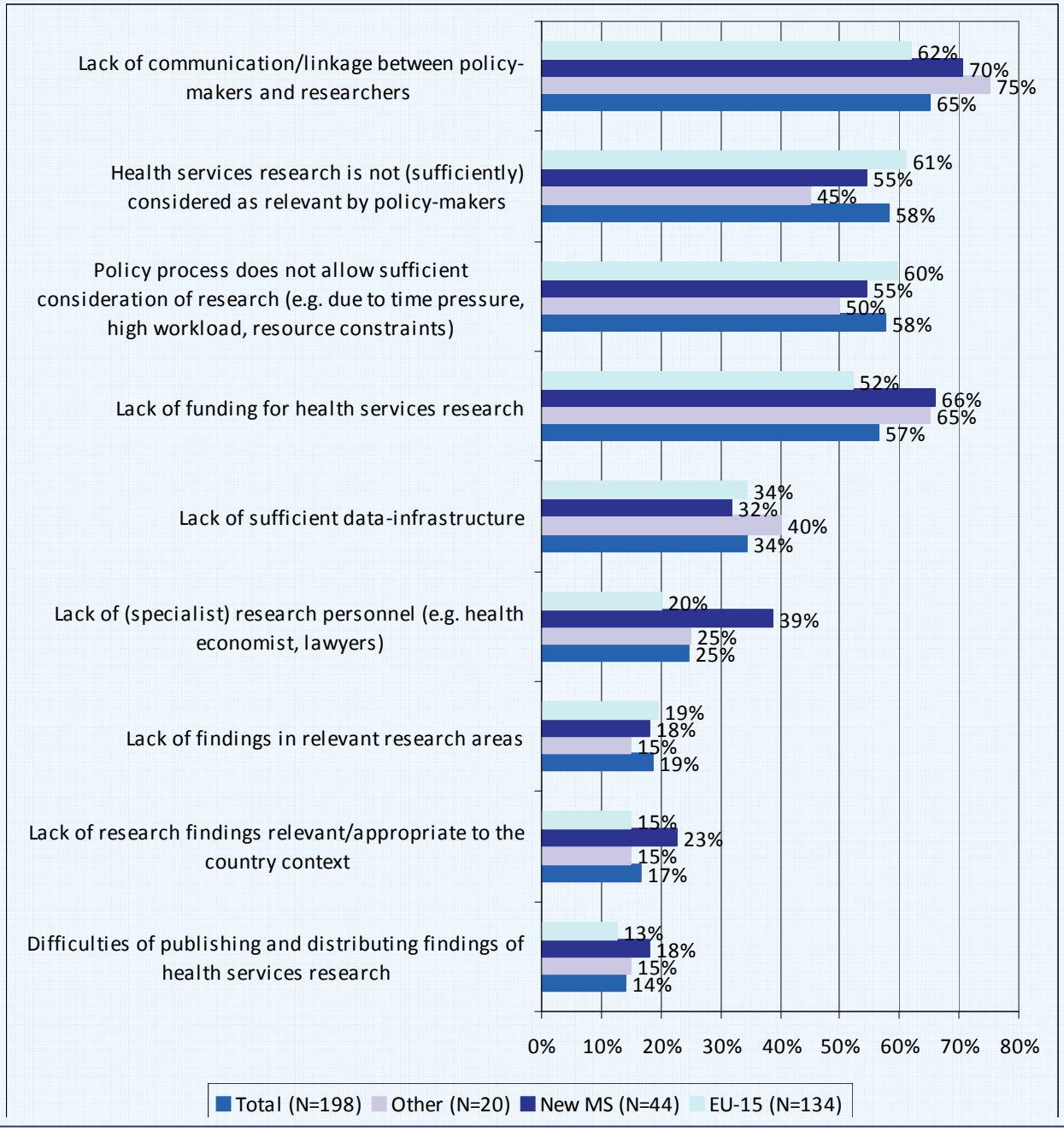
As part of this project, an online survey of decision-makers and health services researchers was undertaken in 2010 to understand the priorities of both groups in relation to health services research and policy. Respondents were also asked to identify the reasons why, in their view, health policy research was not used in policy-making as much as one might expect. Both researchers and decision-makers identified a lack of communication, and linkage, between policy-makers and researchers; lack of awareness of the potential of research by policy-makers; pressures arising from the policy process; and lack of funding for research as key reasons for the under-use of health services research (Table 7.2).

Table 7.2 Barriers for the use of health services research, identified by decision-makers and researchers, in percent



Box 7.4 - continued

A particularly large proportion of respondents from new member states of the European Union (EU), as well as those European countries that are not (yet) members of the EU, gave particular priority to expressed concern about the lack of communication and linkage; the lack of funding for health services research; and the lack of specialist health services research personnel. Respondents from countries constituting the EU-15, in contrast, gave higher priority to addressing the barriers associated with the policy process and the lack of awareness of policy-makers for the potential of research for informing policy, although these were also identified by about half of respondents in other EU and non-EU countries.



Only a few respondents mentioned facilitating factors, such as efforts to promote the use of research, the fact that policy-makers and researchers often are members of the same social and professional networks (perhaps especially in small countries and small research and policy communities) and the existence of mechanisms for strategic research commissioning. Concerns about researchers becoming too closely involved with policy-making, potentially leading to undue influence by policy-makers on the priorities and content of research, highlight the need for strategies to ensure a sufficient degree of independence and effective management of conflicts of interest (e.g. through disclosure of competing interests and publication of financial flows; Oxman et al., 2009). It also highlights the need for awareness of the subtle balance between health services research that is relevant to policy-makers and the importance of sufficient distance to allow for independent inquiry and criticism of policy.

7.5.2 Strengths and limitations

This chapter is based on a survey of 30 European countries, most of which have not previously reported on health services research and its use in policy. The chapter cannot be exhaustive due to its methods and the resources available, but it provides a first overview of capacity and activities in this growing and significant field of applied research.

Data are currently available for 30 of the 34 included countries. The study also has had to rely on responses from country respondents to survey questions rather than primary data collection in each country, to ensure the inclusion of a large number of countries, as requested by the European Commission, within the resources available. Respondents were health researchers in each country knowledgeable in the field, though, in most cases, it was only possible to request information from one expert per country (with few exceptions) because of time and resource constraints. Responses inevitably varied in completeness, depth and detail. The nature of the questionnaire approach also means that it is difficult to establish whether omissions reflect a lack of knowledge on the part of the country expert or lack of time on the part of the expert to collate the requested information or absence of information on a topic. With a few exceptions, respondents were members of the academic community since such individuals are far easier to identify than officials in ministries and other agencies, thus the knowledge, views and experience of policy-makers are commensurately under-represented.

The data collected were not specific enough to allow any comment on the relative production and use of different areas of health services research, apart from some indication that health technology assessment may be a sub-field in which application to policy is particularly developed.

7.5.3 Recommendations for further research

While a broad brush survey of a large number of countries can provide a high level impression of activity and use of health services research, a proper understanding of how health services research is being undertaken and used requires studies looking at fewer carefully selected countries in greater depth, involving interviews and other field work rather than reliance on individual informants.

In particular, future research assessing the relationship between health services research and policy making in different countries could usefully take differences in health system architecture and related policy-making actors and processes rather than research as the analytical starting point, given the importance of governance and health system organisation for how health services research is funded, undertaken and used. This would acknowledge the fact (which is reflected in

many of the responses) that much of the policy process is shaped by actors and politics, and that ultimately policy-makers make the decision" (Hanney et al., 2003; Blendon and Steel Fisher, 2009).

A policy process perspective would also allow the research to distinguish the uses of health services research at different stages of policy-making, such as agenda setting, policy formulation and policy implementation in different types of health care systems (Lavis et al., 2002). As part of the current study, we did not attempt to collect data about the policy process in individual countries, although we expect that processes vary, reflecting different political and administrative traditions and structures (i.e. context). How these structures define the use of research and how they differ among countries could be the object of further research, focusing on a smaller number of countries and based on interviews with policy-makers and researchers, and the analysis of policy documents and/or the media.

7.6 Improving the relationship between health services research and policy

Returning to the framework that has largely structured this work, we conclude that there are several key areas which should be considered in efforts to strengthen the use of health services research in policy-making at national and European level.

Developing capacity in health services research

- Given that countries vary substantially in the maturity of this field of research, any changes should be geared to the stage of development and level of recognition of health services research in each country. There will be no 'one size fits all' approach possible for developing national capacity, although there may be a role for external research funding and support, such as through the European Commission or WHO.
- Given that priority-setting in health services research is absent in most countries, there should be efforts to establish approaches to align research with the needs of policy-makers through priority-setting and strategic planning. Arguably, priority-setting is particularly relevant in countries, in which financial resources for research are very constrained.
- Opportunities for strengthening international exchange and mutual learning should be explored, including the creation of a European platform for health services research through a European Association for Health Services Research and/or an annual European Health Services Research Conference.

Improving the capacity of users of health services research

- Opportunities for improving the willingness and ability of policy-makers to use health services research should be considered. Efforts to improve research use skills could include, for example, tailored training in research methods and the use of bibliographic databases.
- There may also be opportunities for improving the integration of the use of research into policy processes and for creating a more research-friendly culture in policy organisations which should be further explored. An example could be the checklist for research use developed in Canada (Lomas and Brown, 2009) or experiences of research and policy co-location, as in the Netherlands.

Enhancing activities that support the use of health services research in policy

- Efforts should be made to strengthen the relationship between health services researchers and policy-makers both at national level and internationally, for example, by strengthening/

establishing national and European forums for exchange.

- Further developments could include establishing new organisations at the interface of health services research and policy, such as government research organisations or knowledge centres for health services research.

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Appendices

Appendix 1 Consultation form for country consultants

Health Services Research into European Policy and Practice
Consultation form for country consultants

Contact: Stefanie Ettelt, LSHTM & Johan Hansen, NIVEL

HSREPP is a new European initiative aimed at identifying, evaluating and improving the contribution of health services research (HSR) to the development of health policy in the EU and its member countries. The objective of this consultation is to identify the activities in HSR in each country and to assess how this research is used to inform policy-making.

Your response is an essential contribution to this project. We would like to ask you to complete as many questions as possible. You may wish to consult other experts if appropriate. Please indicate if questions do not apply to your country (e.g. if there is no organisation undertaking health services research or no public funding for research). Please add weblinks to organisations, events or publications where appropriate.

As HSR covers a broad field of research, we use the term broadly as a "multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviours affect access to health care, the quality and cost of health care, and ultimately our health and well-being" (Lohr and Steinwachs 2002). While different areas of HSR are inter-related and overlap, for the purpose of this project we are distinguishing between four topics:

1. Health systems research:
   Research on whole systems and national policies (macro-level).

2. Research on the organisation and delivery of health services:
   Studies at the level of health care providers e.g. GPs, hospitals (meso-level).

3. Health technology assessment:
   The evaluation of the medical, social, ethical, organisational and economic implications of health technology (micro/meso-level).

4. Benchmarking and performance measuring:
   Research on assessing and measuring performance of health services.

"Policy-making" refers to the development and implementation of policies, defined here as "a series of goal-oriented actions taken by authoritative (usually governmental) actors" (Leichter 1979). Depending on country context, these actors – or users of HSR – may include national or regional governments, health authorities, government agencies, professional organisations as well as bodies responsible for funding health services, such as sickness funds.

Our definitions indicate a close relationship and partial overlap between HSR and clinical and public health research. Responses may include studies at the boundaries of these fields, but should exclude research on health determinants or clinical interventions if it does not examine the way of organising health services, e.g. population-based epidemiological studies or biomedical / clinical studies.

Thank you very much for your contribution. We greatly appreciate your work and effort.

1. Funding and prioritising health services research (HSR)

1.1 Who are the main funders of HSR in your country (e.g. national or regional governments, health authorities, government agencies, professional organisations or other bodies responsible for funding / commissioning health services, such as sickness funds)?

1.2 What is the volume of funding for HSR (total per year, latest available data) and what proportion of funding for HSR comes from public sources?

1.3 Have there been major changes in funding for HSR in the last five years (e.g. growth/decline in funding, type of funders, topics funded)?

1.4 How are priorities for HSR funding established nationally? Who is involved in setting priorities? How transparent is prioritisation (e.g. involving peer review, based on published criteria)?

1.5 Is there a national or regional plan for health services research in your country? If so, who is funding it? What are its specific aims? Please provide details.

1.6 What are the key topics policy-makers in your country have identified as priorities for HSR? Please specify per research area if possible.

- Health systems research:
- Research on the organisation of health services:
- Health Technology Assessment:
- Benchmarking and measuring performance indicators:

2. Production of health services research

2.1 Who are the main producers of HSR in your country (e.g. universities; public research institutes; government researchers; private sector research institutes; charity and foundation institutes)? Please provide the names of key organisations and their main field of research (e.g. health systems research, research on the organisation of health services, HTA).

2.2 Are there any organisations or institutes dedicated specifically to HSR? Please provide names of organisations (per area).

