Continuous Morbidity Registration at Dutch Sentinel General Practice Network 2010

Mrs. Dr. G.A. Donker

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http://www.nivel.nl
nivel@nivel.nl
Telephone 030 2 729 700
Fax 030 2 729 729

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Foreword

For the sentinel practices Continuous Morbidity Registration (CMR) the year 2010 was – with the flu pandemic fresh in our memories – more like business as usual with the continuation, amendment or cancelling of old topics and the start of a few new ones.

As a matter of content, the beginning of a new topic “gut feeling of the GP” regarding cancer is important. During their study, GPs are learning to make a diagnosis systematically, by asking questions and by examination. In practice, GPs not only apparently go for a structured approach, but also use their intuition and experience. The distinction “right versus not-right” plays a role in this respect. The importance of this intuition is broadly recognised, even in findings of disciplinary courts, however, quantitative studies into this matter never took place before. In the questionnaires, filled in at the moment that the gut feeling occurs and three months after that, the cause of the gut feeling is explored, the follow-up strategy of the GP and compared in the end with the diagnosis. In this annual report you will find a first account of the meaning of this intuition for the diagnosis of cancer.

In 2010, Gabriëlle van Son took her doctor’s degree in research regarding eating disorders, mainly using data from the CMR sentinel practices. The research that was started in 1985 in the sentinel practices shows the link between boulimia and urbanisation and it shows that early diagnosis in the GP practice leads to a better prognosis. This research is an important addition to eating disorder research that is normally done in specialised centres for eating disorders. The findings of this research have been presented at several international conferences and have been published in international as well as Dutch scientific journals.

The topic urinary tract infections, that was started in 2009 was continued in 2010 for the target groups with less frequent occurrence of urinary tract infections but for whom specific treatment directions are necessary for various reasons, like pregnant women, children and men. Data on antibiotic

sensitivity of uropathogens isolated in men are hardly available. Increasing (multi) resistance reported in the hospital population and the increasing prevalence of the so-called Extended Spectrum Beta-lactamases (ESBL) in the veterinary sector stress the importance to gain insight into the antibiotic sensitivity of unselected uropathogens derived from patients in the GP practice. The GPs send urine samples of these patients with urinary tract infections to Maastricht University Medical Centre for bacterial analysis and for defining the resistance. In this way, the sentinel practices enable us to gain insight into the resistance patterns in the extramural setting, also for men, children and pregnant women. Generally speaking these data show a more favourable picture, fortunately, regarding antibiotic resistance than the data from hospitals. In this way, the sentinel practices make an important contribution to the objectives of the SWAB ("Stichting Werkgroep Antibioticabeleid", Foundation Working Group Policy on Antibiotics).

The increased attention for adverse effects of cosmetics has lead to the beginning of a registration concerning side effects of cosmetics in the sentinel practices in 2009. In 2010, a questionnaire was added to the registration of this topic. This research in the sentinel practices runs parallel with research into symptoms caused by cosmetics reported by dermatologists and directly reported by consumers via a web site of the RIVM (National Institute for Public Health and the Environment). Information from these sources is put together and this has lead to a warning in 2010 to the Dutch Food and Consumer Product Safety Authority (VWA: Voedsel en Waren Autoriteit) on the relevant side effects caused by some cosmetic products. In this report, the extent of this problem in the GP practice with special attention for differences between men and women is described.

Research that has been running since 1979 regarding (attempts to) suicide in the CMR Sentinel practices was presented at several international conferences. No clear growing trend is seen, however, recent incidents in Apeldoorn and Alphen aan de Rijn focus the attention again on sensitive persons and groups with, sometimes, far-reaching consequences for society.

After the flu pandemic in 2009 there was no flu epidemic in the year 2010, but indeed right in the beginning of 2011. In the flu season 2010/2011 the new flu variant A(H1N1)2009 turned out to have developed into a normal seasonal flu virus. The epidemic of this season was caused by influenza

A(H1N1), as well as influenza B; both strains were incorporated in the flu vaccine.
Most GP Information Systems (“Huisartsen InformatieSystemen, HISsen”) consist of an application, the so-called sentinel module, that enables us to record the data of the sentinel topics. In participating practices that use a HIS but in which this module could not yet be integrated, a comparable web application is available. Additional data by questionnaires are mainly recorded on paper. This annual report is exclusively based on electronically recorded data via the sentinel module or the web application.

Prof. dr. F.G. Schellevis
Chairman of the Counseling Committee

1 Introduction

Continuous Morbidity Registration (CMR) is an information system based on records kept by general practitioners. A national network of general practices, covers with the patients registered in these practices about 0.8% of the Dutch population. The network structure takes account of the geographical distribution of the population and its distribution over areas with different degrees of urbanisation (see pp 17-20). The GPs in the network, the sentinel doctors, weekly assess and deliver data with regard to certain illnesses, events and procedures in general practice.

Since 2009, the data on the topics are exclusively electronically registered and delivered. Most GP-information systems now contain an application, the so-called sentinel module, that facilitates the registration of these data. For participating practices, not having the integrated model at their disposal yet, a web application has been made available. Supplementary data gathered via questionnaires still are mostly registered by pencil and paper. This annual report is based on data assembled electronically, either via the sentinel module or via the web application.

Each year an update is made of the composition of populations of the sentinel practices by gender and age. Consequently it is known to what population the gathered data are related (the epidemiological denominator). Usually, data are presented as frequencies per 10,000 men or women (see page 30). Each year the Counselling Committee selects the topics for which data will be registered. The Committee also considers requests and suggestions for new topics by other parties. If a decision is made for the inclusion of a new topic a supervisor working at Nivel or from outside who is responsible for the registration is assigned.
At least five conditions must be met for a disease or occurrence to be registered:

1 The importance of the topic must be described.
2 Strict and unambiguous criteria must be definable for the disease or occurrence to be registered.
3 Application of these criteria must not take too much time and must fit in with the GP's work.
4 A need must exist for representative information at the national level.
5 The CMR Sentinel Practices must be the best source of information.

The recording of data for a topic is discontinued if the topic ‘owner’ feels that data has been collected for a sufficiently long period of time, or if a different registration system is going to gather more or less the same information, or if insurmountable problems have arisen in the recording of data.

This report provides background information on each topic included in the registration for the first time. Refer to previous reports for information about "old" topics. See pages 179-183 for an overview of the years when topics were first included in the registration.
In 1976, besides collection of regular weekly data, CMR sentinel practitioners also started to provide data from so-called "incidental studies". These studies focus on relatively uncommon diseases and occurrences. Appendix 3 lists the subjects covered by the studies. Here we report the data assembled in 2010. The difference with other topics is that the data are requested only once a year, usually immediately after the end of the year. This approach allows data to be gathered retrospectively on subjects for which the need for registration did not become apparent until after the start of the year. One condition is that the subject must be well imprinted in the memory of the doctor, as may be the case with topics as requests for euthanasia or the implementation of palliative sedation.

1.1 International cooperation

The CMR Sentinel General Practice Network has been participating in international projects since 1985.
At present the oldest international project is the European Influenza Surveillance Scheme (EISS). From August 2008 this international collaborative program of, among others, all EU-countries is executed by the

European Center of Disease Control (ECDC) in Stockholm. In ECDC sentinel networks of GPs and national influenza centers of participating countries collaborate. Apart from all EU countries also Norway, Ukraine, Switzerland, Serbia and Turkey are involved. At the same time, flu data delivered to the ECDC are also delivered to the World Health Organization (WHO).

In end-of-life research also from the beginning (2005) work has been done in international cooperation, initially only with Belgium, but over the past years with more European countries, such as Spain and Italy.

2 Counselling Committee

A condition of the grant received from the Ministry of Health, Welfare and Sport is that the Counselling Committee that oversees the registration system must in principle consist of:

The committee members in 2010 were:

Counselling Committee:	Mrs. Dr. Ir. B.H.B. van Benthem, (RIVM)
	Drs. R. Poos, (RIVM)
	S.M. Handgraaf, Sentinel GP
	Mrs. Dr. E.E. Stobberingh, MD PhD, microbiologist (Maastricht University Medical Centre)
	Prof. Dr. F.G. Schellevis, PhD Chairman, (NIVEL)
Project leader:	Mrs. Dr. G.A. Donker, (GP and Epidemiologist)
Secretary:	Mrs. M. Heshusius-van Valen

The counselling committee met twice in 2010.
In close collaboration with the National Information Network of GPs (LINH), in which NIVEL, IQ Healthcare*, the National GP Association (LHV), and the Dutch GP Society (NHG) are partners, the CMR project team consists of the following persons:

Project leader	Mrs. Dr. G.A. Donker, (GP and Epidemiologist)
Secretary	Mrs. M. Heshusius-van Valen (NIVEL)
ICT support	Mr. J. Gravestein and Mr. R Davids (NIVEL) Mr. H. van den Hoogen, Mr. S. Visscher, Mr. W Tiersma and Mrs. J. Donkers (IQ healthcare)
Contact	Mrs. C. Walk and Mrs. E. Wentink (IQ healthcare)

* IQ Healthcare is a Department of Radboud UMC Nijmegen.

3 Sentinel General Practice Network staff seminar in 2010

For the appropriate functioning of the Sentinel Network it is of utmost importance that Sentinel GPs and their co-workers, the Counselling Committee, the topic managers and project leaders meet regularly. Every year, at the start of a new registration period, which runs from the first of January to December 31, an annual meeting is held. From 2009, this annual meeting is combined with participants and GPs of the National GP information system (LINH). The GPs could assemble their own programme by choosing from the various workshops that were provided. This meeting was highly appreciated.

The meeting was held on January 15 2010 and contained presentations on the following subjects:

PLENARY SESSION

10.15-10.30	Opening by Prof. Dr. P.P. Groenewegen, program director (NIVEL)
10.30-10.55	Flu pandemic with influenza AH1N1 – what do we learn from it? Prof. dr. A.D.M.E. Osterhaus

SEPARATE SESSIONS FOR CMR SENTINEL GENERAL PRACTICE NETWORK AND LINH

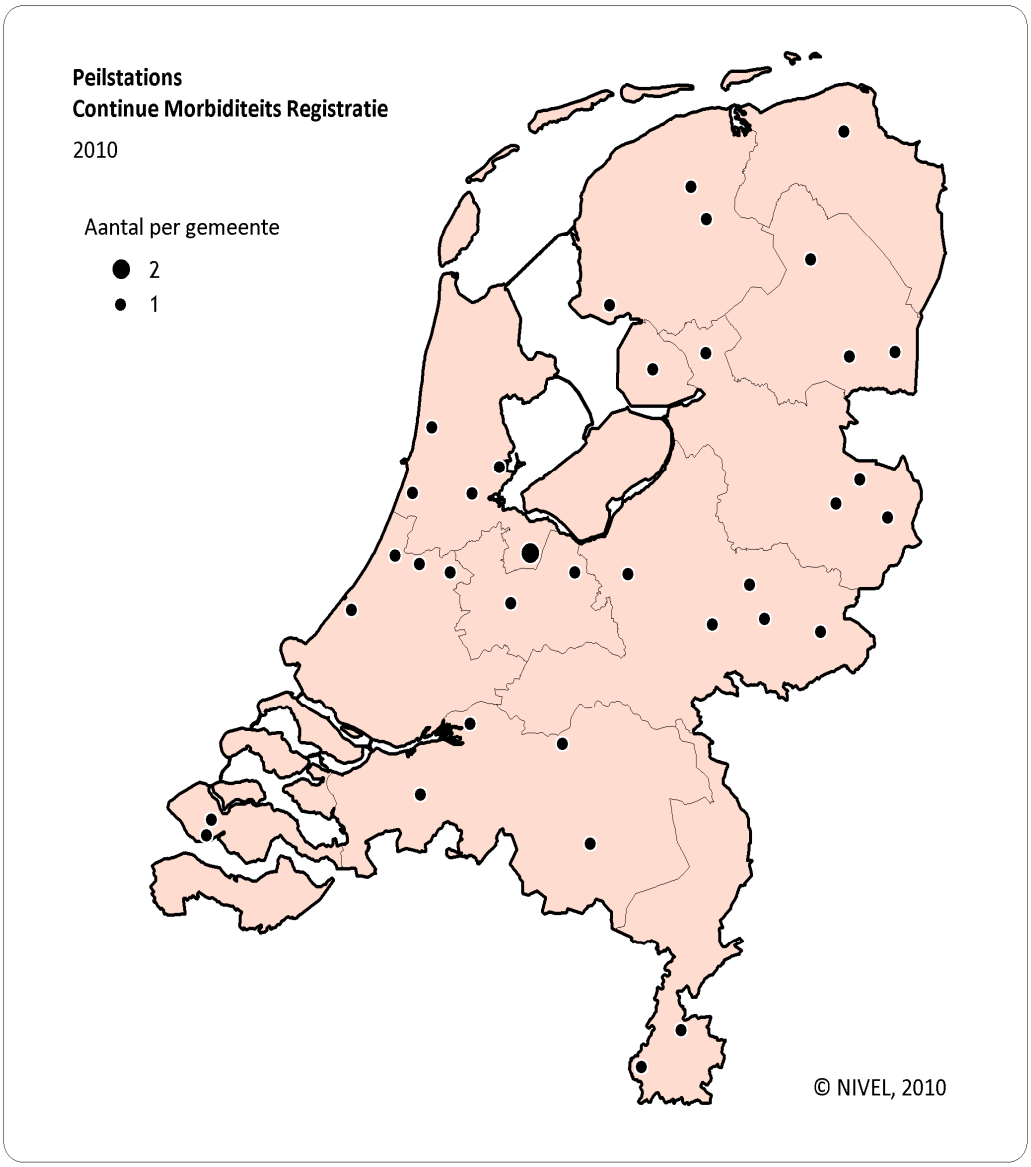
	CMR sentinel general practice network	LINH
11.00-11.15	From Hong Kong flu to Mexican flu and what do we monitor in 2010 and how? Gé Donker (NIVEL)	An interactive program concerning: - How do we register multidisciplinary care in GP-information systems? - Indicators for quality of GP care
11.15-11.30	Gut feeling. A new international study in the sentinel practices. Lea Jabaaij (NIVEL)	- Episode-focused monitoring. - The LINH-registration agreements and the interpretation of these by GPs and researchers
11.30-11.45	Cosmetic allergy: what is known and what not? Explanation of a new questionnaire. Joanne Nijhof (RIVM)	With the cooperation of , among others, Lianne Wennekes (IQ), Stefan Visscher (NIVEL), Robert Verheij (NIVEL), Jozé Braspenning (IQ)

OPTIONAL SESSIONS

	Parallel session 1	*Parallel session 2*
12.10-12.25	Unwanted pregnancy, what to do? Ciel Wijsen (Rutgers WPF)	Trends in incidence of std and std-medication in the electronic records of the LINH-practices. I. van den Broek (RIVM)
12.30-12.45	The std-consultation in the GP practice, the state of the art. Jan van Bergen, GP (SoaAids Ned.)	Meeting the costs functionally. Christel van Dijk (NIVEL)
12.50-13.05	Knowledge quiz GP care: Ingrid van den Broek (RIVM), Ellen Stobberingh (SWAB), Michael Echteld (VU), Adam Meijer (NIC), Gabriëlle van Son (Centrum voor Eetstoornissen Parnassia), Gé Donker (NIVEL)	Self-test via the internet: effects of the kidney-check in GP practice. Mark Nielen (NIVEL)

4 Distribution of sentinel practices in the Netherlands

Figure 4.1



For location level practice see p. 177-178

4.1 Practices

There were 41 sentinel practices in the Netherlands in 2010. The number of participating general practitioners working in the sentinel practices was 63.

In this annual report the following breakdown and codes are used in processing and discussing the data:

N stands for the Groningen, Friesland and Drenthe province group (northern provinces);
O stands for the Overijssel, Gelderland and Flevoland province group (eastern provinces);
W stands for the Utrecht, Noord Holland and Zuid Holland province group (western provinces);
Z stands for the Zeeland, Noord Brabant and Limburg province group (southern provinces);
1 stands for address density category 5 (rural municipalities);[1]
2 stands for address density category 4-3-2 (urbanised rural municipalities and municipalities with urban features):
3 stands for address density category 1 (municipalities with 100,000 or more inhabitants).