- Health systems research:
- Research on the organisation of health services:
- Health Technology Assessment:
- Benchmarking and measuring performance indicators:
- Other (please specify):

2.3 Is there a national society or association whose aim it is to promote or undertake health services research? Please provide the name(s) and main field(s) of interest?

2.4 Is there specialised training/education available for health services researchers? Please specify target group and research area/discipline.

2.5 Are there any scientific journals published in your country and/or in your language specifically focusing on health services research? Please provide the titles of the most influential journal(s) (up to five; please add title in English). Which areas of HSR do they mainly cover?

2.6 Have there been any conferences, workshops and/or symposia on health services research in your country (last 2-5 years)? Please provide the title, date and website of key events. Which areas of HSR did they address?

2.7 To what extent is HSR relevant to policy-making in your country produced domestically rather than outside your country? Which external sources do policy-makers use most (e.g. OECD, WHO, EC, World Bank, the European Observatory)?

3. Use of health services research in policy-making

3.1 Who are the main users of HSR in your country in relation to policy-making (e.g. national/regional government(s); health authorities; government agencies; professional organisations; other bodies responsible for funding / commissioning health services, such as sickness funds, health care personnel; health care managers; patient organisations; others)?

3.2 Which areas of HSR do policy-makers consider to be most useful and why?

3.3 Are the government or other policy organisations be held accountable for using (or not using) HSR evidence (e.g. by Parliament, internal / external commissions, external auditors, the media)?

3.4 How is health services research used to inform policy-making and what is the impact? Please specify per area.

- Health systems research:
- Research on the organisation of health services:
- Health Technology Assessment:
- Benchmarking and measuring performance indicators:

3.5 In what ways are health services researchers involved in policy-making (e.g. as members of committees; as government consultants; as Ministry of Health employees)? Please provide examples.

3.6 Please describe the impact of HSR on health policy in your country by giving one example of where HSR has had a demonstrable influence on:
a. the development, design or implementation of a national policy,
b. a decision in relation to the organisation or delivery of a health service,
c. a decision concerning the clinical management of patients.

3.7 At which of these three levels has HSR been most influential?

4. Activities to promote the use of health services research

4.1 Whose responsibility is it to promote or facilitate the use of HSR in policy-making (e.g. researchers, policy-makers, research funders, government organisations, others)?

4.2 Are there mechanisms in place to promote the distribution, availability and access to HSR evidence (e.g. by providing summaries and syntheses of research; by operating research databases)?

4.3 Are there mechanisms in place to support the uptake of HSR by policy-makers (e.g. by training policy-makers in research utilisation; by training researchers in policy-making; by creating a research friendly environment in policy organisations; by giving research a formal role in informing policy-making)?

4.4 Are there mechanisms in place to promote linkages between researchers and policy-makers (e.g. long-term or short-term efforts, professional networks, co-location of researchers and policy-makers, exchange programmes, brokers in and outside of organisations)?

4.5 Is there evidence of the effectiveness of any of the measures mentioned above?

4.6 What are the main incentives and/or disincentives for policy-makers to use/not use HSR evidence? Do these differ between types of policy-makers or research areas?

4.7 What are the main incentives and/or disincentives for health services researchers to produce evidence that is relevant to policy-makers?

5. Barriers to and facilitators of the use of health services research in policy-making

5.1 In your experience, what are the most important barriers and facilitators that determine whether HSR is used or not used in policy-making in your country?

5.2 What would need to change in your country to increase the use of HSR in policy-making?

Appendix 2 Additional information for Chapter 3: Health systems research in Europe

A. Development of search strategy

The following table documents how MeSH terms were identified from the topic list. The table reads as follows: The first column shows the entry made in the MeSH search engine. The second column shows the number of hits (i.e. of MeSH terms) identified. The third column documents the terms considered relevant to be applied in the final search strategy and indicates whether these terms were "exploded" or not. A "0" in the third column indicates that none of the identified terms was considered relevant.

Entry	#MeSH	Relevant MeSH
Services delivery	2	Delivery of Health Care, --> NOT EXPLODED Delivery of Health Care, Integrated
Services provision	23	Health Care Sector, Community Health Planning, Health Personnel--> NOT EXPLODED
Availability, supply	21 0	Health Services Accessibility Health Manpower Healthcare Disparities
Accessibility, access	11 30	Health Services Accessibility Community Health Planning Medically Underserved Area Healthcare Disparities
Acceptability	1	Patient Acceptance of Health Care--> NOT EXPLODED
Coverage, benefit basket, benefit package, entitlements	18 0 0 0	Universal Coverage Insurance Coverage Health Care Reform Cost Sharing Insurance, Health
Waiting time, waiting list	0 1	Waiting Lists
Utilization	15	0
Responsiveness, satisfaction	30 4	0 Patient Satisfaction--> NOT EXPLODED Consumer Satisfaction--> NOT EXPLODED
Financing	8	Financing, Organized
Expenditures	4	0
Funding	3	Capital Financing Financial Management
Payment of providers	2	0
Reimbursement	10	Reimbursement Mechanisms
Purchasing	4	0
Allocation	3	Resource Allocation
Equity	2	0
Fairness	0	0
Resource Creation	0	0
Professional education	1	Education, Professional
Research and development	1	0

Entry	#MeSH	Relevant MeSH
Innovation Management	0	0
Knowledge generation and management	0	0
Public health intelligence	0	0
Stewardship	0	0
Planning, Health plans	78 11	Health Planning Support Health Planning Health Planning Organizations
Health policy, Policy Making, Health Care Reform	1 1 1	Health Policy 0 Health Care Reform
Centralization/ Decentralization/ Devolution	0 1 0	0 0 0
Privatization/ Recommunalization	1 0	Privatization
Commissioning	0	0
Licensing	7	Licensure
Accreditation	2	Accreditation
Contracting	15	0

B. Search Strategy for Pubmed Database

Search	Most Recent Queries	Results
#89	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2004/01/01 to 2010/01/01	27994
#100	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2004/07/01 to 2005/01/01	2489
#99	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2008/07/01 to 2009/01/01	3552
#98	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2008/01/02 to 2008/06/31	2717
#97	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2007/07/01 to 2008/01/01	3691
#96	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2007/01/02 to 2007/06/31	2466
#95	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2006/07/01 to 2007/01/01	3289
#94	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2006/01/02 to 2006/06/31	2234
#93	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2005/07/01 to 2006/01/01	3021
#92	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2005/01/02 to 2005/06/31	1782
#91	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2004/01/01 to 2004/06/31	2206
#90	Search (#83) AND #88 Limits: only items with abstracts, Humans, Publication Date from 2009/01/02 to 2010/01/01	3761
#88	Search albania OR andorra OR armenia OR Austría OR azerbaijan OR belarus OR belgium OR "bosnia and herzegovina OR Bulgaria OR Croatia OR cyprus OR czech Republic OR denmark OR estonia OR finland OR france OR georgia OR germany OR greece OR hungary OR Iceland OR ireland OR	814265

Search	Most Recent Queries	Results
	jsrael OR italy OR kazakhstan OR kyrgistan OR latvia OR lithuania OR luxembourg OR malta OR monaco OR montenegro OR netherlands OR norway OR poland OR Portugal OR moldova OR romanía OR russia OR "russian federation" OR "san marino" OR serbia OR slovakía OR slovenia OR spain OR Sweden OR Switzerland OR tajikistan OR macedonia OR turkey OR turkmenistan OR Ukraine OR "united kingdom" OR uk or "qreat Britain" OR Scotland OR wales OR england OR "north ireland" OR uzbekistan Limits: only items with abstracts, Humans, Publication Date from 2004/01/01 to 2010/01/01	
#85	Search (#81) AND #82 Limits: only items with abstracts, Humans, Publication Date from 2004/01/01 to 2005/01/01	13504
#83	Search (#81) AND #82 Limits: only items with abstracts, Humans	174921
#82	Search health system OR healthcare system OR health care system Limits: only items with abstracts, Humans	420694
#81	Search (((#43)[1] OR #59) OR #62) OR #80 Limits: only items with abstracts, Humans	272497
#80	Search ((((((#64) OR #67) OR #69) OR #71) OR #73) OR #76) OR #79 Limits: only items with abstracts, Humans	109142
#79	Search "Accreditation"[Mesh] Limits: only items with abstracts, Humans	2664
#76	Search "Licensure"[Mesh] Limits: only items with abstracts, Humans	2760
#73	Search "Privatization"[Mesh] Limits: only items with abstracts, Humans	489
#71	Search "Health Policy"[Mesh] Limits: only items with abstracts, Humans	21713
#69	Search "Health Planning Organizations"[Mesh] Limits: only items with abstracts, Humans	941
#67	Search "Health Planning"[Mesh] Limits: only items with abstracts, Humans	91697
#64	Search "Health Planning Support"[Mesh] Limits: only items with abstracts, Humans	83
#62	Search "Education, Professional"[Mesh] Limits: only items with abstracts, Humans	56726
#59	Search ((((#46) OR #48) OR #51) ORp54) OR #58 Limits, only items with abstracts, Humans	61976
#58	Search "Resource Allocation"[Mesh] Limits: only items with abstracts, Humans	5101
#54	Search "Reimbursement Mechanisms"[Mesh] Limits: only items with abstracts, Humans	3876
#51	Search "Financial Management"[Mesh] Limits: only items with abstracts, Humans	13496
#48	Search "Capital Financing"[Mesh] Limits: only items with abstracts, Humans	301
#46	Search "Financing, Organized"[Mesh] Limits: only items with abstracts, Humans	47696
#43	Search ((((((((((((((((#7) OR #42) OR #40) OR #38) OR #36) OR #34) OR #31) OR #28) OR #26) OR #24) OR #22) OR #19) OR #18) OR #16) OR #14) OR #11) OR #10) OR #8 Limits: only items with abstracts, Humans	135413
#42	Search "Medically Underserved Area"[Mesh] Limits: only items with abstracts, Humans	2125
#40	Search "Consumer Satisfaction"[Mesh:NoExp] Limits: only items with abstracts, Humans	7116
#38	Search "Patient Satisfaction"[Mesh:NoExp] Limits: only items with abstracts, Humans	33466
#36	Search "Waiting Lists"[Mesh] Limits: only items with abstracts, Humans	3714
#34	Search "Insurance, Health"[Mesh] Limits: only items with abstracts, Humans	28653
#31	Search "Cost Sharing"[Mesh] Limits: onlv items with abstracts, Humans	1074
#28	Search "Health Care Reform"[Mesh] Limits: only items with abstracts, Humans	4955
#26	Search "Insurance Coverage"[Mesh] Limits: only items with abstracts, Humans	3179
#24	Search "Universal Coverage"[Mesh] Limits: only items with abstracts, Humans	431

Search	Most Recent Queries	Results
#22	Search "Patient Acceptance of Health Care"[Mesh:NoExp] Limits: only items with abstracts, Humans	16800
#19	Search "Healthcare Disparities"[Mesh] Limits: only items with abstracts, Humans	1411
#18	Search "Health Manpower"[Mesh] Limits: only items with abstracts, Humans	1552
#16	Search "Health Services Accessibility"[Mesh] Limits: only items with abstracts, Humans	28546
#14	Search "Health Personnel"[Mesh:NoExp] Limits: only items with abstracts, Humans	7947
#11	Search "Community Health Planning"[Mesh] Limits: only items with abstracts, Humans	2154
#10	Search "Health Care Sector"[Mesh] Limits, only items with abstracts, Humans	1193
#8	Search "Delivery of Health Care, Integrated"[Mesh:NoExp] Limits: only items with abstracts, Humans	2587
#7	Search "Delivery of Health Care"[Mesh:NoExp] Limits: only items with abstracts, Humans	13772

C. Search Strategy for EMBASE Database

#	Search term	Results
1	*health care delivery/	8927
2	*managed care/	2856
3	health care sector.af.	651
4	health care planning/	23683
5	*health care personnel/	4953
6	health care access/	23975
7	health care manpower/	1483
8	health care disparity/	478
9	patient attitude/	22754
10	*patient attitude/	4083
11	universal coverage.af.	337
12	insurance coverage.af.	2272
13	health care policy/	64414
14	*health care policy/	15864
15	cost sharing. af.	538
16	health insurance/	28300
17	waiting lists.af.	1073
18	*patient satisfaction/	3912
19	patient satisfaction/	39803
20	consumer satisfaction. af.	368
21	medically underserved area.af.	17
22	1 or 2 or 3 or 4 or 5 or 6 or 7or 8 or 9 or 11 or 12 or 13 or 15 or 16 or 17 or 19 or 20 or 21	193058
23	limit 22 to (abstracts and human and yr="2004 -2010")	55291
24	financial management/	26320
25	reimbursement/	12514
26	resource allocation/	8267