Appendix 1 (pp177-179) contains a list of the GPs who participated in the sentinel practices in 2010. Two or more GPs cooperate at eleven of the sentinel practices (two GPs cooperate in 6 practices, three in 2 practices, 1 in four practices, 1 in five practices, and six in 1 practice). The percentage of GPs working in a group practice nationwide in January 2010 was 82%; but 52% for the sentinel practices. In the sentinel practices there exists a relative overrepresentation of single practice exist. There were eleven dispensing sentinel doctors, ten in rural areas and 1 in an urbanised rural municipality, which is 18% of the total number of sentinel doctors. The figure for the Netherlands as a whole is 7%.[2]

Tables 4.1 and 4.2 show the distribution of the number of sentinel doctors and sentinel practices in each province group and address density group in the 2000-2010 period.

Table 4.1 Distribution of sentinel physicians (GPs) and sentinel practices per province group in the 2001-2010 period[3]

	N; Groningen, Friesland and Drenthe		E; Overijssel, Gelderland and Flevoland		W; Utrecht, Noord- and Zuid- Holland		S; Zeeland, Noord-Brabant and Limburg	
province-group	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices
2001	13	6	15	10	23	19	14	10
2002	13	6	15	10	23	18	14	10
2003	11	5	14	9	24	18	14	10
2004	12	5	7	6	23	17	14	10
2005	12	5	12	11	28	24	13	9
2006	10	4	9	9	25	22	9	7
2007	14	8	12	10	25	20	10	7
2008	14	8	12	10	24	19	11	8
2009	13	8	12	10	23	16	11	8
2010	12	8	13	10	23	14	15	9

Table 4.2 Distribution of sentinel physicians (GPs) and sentinel practices per address density in the 2001-2010 period

	1; rural municipalitie < 500/km^2		2; urbanised rural municipalities together with municipalities with urban characteristics 500-2500/km^2		3; municipalities with 100,000 or more inhabitants >2500/km^2		total	
address density	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices
2001	10	7	43	27	13	11	66	45
2002	10	7	43	27	12	10	65	44
2003	8	5	44	28	11	9	63	42
2004	6	4	39	25	11	9	56	38
2005	11	9	43	31	11	9	65	49
2006	11	9	28	21	18	14	53	42
2007	12	10	36	26	13	9	61	45
2008	14	11	33	25	14	9	61	45
2009	10	9	32	24	17	9	59	42
2010	14	11	36	23	13	7	63	41

4.2 Practice populations

A census of most practice populations was held in 2010. The results of the census have been used in processing the CMR Sentinel General Practice Network data from 1 January 2010. The CMR project was organised with the aim of achieving a sample of approximately 1% of the population of the

Netherlands. The structure of the project takes geographical distribution (the 'province groups' referred to above) into account, plus distribution over areas with differing population density ('urbanisation degree'). A check was done to see whether these criteria still were met. The tables show that he northern part of the country is overrepresented, whereas the western regions are underrepresented. In the last few years, the CMR population represents 0.8% of the Dutch population. This is accounted for in the recruitment of new practices.

The population of the Netherlands increased in 2009 by 89,202 and stood at 16,574,989 on 1 January 2010 (www.cbs.nl).

Table 4.3 Comparison of the population of the sentinel practices with the total population of the Netherlands, 2010

	population of the Netherlands**	population of sentinel practices* (with percentages)	
province group:			
N	1,713,954	27,328	(1.6)
E	3,517,162	30,442	(0.9)
W	7,395,605	43,846	(0.6)
S	3,948,268	32,799	(0.8)
gender:			
men	8,203,476	66,293	(0.8)
women	8,371,513	68,122	(0.8)
total (1-1-2010)	16,574,989	134,415	(0.8)

* Practices census 2010

** 1-1-2010 Netherlands Statistics *(Centraal Bureau voor de Statistiek)*.

The total practice population of all Sentinel Practices at the beginning of 2010 was 134,415 persons, 0.8% of the Dutch population consisting of > 16 million inhabitants. The table below shows the percentages of men and women in the Dutch population who are registered with the sentinel practices in 2010, with a breakdown according to age group and province group are presented in table 4.4.

Table 4.4 Percentage of men and women in the Dutch population registered with sentinel practices, by age group, province group and for the Netherlands as whole in 2010

	province group								Netherlands	
	N		E		W		S			
	m	f	m	f	m	f	m	f	m	f
0-4	1,6	1,6	0,9	0,9	0,6	0,6	0,8	0,8	0,8	0,8
5-9	1,7	1,7	1,0	0,9	0,6	0,6	0,8	0,7	0,8	0,8
10-14	1,7	1,7	1,0	1,0	0,6	0,6	0,8	0,7	0,9	0,8
15-19	1,6	1,6	1,0	0,9	0,6	0,6	0,7	0,8	0,8	0,8
20-24	1,4	1,5	0,8	0,8	0,6	0,6	0,9	1,0	0,8	0,8
25-29	1,4	1,6	0,7	0,8	0,5	0,6	1,1	1,0	0,8	0,8
30-34	1,4	1,5	0,8	0,8	0,5	0,6	1,0	1,0	0,8	0,8
35-39	1,6	1,6	0,8	0,8	0,5	0,6	0,9	0,8	0,8	0,8
40-44	1,7	1,8	0,9	0,9	0,6	0,6	0,8	0,8	0,8	0,8
45-49	1,8	1,8	0,9	0,9	0,6	0,6	0,8	0,7	0,8	0,8
50-54	1,6	1,6	0,8	0,8	0,6	0,6	0,8	0,7	0,8	0,8
55-59	1,4	1,6	0,8	0,8	0,6	0,7	0,7	0,7	0,8	0,8
60-64	1,6	1,6	0,8	0,8	0,6	0,6	0,8	0,8	0,8	0,8
65-69	1,6	1,6	0,9	0,9	0,6	0,6	0,9	0,9	0,8	0,9
70-74	1,7	1,6	0,9	0,9	0,6	0,6	0,9	0,9	0,9	0,8
75-79	1,5	1,5	0,9	0,9	0,6	0,6	0,9	1,0	0,8	0,8
80-84	1,5	1,3	0,9	0,9	0,6	0,6	1,0	1,0	0,9	0,8
>85	1,4	1,3	0,9	0,8	0,7	0,7	1,0	0,9	0,9	0,9
total	1,6	1,6	0,9	0,9	0,6	0,6	0,8	0,8	0,8	0,8

4.3 Scale and continuity of reporting

The number of days per year that each sentinel practice reports and the combined number of reporting days per week of all sentinel practices have been checked and processed since 1975. This check is made to monitor the completeness and continuity of reporting. The sentinel doctors are requested to let it be known when they are unable to report due to holidays or personal circumstances.
The maximum number of days on which reporting is possible depends on the number of weeks in the year and on the number of sentinel practices. The number in 2010 was 10,480: 52 weeks x 5 days x 38 sentinel practices; 3 practices registered 38, 41, and 40 weeks, due to the start of their participation during the year.

In table 4.5 the absolute numbers and percentages are given.

Table 4.5 Maximum number and actual number of reporting days per year (2001-2010)

year	maximum number of reporting days	actual number (absolute)	reporting day percentage
2001	11,700	9,455	80,8%
2002	11,440	8,948	78,2%
2003	10,920	8,445	77,3%
2004	10,070	7,983	79,3%
2005	12,740	10,011	78,6%
2006	10,465	7,905	75,5%
2007	10,860	9,205	84,8%
2008	10,450	9,087	87,0%
2009	10,755	9,381	87,0%
2010	10,480	9,965	95,0%

The percentage of reporting days in 2010 is much higher than in 2009 The table below contains a breakdown by province group and address density.

Table 4.6 Reporting by province group and address density in 2010

province group		address density	
N	95,2%	1	93,4%
E	94,4%	2	96,1%
W	93,1%	3	94,9%
S	97,7%		

Figure 4.2 shows the weekly reporting of all sentinel practices. The influence of public holidays is clearly visible. The average number of non-reporting days per week is 26 (maximum is 210 days).

Figure 4.2 Number of days in 2010 that data were recorded

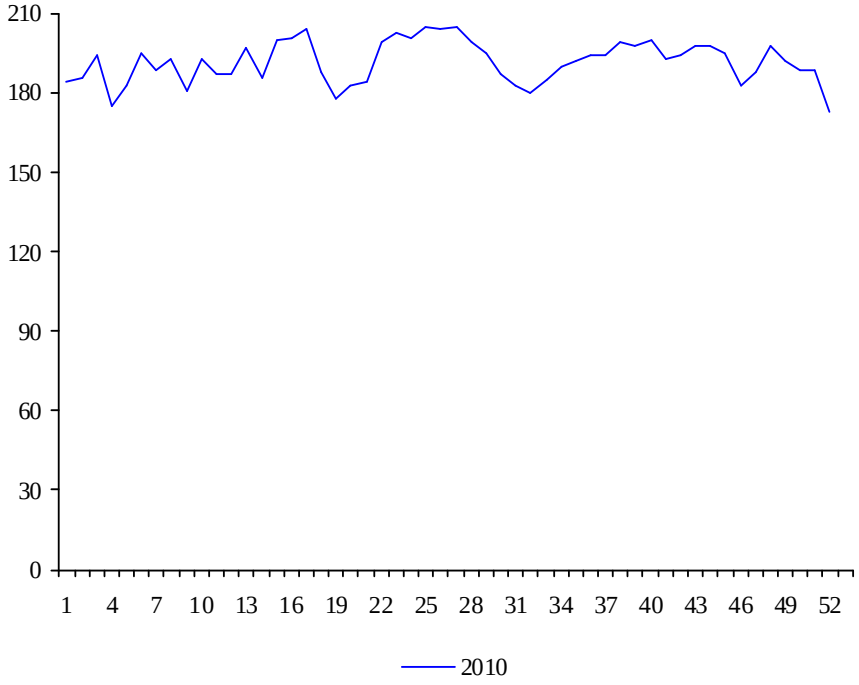


Table 4.7 shows the frequency distribution of the number of non-reporting days at each sentinel practice. The average number of non-reporting days per sentinel practice in 2010 was 13, which is less than in 2009 (33).
A breakdown into single and group practices reveals a significant difference, i.e. 15 and 7 days, respectively. This is in agreement with the expectation that in collaborative practices the continuity of reporting is better guaranteed.

Table 4.7 Frequency distribution of the number of non-reporting days per sentinel practice (2001-2010)

number of non reporting days	number of sentinel practices									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
0	3	3	2	2	1	2	3	8	-	5
1-9	1	1	1	-	-	1	8	3	7	18
10-19	2	1	1	-	1	1	6	15	8	8
20-29	1	-	2	3	4	3	5	4	10	4
30-39	3	7	5	3	7	4	5	2	9	5
40-49	14	12	12	9	12	8	6	4	4	1
50-59	7	8	7	15	11	8	5	1	1	-
60-69	5	2	3	2	4	7	2	2	1	-
70-79	3	1	1	-	2	-	1	2	-	-
80-89	3	2	-	1	2	1	-	1	-	-
90-99	2	-	-	-	1	1	2	1	-	-
>99	1	7	8	3	4	6	2	2	2	-
total number of sentinel practices	45	44	42	38	49	42	45	45	42	41
average	49	56	59	55	56	61	37	31	33	13
median	48	48	48	52	49	66	31	17	23	7

Closer examination of the table reveals an increase in non reporting days over the years until 2006, after which it decreased. A major failure to report i.e. no reporting by a sentinel practice on more than 50 days per year does not occur in 2010, in 2009 at 10 % and in 2008 at 20% of the sentinel practices. The three practices that registrated in 2010 not for more than 50

days were all practices that started to participate during the year. Illness of the GP, moving of the practice and shift to a new His-system were the most frequent reasons for non-reporting over a prolonged period of time in the previous years.

4.4 Surveillance topics and incidental studies

In 2010 data were registered from the following topics. Between brackets the year is given in which the topic was entered for the first time.

1 Influenza (and influenza-like illnesses) (1970);
2 End-of-Life study (2005);
3 Chickenpox (2000);
4 Pneumonia (2007);
5 Suicide (and attempted suicide) (1979);
6 STD (2008);
7 Gastro-enteritis (1996);
8 Unwanted pregnancy (2003);
9 Urinary tract infections (2009);
10 Whooping cough (1998);
11 Cosmetic allergy (2009);
12 Gut feeling (2010);

A weekly report is the norm. Consequently, a sentinel doctor also reports patients seen after office hours by a locum (with the exception of influenza and influenza-like illnesses). Diagnoses and advice given by telephone are not reported, with the exception of those concerning influenza.

In addition data were registered in 2010 for the following incidental studies (between brackets the year is shown in which the topic was started).

13 Eating disorders (1985)
14 Request for euthanasia (1976)
15 Palliative sedation (2005)
16 Diabetes mellitus (2007)

An alphabetical list of all topics since 1970 is provided in appendix 2 (pp 179), together with the years during which the data were registered.

4.5 Analyses

This report contains the results of registration of topics in 2010. The data were processed at NIVEL.

Three tables are presented routinely for each subject:
1 absolute number of patients by gender and age group;
2 absolute number of patients by gender and province group;
3 absolute number of patients by gender and address density.

Tables 1, 2 and 3 are produced each week for surveillance purposes and each quarter and year for annual reporting purposes.

With the exception of the information provided per sentinel practice, the data is also presented per 10,000 of the total practice population (relative frequencies). Frequencies have been rounded off. A frequency below 0.5 per 10,000 inhabitants is rounded off to '0'. '_' denotes that no cases were reported.
A frequency based on fewer than five reported cases is stated in brackets. A frequency of new cases of a disease in a certain period of time is referred to as 'incidence' or 'incidence rate' in epidemiology. The term 'prevalence' refers to all cases of the disease that exist in a certain period of time or at a certain moment in time. There are also absolute and relative incidences and prevalences.
The cumulative incidence of periodic prevalence (per year) in general practice is calculated in this report in all instances per 10,000 inhabitants, men or women. Appendix 4 (p 184) shows the age structure of the Dutch population on 1 January 2010, which can be used to calculate absolute numbers for the Netherlands.

Data from practices reporting only 0, 1 or 2 days of the week are not processed i.e. the reported cases are not included in the "numerator" and the practice population not included in the "denominator". Data from practices reporting more than 2 days per week were processed normally.
A correction factor used to be applied because enquiries among sentinel doctors revealed that an absence of 1 or 2 days merely meant that the work was shifted to a different time.

The tables were produced using the weekly returns, with frequencies being calculated on the basis of the average population present in the period concerned.

As mentioned in the introduction, the purpose of this report is to present data, not to provide a complete analysis of that data.

The following annual tables are included (pp 185-190).

1 Cumulative, i.e. all sentinel practices in a standardised format, year 2010, weeks 01-52, pp 1-3.[4]
2 Province group standardised according to illness, year 2010, weeks 01-52 pp 1-3.[4]
3 Address density, standardised according to illness, year 2010, weeks 01-52, pp 1-3.[4]

4.6 Extrapolation of observed frequencies to the Dutch population as a whole

For each topic a general impression is given of the numbers of patients, consultations, actions and events in the Netherlands. The figures presented are based on frequencies calculated using data recorded by sentinel practices in the Continuous Morbidity Registration programme. As pointed out in previous reports, readers should bear in mind when examining the tables that while the populations of the sentinel practices represent the Dutch population as a whole with reasonable accuracy (see also pages 18-20), the sentinel doctors are a select group. Consequently it is impossible to determine conclusively to what extent the results vary from the situation that exists in reality. Variances may differ depending on the nature of the topic. Caution should be exercised when examining topics that include intervention by a GP. Similarly, the 'suicide and attempted suicide'[5] topic appears to differ from data recorded elsewhere, probably because these occurrences are not always reported to a GP. With regard to the topics: sexually transmitted diseases and pneumonia, only practices reporting these items in 2010 and previous years were included in the analysis in order to decrease underreporting. As regards the registration of data in general, the sentinel doctors almost definitely act as a select group, but this must inevitably benefit the project. Nevertheless, readers should examine **not only** the extrapolated numbers, but should also refer to the chapters concerned. To allow correct interpretation of the extrapolated figures, the details of the total Dutch population per year are presented first, in thousands.

Table 4.8 Dutch population by gender, in thousands, 2001-2010 (CBS)*

year	men	women	total
2001	7,910	8,077	15,987
2002	7,972	8,133	16,105
2003	8,016	8,177	16,193
2004	8,046	8,212	16,258
2005	8,066	8,240	16,306
2006	8,077	8,257	16,334
2007	8,089	8,269	16,358
2008	8,112	8,293	16,405
2009	8,156	8,329	16,486
2010	8,203	8,372	16,575

* Numbers as on 1 January of each year.