#	Search term	Results
27	24 or 25 or 26	45247
28	limit 27 to (abstracts and human and yr="2004 -2010")	8025
29	vocational education/	3910
30	privatization.af.	398
31	licensing/	4755
32	acreditation/	8168
33	30 or 31 or 32	13034
34	limit 33 to (abstracts and human and yr="2004 -2010")	1751
35	23 or 28 or 29 or 34	65616
36	limit 35 to (abstracts and human and yr="2004 -2010")	62286
37	health system.af.	23888
38	healthcare system. af.	13618
39	health care system. af.	52418
40	37 or 38 or 39	84430
41	limit 40 to (abstracts and human and yr="2004 • 2010")	29891
42	36 and 41	5529
43	andorra.af.	92
44	albania.af.	574
45	armenia.af.	1008
46	austria.af.	133554
47	azerbaijan.af.	1295
48	belarus.af.	3532
49	belgium.af.	177830
50	(bosnia and herzegovina).af.	1068
51	bulgaria.af.	20109
52	croatia.af.	20214
53	cyprus.af.	1642
54	czech republic.af.	44898
55	denmark.af.	225638
56	estonia.af.	4269
57	finland.af.	105040
58	france.af.	791992
59	georgia.af.	38085
60	germany.af.	1420564
61	greece.af.	92562
62	hungary.af.	64082
63	iceland.af.	4748
64	ireland.af.	216109
65	Israel.af.	159234
66	italy.af.	608984
67	kazakhstan.af.	2438
68	kyrgyzstan.af.	117
69	latvia.af.	1502

#	Search term	Results
70	lithuania.af.	3170
71	luxembourg.af.	2206
72	malta.af.	1341
73	monaco.af.	2868
74	montenegro.af.	1237
75	netherlands.af.	1024893
76	norway.af.	128140
77	poland.af.	117082
78	portugal.af.	34682
79	moldova.af.	374
80	Romania.af.	14125
81	russia.af.	4386
82	russian federation.af.	46584
83	san marino.af.	118
84	serbia.af.	4379
85	slovakia.af.	16409
86	slovenia.af.	3625
87	spain.af.	345347
88	sweden.af.	263979
89	switzerland.af.	452851
90	tajikistan.af.	123
91	macedonia.af.	1527
92	turkey.af.	118363
93	turkmenistan.af.	82
94	ukraine.af.	16212
95	united kingdom.af.	3020562
96	uk.af.	78713
97	great britain.af.	5754
98	scotland.af.	14432
99	wales.af.	58982
100	england.af.	66123
101	northern ireland.af.	3513
102	uzbekistan.af.	675
103	43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102	7323816
104	42 and 103	2935

D. Keyword Clustering

Area of Health System	Thematic Cluster	Keywords included
Service delivery/provision	Service Delivery	Delivery of Health Care
		Delivery of Health Care, Integrated
		Health Care Delivery
		Health Facilities
		Health Care Disparity
		Health Care availability
		Supply & Distribution
		Health Services Needs and Demand
	Access	Health Care Access
		Health Services accessibility
	Acceptance	Patient acceptance of health care
	Utilization	Utilization
		Health Care Utilization
	Satisfaction	Satisfaction
		Patient Satisfaction
	Waiting Lists	Waiting lists
		Waiting time
Financing/Expenditure	Finance/Expenditure	Finance
		Financing*
		Financial Management
		Health care financing
		Capital financing
		Fund Raising
		Funding
		Health Expenditures
		Capital Expenditures
		Health Care Cost
		Health Care Costs
		Reimbursement*
		Prospective Payment
		Prospective Payment System
		Resource Allocation
		Resource management
		Cost Allocation
		Purchasing*
		Purchasing, Hospital
		Group Purchasing
Resource Creation	Professional Education	Professional Competence
		Professional Development
		Education Management
		Education, Continuing
		Education, Dental
		Education, Dental, Continuing
		Education, Dental, Graduate
		Education, Distance
		Education, Graduate
		Education, Medical
		Education, Medical, Continuing
		Education, Medical, Graduate
		Education, Medical, Undergraduate

Area of Health System	Thematic Cluster	Keywords included
		Education, Nursing
		Education, Nursing, Associate
		Education, Nursing, Baccalaureate
		Education, Nursing, Continuing
		Education, Nursing, Diploma Programs
		Education, Nursing, Graduate
		Education, Pharmacy
		Education, Pharmacy, Continuing
		Education, Pharmacy, Graduate
		Education, Premedical
		Education, Professional
		Education, Professional, Retraining
		Education, Public Health Professional
	Manpower	Personnel*
		Health Personnel
		Health Occupations
		Manpower
		Health Manpower
		Health Care Manpower
		Health Care Personnel*
		Nursing Staff
		Staff
		Staff Development
		Staff Training
		Nursing Staff, Hospital
		Medical Staff
		Medical Staff, Hospital
		Personal Staffing and Scheduling
Stewardship/Governance	Administration/Management	Health Care Management
		Health Services Administration
		Nurse Administrators
		Hospital Administration
		Hospital Administrator
		Public Health Administration
		Management
		Manager
		Managed Care
		Managed Care Organization
		Managed Care Programs
		Managed Competition
	Planning	Planning
		*planning
		Health Plan Implementation
		Health Planning*
		Health Care Planning
	Policy/Reform	Policy*
		Health Policy
		Health Care Policy
		Health Care Reform
		Organizational Policy
	Privatization	Private Health Insurance
		Private Hospital

Area of Health System	Thematic Cluster	Keywords included
		Private Practice
		Private Sector
		Privatization
		Public-Private Sector Partnerships
	Licensing/Accreditation	Licence
		Licensing
		Licensure*
		Accreditation

E. References per Country (research from and on a country)

Country	References from country			References on country		
	Total Number	*per 10,000 population*	*per 1 billion GDP (USD)*	*Total Number*	*per 10,000 population*	*per 1 billion GDP (USD)*
Albania	1	0.004	0.104	11	0.043	1.144
Andorra	0	0	-	0	0	-
Armenia	2	0.007	0.278	9	0.029	1.251
Austria*	238	0.288	0.695	340	0.411	0.993
Azerbaijan	1	0.001	0.041	4	0.005	0.164
Belarus	0	0	0	5	0.005	0.128
Belgium*	479	0.454	1.15	561	0.531	1.347
Bosnia and Herzegovina	18	0.048	1.35	22	0.058	1.651
Bulgaria*	11	0.014	0.318	27	0.035	0.781
Croatia	85	0.192	1.622	110	0.248	2.099
Cyprus*	10	0.118	0.552	16	0.189	0.883
Czech Republic*	43	0.042	0.28	63	0.061	0.411
Denmark*	490	0.9	1.71	629	1.156	2.194
Estonia*	32	0.238	1.855	54	0.402	3.13
Finland*	440	0.835	1.981	499	0.947	2.247
France*	1176	0.192	0.493	1466	0.239	0.615
FYR Macedonia	1	0.005	0.143	5	0.025	0.714
Georgia	9	0.02	1.065	31	0.07	3.667
Germany*	1607	0.195	0.521	2747	0.334	0.891
Greece*	262	0.235	0.925	313	0.281	1.106
Hungary*	61	0.061	0.493	119	0.118	0.962
Iceland#	40	1.315	2.416	68	2.236	4.107
Ireland*	533	1.25	2.327	814	1.91	3.554
Israel	609	0.863	3.974	683	0.968	4.457
Italy*	1059	0.18	0.543	1308	0.222	0.67
Kazakhstan	2	0.001	0.024	11	0.007	0.131
Kyrgyzstan	0	0	0	6	0.012	1.914
Latvia*	2	0.009	0.089	18	0.079	0.801
Lithuania*	57	0.168	1.729	78	0.23	2.366
Luxembourg*	14	0.296	0.322	21	0.444	0.483
Malta*	19	0.468	2.996	16	0.394	2.523
Monaco	0	0	-	0	0	-

Country	References from country			References on country		
Montenegro	7	0.112	2.273	11	0.176	3.573
Netherlands*	1802	1.102	2.546	2056	1.257	2.905
Norway#	585	1.252	1.685	735	1.574	2.117
Poland*	144	0.038	0.389	370	0.097	1
Portugal*	66	0.062	0.322	110	0.104	0.537
Republic of Moldova	1	0.003	0.257	6	0.016	1.543
Romania*	26	0.012	0.196	49	0.023	0.369
Russian Federation	19	0.001	0.018	273	0.019	0.26
San Marino	0	0	0	0	0	0
Serbia	28	0.038	0.817	42	0.057	1.225
Slovakia*	12	0.022	0.19	27	0.05	0.427
Slovenia*	45	0.224	1.071	66	0.328	1.571
Spain*	794	0.18	0.616	1071	0.243	0.831
Sweden*	1414	1.555	3.448	1547	1.701	3.772
Switzerland#	770	1.027	1.891	906	1.208	2.225
Tajikistan	0	0	0	11	0.017	3.428
Turkey	605	0.084	1.059	682	0.095	1.194
Turkmenistan	0	0	0	2	0.004	0.177
Ukraine	10	0.002	0.086	40	0.009	0.344
United Kingdom*	9979	1.646	4.078	7894	1.302	3.226
Uzbekistan	4	0.002	0.214	8	0.003	0.427
*Countries of the EU; # Countries of the EEA						

F. Health systems research on the internet

Country	"Health System Research"			"Health Systems Research"		
	Total Number	*per 10,000 population*	*per 1 billion GDP (USD)*	*Total Number*	*per 10,000 population*	*per 1 billion GDP (USD)*
Albania	0	0	-	0	0	-
Andorra	0	0	-	0	0	-
Armenia	1	0.003	0.139	6	0.02	0.834
Austria*	26	0.031	0.076	39	0.047	0.114
Azerbaijan	0	0	-	0	0	-
Belarus	3	0.003	0.077	10	0.01	0.255
Belgium*	44	0.042	0.106	716	0.678	1.719
Bosnia and Herzegovina	1	0.003	0.075	1	0.003	0.075
Bulgaria*	5	0.006	0.145	20	0.026	0.578
Croatia	14	0.032	0.267	14	0.032	0.267
Cyprus*	2	0.024	0.11	2	0.024	0.11
Czech Republic*	20	0.019	0.13	48	0.047	0.313
Denmark*	28	0.051	0.098	393	0.722	1.371
Estonia*	2	0.015	0.116	16	0.119	0.927
Finland*	15	0.028	0.068	33	0.063	0.149
France*	1650	0.269	0.692	786	0.128	0.33
FYR Macedonia	1	0.005	0.143	4	0.02	0.571

Country	"Health System Research"			"Health Systems Research"		
Georgia	0	0	0	8	0.018	0.946
Germany*	4040	0.491	1.31	1090	0.132	0.353
Greece*	15	0.013	0.053	33	0.03	0.117
Hungary*	4	0.004	0.032	21	0.021	0.17
Iceland#	3	0.099	0.181	8	0.263	0.483
Ireland*	10	0.023	0.044	251	0.589	1.096
Israel	13	0.018	0.085	21	0.03	0.137
Italy*	35	0.006	0.018	215	0.036	0.11
Kazakhstan	1	0.001	0.012	2	0.001	0.024
Kyrgyzstan	0	0	0	1	0.002	0.319
Latvia*	1	0.004	0.045	6	0.026	0.267
Lithuania*	5	0.015	0.152	8	0.024	0.243
Luxembourg*	9	0.19	0.207	15	0.317	0.345
Malta*	0	0	0	1	0.025	0.158
Monaco	0	0	-	0	0	-
Montenegro	NA	-	-	NA	-	-
Netherlands*	1210	0.74	1.709	1860	1.137	2.628
Norway#	16	0.034	0.046	301	0.644	0.867
Poland*	11	0.003	0.03	37	0.01	0.1
Portugal*	9	0.009	0.044	29	0.027	0.142
Republic of Moldova	3	0.008	0.771	11	0.03	2.828
Romania*	9	0.004	0.068	37	0.017	0.279
Russian Federation	11	0.001	0.01	244	0.017	0.233
San Marino	0	0	0	0	0	0
Serbia	4	0.005	0.117	1	0.001	0.029
Slovakia*	5	0.009	0.079	21	0.039	0.332
Slovenia*	4	0.02	0.095	12	0.06	0.286
Spain*	31	0.007	0.024	357	0.081	0.277
Sweden*	31	0.034	0.076	386	0.424	0.941
Switzerland#	3110	4.148	7.638	2700	3.601	6.631
Tajikistan	0	0	0	0	0	0
Turkey	8	0.001	0.014	163	0.023	0.285
Turkmenistan	0	0	0	0	0	0
Ukraine	1	0	0.009	11	0.002	0.095
United Kingdom*	11400	1.88	4.659	5580	0.92	2.28
Uzbekistan	0	0	0	2	0.001	0.107

*Countries of the EU; # Countries of the EEA; NA: not available a search field.