4.7 Confidence intervals

Reliability margins have to be applied when examining the incidence rates and prevalence rates estimated for the entire Dutch population. The table below provides an impression of the incidence rates and prevalence rates, for relative and absolute numbers.

The table should be read in the following way. If a frequency of 1 per 10,000 patients is observed in the sentinel practices' total population of approximately 134,415 patients (1st column), the 95% confidence interval is 0.47 – 1.53 per 10,000 (2nd column). It then follows that the estimated absolute number in the Dutch population is 1658 (3rd column), and that the 95% confidence interval is between 772 and 2545. The table shows how these estimates relate to a frequency at the sentinel practices of 1 to 1,000 per 10,000 patients with some intermediate 'steps'. The confidence intervals are particularly high at the lower frequencies.

Table 4.9 Confidence intervals of estimates of incidence and prevalence and sentinel station practices per 10,000 and the absolute numbers

frequency per 10,000		Netherlands (absolute numbers)	
frequency	95%CI	absolute number	95%CI
1	0,47 - 1,53	1658	772 – 2,545
10	8,31 – 11,69	16575	13,785 – 19,390
100	94,68 – 105,32	165750	157,052 – 174,698
1,000	983,96 - 1016,04	1657500	1.632,147 – 1.685,353

For the total groups of men and women separately, each comprising about half of the total population, the confidence intervals are only a little wider than shown in the table. For separate 5 or 10-year age groups, the intervals obviously are much wider, because these groups are smaller in size (with thanks to Mrs. C. van Dijk, NIVEL).

5 Influenza(-like illness)

Topic owner: National Influenza Centre *(Nationaal Influenza Centrum)*
(1970-2010)

Introduction

Influenza is an important health care and public health problem.
Influenza has been linked to an increase in the number of consultations and visits by GPs, as well as to an increased workload in health care and nursing institutions, an extra load on hospitals as a result of more referrals and admissions and an increase in the mortality rate. In addition, absenteeism due to influenza means loss of production from the workforce and pupils not attending school.

Cases of influenza occur every year in the Netherlands and throughout the rest of the world. The usual 'influenza season' runs from week 40 to week 20 of the following year. In the so-called inter pandemic situation an influenza epidemic actually only occurs in the winter in the northern hemisphere. A pandemic also may occur outside this season and this phenomenon did happen in 2009. Since registration of influenza-like illness (ILI) began, the influenza epidemics have always started between mid-November and the beginning of March, except for the pandemic in 2009, that from the beginning of October (week 41) lead to an epidemic in the Netherlands, earlier than ever before over the 40 years of registration of IAZ in the CMR sentinel practices.

The history of well-described outbreaks of respiratory infections dates from 1173-1174. The incidence of airway infection described in that winter is considered to be a good description of an influenza epidemic. Since the end of the 12th century there have been a number of descriptions of (sometimes worldwide) outbreaks of what appeared to be influenza.
In the 20th and 21st century the world was hit by four pandemics (the Spanish flu (1918-1919), the Asian flu (1957-1958), the Hong Kong flu (1968-1970) and the Mexican flu (2009-2010) of which the flu outbreak in 1918-1919 made the most impression and left frightened people in its wake:

approximately 40 million dead throughout the entire world.
In 1933 various parts of the influenza puzzle started to fall into place and the influenzavirus was identified and held responsible for small or larger outbreaks of acute respiratory infections where it was not unusual for the infected person to die. It was also proven that influenza could be transmitted from animal to animal, from animal to human and from human to human.

After the 2nd World War the newly set up World Health Organisation decided in 1949 to monitor influenza. National Influenza Centres were established to track the occurrence of influenza and report to the WHO. However, it was only at the start of the 1960s that sentinel doctors began to register the occurrence of influenza among the population (in England and Wales). Other European countries followed. For example, the Netherlands set up the CMR Sentinel General Practice Network system in 1970 as a representative national network that succeeded the local networks in a number of large cities.
At the start of the 1990s the quality of the influenza surveillance system was further improved. From 1992/1993, sentinel doctors in an increasing number of European countries took a nose and/or throat swab from patients with an influenza-like illness (ILI) or an acute respiratory infection. These swabs were then sent for further tests at the laboratory of the National Influenza Centre for virological determination. This procedure is also applied in the Netherlands.

Method

The GPs register patients who consult them for an acute influenza-like infection known as ILI, that meets the Pel criteria.[6] The age of the patient is also recorded.
The doctor is asked to take a nose and throat swab from 2 patients per week which are then sent for further testing to the National Institute for Public Health (RIVM) (Infectious Diseases Diagnostics and Screening Laboratory). This laboratory tests for a number of pathogens, including the influenza and RS viruses. The number of pathogens for which tests are performed can differ from year to year.
The results are analysed and reported throughout the year but they are presented in this report from week 40 to week 20 of the following year.

Results

In the 2009/2010 season the baseline above which raised level of flu activity can be observed, was maintained at 51 per 100,000. This line is based on statistical analysis of the incidence of ILI during the last 10 seasons outside the endemic period. Increased influenza activity is supposed to be increased if the incidence of ILI surpasses the baseline of 51 per 100,000 for two consecutive weeks and if samples sent to RIVM are found to contain influenza viruses. The method for calculation of the baseline was developed by the European Influenza Surveillance Scheme (EISS) in order to harmonize the baselines of the various European Countries, taking into account the variety in health systems.
After the pandemic in 2009, no flu epidemic occurred in the year 2010, but that changed shortly after the new year. At the start of January (week 1) the ILI-incidence amply surpassed the background level. At the same time the weekly number of virus detections and hospital admissions increased. The third week in January 2011, with the highest incidence of 11 cases per 10,000 inhabitants, a (mild) epidemic was reached. In the Netherlands, less people had the flu than during the pandemic in 2009, In week 8 all clinical and virological parameters had returned to background levels and that continued to be so until the end of the season. The epidemic lasted for 7 consecutive weeks. (Figure 5.1). The surveillance activities in the sentinel practices were maintained also in this year for the whole year.

RIVM received 698 samples over the whole year from patients with ILI and 673 samples of patients with other respiratory tract infections (ARI). During the week with the highest incidence of the epidemic, in 75% of the samples of patients with ILI the influenza virus was found. In over 40% of all patients in which influenza was demonstrated in the samples the causal virus was the AH1NI pandemic influenza virus of 2009, which was seen as a normal seasonal flu virus. Influenza virus type B co-circulated with the A(H1N1)2009 influenza virus and ultimately in nearly 60% of the patients with influenza positive samples influenza virus B was found. Influenza virus A(H3N2) was detected sporadically. In 6% of the samples from patients with ILI and also in 6% of the samples of patients with ARI RS-virus was found. All types A and B influenza viruses that were tested on sensitivity to the antiviral remedies oseltamivir and zanamivir turned out to be sensitive to it. All influenza A(H1N1) 2009 and A(H3N2) viruses that were tested on

sensitivity to the adamantine antiviral remedies (amantadine and rimantadine) turned out to be resistant.

No marked regional differences in influenza activity were observed. The highest incidence (15 per 10.000 inhabitants) was noted in week 3 in the northern part of the country (Figure 5.2).
In contrast to previous seasons the incidence was higher in the big cities (Figure 5.3). As usual, the highest incidence did occur in the age group 0-4 years, who were not vaccinated this season, in contrast to the previous year(Figure 5.4). This year too, relatively few 65-plus people were suffering from ILI.

Figure 5.1 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, for the Netherlands in, 2008/2009 and 2009/2010 and 2010/2011

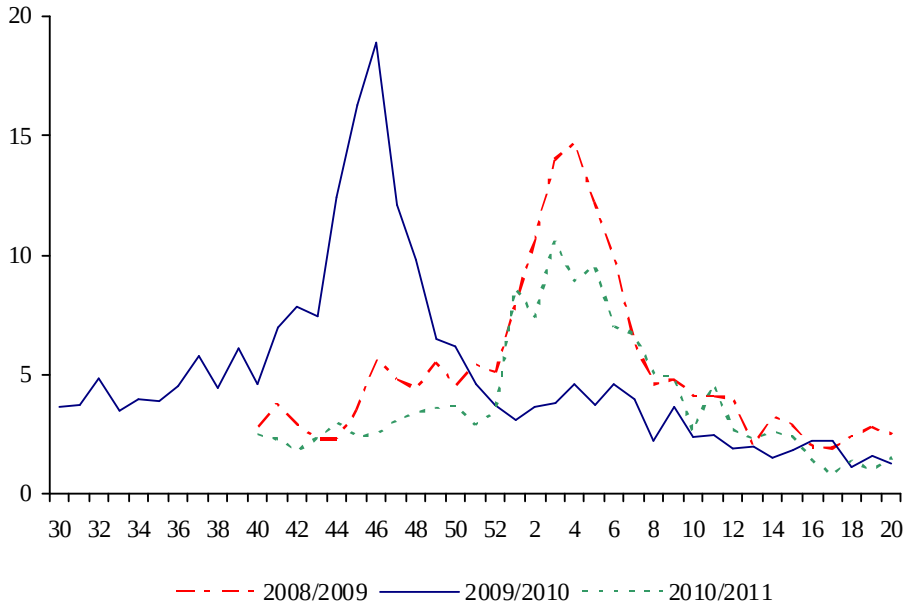


Figure 5.2 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, according to population density in 2010/2011

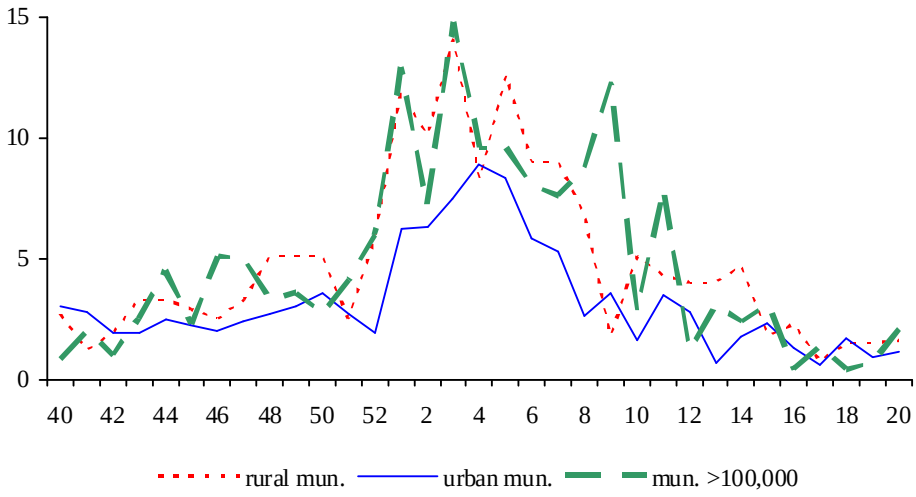


Figure 5.3 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, per province group in 2010/2011

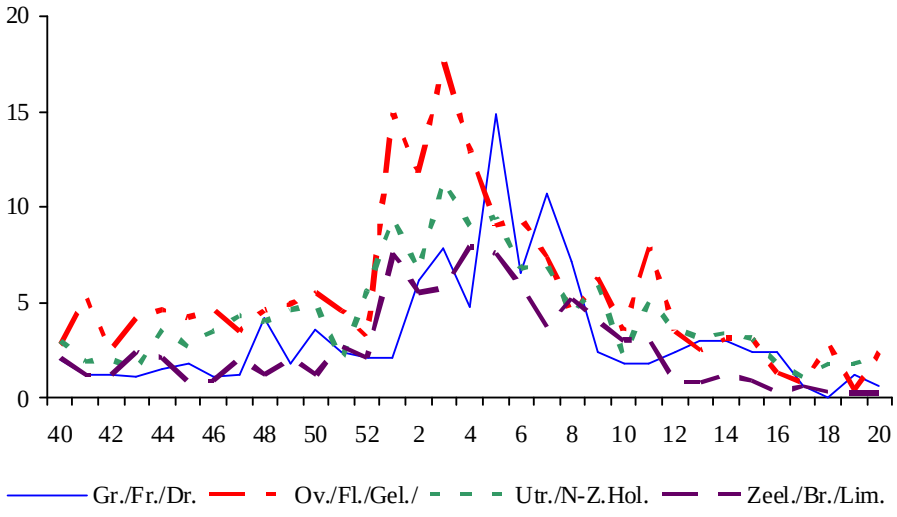


Figure 5.4 Number of incidental patients with influenza-like –illness, per 10,000 per age group, season 2010-2011

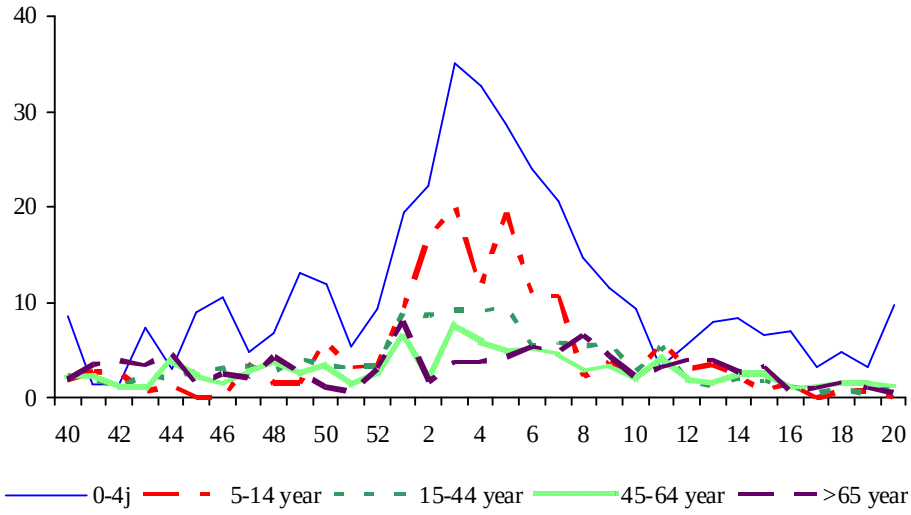


Table 5.1 Number of incidental patients with influenza(-like illness), per 10,000 inhabitants, 2001-2011

year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
total calendar year	113	157	122	71	208	190	134	131	168	275	128
highest weekly incidence per 'season'		13	7	15	26	14	8	7	15	19	11

Extrapolation

Table 5.2 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
influenza like complaints		
2001	113	181,000
2002	157	253,000
2003	122	198,000
2004	71	116,000
2005	208	339,000
2006	190	310,000
2007	131	219,000
2008	168	276,000
2009	275	442,000
2010	128	212,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

During this season too, the flu epidemic was mainly caused by the in 2009 pandemic A(H1N1) virus and the influenza virus B. In the Netherlands, less patients were reported with ILI by the GP than during the pandemic in 2009. The surveillance by the sentinel practices was this year also maintained

during the whole year. The epidemic started in week 1 2011 and lasted for seven weeks. The peak incidence was reached in week 3; 11/10,000 were reported that week by the GPs. Thereafter the incidence decreased slowly. The background level was reached in week 8. No extra risk groups were vaccinated outside the usual ones. As usual the highest incidence did occur in the age group 0-4 year. The low incidence among persons > 65 years was also in this season noteworthy.

This topic remains on the weekly returns

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6 Pneumonia

Topic owner: Mrs. Dr. E.E. Stobberingh SWAB (2007-2010)

Introduction

In primary care respiratory infections, notably pneumonia's, are an important reason to prescribe antibiotics. Although previous investigations indicated that antibiotic resistance of respiratory pathogens (the ARI-EL study) was not a major problem, there were arguments to start a new study on this subject 4 years later. Surveillance of resistance requires regular monitoring of the micro-organisms involved (www.swab.nl). This study may serve also as a description of the point zero situation after the implementation of pneumococcal vaccination in 2006.

The aims of the study are to assess the incidence of pneumonia in general practice and to identify the causing pathogens.

The bacteriological swabs will be analyzed for the presence of the most common pathogens. In addition, the sensitivity of these pathogens for antibiotics frequently used in general practice is determined.

The sampling will provide insight into the prevalence of bacterial pathogens in the Netherlands in patients with suspected lower respiratory tract infection, and in the prevalence of antibiotic resistance for these pathogens. The results will have direct clinical relevance for the management of low respiratory infections in general practice and will be used in adjusting the guidelines composed by the Dutch Society of General Practitioners.