G. Evolution over time of references per country

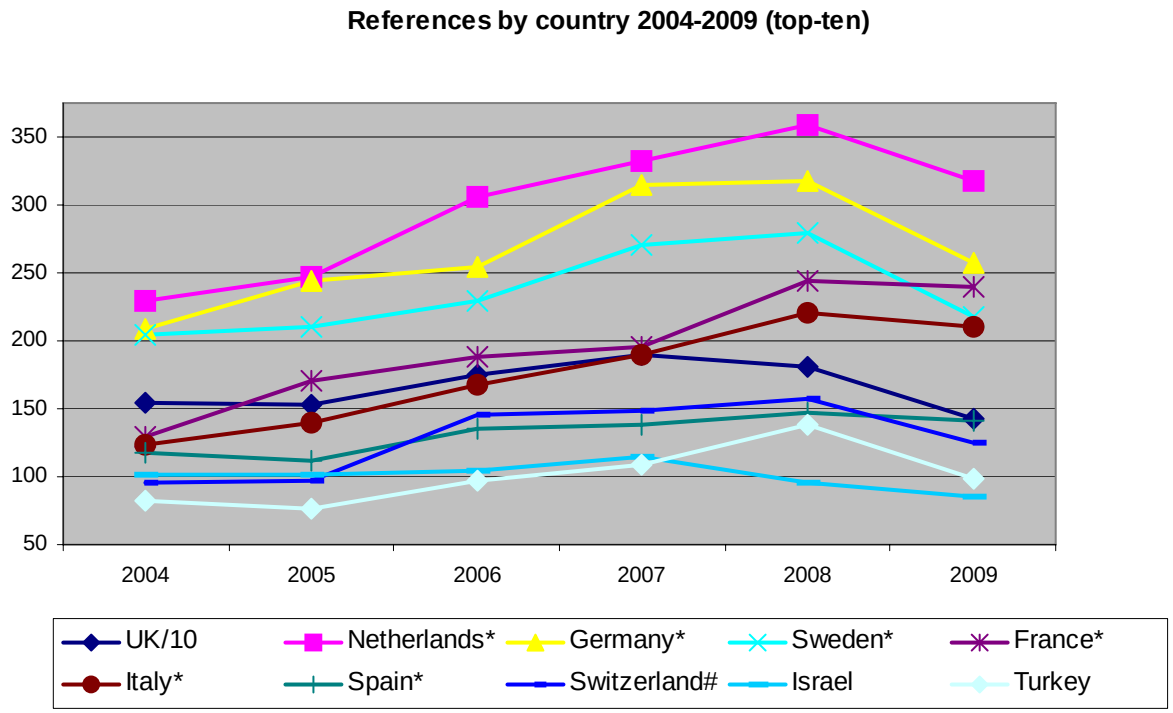

Figure 2G.1 References by country 2004-2009 (First ten countries, country mentioned in address field)

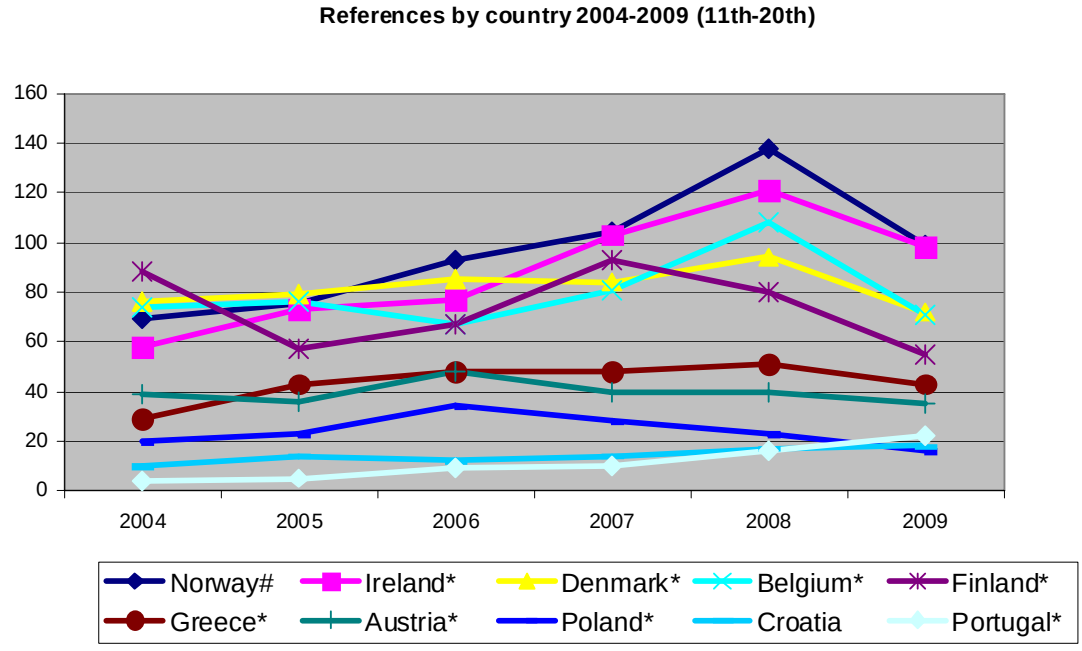

Figure 2G2 Rreferences by country 2004-2009 (Countries 11th to 20th, country mentioned in address field)

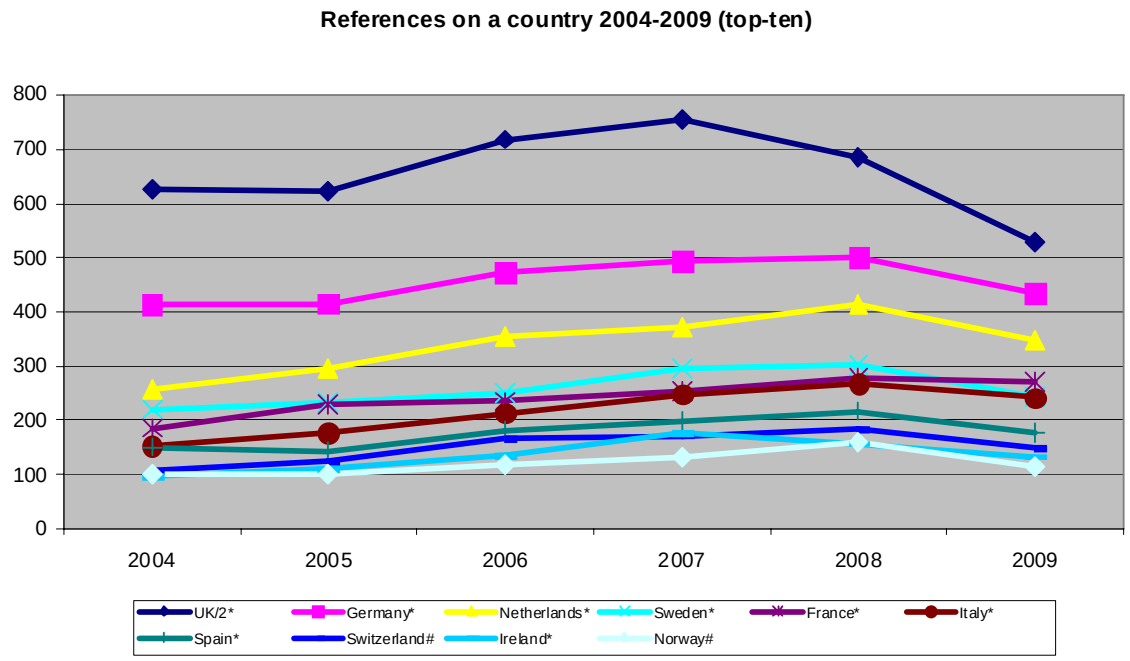

Figure 2G3 References by country 2004-2009 (first ten countries, countries mentioned in title, abstract or keywords field)

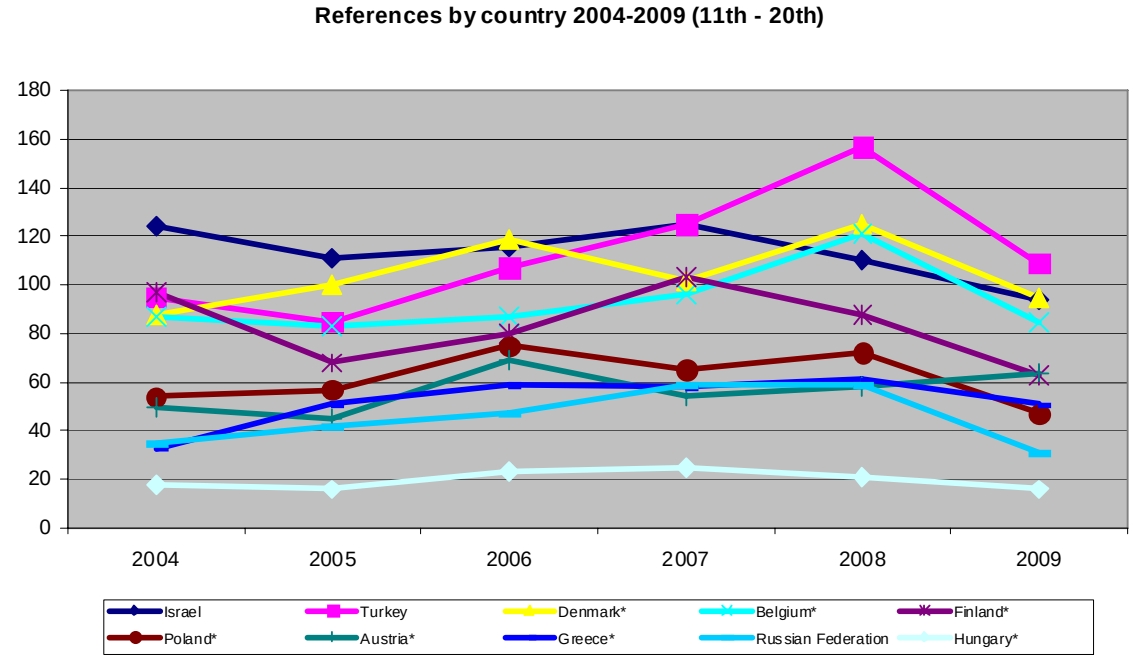

Figure 2G4 References by country 2004-2009 (countries 11th to 20th, countries mentioned in title, abstract or keywords field)