Method

The general practitioners are asked to register new patients with the clinical diagnosis of pneumonia with ICPC-code R81. It is not essential that the diagnosis has been confirmed by x- ray. Still, it is asked whether a thorax photo has been made and whether the patient has been hospitalized.
The following questions are asked:
- Has a sample been taken for culturing?
- Has the diagnosis been confirmed by x-ray?
- Is the CRP level increased?
- Is there leukocytosis (leukocytes > 10 per mm^3)?

The GPs are also asked to take a sample for bacteriological investigation from every new patient suspected for pneumonia and send it to the Maastricht University Medical Center. The samples are analyzed for the most common respiratory pathogens. The sensitivity for various antibiotics, notably those frequently used in general practice, are determined. The swabs plus send and return envelopes are provided by the Maastricht University Medical Center (MUMC) and are analyzed at the department of microbiology of MUMC. GPs are informed on the results of the bacteriological investigation within about one week. If ILI is the cause of pneumonia, this will be reported electronically and the GPs should also send samples for virological identification to RIVM. This also takes one week. Data from sentinel practices reporting about pneumonia not only once were excluded from the annual analysis because it is unlikely that pneumonia does not occur in a whole year in a given practice. Including the data of these practices would lead to an underestimation of the incidence in general practice.

Results

Table 6.1 shows the number of patients with pneumonia per province group and address density. The incidence of 54 cases per 10,000 is at comparable level as in 2009 (therefore, in the year of the pandemic there was no increased incidence) and is, like the previous years the highest in rural areas. The results relate to 36 reporting sentinel practices.

Table 6.1 Number of patients with pneumonia per 10,000 inhabitants, per province group, address density and for the Netherlands, 2007-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2007	39	47	62	61	73	45	68	54
2008	48	47	76	64	94	48	69	59
2009	63	65	56	26	94	40	65	55
2010	68	47	72	22	74	49	45	54

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Seasonal influence

Comparison of the incidence per season shows that pneumonia occurs mostly in winter and less often in summer. In 2010 this was also the case and the peak was in the three months after the influenza epidemic (table 6.2).

Table 6.2 Number of patients with pneumonia per 10,000 inhabitants per quarter, 2007-2010

	weeks 1-13	weeks 14-26	weeks 27-39	weeks 40-52
2007	18	11	9	15
2008	19	13	9	17
2009	18	10	10	18
2010	20	13	9	13

Age distribution

The incidence of pneumonia is the highest in infants (1-4 year) and the elderly (65 years and older). The highest incidence occurs in persons of 85 years and older: 134 per 10,000. In elderly persons above 70 years the incidence is higher in men than in women. In the younger age groups the differences between men and women are inconsistent (table 6.3).

Table 6.3 Number of male and female patients with pneumonia per 10,000; per age group and for the Netherlands, 2007-2010

	2007			2008			2009			2010		
age group	m	f	t	m	f	t	m	f	t	m	f	t
<1	(65)	(33)	49	107	75	92	(17)	(18)	(17)	145	(67)	107
1-4	139	92	103	116	69	93	110	46	78	133	69	101
5-9	32	48	40	73	46	60	39	31	35	43	47	45
10-14	15	23	19	31	11	21	35	44	39	31	43	36
15-19	25	23	24	31	(7)	19	38	21	29	14	(0)	7
20-24	(10)	(10)	10	20	(8)	14	16	25	21	31	(9)	20
25-29	(7)	(6)	(7)	(8)	12	10	10	16	13	19	15	17
30-34	15	30	23	31	38	34	24	32	28	(6)	19	13
35-39	38	36	37	39	40	40	44	48	46	30	42	36
40-44	26	47	36	59	42	50	33	46	39	44	44	44
45-49	35	38	36	44	31	37	45	47	46	44	30	37
50-54	34	37	35	67	44	56	35	46	40	35	21	28
55-59	81	78	80	29	68	48	58	62	60	23	47	35
60-64	43	71	57	65	68	67	70	56	63	74	85	80
65-69	128	77	102	77	83	80	75	73	74	82	113	98
70-74	124	88	105	122	50	84	122	106	114	120	63	91
75-79	200	92	138	198	143	167	122	92	105	145	52	93
80-84	225	152	178	466	119	249	291	123	181	255	145	188
>85	492	258	323	518	281	349	296	301	300	335	310	319
total	55	54	54	67	52	59	55	55	55	56	52	54

Extrapolation

Table 6.4 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total (m+f)	m	f	total (m+f)
Pneumonia						
2007	55	54	54	44,000	45,000	89,000
2008	67	52	59	54,000	43,000	97,000
2009	55	55	55	45,000	46,000	91,000
2010	56	52	54	46,000	44,000	90,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

The registration of pneumonia shows a clear correlation with the seasons: the highest incidence occurs in the first trimester of 2010, straight after the influenza epidemic in 2009. There was no increase during the influenza pandemic in 2009. Only at old age the incidence in men is higher than in women, probably due to more co-morbidity in men related to smoking in these age categories (COPD and cardiovascular disease). It would be interesting to know which bacteriological pathogens were isolated from these patients and for which antibiotic they were susceptible. This item will be addressed in a separate publication. Also extension of the diagnostic

armamentarium with virological studies may be of interest. This has already been performed in patients with ILI and pneumonia. This item too will be addressed in a separate publication.

This topic was discontinued in 2011 and will be started in 2012 without bacteriological sampling.

7 Chickenpox

Topic owner: Dr. G.A. Donker (2000-2010)

Introduction

Chickenpox is one of the infectious illnesses that can be treated by primary health care providers, in cases where people are unable to handle the situation themselves. Specialised hospital care is only required in cases in which dangerous complications arise, such as Varicella pneumonia or Varicella meningitis, especially among adults. Chickenpox infection at the end of pregnancy is a very serious condition, both for mother and child.[7] A study may serve as baseline before the eventual implementation of vaccination. In the USA and Japan vaccination against chickenpox is common practice since 1995 and in Germany since 2004. In the Netherlands a vaccine against chickenpox with live weakened virus has been registered since 2007, to be used in special cases such as patients with a transplant or patients undergoing chemotherapy, but thus far is not added to the national vaccination program.

Method

In 2001-2010 only the number of patients which the GP diagnosed as having chickenpox was recorded. In 2000 additional information was gathered about the incidence of chickenpox in groups of patients consulting or not consulting their GP.

This report exclusively contains information about the results of the registration of chickenpox in the electronic records. The additional information from 2000 has been published elsewhere (Fleming et al.). See the list of publications below.

Results

The number of chickenpox patients per 10,000 inhabitants is shown in Table 7.1 by province group, address density and for the Netherlands as a whole.

Table 7.1 Number of chickenpox patients per 10,000 inhabitants by province group, address density and for the Netherlands as a whole in 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	17	28	25	22	17	24	27	24
2002	18	45	31	30	21	33	32	32
2003	15	38	27	28	46	22	26	27
2004	9	29	29	31	39	18	36	25
2005	10	18	24	17	14	18	28	19
2006	21	20	35	36	31	25	39	30
2007	10	11	29	28	17	21	27	21
2008	11	7	25	16	10	13	35	16
2009	10	7	17	4	9	10	16	11
2010	18	13	19	20	13	16	31	18

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Following the epidemic in 2002 and the stepwise decrease in the years thereafter, 2006 showed an epidemic comparable to 2002, predominantly striking the western and southern part of the country. The incidence in 2010 was higher than in the previous 2 years. The incidence was the highest in the big cities like in the previous years.

Seasonal influences

Patient numbers per 10,000 persons reported by GPs per quarter are presented in table 7.2.

Table 7.2 Number of patients with chickenpox per 10,000 persons per quarter in 2001-2010

	weeks 1-13	weeks 14-26	weeks 27-39	weeks 40-52
2001	9	8	5	3
2002	9	11	7	5
2003	10	8	6	3
2004	8	9	5	3
2005	6	5	4	4
2006	10	10	6	4
2007	7	8	2	4
2008	5	5	2	3
2009	3	3	3	2
2010	5	6	4	4

The incidence of chickenpox was higher in the first half of 2010 than in the second half. This was also the case in the previous years 2000-2009.

Age distribution

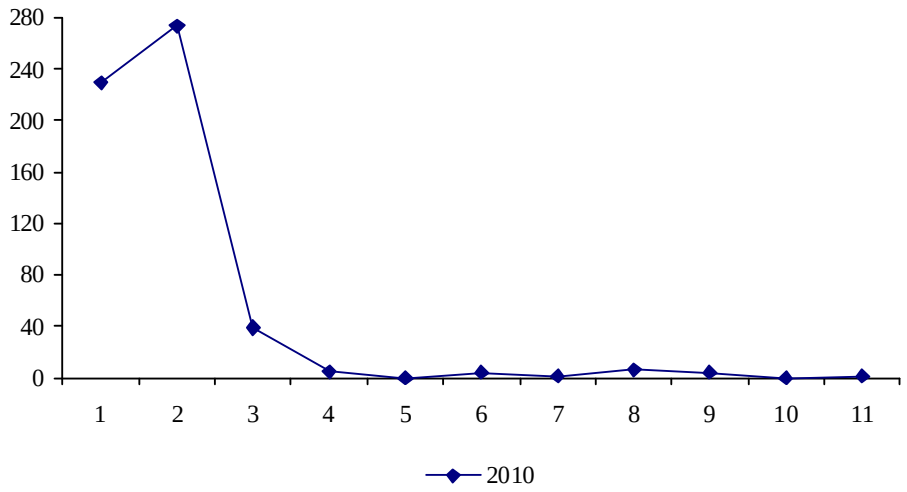
The incidence of chickenpox in the Netherlands per 10,000 persons is shown by age group in Table 7.3.

Table 7.3 Number of patients with chickenpox per 10,000 persons by age group and for the Netherlands as a whole in 2001-2010

age group	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
2001	320	281	70	12	(4)	6	7	5	(3)	(3)	-
2002	301	359	136	11	(3)	(4)	8	6	(3)	(3)	(1)
2003	284	358	63	9	(3)	8	(4)	7	(4)	-	-
2004	225	311	85	(5)	(7)	(6)	(6)	(5)	(5)	(2)	-
2005	217	232	44	(6)	(4)	(6)	(4)	(3)	(2)	(3)	(2)
2006	305	331	102	7	(2)	13	(4)	(5)	8	(0)	(1)
2007	235	278	53	(2)	(3)	(2)	(3)	(3)	(5)	(1)	(1)
2008	207	199	41	8	(5)	(3)	(2)	(2)	(0)	(2)	(1)
2009	90	159	21	(3)	(0)	(2)	(2)	(2)	(4)	(1)	(0)
2010	230	274	39	(5)	(0)	(4)	(1)	(6)	(4)	(0)	(1)

Chickenpox predominantly affects children younger than 10 years. The incidence in 2010 was considerably higher than in the previous year, for all age groups. Above the age of 50 chickenpox occurs sporadically (data not in table).

Figure 7.1 Number of cases of chickenpox per 10,000 persons by age group and for the Netherlands as a whole in 2010



Age groups

1=< 1 years	2=1-4 years	3=5-9 years	4=10-14 years	5=15-19 years
6=20-24 years	7=25-29 years	8=30-34 years	9=35-39 years	10=40-44 years
11=45-49 years				

Extrapolation

Table 7.4 Extrapolation of incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
chickenpox		
2001	24	38,500
2002	32	51,500
2003	27	44,000
2004	25	40,500
2005	19	31,000
2006	30	49,000
2007	21	34,000
2008	16	26,000
2009	11	18,000
2010	18	30,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

After the epidemics in 2002 and 2006 the incidence in 2010 is higher than in the previous 2 years, possibly a mild or starting epidemic. Epidemics of chickenpox usually occur once every 3-4 years. Similarly as in previous years the incidence was the highest in the more densily populated parts of

The Netherlands. Chickenpox mostly affects children younger than 10 years, predominantly children younger than 5 years. Only a few patients consult their GP for this. One consequence of the frequent occurrence of chickenpox in the youngest age groups (< 5 years old) is that women who are pregnant for at least the second time run a greater risk of coming into contact with chickenpox. However, also among this group the degree of protection is high, because more than 90% has endured the disease at a young age. The Health Counsel has advised first to monitor the number of complications evoked by chickenpox, before it will advise about the possible inclusion of chickenpox vaccination into the national vaccination program.

This topic of chickenpox was discontinued in 2011, because data on this topic are also available via other sources.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, Haar van der Ella. *Waterpokken: vaccinatie invoeren of niet?* Huisarts en Wetenschap 2009;52(4):165

Boot HJ, Melker de HE, Stolk EA, Wit de GA, Kimman TG, *Assessing the introduction of universal varicella vaccination in the Netherlands.* Vaccine 2006;24(37-39):6288-99

Melker de HE, Berbers G, Hahné S, Rümke S, Hof van den S, Wit de A, Root H. *The epidemiology of varicella and Herpes Zoster in The Netherlands: implications for varicella zoster virus vaccination.* Vaccine 2006;24(18):3946-52

Fleming DM, Schellevis FG, Paget WJ. *Health Monitoring in Sentinel Practice Networks.* Final Report to the EU, Nivel, 2002

Fleming DM, Schellevis FG, Falcao I, Alonso TV, Padilla ML. *The incidence of chickenpox in the community. Lessons for disease surveillance in sentinel practice networks.* Eur J Epidemiol 2002;17:1023-1027

8 Whooping cough

Topic owner: Dr. H. de Melker, (RIVM) (1998-2010)

Introduction

Whooping cough is an acute, very infectious disease of the upper airways that is caused by the bacteria *Bordetella pertussis* and in some cases by *Bordetella parapertussis*.
Notably in children younger than 3 months whooping cough may have very serious complications such as brain damage and convulsions**,** actelectasis of the lungs, pneumothorax, and pulmonary emphysema and even death.
Immunity is built up both after having had whooping cough and after having a vaccination, but in both cases the immunity decreases again with the passage of time.
Vaccination against *Bordetella pertussis* has been included in the Dutch government's vaccination programme 1952. The percentage of people reached by this programme is high (> 96%).

The vaccine that was developed in the 1950s was effective in preventing the infection but did not wipe out the bacteria. The bacteria remained in circulation and in spite of the large numbers of people who have been vaccinated the incidence of whooping cough in the Netherlands has been increasing since 1996. Every few years it reaches epidemic levels. Analysis of the available data showed that the proportion of vaccinated people among the indicated disease cases of whooping cough had increased.[8] From July 2001 children at the age of 4 are therefore re-vaccinated with a specific a-cellular vaccine.
Since 2005 vaccination with a cellular vaccine in the first year of life have been substituted by an a-cellular vaccine.

Whooping cough is one of the diseases included in the national mandatory notification. However, the development of the illness and the criteria for registration lead to significant under-reporting and the number of notifications do not reflect the real picture. Underreporting can be caused by

3 reasons. Firstly, many people, notably adults who have been coughing for a few weeks, do not quickly decide to consult a doctor. Secondly, if a patient consults a doctor and the doctor suspects whooping cough, then a laboratory test will not always be requested. Thirdly, not all GPs report all proven cases of chickenpox to the health authorities.

Direct registration of whooping cough in general practice is one way of gaining insight in to the extent of under-reporting. At the end of the 1990s information about the incidence of whooping cough was not available in general practice and was just as difficult to obtain from other sources. Further research into the changes in the epidemiology of whooping cough was considered desirable, especially after the introduction of an improved vaccine in 1998. In 1998, it was decided to explore prevention of whooping cough and the diagnostic method in the sentinel surveillance. Because of the recent changes in the strategy of vaccination against whooping cough it is desirable that monitoring will be continued. In 2010, further analysis into the shifts in epidemiology and age distribution took place, since the in introduction of the acellular vaccine (Donker and Van der Gevel).

Method

The sentinel doctor is asked to register every patient with whooping cough, divided up into gender and age group. A case description is not easy because of the often atypical development of whooping cough in vaccinated people. The sentinel doctors use the following definition for whooping cough: Long-term cough (longer than 3 weeks) with more or less typical characteristics and/or proof of *Bordetella pertussis/parapertussis* infection (according to the protocol of the National Coordination Centre for Combating Infectious Diseases (*Landelijke Coördinatiestructuur Infectieziektebestrijding*).

Using an additional questionnaire, a difference is made between clinical whooping cough that is not laboratory-confirmed and a symptomatic infection (typically or not) with *Bordetella pertussis/Bordetella parapertussis* that is confirmed by a laboratory test. By making this distinction, insight may be obtained into the frequency of whooping cough diagnosed by the GP on basis of clinical signs only.

A few weeks after registering a case of whooping cough the GP is asked to provide additional information about the registration and about the results of the laboratory test if one was requested. The GP will also be asked whether the patient has ever been vaccinated against whooping cough and if so, how many doses of inoculation have been applied.
The information, together with other sources of information about the occurrence of whooping cough, is used by the Centre for Infectious Diseases, Epidemiology and Surveillance of the RIVM at Bilthoven to interpret the progress of whooping cough in the Netherlands.

Results

Distribution by province group and address density.

In 2010 35 patients were reported with whooping cough, which amounts to 3 per 10,000 patients. This incidence is comparable with the incidence in the previous year (see Table 8.1). There is an epidemic every three to four years. Since the introduction of the acellular vaccine - for four year olds in 2001 and for zero year olds in 2005 – the epidemics are decreasing (Donker and Van der Gevel Huisarts en Wetenschap 2011;54(2):53).

Table 8.1 Number of patients with whooping cough by province group, address density and for the Netherlands as a whole, per 10,000 people, 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	3	5	15	7	6	9	22	11
2002	2	2	5	6	2	4	7	4
2003	0	(1)	4	3	(0)	2	7	3
2004	6	10	8	9	7	7	12	8
2005	0	6	6	11	6	6	5	6
2006	1	7	2	1	7	2	2	3
2007	4	6	4	8	7	5	3	5
2008	3	1	3	15	5	5	2	5
2009	2	5	4	1	2	4	2	3
2010	3	2	3	3	1	3	3	3

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

No consistent differences have been found in province group and population density during all the years of registration.

Distribution by age group

Table 8.2 shows the numbers of patients with whooping cough per 10,000 inhabitants and per age group.

Table 8.2 Number of patients with whooping cough by age group per 10,000 inhabitants, 2001-2010

age group	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<1	29	5	(7)	(29)	(8)	(18)	(8)	9	-	(7)
1-4	99	21	14	35	30	17	17	8	17	(4)
5-9	15	20	11	33	18	(7)	10	9	7	(4)
10-14	19	10	(3)	23	10	10	17	24	7	10
15-19	9	(2)	(4)	10	(3)	(7)	14	6	7	(4)
20-24	-	(1)	-	(3)	-	-	(3)	(2)	(2)	(4)
25-29	(2)	(2)	(2)	-	-	-	0	(3)	-	(1)
30-34	4	(1)	(1)	6	5	(3)	(6)	(2)	(2)	(3)
35-39	6	(1)	(3)	6	4	(1)	(1)	(4)	-	-
40-44	(2)	(0)	-	-	(1)	-	(5)	6	(3)	(3)
45-49	6	-	(1)	(3)	6	-	6	(1)	(1)	(3)
50-54	0	(1)	(1)	(6)	(4)	-	0	(1)	-	(1)
55-59	(2)	-	-	(3)	(5)	-	(1)	(4)	(1)	(1)
60-64	(4)	(2)	(2)	-	(6)	-	(2)	(2)	-	(2)
65-69	-	-	-	(5)	-	-	0	-	-	(2)
>70	(1)	(1)	-	(0)	(2)	-	-	-	-	(2)

Whooping cough may occur at any age. Analysis of the period 1998-2009 in three groups of 4 years shows that since the introduction of the acellular vaccine – for four year olds in 2001 and for zero year olds in 2005 – the peak incidence gradually shifts from toddler to teenager (Donker and Van der Gevel 2011). In 2010, the highest incidence is also found in the age groups 0-19 years, especially the sub group 10-14 years.

Extrapolation

Table 8.3 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
whooping cough		
2001	11	17,500
2002	4	6,500
2003	3	5,000
2004	8	13,000
2005	6	9,800
2006	3	4,900
2007	5	8,000
2008	5	8,000
2009	3	5,000
2010	3	5,000

* number of patients, consultations, etc. per 10,000 men and women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

The results on diagnostics are published in medical articles.

Discussion

In spite of the large number of people being vaccinated against whooping cough it still does occur relatively often in the population. The incidence of whooping cough recorded in general practice is higher than the officially declared incidence. However, this difference has become smaller during the last years, as the incidences in both registrations are decreasing.
Whooping cough occurs in all age groups. According to the registration by GPs whooping cough has the highest incidence between 0-19 years. Since the introduction in 2001 of vaccination with an a-cellular vaccine at the age of 4 years and the replacement of a cellular vaccine by an a-cellular vaccine in the first year after birth in 2005, the peak incidence gradually shifts towards teenage groups. This was also the case in 2010, with a peak incidence in the age group 10-14 years.

The topic will be continued in 2011.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, van der Gevel Joost. *Kinkhoest van kinder- naar tienerziekte.* Huisarts en Wetenschap 2011;54(2):53

Greeff de Sabine C. Lugnér Anna K. Heuvel van den Danielle M, Mooi Frits R, Melker de Hester E. *Economic analysis of pertussis illness in the Dutch population: Implications for current and future vaccination strategies.* Vaccine 2009;(27):1932-1937

9 Acute gastro-enteritis

Topic owner: Dr. W. van Pelt (RIVM-CIE) (1992-1993) (1996-2010)

Introduction

Gastro-enteritis is among the top ten illnesses in the Netherlands in terms of incidence. It is an illness that places a considerable burden on the primary health care system.[9]
Gastro-enteritis was added again to the surveillance of the Continuous Morbidity Registration Sentinel Practices in the Netherlands in 1996. Also in 1992 and 1993 the subject has been registered by the sentinel practices. Initially (until 1999) the investigation mainly focused on the assessment of trends in the incidence of gastro-enteritis, campylobacteriosis and salmonellosis and the burden of health care involved, also with regard to specific pathogens. The results of this research have been published before.

Since 2000 this topic has been maintained in accordance with the first of the above aims: the monitoring of trends in the incidence of acute gastro-enteritis in general practice. In 2001-2002 supplementary information was collected about laboratory diagnosis of patients sent in for consultation within the frame-work of regular health care. The results of this study are published elsewhere (van den Brandhof et al. 2006).

Method

Sentinel doctors are asked to report patients with a new episode of gastro-enteritis. A new episode includes that the patient is seen for the first time during the current episode and has not shown symptoms for at least 14 days following an earlier report. Patients who consult their GP solely by phone are not reported.
In 2001 and 2002 the doctors were also asked to indicate when the GP decided as part of regular health care to perform a faeces test. The doctors

were asked to indicate the reason why the test was requested, the micro-organisms for which the test was performed and whether antibiotics were prescribed.

In 2003 it was requested to only report the occurrence of acute gastro-enteritis and to indicate whether or not a faeces test was performed. No other questions with regard to the indication or result of the test are asked.

The sentinel doctors adhere to the following definition of gastro-enteritis:
- thin bowel movements three or more times a day, differing from the normal situation for the person concerned, or
- thin stools and two of the following symptoms: fever, vomiting, nausea, stomach ache, stomach cramps, blood or mucus in the stools or
- vomiting and two of the following symptoms: fever, nausea, stomach ache, blood or mucus in the stools.

Results

Table 9.1 shows the number of reports of acute gastro-enteritis, by province group, address density and for the Netherlands as a whole.

Table 9.1 Numbers of cases of acute gastro-enteritis by province group, address density and for the Netherlands as a whole, per 10,000 men and per 10,000 women, 2001-2010

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2001	male	76	98	78	122	102	90	95	93
2002		65	109	106	113	81	99	151	104
2003		111	127	103	104	121	103	117	109
2004		76	115	90	135	141	91	109	103
2005		73	125	90	101	131	82	117	96
2006		85	135	112	167	121	119	126	121
2007		69	36	110	110	66	77	135	86
2008		92	53	89	130	105	71	150	90
2009		73	43	72	59	64	56	84	64
2010		86	57	75	96	80	73	97	79
2001	female	55	108	97	169	100	106	127	109
2002		58	108	113	110	70	95	135	98
2003		93	142	103	118	134	104	115	112
2004		61	102	98	107	136	82	97	94
2005		45	112	96	108	100	87	107	93
2006		71	124	122	143	107	122	112	117
2007		67	36	122	139	56	95	134	95
2008		83	57	91	152	88	79	158	93
2009		68	62	77	65	73	60	92	70
2010		110	57	83	112	95	87	95	90

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Table 9.1 Numbers of cases of acute gastro-enteritis, by province group, address density and for Netherlands as a whole, per 10,000 men and per 10,000 women 2001-2010 (cont.)

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2001	total	65	103	88	145	101	98	112	101
2002		58	109	113	110	76	97	143	101
2003		102	134	103	111	128	103	116	110
2004		68	109	94	121	138	86	103	98
2005		59	119	93	104	116	85	112	94
2006		78	129	117	155	114	120	119	119
2007		69	36	116	124	61	86	135	90
2008		88	55	90	141	92	75	154	91
2009		70	53	75	61	69	58	88	67
2010		99	57	79	104	88	80	96	84

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

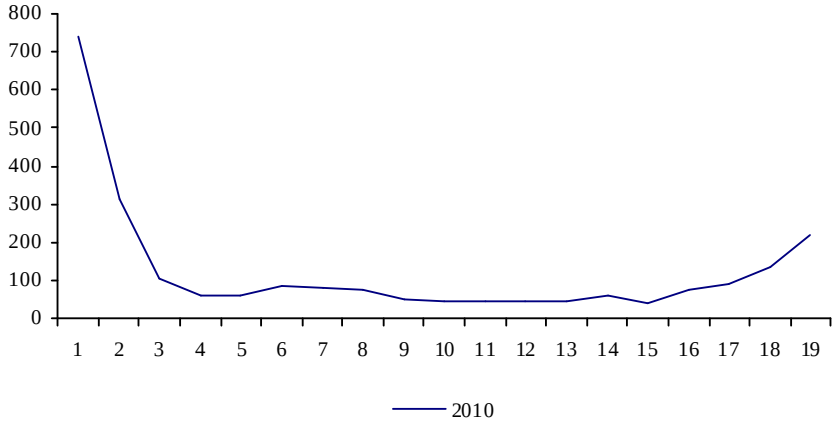
The highest incidence for men and women was seen in 2006.
In 2010 the incidence is higher than in 2009, but lower than in the years before 2009, for men and women. The highest incidence is found in the big cities and in the northern part of the country. The difference between men and women is inconsistent.

Age distribution

Table 9.2 Numbers of patients with acute gastro-enteritis per 10,000 inhabitants, 2001-2010

	total									
age group (year)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<1	823	653	613	765	687	690	588	689	432	741
1-4	397	412	437	341	296	472	349	368	267	313
5-9	170	195	197	136	163	156	114	114	85	107
10-14	84	96	125	80	79	107	56	61	76	58
15-19	92	86	83	82	100	84	53	54	49	61
20-24	105	101	118	99	80	121	84	85	53	85
25-29	73	105	95	87	72	104	82	80	46	79
30-34	70	72	94	99	67	80	84	83	64	75
35-39	75	69	84	71	56	86	44	72	35	49
40-44	66	63	52	55	55	61	38	56	42	45
45-49	50	48	66	70	49	65	49	44	36	46
50-54	62	59	65	67	57	67	57	42	28	45
55-59	59	50	54	57	57	67	76	53	41	43
60-64	99	46	68	48	78	61	48	54	36	60
65-69	57	65	56	58	76	92	63	73	65	41
70-74	67	63	72	54	82	102	100	61	35	73
75-79	82	38	49	101	98	125	131	119	72	92
80-84	70	58	110	115	131	193	152	141	88	133
>85	67	86	81	104	131	166	152	174	178	219

Figure 9.1 Numbers of patients with acute gastro-enteritis in 2010, by age group per 10,000 inhabitants



Age group distribution (years) X-axis

1=< 1 years	2=1-4 years	3=5-9 years	4=10-14 years	5=15-19 years
6=20-24 years	7=25-29 years	8=30-34 years	9=35-39 years	10=40-44 years
11=45-49 years	12=50-54 years	13=55-59 years	14=60-64 years	15=65-69 years
16=70-74 years	17=75-79 years	18=80-84 years	19=> 85 years	

During the whole registration period, most cases of acute gastro-enteritis were diagnosed among babies and 1-4 years olds. In 2010 this was also the case, but especially for babies, the incidence was slightly lower than in the previous years. Similarly as during the years 2003-2009, a higher incidence was found once again for persons older than 75 years in 2010.

Seasonal influences

Table 9.3 shows the numbers of cases of acute gastro-enteritis that were reported per season.

Table 9.3 Numbers of patients with acute gastro-enteritis per 10,000 inhabitants from 2001-2010, arranged per quarter

quarter	1 : weeks 1-13	2 : weeks 14-26	3 : weeks 27-39	4 : weeks 40-52
2001	30	23	27	20
2002	27	25	23	25
2003	40	23	28	18
2004	25	22	24	27
2005	30	19	24	21
2006	41	28	27	23
2007	25	24	18	22
2008	37	18	17	16
2009	24	11	15	14
2010	32	18	17	19

Similarly as in most earlier years the highest incidence in 2010 is seen during winter time (first quarter).

Faeces test in cases of acute gastro-enteritis

Table 9.4 gives a summary of the number of reports of acute gastro-enteritis for which the GP requested a faeces test, arranged per province group, by address density and for the Netherlands as a whole.

Table 9.4 Number of times that the GP requested a faeces test in cases of acute gastro-enteritis, per province group by address density and for the Netherlands as a whole, per 10,000 inhabitants for 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	5	16	16	15	17	13	14	14
2002	7	11	16	19	14	13	19	14
2003	20	31	26	25	34	23	20	25
2004	17	29	24	20	30	15	34	22
2005	21	13	25	22	18	19	33	21
2006	35	10	32	18	22	24	34	26
2007	20	33	29	13	16	25	31	25
2008	6	3	13	22	9	11	13	11
2009	10	5	11	7	8	7	13	9
2010	15	8	9	9	8	10	11	10

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The number of requests in 2010 was similar to that in 2009, but lower than in the years before 2009. In 2010, the number of request for a test was the highest in the big cities and in the northern provinces, which is consistent with the higher incidence in these areas.

Age distribution

Table 9.5 shows the number of requests for a faeces test in cases of acute gastro-enteritis per age group and per 10,000 persons.

Table 9.5 Number of requests for a faeces test in cases of acute gastro-enteritis per age group per 10,000 inhabitants from 2001-2010

age group (year)	2001	%	2002	%	2003	%	2004	%	2005	%
<1	69	7	86	13	90	15	49	6	82	11
1-4	39	10	50	12	78	18	45	13	57	16
5-9	13	8	11	6	36	18	30	15	18	10
19-14	7	8	13	13	15	12	15	19	24	23
15-19	12	12	19	22	13	16	17	21	32	24
20-24	13	12	17	17	32	27	22	22	17	17
25-29	9	11	13	12	32	34	22	25	16	19
30-34	14	19	15	21	26	31	27	27	22	25
35-39	10	15	13	18	19	37	17	24	20	27
40-44	9	15	10	17	22	33	23	42	22	28
45-49	14	26	9	19	19	29	20	29	19	28
50-54	17	26	6	10	19	29	24	36	12	18
55-59	12	20	14	28	16	30	23	40	16	22
60-64	11	12	12	26	11	16	12	25	17	18
65-69	8	17	(4)	6	17	30	32	60	25	25
70-74	10	17	(5)	7	15	21	19	32	13	14
75-79	8	10	(6)	15	31	63	(7)	7	3	3
80-84	23	31	-	0	13	12	(10)	9	20	13
>85	23	33	-	0	(5)	6	(7)	7	0	0

% = number of faeces tests: number of reports of acute gastro-enteritis x 100

Table 9.5 Number of requests for a faeces test in cases of acute gastro-enteritis per age group per 10,000 inhabitants for 2001-2010

	2006	%	2007	%	2008	%	2009	%	2010	%
<1	45	6	118	17	28	4	(16)	4	(15)	2
1-4	61	13	77	18	30	8	31	112	31	10
5-9	25	16	27	19	(6)	5	(6)	7	9	8
19-14	19	17	9	14	(3)	5	(3)	4	8	14
15-19	26	31	21	29	(8)	15	(1)	2	16	26
20-24	42	35	29	26	12	14	12	23	11	13
25-29	41	39	35	30	13	16	14	30	10	13
30-34	31	38	25	23	10	12	(6)	9	13	17
35-39	19	22	24	35	12	17	11	31	(5)	10
40-44	23	38	13	25	(9)	16	(6)	26	8	18
45-49	10	15	22	31	(9)	20	(5)	14	9	20
50-54	22	33	18	24	12	29	(4)	11	(6)	13
55-59	19	28	14	15	15	28	11	39	(5)	12
60-64	27	43	26	35	(8)	15	(4)	10	(5)	8
65-69	20	22	24	27	(9)	12	15	42	13	32
70-74	21	21	15	13	(5)	8	17	57	15	31
75-79	26	19	10	7	(9)	8	(3)	4	(5)	5
80-84	31	16	17	10	13	9	0	0	(7)	5
>85	(7)	4	(12)	7	(2)	1	(14)	8	(4)	2

% = number of faeces tests: number of reports of acute gastro-enteritis x 100

Overall, the number of registered requested faeces tests per 10,000 people per age group shows the same pattern as for the total number of reports of acute gastro-enteritis per age group. In absolute numbers most requests for a faeces test were made in 2010 for 1-4 years olds.