H. Thematic Cluster, percentage per country

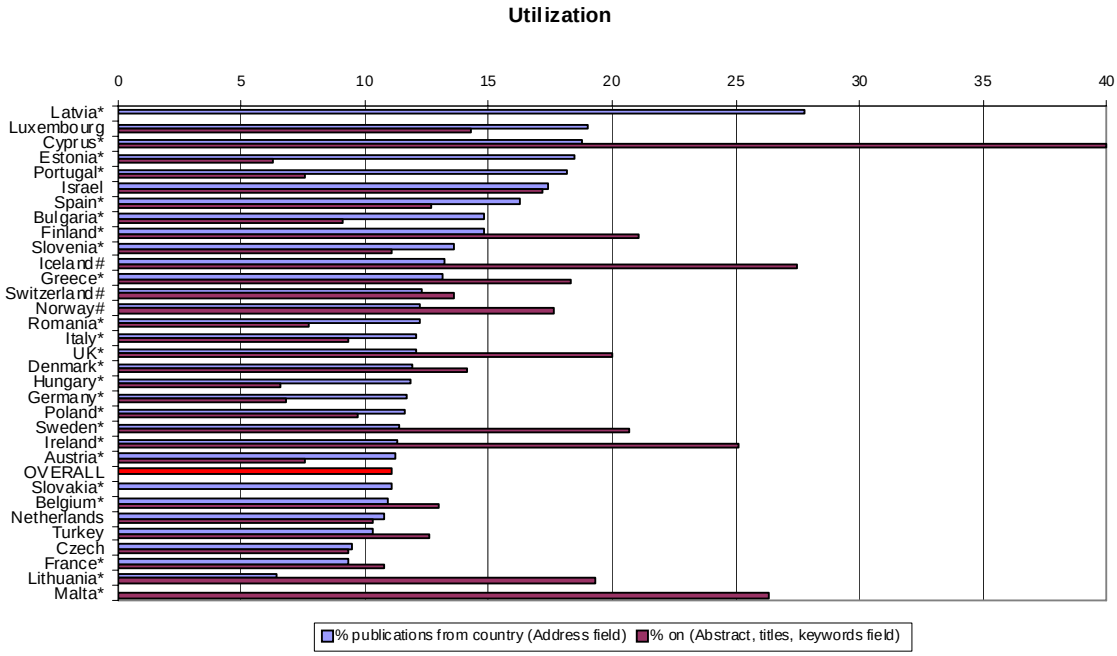

Figure 2H1 Utilization as percentage of the number of references per country

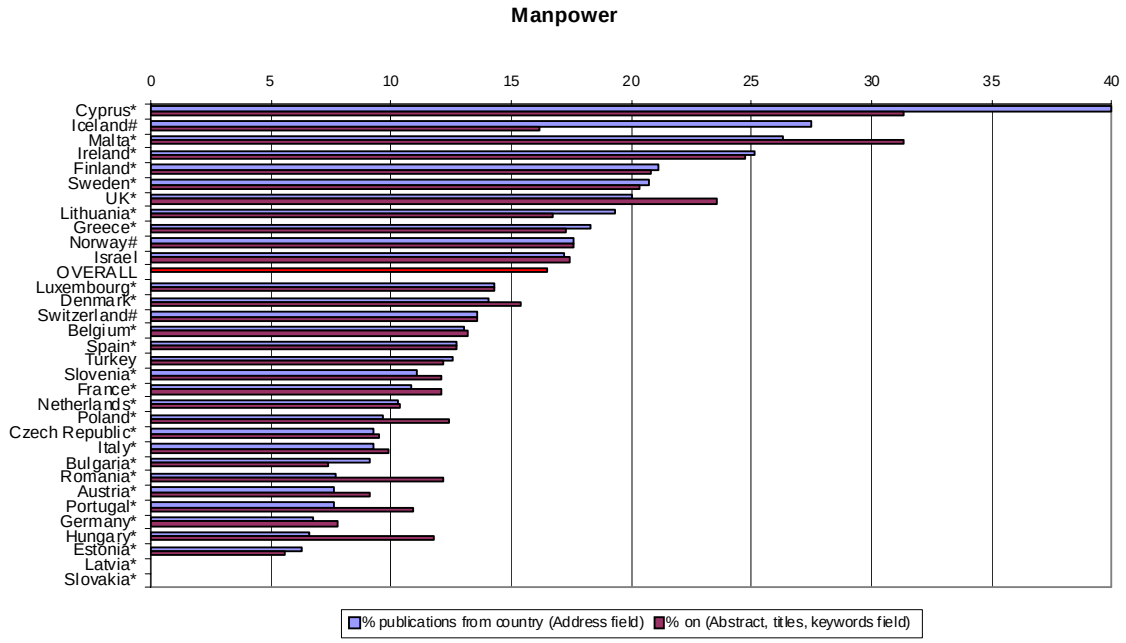

Figure 2H2 Manpower as percentage of the number of references per country

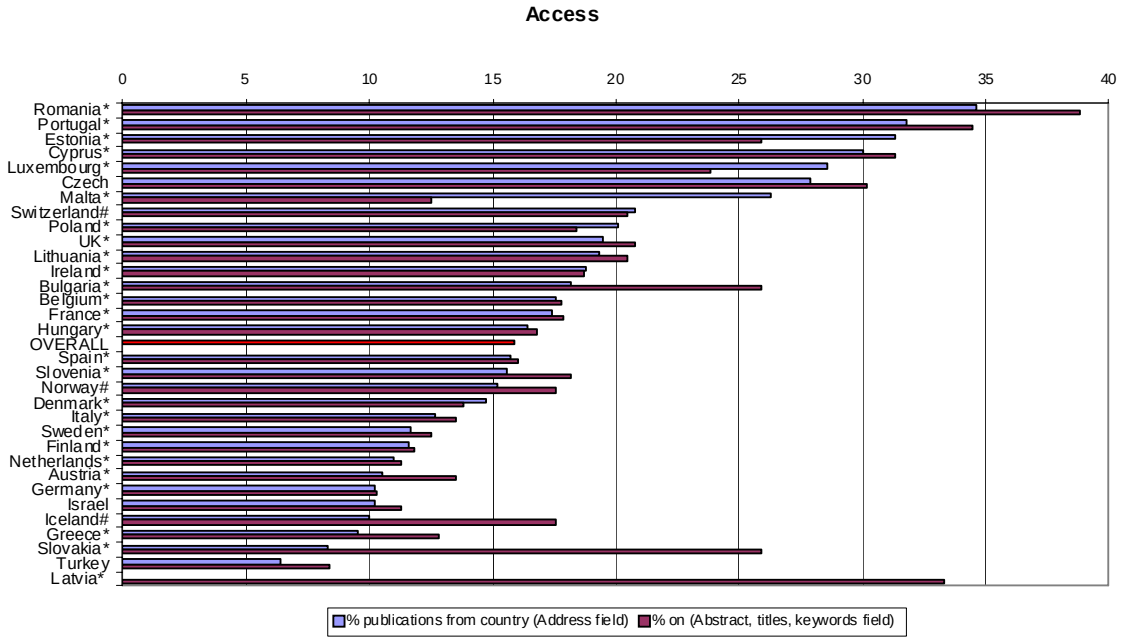

Figure 2H3 Access as percentage of the number of references per country

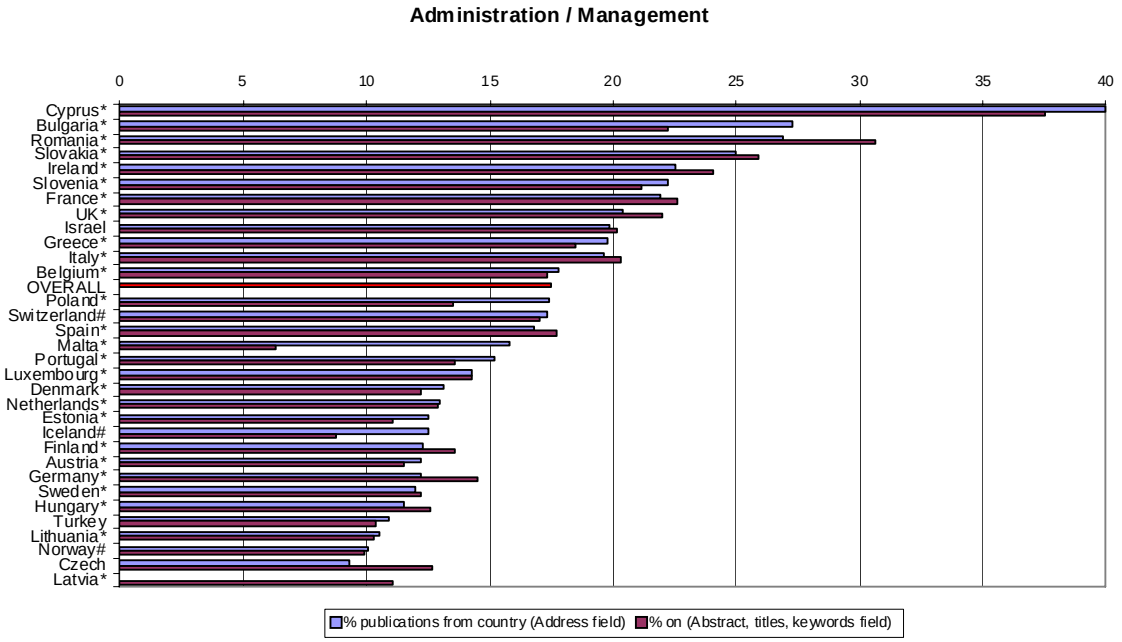

Figure 2H4 Administration/Management as percentage of the number of references per country

	Satisfaction		Delivery		Utilization		Manpower		Policy-Reform		Access		Admin / Management	
	% from	% on	% from	% on	% from	% on	% from	% on	% from	% on	% from	% on	% from	% on
Austria*	52.5	43.2	15.5	17.9	7.6	11.2	7.6	9.1	7.6	10.9	10.5	13.5	12.2	11.5
Belgium*	33.1	30.8	20	21	10.4	10.9	13	13.2	17.4	17.3	17.6	17.8	17.8	17.3
Bulgaria*	27.3	18.5	27.3	25.9	9.1	14.8	9.1	7.4	45.5	37	18.2	25.9	27.3	22.2
Cyprus*	10	12.5	40	31.3	0	18.8	40	31.3	10	31.3	30	31.3	40	37.5
Czech Republic*	34.9	23.8	11.6	17.5	4.7	9.5	9.3	9.5	16.3	25.4	27.9	30.2	9.3	12.7
Denmark*	36.3	35.3	16.9	16.2	11.2	11.9	14.1	15.4	11.4	11	14.7	13.8	13.1	12.2
Estonia*	21.9	18.5	25	24.1	25	18.5	6.3	5.6	34.4	35.2	31.3	25.9	12.5	11.1
Finland*	31.1	29.3	20.7	21.4	13.4	14.8	21.1	20.8	7.7	9	11.6	11.8	12.3	13.6
France*	37.8	32.9	15.5	17.4	9.4	9.3	10.8	12.1	9.6	11.7	17.4	17.9	21.9	22.6
Germany*	40.3	31.5	16.4	24.6	11.6	11.7	6.8	7.8	9.6	10.4	10.2	10.3	12.2	14.5
Greece*	39.3	35.8	18.7	21.1	11.5	13.1	18.3	17.3	10.3	12.5	9.5	12.8	19.8	18.5
Hungary*	21.3	15.1	16.4	24.4	9.8	11.8	6.6	11.8	16.4	19.3	16.4	16.8	11.5	12.6
Iceland#	25	26.5	25	22.1	10	13.2	27.5	16.2	7.5	7.4	10	17.6	12.5	8.8
Ireland*	24.4	20.1	24.6	23.5	9.9	11.3	25.1	24.7	14.1	19	18.8	18.7	22.5	24.1
Italy*	42.4	38	14.7	16.6	11.6	12.1	9.3	9.9	9.8	10.5	12.7	13.5	19.6	20.3
Latvia*	0	16.7	100	33.3	0	27.8	0	0	0	38.9	0	33.3	0	11.1
Lithuania*	38.6	32.1	26.3	25.6	5.3	6.4	19.3	16.7	26.3	29.5	19.3	20.5	10.5	10.3
Luxembourg*	28.6	28.6	0	4.8	14.3	19	14.3	14.3	7.1	23.8	28.6	23.8	14.3	14.3
Malta*	10.5	12.5	36.8	43.8	10.5	0	26.3	31.3	15.8	25	26.3	12.5	15.8	6.3
Netherlands*	36.6	34.7	18.9	19.8	10.5	10.8	10.3	10.4	13.2	14.2	11	11.3	13	12.9
Norway#	33.3	32.9	20.2	18.6	12.1	12.2	17.6	17.6	9.2	11.6	15.2	17.6	10.1	9.9
Poland*	28.5	28.4	23.6	21.6	5.6	11.6	9.7	12.4	18.1	15.4	20.1	18.4	17.4	13.5
Portugal*	22.7	20.9	16.7	19.1	13.6	18.2	7.6	10.9	24.2	24.5	31.8	34.5	15.2	13.6
Romania*	11.5	12.2	23.1	28.6	11.5	12.2	7.7	12.2	30.8	26.5	34.6	38.8	26.9	30.6
Slovakia*	33.3	11.1	25	33.3	8.3	11.1	0	0	16.7	37	8.3	25.9	25	25.9
Slovenia*	31.1	24.2	24.4	27.3	11.1	13.6	11.1	12.1	22.2	22.7	15.6	18.2	22.2	21.2
Spain*	34.9	30.9	18.4	20.1	16.4	16.3	12.7	12.7	10.3	11.5	15.7	16	16.8	17.7
Sweden*	33.8	32.5	23.3	22.7	10.5	11.4	20.7	20.3	8.2	9.3	11.7	12.5	12	12.2
Switzerland#	29.2	29.6	24.9	25.1	12.3	12.3	13.6	13.6	15.8	15.5	20.8	20.5	17.3	17
UK*	25.7	20.1	23.8	25.7	11.5	12.1	20	23.6	16.8	19.7	19.5	20.8	20.4	22
Turkey	52.2	48.2	14	15.1	8.4	10.3	12.6	12.2	3.3	4.3	6.4	8.4	10.9	10.4
Israel	31.7	31.6	16.4	17.9	17.9	17.4	17.2	17.4	18.6	18.6	10.2	11.3	19.9	20.2

J. Country Experts Consultation – Priority Areas of Health Systems Research (Summary)

Country	Health System Research Priorities
Austria	Financing of hospitals
Belgium	not reported
Bulgaria	Financing of health system, insurance models
Croatia	IT for information management
Cyprus	Financing, IT quality management
Czech Republic	Financing, sustainability, health insurance funds
Denmark	Financing, alternative ways for service provision
England	Assessment of the impact of reform (provider competition, payment mechanisms, commissioning), emergency planning
Estonia	Financing, purchasing for service provision
France	Financing, expenditure, coverage for disability, assessment of reforms (impact on access)
Germany	Privatisation, economic pressure to providers, integrated care, comparative health systems research
Ireland	Assessment of the impact of health care reforms, Resource allocation, international comparisons
Italy	Citizens information and empowerment, continuity
Lithuania	organisation of health services
Macedonia	Financing, purchasing, payment systems
Malta	Financing /funding sustainability
Netherlands	Governance issues
Norway	Financing systems, integrated care
Poland	not reported
Portugal	prospective analysis of health system changes, contracting, knowledge and information management, international comparisons
Romania	IT (e-health)
Slovakia	not reported
Slovenia	Networking and coordination of sectors, workforce planning, health policy development
Spain	Access, waiting lists
Switzerland	access, equality, international comparisons, payment systems
Turkey	financing, satisfaction (patient and provider)

Appendix 3 Additional information for Chapter 4: Health care organisations and service delivery

A. Selected MeSH terms applied in Pubmed and Embase for research on health care organisations

Table 3A1 MeSH terms applied in Pubmed

Appointments and Schedules	Organizational Culture, Culture and Objectives
Capacity Building	Outcome and Process Assessment (Health Care)
Consumer Health Information	Patient Care Management
Continuity of Patient Care	Patient Education, Participation and Satisfaction
Delivery of Health Care, Integrated	Physician's Practice Patterns
Nurse's Practice Patterns	Physician-Patient Relations
Efficiency, Organizational	Physicians
Guideline Adherence	Professional Practice
Health Facilities	Guidelines as Topic
Health Knowledge, Attitudes, Practice	Total Quality Management
Health Manpower	Credentialing
Health Services Needs and Demand	Safety Management
Hospitals	Models, Organizational
Institutional Management Teams	Hospital-Physician Relations
Long-Term Care	Health Facility Size