However, this is not the case for the number of faeces tests per age group as a percentage of the total number of reported cases of acute gastro-enteritis in that age group. In adults a faeces test is performed more often.

Children (< 15 years old) with acute gastro-enteritis consult their GP more often than older children or adults. When people older than 14 years of age consult their GP with the symptoms of acute gastro-enteritis the GP will relatively more often request a faeces test, with the exception of the age group ≥ 75 years.

Extrapolation

Table 9.6 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total	m	f	total
gastro-enteritis						
2001	93	103	101	74,000	83,000	157,000
2002	104	98	101	83,000	80,000	163,000
2003	109	112	110	88,000	91,000	179,000
2004	103	94	98	83,000	86,000	164,000
2005	96	93	94	77,000	77,000	154,000
2006	121	117	119	98,000	97,000	194,000
2007	86	95	90	71,000	80,000	151,000
2008	90	93	91	73,000	77,000	150,000
2009	64	70	67	52,000	58,000	110,000
2010	79	90	84	65,000	75,000	139,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

In 2010 the incidence was higher than in 2009, but lower than in the years before 2009. In 2006 the incidence was the highest, predominantly in the first quarter. Similarly as in 2002/2003 this coincided with a high incidence of Norovirus and the occurrence of a Rotavirus epidemic.[10, 11]
As part of regular health care GPs request a faeces test relatively more often for patients who are older than 14 years. This is the result of a difference in consultation behaviour between cases of acute gastro-enteritis involving children (< 15 years old) and cases involving young people and adults (> 15 years old). This second group consults the doctor when they have more serious symptoms that last longer. Diarrhoea following a trip abroad occurs more often in young people and adults.

This topic was continued in 2010.

Publications based fully or partly on continuous morbidity registration data

Pelt W van, Notermans D, Mevius DJ, Vennema H, Koopmans MPG, Duynhoven YTHP van. *Trends in gastro-enteritis van 1996 – 2006: Verdere toename van ziekenhuisopnames, maar stabiliserende sterfte.* Infectieziekten Bulletin 2008;19(1)

Pelt van W, Friesema I, Doorduyn Y, Jager de CM, Duynhoven YTHP. *Trends in gastro-enteritis in Nederland; notitie met betrekking tot 2007.* RIVM project V/210221/TS. RIVM, Bilthoven, December 2008

Pelt van W, Notermans D, Giessen AW, Mevius DJ, Vennema H, Koopmans M, Asten van L, Duynhoven van YTHP. *Trends in gastro-enteritis van 1996-2005; Toename van ziekenhuisopnames en sterfte: een toenemende rol van virale infecties?* Infectieziekten Bulletin 2006;10:364-70

Brandhof van den WE, Bartelds AIM, Koopmans MPG, Duynhoven van YTHP. *General practitioner practices in requesting laboratory tests for patients with gastro-enteritis in the Netherlands,* 2001-2002; BMC Family Practice 2006;7:56

Pelt van W, Wannet WJB, Giessen van de AW, Mevius DJ, Koopmans MPG, Duynhoven van YTHP. *Trends in gastro-enteritis van 1996 tot en met 2004: hoogste aantal ziekenhuisopnames sinds 1996, maar afnemende trend van laboratoriumbevestigde salmonellose en campylobacteriose*. Infectieziekten Bulletin 2005;16:250-6

Pelt van W, Duynhoven van YTHP. *Trends in gastro-enteritis in Nederland; notitie met betrekking tot 2004.* Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu, (juli) 2005

Kroneman A, Vennema H, Duynhoven van YTHP, Duizer E, Koopmans M. *High number of norovirus outbreaks associated with a GGII.4 variant in the Netherlands: does this herald a world-wide increase?* http://www.eurosurveillance.org/ew/2004/041223.asp#1)

Duynhoven van YTHP. *Gastro-enteritis in the Netherlands: studies on risk factors and burden of illness.* Proceedings EU-RAIN Conference: Food pathogen epidemiology: microbes, maladies and methods, 2-3 december 2004, Padua, Italy

Brandhof van den W, Wit de GA, Wit de MAS, Duynhoven van YTHP. *Costs of gastro-enteritis in the Netherlands.* Epidemiol Infect. 2004; 132:211-21

10 Sexually Transmitted Diseases (STD)

Topic owner: Mrs. dr. I. Van den Broek (RIVM)(2010)

Introduction

Together with respiratory, gastro-intestinal and urinary tract infections, Sexually Transmitted Diseases (STD) are the most frequently occurring infectious diseases in the Netherlands. Chlamydia, gonorrhea, syphilis, HPV-infection, hepatitis-B and HIV infection are the most important STDs.

National surveillance of STD is predominantly performed by the electronic SOAP registration of the RIVM, used since 2004 by the STD out patients clinics of the municipal health agencies (GGD), and through registration of infections by the HIV Monitoring Foundation. The GGD out patients clinics offer low threshold STD-care to high risk groups and persons who prefer to remain anonymous. In recent years the number of STD consultations at the GGD out patients clinics has increased substantially.

However, it is estimated that GPs account for 65-75% of all STD-related consultations. This was recently confirmed by the results from the CMR topic " fear of STD" and from estimates based on LINH data ("Landelijk Informatienetwerk Huisartspraktijken" or Netherlands Information Network for General Practice). In previous years GPs have noticed a steady increase in the number of STD-related consultations (see van den Broek et al, 2010). This increasing trend is also described in the annual surveillance report of the RIVM (Koedijk et al., 2010). Therefore, registration by CMR sentinel practices, may serve as a welcome addition to these data, especially because the questionnaires that have been included will provide insight into the background and reasons of a request for a STD test. In consultation with the RIVM and STD-AIDS the Netherlands, the topics 'fear of AIDS' and 'urethritis in men' have been replaced by 'STD' in men and women from 1-1-2008 onward. In this chapter only data regarding STD-related consultations by sentinel GPs are being reported. The collected additional data are published separately.

Method

The sentinel GPs are instructed to register this topic as a new STD consultation, except if a consultation was asked for information on i.e. prescription of anticonceptives. Proof of STD is not mandatory for registration. Also fear of STD and the possibility of STD and/or AIDS should be registered. In addition a questionnaire addressing additional information emerging from the consult should be completed. If diagnostic STD-tests are requested, a form with the test results should be added to the questionnaire. The diagnostic tests for chlamydia, gonorrhea, trichomonas, HIV and/or syphilis are performed by the regional laboratory of the participating practice. Only sentinel practices reporting SOA at least once per year were included.

Results

The results are based on data from 37 reporting practices. The number of STD-related consultations per10,000 patients per province group and address density are presented in table 10.1.The incidence is the highest in the western part of the Netherlands (60/10,000) and in the big cities (60/10,000). The number of STD-related consultations was approximately the same in recent years.

Table 10.1 Number of new STD-related consultations per province group, address density and for the Netherlands as a whole per 10,000 in 2008-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2008	35	38	65	50	20	46	88	49
2009	37	22	64	46	21	37	85	45
2010	37	32	60	50	32	48	60	47

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

In table 10.2 the data on new STD-related consultations are shown per age group. The age group between 20 and 30 years consults the GP the most for these problems. More women than men consult the GP for STD and/or fear for AIDS.

Table 10.2 Number of new STD-related consultations per age group and per 10,000 inhabitants, 2009-2010

	2008			2009			2010		
age group	m	f	t	m	f	t	m	f	t
10-14	0	12	6	0	15	7	0	(6)	3
15-19	32	121	76	57	137	97	51	145	97
20-24	178	302	241	148	217	183	165	263	215
25-29	141	175	158	144	169	157	150	140	145
30-34	58	116	87	70	102	87	80	100	90
35-39	64	90	77	68	65	66	60	76	68
40-44	47	49	48	54	28	41	30	48	39
45-49	23	38	31	43	35	37	22	41	32
50-54	10	23	16	19	14	16	17	25	21
55-59	16	14	15	(12)	23	17	22	19	20
60-64	5	15	15	18	0	9	13	(8)	11
65-69	5	10	8	0	(4)	(2)	0	(3)	(2)
70-74	13	0	6	(10)	(14)	12	(5)	(4)	(5)
75-79				(7)	(5)	(6)	(0)	(5)	(3)
80-84	-	-	-	-	-	-	-	(6)	(4)
total	38	60	49	40	51	45	39	55	47

Extrapolation

Table 10.3 Extrapolation of incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
STD						
2008	38	60	49	31,000	50,000	81,000
2009	40	50	45	32,500	41,500	74,000
2010	39	55	47	32,000	46,000	78,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

As expected, the highest incidence of new STD-related consultations were reported in the big cities and the western part of the Netherlands, where most of the big cities are located, with an age peak between 20 and 30 years. GPs are consulted more frequently by women than by men for STD and/or fear of AIDS.

The incidence rates from the sentinel practices are lower than from LINH. LINH estimated the incidence of STD/HIV or fear of STD/HIV on basis of the relevant ICPC codes. The LINH estimate for 2009 was 115 per 10,000. The lower estimates of the sentinel practices are due to differences in the applied criteria for STD-related consultations, for which a questionnaire was filled in at the sentinel practices in comparison with those for the STD-

episodes based on ICPC codes and the lower threshold for including sentinel practices in the analysis. The additional data from the questionnaires will be compared with the data from LINH and other sources. These will be reported separately.

This topic will be continued in 2011.

Publications based fully or partly on continuous morbidity registration data

Vriend HJ, Koedijk FDH, Van den Broek IVF, Van Veen MG, Op de Coul ELM, Van Sighem AI, Verheij RA, Van der Sande MAB *Sexually transmitted infections, including HIV, in the Netherlands in 2010.* Utrecht, RIVM report number: 210261009/2011

Dorsman S, Donker G, Van den Broek IVF, Van Bergen J. Angst voor HIV/AIDS. *Hulpvragen bij de huisarts in de periode van 1988 tot en met 2009.* Rapport NIVEL mei 2011

Van den Broek IVF, Verheij RA, van Dijk CE, Koedijk FDH, van der Sande MAB and van Bergen JEAM. *Trends in sexually transmitted infections in the Netherlands, combining surveillance data from general practices and sexually transmitted infection centers.* BMC Family Practice 2010;May 20:11:39

Vriend HJ, Donker GA, Bergen van JE, Sande van der MAB, Broek van den I. *Urethritis bij de man in de huisartspraktjik. SOA's vooral op jongere leeftijd.* Nederlands Tijdschrift Geneeskunde 2009;153:A323

Koedijk FDH, Vriend HJ, van Veen MG, Op de Coul ELM, van den Broek IVF, van Sighem AI, Verheij RA, van der Sande MAB. *Sexually transmitted infections including HIV, in the Netherlands in 2008.* Annual STI-report RIVM, available at: http://www.rivm.nl/bibliotheek/rapporten/210261005.html

Donker Gé, Wolters Irmin, Bergen van Jan. *Huisartsen moeten risicogroepen testen op hiv.* Huisarts en Wetenschap 2008; 51:(419)

Kerssens JJ, *Vragen aan de huisarts over HIV en AIDS, van 1998-2004.*SOAIDS 2005;2:8-9

Kerssens JJ. Peters L. *Angst voor AIDS: hulpvragen bij de huisarts in de periode van 1988 tot en met 2004.* Utrecht, NIVEL, 2005

11 Urinary tract infection

Topic owner: Dr. E.E. Stobberingh, SWAB (2009-2010)

Introduction

Urinary tract infections are common in general practice. The incidence varies from 40-60 per 1000 patients, depending on the population. The initial treatment with antibiotics by the GP is not based on the outcome of bacteriological analysis. The choice of an antibiotic is predominantly based on the guidelines from the Dutch GP Association and sometimes on other considerations. This approach is also followed if the first treatment has no effect. Only when treatment failure occurs for a second time bacteriological analysis will be performed.
The empirical choice of antibiotics should be based on the actual sensitivity percentages for antibiotics of the microorganisms to be treated, being unselected urological pathogens. For an optimal choice actual data are necessary. The most recent data stem from 2003-2004. In that period research was being performed on the antibiotic sensitivity of unselected micro-organisms isolated from women between 12-70 years consulting their GP for an uncomplicated urinary tract infection. Because of the increasing incidence of (multi) resistance in hospitals (Nethmap 2010) and the increasing prevalence of so-called Extended Spectrum Beta-lactamases (ESBL) in the veterinarian sector (D. Mevius, personal communication) it is important to repeat the 2002-2003 study in order to obtain actual data. It has also become clear that sensitivity data for urological pathogens isolated from men are lacking or scarce. In connection with the extramural antibiotic surveillance of SWAB a surveillance of antibiotic sensitivity for urological pathogens has been started in general practices in 2009. The results will be reported elsewhere.

The aim of the study is:
determination of antibiotic sensitivity of urological pathogens isolated from men and women consulting the GP with symptoms indicative for a urinary tract infection.

Method

- All male and female patients with symptoms of a urinary infection should be included, independent of the applied therapy, including patients with a catheter.
- Incidence and prevalence are determined using ICPC-codes U71 (cystitis) and U70 (pyelitis).
- The usual diagnosis and way of treatment in general practice is continued. This is not excluded by the current study.
- In the freshly produced urine a uricult is immersed, marked with the code of the GP and patient number, to be sent to the bacteriological laboratory of the Maastricht University Medical Centre (MUMC).
- Isolation and determination of the uropathogens will be performed according to the standard microbiological methods of SWAB.
- The GP receives the bacteriological results weekly.
- The project leader and SWAB are informed yearly. The results are published in Nethmap every year.
- If the practice is very busy on a given day the GPs are requested to sent the first 2 samples of that day.

Results

Table 11.1 shows the number of reported episodes with a urinary tract infection stratified by region and address density, men, women and total. The incidences are based on analysis of episodes with the ICPC codes U70 (pyelitis) and U71 (cystitis). Incidences of 2009, too, were recalculated, because the dataset is now more complete than during the previous annual report. For both groups underreporting is likely, because most of the activities were performed by GP assistants and the results were available only one day later. The reported incidences in 2010 are slightly lower than in 2009. As usual, the incidence in women is much higher than in men.

Table 11.1 Number of episodes with a urinary tract infection per province group and address density in the Netherlands, per 10,000 men and 10,000 women in 2009-2010

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2009	m	186	167	111	230	137	181	131	161
2010		144	150	119	212	150	158	156	156
2009	f	946	1054	817	1471	836	1082	955	1014
2010		776	959	795	1157	915	905	984	922
2009	t	570	614	478	849	479	942	557	596
2010		463	557	468	679	528	538	579	543

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The incidence of urinary tract infection in women is almost 6 times higher than in men. For both groups the incidence increases especially after the age of 60 years (Table 11.2). The differences between men and women are reducing with age: at 85+ years the incidence of urinary tract infection in women is about 2 times higher than in men.