NOT "Health Care Reform"[Mesh] NOT "Health Services Accessibility"[Mesh])

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Great Britain OR Wales OR Scotland OR Northern Ireland OR England

Limits: hasabstract[text] AND Humans[Mesh] AND English[lang]

Table 3A1 MeSH terms applied in Embase

hospital personnel management	practice guideline'/exp AND physician
hospital bed capacity	management AND primary care
consumer health information	patient education
progressive patient care	patient participation
advanced practices nursing	patient satisfaction
organizational efficiency	doctor patient relation
outpatient department	Physician
knowledge management	professional practice
health personnel attitude	Accreditation
health care manpower	patient safety AND organization
hospital policy	educational model AND organization
multihospital system	doctor nurse relation

AND [humans]/lim AND [english]/lim AND [abstracts]/lim AND [embase]/lim AND [1-1-2000]/sd NOT [1-1-2010]/sd

'austria'/exp OR 'belgium'/exp OR 'bulgaria'/exp OR 'croatia'/exp OR 'cyprus'/exp OR 'denmark'/exp OR 'estonia'/exp OR 'finland'/exp OR 'france'/exp OR 'germany'/exp OR 'greece'/exp OR 'hungary'/exp OR 'iceland'/exp OR 'ireland'/exp OR 'italy'/exp OR 'latvia'/exp OR 'lithuania'/exp OR 'luxembourg'/exp OR 'macedonia (republic)'/exp OR 'malta'/exp OR 'netherlands'/exp OR 'norway'/exp OR 'poland'/exp OR 'portugal'/exp OR 'romania'/exp OR 'slovakia'/exp OR 'slovenia'/exp OR 'spain'/exp OR 'sweden'/exp OR 'switzerland'/exp OR 'turkey (republic)'/exp OR 'united kingdom'/exp

NOT

'epidemiology'/exp NOT 'public health'/exp

NOT

'clinical article'/exp OR 'clinical article' NOT ('clinical practice'/exp OR 'clinical practice') NOT ('medical practice'/exp OR 'medical practice') NOT ('treatment outcome'/exp OR 'treatment outcome')

B. Explanation of top 10 keywords study on health care organisations

Keyword	Description
Professional Practice (PP)	Professional Practice is about evidence-based practice research; has a domain that spreads from identifying the patterns of treatments' usage, improvement in professionals' work conditions and the environment for nurses, doctors as well as the primary care providers' interventions into lifestyle behavioural risk factors. The keyword has a number of sub-terms that count for different types of practices performed in medical profession sphere, both explicit and implicit.
Patient Care Management	Patient Care Management includes topics such as management of primary care and physician's practice patterns. The articles depict nurses and doctors specialist working with chronically ill patients. Some articles focus on the discrepancy of the type of care provided to different populations and explain inconsistent patterns in the delivery of health care. Articles on physician's practice patterns focus on the relation between patients, doctors and method of treatment.
Health Facilities (HF)	The topic Health Facilities encompasses articles on many different types of health facilities. Topics on administration, organization, and size of the health facilities and the relation with the individual physician; It contains assessments of the work environment on the grounds of patient responsiveness to treatment, or measurement of quality of provided care by physician's. The topic also contains evaluations of the changes in the facilities.
Physician	The keyword physician describes all aspects of work for physicians: increasing the quality of care via monetary and non-monetary benefits for a professional; education and practices of professionals including migration of physicians and the impact of continuation of professional training.
Safety management	Safety management deals with articles that refer to cases of wrong diagnosis and/or treatment (topic of medical risk); the necessity of improvement in the field; studies of drug/treatment administering in hospital units and differences in outcome. The topic contains assessment and development of feedback instruments for practitioners about their performance, which is also reflected in the outcomes for the patients.
Outcome Assessment (Health Care)	Articles on Outcome Assessment describe assessment and measurement of different instruments and their impact on medical treatments, research on quality of life, utilization of health care for chronic diseases and the use of health technology assessment instruments.
Patient Education, Participation, Satisfaction (PEPS)	Patient Education, Participation and Satisfaction is a combination of three keywords relating to patients and health care. Education reflects the necessary minimum knowledge each patient has to posses about the illness and the treatment they are coping with. Patient participation describes the involvement of patients and total population in decision-making on following through with procedures prescribed or forgoing the advice. Patient satisfaction topics are about satisfaction with the medical treatment or service provided in primary and secondary health care.

Keyword	Description
Guideline Adherence	In articles on guideline adherence a major line is placed on correct diagnosis and treatment by the doctor. It includes assessment of practice and motivation among medical professionals in treating patients within the directives. These articles are focused on the differences among hospitals and professions and the high impact of decision-making.
Health Knowledge, Attitudes, Practice	Health Knowledge, Attitudes and Practice articles are based on evidence-based research in the field of use and application of medical treatment and drugs. It is a combination of professionals' and patient behaviour in the medical environment.
Physician-Patient Relations	These articles include evaluations and views on the communication between doctors and patients.

C Additional tables and figures

Table 3C1 Total number of references from and on a country (absolute numbers, per 10,000 inhabitants and per 1 billion GDP (USD))

	No. of publications on a country			No. of publications from a country			Ratio
	Total Number	*per 10.000 population*	*per 1 billion GDP*	*Total Number*	*per 10.000 population*	*per 1 billion GDP*	on / from a country
Macedonia	7	0.03	1.21	2	0.01	0.34	3.50
Malta	7	0.17	1.19	3	0.07	0.51	2.33
Latvia	12	0.05	0.74	3	0.01	0.19	4.00
Luxembourg	12	0.26	0.32	1	0.02	0.03	12.00
Cyprus	13	0.18	0.77	4	0.05	0.24	3.25
Slovakia	20	0.04	0.42	2	0.00	0.04	10.00
Czech Rep.	24	0.02	0.19	7	0.01	0.06	3.43
Lithuania	26	0.08	1.01	14	0.04	0.54	1.86
Romania	26	0.01	0.26	8	0.00	0.08	3.25
Estonia	29	0.21	2.09	17	0.13	1.22	1.71
Bulgaria	30	0.04	1.10	14	0.02	0.51	2.14
Iceland	30	1.01	1.84	12	0.40	0.74	2.50
Slovenia	47	0.23	1.34	28	0.14	0.80	1.68
Hungary	48	0.05	0.43	22	0.02	0.20	2.18
Portugal	52	0.05	0.28	17	0.02	0.09	3.06
Croatia	67	0.15	1.72	45	0.10	1.16	1.49
Poland	105	0.03	0.35	72	0.02	0.24	1.46
Austria	124	0.15	0.41	63	0.08	0.21	1.97
Greece	193	0.17	0.78	125	0.11	0.51	1.54
Finland	239	0.46	1.22	177	0.34	0.91	1.35
Belgium	240	0.23	0.64	150	0.14	0.40	1.60
Turkey	254	0.04	0.70	216	0.03	0.60	1.18
Switzerland	315	0.43	0.85	226	0.31	0.61	1.39
Norway	316	0.69	1.05	252	0.55	0.84	1.25
Denmark	344	0.64	1.33	260	0.48	1.00	1.32
Spain	350	0.08	0.31	226	0.05	0.20	1.55
Sweden	529	0.59	1.48	398	0.44	1.11	1.33
France	543	0.09	0.25	372	0.06	0.17	1.46
Italy	544	0.09	0.31	393	0.07	0.22	1.38
Germany	728	0.09	0.26	490	0.06	0.18	1.49
Netherlands	921	0.56	1.46	742	0.45	1.17	1.24
Ireland	1411	3.44	7.03	678	1.65	3.38	2.08
UK	19060	3.18	8.49	9706	1.62	4.33	1.96
Average	**808.1**	**0.41**	**1.27**	**446.8**	**0.23**	**0.69**	**1.81**
Average excl	**199,8**	**0,22**	**0,85**	**140,7**	**0,14**	**0,49**	**2,58**

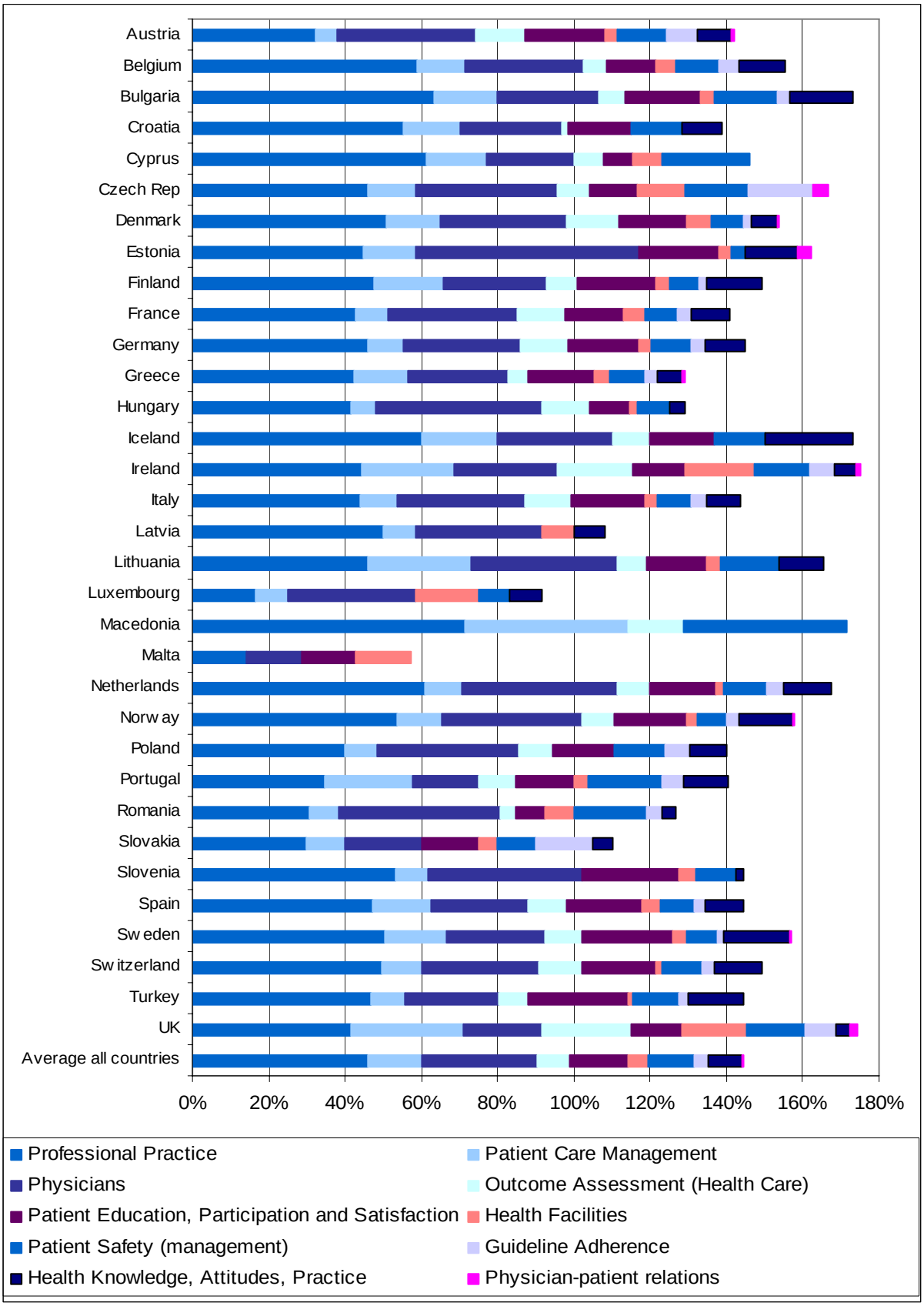

Figure 3C1 Ten most frequently occurring keywords in published research in the period 2000-2009 by country (as keyword)

Table 3C2 Overview table based on classification of articles (n=459) and EU projects (n=62)

Topic	EU-15 (n=249)	New EU MS (n=139)	Candidate MS (n=30)	EEA Mem-bers (n = 41)	Total (n=459)	EC projects (N=62)*
Intra-organisational control	30%	30%	23%	39%	31%	31%
Inter-organisational relations	11%	12%	7%	10%	11%	11%
Patient relations	26%	30%	33%	29%	28%	13%
Governance and Accountability	42%	38%	57%	39%	41%	45%
Topic: Type of care						
Primary care	32%	39%	37%	37%	35%	8%
Hospital care	31%	26%	23%	23%	28%	23%
Primary and hospital care	22%	22%	33%	29%	24%	52%
Not specified	10%	11%	7%	10%	10%	18%
Type of date						
Quantitative (survey) data	50%	58%	37%	61%	53%	-
Qualitative data, documents or literature studies	16%	13%	13%	17%	15%	-
Administrative or clinical data	11%	7%	20%	5%	10%	-
Combinations / other	18%	16%	27%	15%	17%	-
Unknown	2%	3%	0%	0%	2%	-