Table 11.2 Number of episodes with a urinary tract infection per age group and per 10,000 men, women and total in 2009-2010

	2009			2010		
age group	m	f	t	m	f	t
< 1	14	-	7	136	61	98
1-4	49	275	159	92	14	300
5-9	82	464	264	72	509	282
10-14	33	360	191	29	264	142
15-19	31	824	425	47	950	489
20-24	29	1138	594	36	1061	553
25-29	37	952	507	45	907	480
30-34	60	921	496	67	830	451
35-39	75	724	411	67	737	402
40-44	70	850	458	104	772	437
45-49	103	752	430	66	736	396
50-54	87	794	436	138	720	426
55-59	123	847	490	159	878	521
60-64	310	1171	737	241	958	597
65-69	414	1286	864	298	1118	714
70-74	509	1759	1163	416	1456	953
75-79	498	2274	1508	624	1706	1238
80-84	1138	2818	2174	905	2295	1753
> 85	1653	3512	2979	1319	2506	2161
total	161	1014	596	156	922	543

Extrapolation

Table 13.4 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
Urinary tract infection						
2009	161	1014	596	131,000	845,000	983,000
2010	156	922	543	128,000	772,000	900,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

Regular monitoring of antibiotic sensitivity to unselected urological pathogens is the basis for a grounded empirical choice of antibiotic treatment of a urinary tract infection. The national increase of antibiotic resistance found in human and veterinarian isolates and the fact that the last surveillance took place 5 years ago were the main reasons to start a new surveillance in 2009. The results show that the incidence in women is much higher than in men and that the incidence increases especially after the age of 60 years, both in men and women. The incidence totals found of 60 per 1000 in 2009 and 54 per 1000 in 2010 are consistent with other studies in general practice, showing an incidence of 40-60 per 1000 patients. If underreporting occurs, this will be not larger in this registration than in other studies. By now, sufficient insight has been reached into antibiotic

sensitivity in not-pregnant adult women with urinary tract infections in general practice. Articles on this subject have been published in English as well as Dutch scientific papers.

The topic will be continued in 2011 concerning testing samples of pregnant women, children and men.

Publications based fully or partly on continuous morbidity registration data

Den Heijer CDJ, Donker GA, Maes J, Stobberingh EE. *Antibiotica bij ongecompliceerde urineweginfecties: geen toename van resistentie in de afgelopen 5 jaar*. Nederlands Tijdschrift Geneeskunde 2011;155(3):102-106

Den Heijer CDJ, Donker GA, Maes J, Stobberingh EE. *Antibiotic susceptibility of unselected uropathogenetic Escherichia Coli from female Dutch general practice patients: a comparison of two surveys with a five year interval*. J Antimicrob Chemother 2010;65(10):2128-33. Epub 2010 Aug 3 doi:10.1093/jac/dkq286

Koeijers, J.J., Verbon, A., Kessels, A.G.H., Bartelds, A., Donker, G., Nys, S., Stobberingh, E.E. *Urinary tract infection in male general practice patients: uropathogens and antibiotic susceptibility*. Urology:2010;76(2):336-340

Den Heijer CDJ, Donker GA, Maes J, Stobberingh EE. *Antibiotic susceptibility of unselected uropathogenic Escherichia coli from female Dutch general practice patients: a comparison of two surveys with a 5-year interval.* European Journal of Public Health 2010;20(S1):82-83 (Oral Presentation 3rd European Public Health conference Amsterdam, November 2010)

12 Unwanted pregnancy

Topic owners: Mrs. Dr. C. Wijsen (Rutgers WPF) (2003-2010)

Introduction

Registration of unwanted pregnancy is difficult because there is no objective measure for 'unwanted'. Before unwanted pregnancy was added as topic to the weekly returns in 2003, only the number of abortions served an indicator for its incidence. In the Netherlands the annual abortion rate amounts to about 33,000, of which 4,450 (13%) are performed in women not living in the Netherlands. Since the beginning of the nineties the number of abortions has increased: from 6.0 per 1,000 women in the age group 15-44 years in 1994 to 8.7 per 1,000 more than ten years later and a few years later it has slightly decreased to 8.6 per 1000 women.[12,13]

However, apart from being a good indicator, the data on abortions cannot be used to estimate the true incidence of unwanted pregnancy. The incidence of unwanted pregnancy is higher than the abortion rate because part of the women do not decide for an abortion. In the statistics, these pregnancies cannot be disclosed as unwanted. On the other hand, a number of abortions will be performed on women with a wanted pregnancy, for reasons such as congenital defects. Results from a study on a representative sample of >2000 women between 19-49 years of age indicate that almost 7% of the pregnancies in the last year were unwanted.[14] Insight into the extent of unwanted pregnancy as it presents in general practice, and its developments during a number of years, will be an important supplement to the existing registrations.

Method

The GP is requested to register every patient who seeks advise for unwanted pregnancy. For each case a questionnaire on background information and the

circumstances that have led to the unwanted pregnancy is completed. The questionnaires will be analyzed by the Rutgers WPF. The results will be published separately.

Results

In 2010 the number of unwanted pregnancies was slightly higher than in the previous two years. Extrapolated to the whole population the incidence amounted to 17 per 10,000 reports, representing 9.2% of all pregnancies for which the GP is consulted (table 12.1).

Subdivided to province group and address density, it appears that in preceding years the incidence was the highest in the western provinces and in the big cities.

Table 12.1 Number of women consulting the GP for unwanted pregnancy per 10,000 women, per province group by address density and for the Netherlands, 2003-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2003	29	31	32	17	36	21	39	28
2004	13	23	28	19	14	20	32	22
2005	15	24	24	8	11	18	36	19
2006	16	17	30	15	16	17	40	23
2007	13	11	29	29	13	17	46	21
2008	9	4	31	9	4	11	48	15
2009	10	8	26	9	8	9	38	15
2010	14	9	22	20	5	16	33	17

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The number of women consulting the GP for an unwanted pregnancy, by age group, is shown in table 12.2.

Table 12.2 Number of women consulting the GP for an unwanted pregnancy by age group per 10,000 women, in 2003-2010

age group	2003	2004	2005	2006	2007	2008	2009	2010
10-14	30	60	-	(7)	(3)	-	(3)	0
15-19	79	83	48	58	75	45	42	40
20-24	108	43	57	105	84	68	57	76
25-29	53	54	58	65	71	60	55	69
30-34	48	49	45	56	53	22	27	37
35-39	52	22	45	43	47	29	34	33
40-44	22	(3)	23	21	12	12	27	12
45-49	10	-	(4)	(3)	(0)	10	(2)	(8)
50-54	7	-	-	-	(3)	(0)	(0)	0

In 2010, no unwanted pregnancy was registered in the age group of 10-14 years, and 5 unwanted pregnancies in the age group of 15-19 years, which amounts to 40 per 10,000. This adds up to 5 unwanted teen-age pregnancies, which is less than in previous years. From all registered unwanted pregnancies 24% were from women younger than 20 years (18% in 2008 and 2009, 21% in 2007, 16% in 2006 and 14% in 2005). In 2010, the highest proportion originated from women between 20-24 years. The age pattern in the various age groups has been relatively constant for several years, with exception of the years 2004 and 2005, during which the groups 15-19 years and 25-29 years, respectively, were the highest.

In 2010 no unwanted pregnancies were registered for women above 50 years. In the reproductive period from 15-44 years the incidence of unwanted pregnancies was 44 per 10,000 women.

Extrapolation

Table 12.3. Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic	f	f
year		
unwanted pregnancy		
2003	28	22,000
2004	22	18,000
2005	19	16,000
2006	23	19,000
2007	22	18,000
2008	15	12,000
2009	15	12,000
2010	17	14,000

* number of patients, consultations, etc. per 10,000 women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

If the incidence of 17 unwanted pregnancies per 10,000 women is adjusted for the group in which pregnancy is especially likely to occur (age group between 15 and 44 years), the number of unwanted pregnancies reported to GPs amounts to 44 per 10,000 women.
This is lower than the yearly incidence of abortions (86 per 10,000).[13] There are two possible explanations for this difference. Firstly, data from the National Abortion Registry indicate that three out of ten women, visiting an abortion clinic are not referred by a GP.[13] Secondly, a number of women decide not to have an abortion. Thirdly, some women decide to end an unwanted pregnancy when the results of prenatal tests are unfavorable. Fourthly, in the Netherlands, also women from abroad are having an abortion, especially from Germany, who are not registered with a Dutch general practitioner, however, this number has been decreasing over the past few years.

Before, the total number of unwanted pregnancies that were reported in general practice was shown to be decreasing. In 2010, however, this decrease came to a halt, but the number of teen-age pregnancies registered at general practice continued to decrease. The percentage of unwanted pregnancies is 9.2% of the total number of pregnancies for which the GP is consulted. Because these consultations are optional, the percentage of unwanted pregnancies is likely to be even smaller.

The topic is maintained in 2011.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, Goenee Maaike. *Besluiten bij ongewenste zwangerschap.* Huisarts en Wetenschap 2012;55(2):86

13 End-of–Life research

Topic owner: Prof. L. Deliens, Free University Brussels (2005-2010)

Introduction

The percentage of persons not dying acutely, and therefore needing medical treatment and care at the end of life, is increasing. Most people die at old age, and the mortality per 1000 persons is increasing because of the absolute and relative increase in the number of elderly people. Because of this demographic change it is increasingly important to offer adequate care at the end of life, aiming at the highest quality of life possible.
At population level, nationally and internationally, scientific knowledge is lacking on how patients actually die. Existing epidemiological studies have assessed how many persons die, from what disease, and whether death was preceded by an end of life decision with the intentional or accidental effect that life was shortened. However, information about care at the end of life, the place of death, the specific problems of the patients, the quality of dying and the role of the GP in providing terminal care, is limited.
Therefore, research on these topics is mandatory, to improve the care of patients in the final months before dying. GPs are highly involved with the decease of most patients. If patients die outside the practice (hospital or other institutions), they are informed about this event. Therefore they are exclusively apt to provide data about end of life decisions. With this information indicators for quality of care at the end of life are developed. In this chapter only information is provided on the number of deaths per region, address density, season and age group. Additional research with regard to care provided at the end of life will be published separately.

Methods

Sentinel physicians are asked to report the death of a patient, registered in their practice, who did not die unexpectedly or acutely. The GP is also asked

to provide additional information on the type of care the patient may have received during the last 3 months before dying and from which caregiver, which disease(s) have led to the decease of the patient, what type of care the patient preferred, the place of death, and the amount of suffering the patient has encountered shortly before dying. A similar, but more extensive research program is currently being performed in Belgium.

Results

The number of patients per 10,000 reported in 2010 for the end-of-life study is presented in table 13.1, per province group and per address density. Most reported cases came from big cities and from the western part of the country where most big cities are situated.

Table 13.1 Number of reported End-of-Live study per 10,000 inhabitants, per province group, by address density and for the Netherlands, 2005-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2005	26	50	46	62	40	49	40	48
2006	37	49	53	60	36	54	50	50
2007	43	42	66	52	40	50	83	52
2008	46	44	50	38	50	44	47	46
2009	42	48	37	29	46	34	50	40
2010	50	50	52	50	43	52	53	51

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Seasonal influences

The number of patients per 10,000, reported in the end-of-life study, grouped by quarter is presented in table 13.2.

Table 13.2 Numbers of reported End-of-Live study by quarter, per 10,000 inhabitants, 2005-2010

	weeks 1-13	weeks 14-26	weeks 27-39	weeks 40-52
2005	13	11	12	11
2006	12	12	16	11
2007	14	12	12	13
2008	12	10	13	11
2009	10	10	10	10
2010	14	12	11	13

In 2010 the reported number of end-of-life cases was the highest in the first quarter. In this quarter there was no influenza epidemic.

Age distribution

The age distribution of the patients reported for the end-of-life study in 2010 is presented in table 13.3.

Table 13.3 Numbers of reports End-of-Live-study, per 10,000 inhabitants, by age group, 2005-2010

age group	2005	2006	2007	2008	2009	2010
<1	(26)	(21)	(20)	(22)	(0)	(0)
1-4	(0)	(0)	(10)	(2)	(0)	(4)
5-9	-	(0)	(0)	0	(0)	0
10-14	(3)	(0)	(0)	0	(1)	0
15-19	(3)	0	(0)	0	(1)	(3)
20-24	0	(2)	10	(4)	(3)	(1)
25-29	(1)	(2)	(2)	0	(3)	(1)
30-34	0	(2)	(2)	(6)	0	(1)
35-39	7	(2)	(5)	(6)	(3)	(4)
40-44	10	(6)	(4)	(6)	6	8
45-49	10	13	14	11	12	9
50-54	20	19	24	32	30	27
55-59	38	21	27	40	25	40
60-64	68	87	62	62	36	56
65-69	85	80	120	64	66	87
70-74	131	173	138	137	134	143
75-79	268	282	248	201	177	227
80-84	402	426	413	308	294	358
>85	1106	915	918	761	626	808

In the first year of life babies die from, among other things, incurable congenital diseases. In 2010 and 2009, no cases of end of life in the youngest category were reported. Subsequently the mortality rates are low until the age of 50, after which they steadily increase.

Extrapolation

Table 13.4 Extrapolation of the reported deaths to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total (m+f)	m	f	total (m+f)
End-of-Live study						
2005			48			78,000
2006			50			82,000
2007			52			87,000
2008			46			75,000
2009			40			66,000
2010			51			85,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

In the Netherlands the total mortality showed a gradually decreasing trend, amounting to 136,058 in 2010. (Dutch Statistics, www.CBS.nl). This was higher than in 2009, like it was in our registration. It should be realized that not all patients who die are under the direct care of a GP, such as patients in nursing homes or hospices falling outside the practice area of a GP. Therefore, registration by GPs results in a lower incidence rate than registered by CBS, because nursing homes have a high death rate and admission to a hospice generally is meant for terminal care.

According to the second Dutch National Survey of General Practice the mortality rate reported in general practice is 41 per 10,000.[15] This lower rate may be due to underreporting. In the sentinel registration, with a rate of 51 per 10,000, underreporting seems not to occur to such an extent. Extrapolation shows that 62% of the total number of estimated diseased patients are reported in this registration. Apparently, not all deceased patients are reported by the sentinel GPs, this could be due to the care being taken over by a nursing home or a hospice and patients not being the responsibility anymore of the GP. Underreporting may also be due to the extensive questionnaire that has to be filled in for this project. Nevertheless, the study provides a wealth of information with regard to the primary care provided at the end of life in the Netherlands. It has resulted in various publications and presentations at international meetings. A comparative study with the end of life care in Belgium has been published in several scientific papers.

The topic is maintained in 2010 and some subjects in the questionnaire have been changed.

Publications based fully or partly on continuous morbidity registration data

Claessen SJJ, Echteld MA, Francke AL, Van den Block L, GA Donker, L Deliens. *Important treatment aims at the end of life: a nationwide study among GPs.* Br J Gen Pract 2012;62:86-7. DOI: 10.3399/bjgp12X625184

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Abarhi E, Echteld M, Donker GA, van den Block L, Onwuteake-Philipsen B, Deliens L. *Discussing end-of-life issues in the last months of life :a nationwide study among General Practitioners.* J Palliat Med. 2011 Jan 21. [Epub ahead of print] doi 21254811

Abarshi E, Echteld M, Block van den L, Donker G, Bossuyt N, Meeussen K, Bilsen J, Onwuteaka-Philipsen B, Deliens L. *Use of palliative care services and end-of-life GP visits in the Netherlands and Belgium.* Journal of Pain and Symptom Management 2010; accepted for publication

Donker Gé, Abarshi Ebun. *Gewenste plaats van overlijden tijdig bespreken.* Huisarts en Wetenschap:2010;53(5):247

Abarshi E, Echteld M, Van den Block L, Donker G, Deliens L, Onwuteaka-Philipsen B. Transitions between care settings at the end of life in the Netherlands: results of a nationwide study. European Journal of Public Health 2009;19(S1):55 (Oral Presentation 2nd European Public Health Conference Lodz, November 2009)

Abarshi E, Onwuteaka-Philipsen B, Donker G, Echteld M, Van den Block L, Deliens L. GP awareness of preferred place of death and correlates of dying in a preferred place: a nationwide mortality follow-back study in the Netherlands. Suiss Medical Weekly 2009;S175:43S (Oral Presentation 110 15th WONCA-conference Basel, September 2009)

Abarshi E, Onwuteaka-Philipsen B, Donker G, Echteld M, Block van den L, Deliens L. *GP awareness of preferred place of death and correlates of dying in a preferred place: a nationwide mortality follow-back study in the Netherlands.* Journal of Pain of Symptoms management 2009;38:568-77

Abarshi Ebun, Echteld Michael, Block van den Lieve, Donker Gé, Deliens Luc, Onwuteaka-Philipsen Bregje. *Transitions between care settings at the end of life in The Netherlands: results from a nationwide study.* Palliative Medicine:2009;24(2):166-74 doi:10.1177/0269216309351381

Echteld MA, Abarshi E, Block van den L, Deliens L, Donker GA, Onwuteaka-Philipsen B. *Factors associated with well-being at the end of life and good death.* Presentation at the EAPC conference in Vienna 2008

Donker GA, Abarshi E, Echteld M, Block van den L, Deliens L, Onwuteaka-Philipsen B. *GP awareness of patients' preferred place of death and predictors of dying in a preferred place: a nationwide general practice study in The Netherlands.* Presentation at the 14th WONCA Europe Conference in Istanbul, September 2008

Abarshi E, Echteld M, Block van den L, Donker G, Onwuteaka-Philipsen B. *Care setting transitions at the end of life in The Netherlands.* 9th Public Health Symposium: Public Health at the end of life, Jette, Belgium, 14 December 2007. In: Archives of Public Health 2007

Abarshi E, Echteld M, Philipsen B, Donker G, Block van den L, Deliens L. *Transities in zorgsetting aan het levenseinde in Nederland. Vijfde onderzoeksforum Nederland-Vlaanderen*, workshop 17 november 2007

Block van den L, Bossuyt N, Meeussen K, Abarshi E, Deliens L. *Monitoring end-of-life care via general practice in Europe: a study with the Sentinel Surveillance Networks of General Practitioners.* Workshop at the 13th WONCA Europe Conference in Paris, October 2007

14 (Attempted) suicide

Topic owner: Mrs. Dr. G.A. Donker (NIVEL) (1979-2010)

Introduction

In consultation with the Health Care Inspectorate, this topic is included in the sentinel surveillance since 1979.
Research on suicide is also carried out in other institutions (e.g. hospitals, prisons) in order to gain insight into the scope, trend and other aspects of suicide and attempted suicide.