** Given the smaller number of EC projects, these were not classified according to the country studied.*

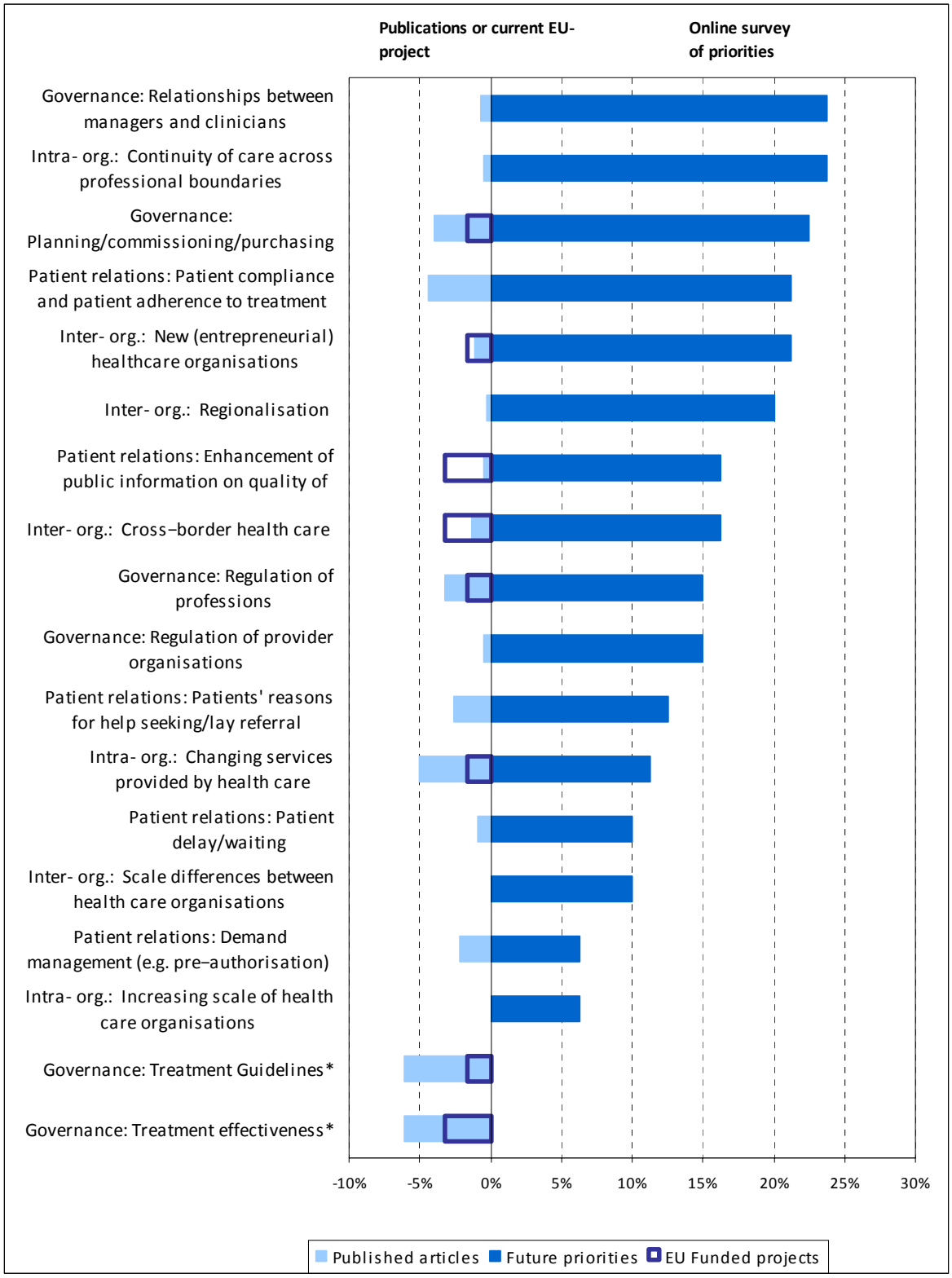

Figure 3C2 Comparison of past/current research topics with perceived priorities for the next two to five years (less than 25%)

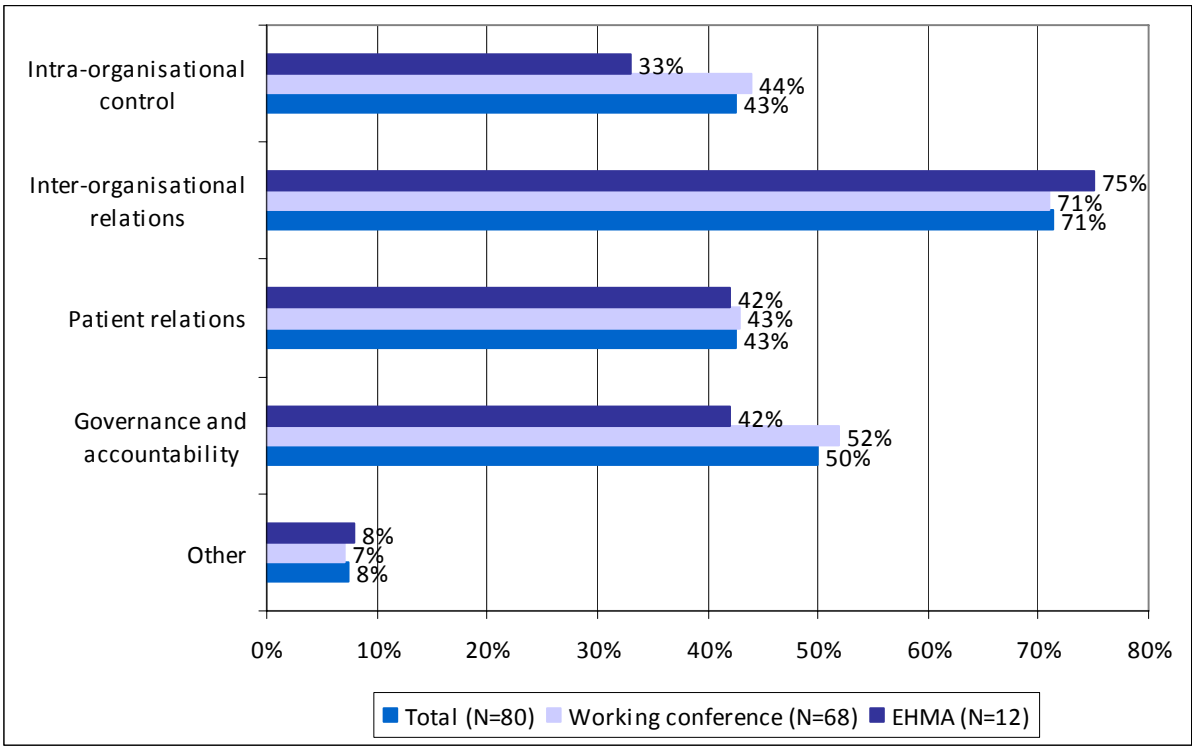

Figure 3C3 Main research topics on health care organisations within the next two to five years by type of respondents

Appendix 4 Additional information for Chapter 5: Health technology assessment

A. List of the included articles and reports from the EUnetHTA project

1. Carbonneil C, Quentin F, Lee-Robin SH, European network for Health Technology Assessment (EUnetHTA). A common policy framework for evidence generation on promising health technologies. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:56-67.
2. Moharra M (edt.). EUnetHTA handbook on health technology assessment capacity building. EUnetHTA work package 8. Barcelona: EUnetHTA, 2008. http://www.gencat.cat/salut/depsan/units/aatrm/pdf/eunethta_wp8_hb_hta_capacity_building.pdf. Accessed 24.03.2011.
3. FinOHTA. HTA core model handbook. Helsinki: EUnetHTA, 2008. https://fio.stakes.fi/htacore/handbook.html. Accessed 24.03.2011.
4. Quentin F, Carbonneil C, Lee-Robin SH (eds.). EUnetHTA web-based toolkit to facilitate European collaboration on evidence generation on promising health technologies. 7, strand A. Paris: EUnetHTA, 2008. http://www.eunethta.net/upload/Work%20Package%207/WP7A%20Deliverable%20Dec%202008%20(adjusted).pdf. Accessed 24.03.2011.
5. Kubesch N, Parada A, Moharra M, Estrada MD, Cortés M, Espallargues M, et al. (eds.) EUnetHTA information management in HTA organisations. EUnetHTA Work Package 8. Barcelona: EUnetHTA, 2008. http://www.eunethta.eu/upload/WP8/WP8Outcomes/Information%20Management%20in%20HTA%20Organisations-%20Survey%20report-CAHTA-May%202008(EUnetHTAProject).pdf. Accessed 25.03.2011.
6. Velasco Garrido M, Kristensen FB, Palmhøj Nielsen C, Busse R (eds). Health technology assessment and health policy-making in Europe: Current status, challenges and potential. London: World Health Organization on behalf of the European Observatory on Health Systems and Policies, 2008.
7. Lampe K, Mäkelä M (eds). EUnetHTA HTA core model for medical and surgical interventions 1.0R Work Package 4. Helsinki: European Network for Health Technology Assessment, 2008. http://www.eunethta.net/upload/WP4/Final%20Deliverables/HTA%20Core%20Model%20for%20Medical%20and%20Surgical%20Interventions%201%200r.pdf. Accessed 24.03.2011.
8. Lampe K, Pasternack I (eds). EUnetHTA HTA core model for diagnostic technologies 1.0R Work Package 4. Helsinki: European Network for Health Technology Assessment, 2008. http://www.eunethta.net/upload/WP4/Final%20Deliverables/HTA%20Core%20Model%20for%20Diagnostic%20Technologies%201%200r.pdf. Accessed 24.03.2011.
9. Lampe K, Makela M, Garrido MV, Anttila H, Autti-Ramo I, Hicks NJ, et al. The HTA core model: A novel method for producing and reporting health technology assessments. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:9-20.
10. Moharra M, Espallargues M, Kubesch N, Estrada MD, Parada A, Vondeling H, et al. Systems to support health technology assessment (HTA) in member states of the european union with limited institutionalization of HTA. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:75-83.
11. Moharra M, Kubesch N, Estrada MD, Parada T, Cortés M, Espallargues M, et al. (eds.). EUnetHTASurvey report on HTA organisations. EUnetHTA Work Package 8. Barcelona:EUnetHTA, 2008. http://www.eunethta.eu/upload/WP8/WP8Outcomes/HTA%20organisations%20report_final_EUnetHTA_Project.pdf. Accessed 25.03.2011.
12. Chase D, Milne R, Hicks N et al. (eds.). EUnetHTA HTA adaptation toolkit. Work Package 5. Southampton: EUnetHTA, 2008. http://www.eunethta.net/upload/WP5/EUnetHTA_HTA_Adaptation_Toolkit_October08.pdf. Accessed 24.03.2011.
13. NCCHTA (NIHR Coordinating Centre for HTA). Glossary of HTA adaptation terms. Southampton: EUnetHTA, 2007. http://www.eunethta.net/upload/WP5/Glossary%20of%20HTA%20Adaptation%20Terms%20November%202007.pdf. Accessed 24.03.2011.

14. Neikter SA, Rehnqvist N, Rosen M, Dahlgren H. Toward a new information infrastructure in health technology assessment: Communication, design, process, and results. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:92-8.
15. Palmhøj Nielsen C, Lauritsen SW, Kristensen FB, Bistrup ML, Cecchetti A, Turk E, et al. Involving stakeholders and developing a policy for stakeholder involvement in the European network for health technology assessment, EUnetHTA. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:84-91.
16. Pasternack I, Anttila H, Makela M, Ikonen T, Rasanen P, Lampe K, et al. Testing the HTA core model: Experiences from two pilot projects. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:21-7.
17. Quentin F, Carbonneil C, Moty-Monnereau C, Berti E, Goettsch W, Lee-Robin SH, et al. Web-based toolkit to facilitate european collaboration on evidence generation on promising health technologies. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:68-74.
18. Rosten C, Chase DL, Hicks NJ, Milne R, European network for Health Technology Assessment (EUnetHTA). Enhancing understanding: The development of a glossary of health technology assessment adaptation terms. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:42-7.
19. Simpson S, Wild C (eds). On the horizon. European newsletter on new and emerging health technologies. EUnetHTA; 2008. http://www.eunethta.net/Public/Communication/Newsletter_WP7_2008. Accessed 24.03.2011.
20. Turner S, Chase DL, Milne R, Cook A, Hicks NJ, Rosten C, et al. The adaptation of health technology assessment reports: Identification of the need for, and development of, a toolkit to aid the process. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:28-36.
21. Turner S, Chase DL, Milne R, Cook A, Hicks NJ, Rosten C, et al. The health technology assessment adaptation toolkit: Description and use. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:37-41.
22. Wild C, Simpson S, Douw K, Geiger-Gritsch S, Mathis S, Langer T. Information service on new and emerging health technologies: Identification and prioritization processes for a European union-wide newsletter. Int J Technol Assess Health Care. 2009 Dec;25 Suppl 2:48-55.

B. Summary of results

The table in this appendix summarizes the results of the literature review, including a summary of the identified trends in health services research in relation to HTA, and the research called for in the existing literature.

	Research trends	Future research agenda
The content of analysis in HTA		
Economic evaluation	Studies concerning economic evaluation in relation to HTA mainly addressed: - Cost-effectiveness analysis (CEA) (e.g. construction and sources of variation in results, and variations in and compliance with guidelines). - Assessment of effects (e.g. the consequences of applying different utility scoring systems such as SF-6D and HUI3, variation in measures of utility and willingness to pay, and consequences of variation). - Implications for comparison of results of	This literature review showed that despite great research activity there is still disagreement concerning the methods to apply when conducting economic evaluations as part of HTA. Issues of future research included: - The possibility of harmonizing measurements of economic evaluations. - The implications of applying different levels and perspectives of analysis - How to properly decide upon a model structure for economic modelling. - How to estimate and include learning effects in

	Research trends	Future research agenda
The content of analysis in HTA		
	economic evaluations. - Economic modelling (e.g. the usefulness and application of Bayesian modelling, guidelines, harmonization, decision uncertainty, and the quality of evidence). - How to estimate and include learning effects in economic evaluations. - The consequences of type of evaluator (e.g. manufacturer vs. university assessment groups). - Influence on decision making (e.g. reporting formats, scope of analysis, and transferability of results.	economic evaluations. - How to address uncertainty. - How to design economic evaluations, taking into account the needs of decision makers in terms of evidence requirements and presentation of results. - How to ensure transparency. - The possibility and purpose of applying international guidelines. - How economic evaluations can be conducted properly in the case of rare diseases. - How to deal with time lags between product launch and routine use.
Assessing the wider impacts of health technologies	Studies concerning the wider impacts of health technologies mainly addressed: - The development and application of specific methods for inclusion of wider impacts in HTA (e.g. EUnetHTA core model). - Discussions of why ethics should be part of HTA, and reasons for lack of its inclusion. - Discussion of the theoretical differences between and within research disciplines and implications for research methods (organisational aspects).	The lack of identified research concerning the wider impacts of health technologies in the literature review implies a need for research and methodological development in this area in general. Issues for future research included: - Clarification of the role of ethics in HTA. - Possibilities of agreement on a common methodology. - How multi-disciplinary research can be encouraged. In relation to the EUnetHTA core model, it should be explored if the model promotes a “western”, individualistic perspective that only fits certain types of organisations.
Best practice in undertaking HTA	Studies concerning best practice in undertaking HTA mainly addressed: - The harmonization of methods for undertaking and reporting HTA. - The advantages and disadvantages of standardization and harmonization of HTA methodology. - Transparency in relation to use of methods and reporting of HTA. - How ‘best practice’ should be defined.	Issues for future research included: - The possible benefit of standardization of methodology and evidence requirements. - Setting criteria for the judgement of qualitative research. - If variations in how HTA is performed affects its influence on decision making.

	Research trends	Future research agenda
The content of analysis in HTA		
	- The benefits of and how to include qualitative data and methodology in HTA. - International comparisons and time trends of HTA practice (e.g. definition, organisation, applied methodology, and type of technologies). - How results of HTA can be adapted to other settings, and how results of HTA can be shared.	
HTA Products		
Horizon scanning systems (HSS)/ early warning	Studies concerning HSS mainly addressed: - The processes and practices of HSS. - The role of EuroScan and the benefits of collaboration. - The criteria for selection of health technologies, sources to search for information, and the effectiveness and accuracy of HSS. - The adaption of established HSS to other settings. - The possibilities of sharing information (EUnetHTA/EuroScan newsletter).	Issues for future research included: - The possibility of closer collaboration and the possibility of creating a common horizon scanning centre. - How to increase the transparency of the priority setting process. - Evaluations of the accuracy of HSS. - Development of a method for wider dissemination of information on new and emerging technologies in a way that satisfies intended audiences.
Rapid assessment	Studies concerning rapid assessment mainly compared different programmes (e.g. scope, methods, and time).	Issues for future research included: - Studies of the quality and process of rapid assessment. - Exploration into how full HTA can be made shorter.
Mini HTA	Studies concerning mini HTA addressed: - The use of and attitudes towards mini HTA. - The quality of mini HTA.	In the future, the quality of the mini HTA should be further evaluated.
Core HTA	Articles concerning core HTA included introductions to and testing of the model.	The EUnetHTA core model still needs further testing and refining to ensure optimal usefulness and user-friendliness.
Adaption toolkit	Articles concerning the adaption toolkit described the development of the toolkit and a glossary.	As the EUnetHTA adaption toolkit is the first of its kind, further development and testing is required to address the quality assurance of the tool.

	Research trends	Future research agenda
The content of analysis in HTA		
Life cycle perspectives of health technologies		
	Studies concerning life cycle perspectives of health technologies mainly addressed: - Constructive medical technology - Coverage with evidence development (CED) - The impact of recommendations on the uptake of cancer treatments - The generation of evidence in the early stages of the lifecycle of health technologies (EUnetHTA web based toolkit).	In relation to CED, it should be explored how the limit of uncertainty should be set, and whether the uncertainty only should concern the quality of evidence or if the potential budgetary impacts and clinical importance should be included.
Challenges to HTA methodology		
	Studies addressing challenges to HTA methodology mainly concerned: - Methodological aspects related to constructive technology assessment (CTA) - Methods for assessment of orphan drugs - Challenges in relation to assessment of expensive cancer drugs - Challenges in relation to assessment of delivery modes - Addressing the equity-efficiency trade offs in economic evaluation within HTA - Challenges in relation to assessment of public health interventions - Methodological aspects of developing a stronger social embedding of HTA	Issues for future research included: - Research required into methods of assessing societal value of health technologies and the methods of funding development of orphan drugs - Adaptation of HTA to an evolving analysis object, evaluating organisational interventions - Research into methods for managing equity-efficiency trade offs - Emphasis on development and evaluation of public health measures. - Ways of measuring and summarising evidence about patient impact, organisational impact and impact on equity - Further research on implementation and impact

	Research trends	Future research agenda
The content of analysis in HTA		
	practice. - Development of HTA methodology as a response to demand from decision makers - Development of a model for assessment of telemedicine. - Improved assessment of medical devices - Linking of knowledge production to practice - Consensus on the clinically worthwhile benefit of new technologies - Assessment of health promotion and disease prevention - Assessment of interventional radiology.	- Harmonising requirements for information in HTA in Europe - Research on HTA concerning prevention - Research concerning new ways of assessing interventional radiology.
Development of HTA capacity and HTA programmes		
HTA Capacity	Studies addressing HTA capacity mainly concerned: - European initiatives of establishing HTA programmes, reporting the case of Romania and Estonia. - The EUnetHTA handbook on capacity building, developed in order to support the development of HTA in Europe. - Developments of educational programmes, including a curriculum for a European master of science in HTA, developed as part of the ECHTA project, and the Ulysses Program, developed in corporation between Canadian, Spanish and Italian HTA agencies.	Issues for future research included: - A broadened focus of HTA towards organisation and delivery of care. - Evaluations of the implications for health technologies for equity and inequality. - Further research in the area of transferability to provide immediate help to decision makers in countries with limited resources.
HTA programmes	Studies addressing HTA programmes mainly concerned: - Performance and description of HTA agencies and HTA programmes. - The challenges faced by HTA agencies and HTA programmes. - Differences and similarities of HTA agencies. - The development of information sharing and	Issues for future research included: - Assessment of the impact of HTA on policies and technology diffusion. - The need to strengthen HTA's link to policy, especially taking into account the countries with limited resources and experience in HTA. - Further development of educational programmes

	Research trends	Future research agenda
The content of analysis in HTA		
	networking among HTA agencies (ECHTA and EUnetHTA).	According to EUnetHTA, coordination, communication, and collaboration among HTA programmes needs to be further strengthened. Collaboration is especially important for countries without institutionalized HTA programmes, and particular support for introducing formal HTA should be dedicated to Eastern and Central Europe to address the growing interest in HTA.
Priority setting	Studies addressing priority setting mainly concerned: - Evaluation of methodology and procedures for prioritization between health technologies. - The importance of using different sources in the priority setting process.	Issues for future research included: - Further development of methods for priority setting. - Why some sources of information contributes more to the priority setting process than others.
Links between Policy and HTA		
Policy-HTA links	Studies addressing policy-HTA links mainly concerned: - The use of evidence (mainly economic evidence) in the development of local health policies. - Policy-HTA links specifically in relation to NICE processes and NICE guidance. - The impact of HTA (e.g. priority setting for adoption of health technologies, integration of HTA recommendations into organisational and clinical practice, and needs of decision makers). - The impact of HTA on decision-making, the needs and demands of policy-makers, and overview of the producers of HTA in Europe (EUnetHTA).	Issues for future research included: - HTA at hospital level: how to make HTA accountable at hospital level and the level of integration between HTA and budgeting - Development of methods for routinely evaluation of impact - Development and testing of theoretical frameworks for evaluation of impact - Studies of how successfully HTA enables control of diffusion of technologies - Research into the professional and organisational responses to evidence based guidance. - Evaluation of the relative contributions of various implementation strategies to practice patterns - Research concerning the marginal return of investment on HTA - Development of HTA methodology to meet the needs of policy-makers - Development of more

	Research trends	Future research agenda
The content of analysis in HTA		
		transparent priority setting within HTA - Theoretically based research concerning utilisation of HTA in policy-making
Stakeholder involvement in HTA	Studies addressing stakeholder involvement in HTA mainly concerned: - The involvement of consumers in HTA - Stakeholder involvement in the NICE process. - Stakeholder involvement in order to increase the impact of HTA. - Processes developed in the EUnetHTA project with the purpose of involving stakeholders in the further development of European collaboration in relation to HTA.	Issues for future research included: - Research concerning systematic attempts to engage the views of citizens - Continued attention to balanced stakeholder representation within HTA

Appendix 5 Additional information for Chapter 6: Benchmarking and performance indicators

Search details

MeSH terms of Pubmed and their description, applied additionally to iterative search.

Keyword	Description
Quality Indicator	Norms, criteria, standards, and other direct qualitative and quantitative measures used in determining the quality of health care. Year introduced: 1998
Benchmarking	Method of measuring performance against established standards of best practice. Year introduced: 1998
Outcome and Process Assessment (Health Care)	Evaluation procedures that focus on both the outcome or status (OUTCOMES ASSESSMENT) of the patient at the end of an episode of care - presence of symptoms, level of activity, and mortality; and the process (ASSESSMENT, PROCESS) - what is done for the patient diagnostically and therapeutically. Year introduced: 1979
Quality Assurance, Health Care	Activities and programs intended to assure or improve the quality of care in either a defined medical setting or a program. The concept includes the assessment or evaluation of the quality of care; identification of problems or shortcomings in the delivery of care; designing activities to overcome these deficiencies; and follow-up monitoring to ensure effectiveness of corrective steps. Year introduced: 1980

Restrictions

Countries

Restriction to literature from Europe: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, England, Great Britain, Northern Ireland, Scotland, Wales;

Search period

1.1.2000 until 1.1.2010

Sources

PUBMED

Free entered search terms

Safety management/methods, medication errors

Mortality, mortality/tends, mortality rates, death certificates, death registration, standardized mortality ratio, perinatal mortality, hospital mortality, quality indicators;

Cancer screening, survival rate, cure, registries, staging, control, quality indicators;

hospitals, performance, quality indicator, quality indicators, patient readmission, medication error, safety management, waiting lists, medical records, coding, audit;

Appendix 6 Overview of included literature on Health technology assessment

This appendix provides an overview of the literature included in the literature review. The literature is presented in tables corresponding to sections of the part of the report concerning existing health services research in relation to HTA (The content of analysis in HTA, HTA products, Life cycle perspectives of health technologies, Challenges to HTA methodology, Development of HTA capacity and HTA programmes, and Policy-HTA links). Due to the amount of literature, the references concerning the content of analysis in HTA are further divided into three tables (economic evaluation, assessing the wider impacts of health technologies, and best practice in undertaking HTA).

The tables present the name of the first author, year of publication, the scientific environment, objectives, focus, methods, and conclusions of the article/report. Furthermore, if the authors of the article point to areas of future research, these are also presented in the tables.

Complete appendix is available as webdocument on www.healthservicesresearch.eu

Appendix 7 Overview over included literature on benchmarking and performance indicators

HEALTH SERVICES RESEARCH RELATED TO BENCHMARKING AND PERFORMANCE INDICATORS

Literature

Performance Indicators and benchmarking related to mortality

Performance Indicators and benchmarking related to cancer care

Performance Indicators and benchmarking on care delivered in hospitals

Patient Safety Indicators

Performance Indicators in Primary Care

Patient Experience

Research on concepts and performance frameworks

Research on the practice of benchmarking and performance improvement

Complete appendix is available as webdocument on www.healthservicesresearch.eu

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