Method

The name of the topic is also its definition. The primary question is not whether the patient's attempt was successful, but whether the patient intended to commit suicide.
At the same time the Health Care Inspectorate made a request for additional data to be collected about the reported cases. To this end a questionnaire was designed. The form included questions about whether the attempt had been successful and about the method employed. Other questions relate to characteristics of the patient and features of care, such as contacts with health care institutions prior to the suicide (attempted suicide).

Results

The absolute numbers of reported cases (which exceeds the number of patients as recurrence is not rare) in the years 2001-2010 were 93, 47, 43, 55, 71, 24, 49, 28, 40 and 46 respectively.

The number of attempts per province group and by address density per 10,000 inhabitants is shown in Table 14.1. Breaking down the numbers into subgroups is of limited value in view of the low frequency.
In 2006 and 2008 the lowest number of suicide (attempts) of the last 10 years is reported. When address density is taken into account the highest incidence is consistently found in the big cities, except for 2000, 2002 and 2007. This was also the case in 2010.
The distribution by province group shows a less consistent picture, possibly due to the small number of cases. In the previous 4 years the incidence in the western part of the country was the highest. In this part of the country most big cities are situated.

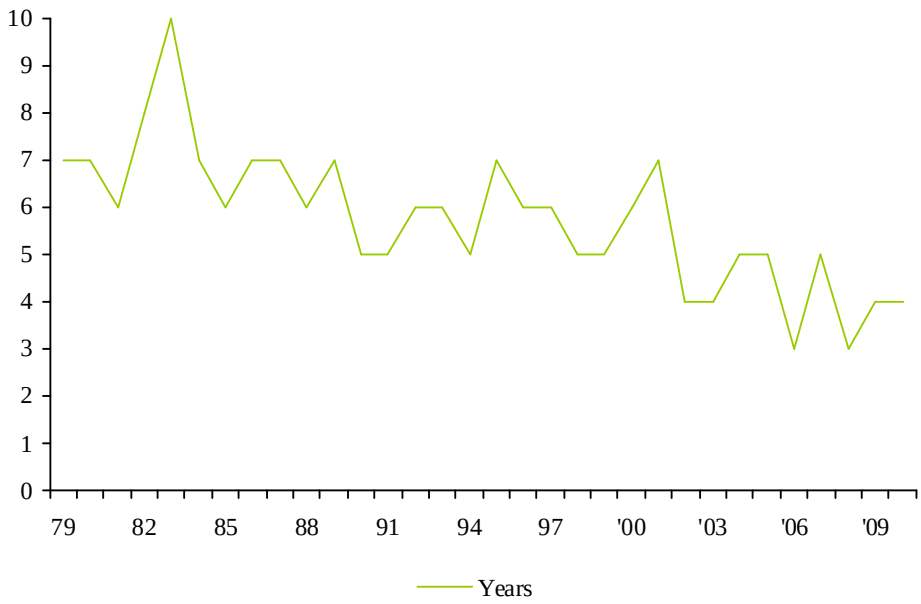
Table 14.1 Number of (attempted) suicides reported per 10,000 inhabitants, per province group, by address density and for the Netherlands as a whole, 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	6	5	7	11	5	7	10	7
2002	3	5	4	3	5	4	4	4
2003	(1)	5	3	6	4	3	6	4
2004	2	3	6	6	3	5	9	5
2005	4	9	6	2	2	6	8	5
2006	1	4	3	1	1	3	3	3
2007	3	4	6	4	6	4	6	5
2008	1	3	4	2	1	3	4	3
2009	3	4	4	3	3	3	6	4
2010	4	2	5	3	3	3	7	4

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The figure shows the gradually decreasing trend in the number of attempted suicides registered in general practice during a period of 30 years.

Figure 14.1 Number of (attempted) suicides reported per 10,000 inhabitants for the Netherlands as a whole, 1979-2010



Age distribution

In 2004 a peak incidence was found for adolescents, however in other years and also in 2010 no specific age group was prominent. On the other hand, through the years the lowest incidences were found in the youngest age group (0-14 years) and in the age group > 65 years.

Table 14.2 shows the frequency of suicide and attempted suicide per 10,000 inhabitants, by age group in the last 10 years.

Table 14.2 Number of (attempted) suicides reported per 10,000 inhabitants, by age group, 2001-2010

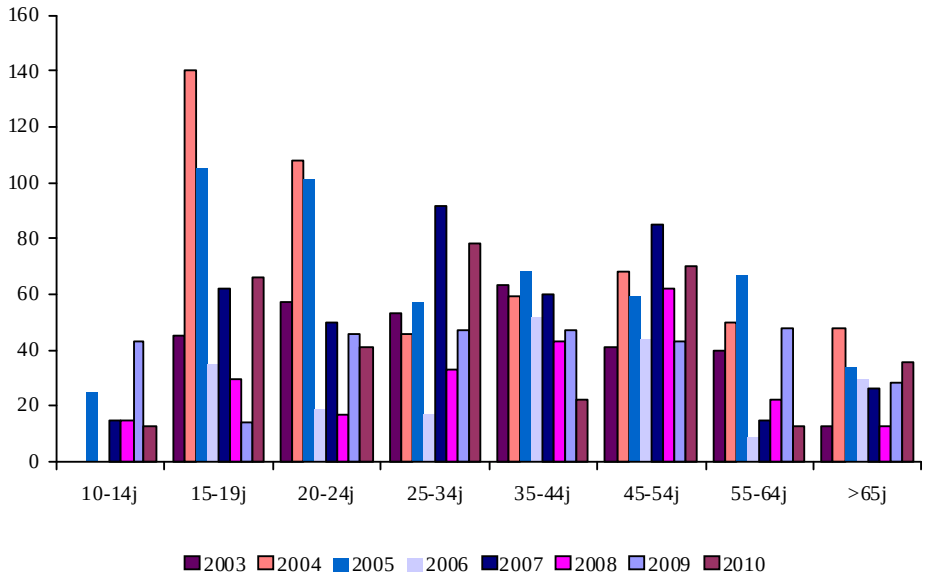
age group	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>65
2001	(3)	11	8	7	15	8	3	7
2002	-	(4)	8	3	6	5	4	(3)
2003	-	(4)	6	5	6	4	4	(1)
2004	-	14	11	5	6	7	5	5
2005	(3)	11	10	6	7	6	7	3
2006	0	(3)	(2)	2	5	4	(1)	(3)
2007	(2)	(6)	(5)	9	6	9	(2)	(3)
2008	2	(3)	(2)	(3)	4	5	(2)	(1)
2009	(4)	(1)	(5)	5	5	4	5	3
2010	(1)	7	(4)	8	(2)	7	(1)	4

Table 14.3 shows the frequency per 100,000 inhabitants by age group in the last 10 years.

Table 14.3 Number of (attempted) suicides reported per 100,000 inhabitants, by age group, 2001-2010

age group	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>65
2001	(28)	(110)	76	76	151	77	39	56
2002	-	(43)	78	34	65	45	38	(25)
2003	-	(45)	57	53	63	41	40	(13)
2004	-	140	108	45	59	68	50	48
2005	(25)	105	101	57	68	59	70	34
2006	-	(35)	(19)	(17)	52	44	(9)	(30)
2007	(15)	(62)	(50)	92	60	85	(15)	(26)
2008	(15)	(30)	(17)	33	43	62	(22)	(13)
2009	(43)	(14)	(46)	47	47	43	48	28
2010	(13)	66	(41)	78	(22)	70	(13)	36

Figure 14.2 Number of (attempted) suicides reported per 100,000 inhabitants by age group, 2003-2010



Extrapolation

Table 14.4 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute number)
topic year	total (m+f)	total (m+f)
(attempted) suicide		
2001	6	10,000
2002	4	7,000
2003	4	7,000
2004	5	8,000
2005	5	8,000
2006	3	5,000
2007	5	8,000
2008	3	5,000
2009	4	7,000
2010	4	7,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

The numbers of 2010 do not support the concern expressed by others that the incidence of suicide (attempts) is increasing. In 2006 and 2008 the lowest incidence was reported since the start of the surveillance in 1979. The breakdown in age groups is of limited value due to the small absolute

numbers which may lead to large fluctuations. The registration does not show a preferential age group.

This topic is continued in 2011

Publications based fully or partly on continuous morbidity registration data

Donker GA, Wolters I, Schellevis F. *Risk factors and trends in attempting or committing suicide in Dutch general practice in 1983-2009 and tools for early recognition.* European Journal of Public Health 2010;20(S1):50 (Oral Presentation 3rd European Public Health conference Amsterdam, November 2010)

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Marquet RL, Bartelds AI, Kerkhof AJ, Schellevis FG, Zee . van der J. *The epidemiology of suicide and attempted suicide in Dutch general practice 1983-2003.* BMC Fam Pract 2005;6:45

Marquet RL, Bartelds A, Schellevis F. *No indication for increased rate of suicide attempts by SSRIs in the Netherland.* British Medical Journal. 2005;33:3March

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15 Cosmetic allergy

Topic owner: Mw. Dr. Ir. J.Salverda-Nijhof (RIVM) (2009-2010)

Introduction

The interest in unwanted side effects of consumer products, including cosmetics, has increased markedly in recent years. Consumers may sometimes experience complaints after having used cosmetics, despite EU-rules and monitoring the safety of cosmetics. In literature, several different health complaints caused by the use of cosmetics have been described: hair loss due to shampoo, chemically induced burns caused by hair dye and a raised risk for cancer due to skin beaching agents (J.Salverda-Nijhoff et a. CESES-jaarrapportage 2010). However, most cosmetics complaints concern reactions of the mucosae and the skin. Irritating contact eczema and allergic contact eczema are the most important skin complaints. Irritating contact eczema occurs most frequently and this concerns an inflammation caused by damaged skin due to irritating substance.

Stimulated by a recently adopted resolution by the European Council, the Dutch Food and Wares Authority (VWA) has indicated the necessity to install a surveillance system on unwanted skin reactions provoked by specified consumer products in the Netherlands. By order of VWA the RIVM has established a registration system named: Consumer Exposure, Skin Effects Surveillance (CESES). In 1992-1993 the sentinel practices already reported about GP consultations for skin and other reactions caused by cosmetics. The current registration may be considered as its follow-up and extension.

Within the CESES project four aims can be distinguished:

1 ***Incidence/prevalence:***
More information will be obtained about incidence, prevalence and severity of skin symptoms by consumers and patients after the use of cosmetics.

2 ***Identification:***
Based on the reports and the ensuing dermatological investigations cosmetic products and/or ingredients can be identified which evoke unwanted side effects and therefore pose a risk for public health.

3 ***Intervention:***
The project will enable VWA to intervene better and more rapidly if complaints about cosmetic products involve a risk for the safety of the consumer, so that escalation of the problem can be prevented or limited.

4 ***Data-sharing:***
Through the project participating physicians will receive description of complaints evoked by specific cosmetic products, which enables a rapid diagnosis if similar complaints do occur in their practice.

The ultimate aim of the project is to test, based on the reported cases, whether the current European safety net for unwanted side effects of cosmetics suffices. This is relevant for policy advice and policy making regarding cosmetic products.

Since July 2009 registration of symptoms in the clinical setting is performed by dermatological clinics spread over the country, and since January 2009 by the GPs of the sentinel practices, who register unwanted skin reactions after the use of cosmetics. In 2010, a questionnaire has been added to this registration, to obtain more specific information about the complaints and possible causes.

Method

In connection with the CESES project GPs report skin complaints after the use of cosmetics. In 2010, additional data were collected via questionnaires, enabling reporting identifying by age, gender, geographic area, address density, type of complaints and the products causing the complaints.

Results

The number of reported patients with complaints about cosmetics per 10,000 persons, per province group, address density and for the Netherlands in 2010 is presented in table 15.1. Most reports about cosmetics complaints are coming from the big cities, as was the case in previous years. The incidence of complaints is especially in the big cities lower than in 2009.

Table 15.1 Number of patients with cosmetics complaints reported per 10,000 inhabitants, per province group, by address density and for the Netherlands as a whole, 2009-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2009	17	14	23	25	8	15	43	20
2010	7	9	14	21	8	12	24	13

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The age distribution of reported patients with a cosmetic complaint in 2010 is presented in table 15.2. It is noteworthy that cosmetic allergy may occur already at an early age, albeit with a low incidence. The incidence in women is more than four times higher than in men.

Table 15.2 Number of patients with cosmetics complaints per age group, per 10,000 inhabitants in 2009-2010

	2009			2010		
age group	m	f	t	m	f	t
< 1	0	0	0	0	(15)	(7)
1-4	19	(12)	16	(4)	(8)	(6)
5-9	(5)	15	10	(3)	20	11
10-14	(8)	15	11	(3)	14	8
15-19	(6)	39	22	0	27	13
20-24	25	45	35	(11)	27	19
25-29	(10)	34	22	(6)	17	11
30-34	(6)	30	19	(6)	37	22
35-39	(8)	24	16	0	24	12
40-44	(7)	20	14	0	23	11
45-49	(7)	33	20	(4)	12	8
50-54	13	28	20	(7)	33	20
55-59	(1)1	24	18	(8)	33	20
60-64	16	33	25	(5)	23	14
65-69	23	29	26	(3)	16	10
70-74	(10)	40	26	(13)	20	17
75-79	(20)	(10)	14	(18)	19	18
80-84	(43)	(21)	29	(10)	(6)	(7)
> 85	(51)	61	58	0	(12)	(9)
total	12	28	20	5	22	13

Extrapolation

Table 15.3 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
cosmetic allergy						
2009	12	28	20	10,000	23,000	33,000
2010	5	22	13	4,000	18,000	22,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

Cosmetics complaints may already occur at an early age, albeit at a low incidence. The incidence in women is more than four times higher than in men and the highest incidence is in big cities. The reason for this is obvious: women use more cosmetic products than men. Literature shows, however, that women also develop complaints caused by cosmetic products relatively more often than men. In 2010 the incidence is lower than in 2009, especially in the big cities. The introduction of the questionnaire in 2010 might have prevented positive reports or one might have forgotten to fill in the questionnaire which resulted in a slight under-registration. It is possible that the fact that no questionnaire existed in 2009 caused over-registration, because the questionnaire is also a kind of control system on the registration.

The topic will be continued in 2011, with questionnaire.

Publications based fully or partly on continuous morbidity registration data

Salverda-Nijhof JGW, Kooi MW, De Wit-Bos L, Bourgeois FC, Van Gorcum TF, Colijn JJ, Van Engelen JGM, Donker GA. *Huidklachten door cosmetische producten.* Eindrapportage CESES. RIVM Rapport 320113004/2011

16 Gut feeling related to cancer diagnosis

Topic owner: Dr. G.A. Donker, NIVEL (2010)

Introduction

During their training, GPs learn systematically and by asking questions and by examination, to make a diagnosis. In practice, GPs not apply a only structured approach, but also use their intuition and experience. The difference between “feeling right versus not-right” plays a role in this. Stolper et al (1009) in Maastricht studied the concept “gut feelings”. They discussed with focus groups of GPs about the “gut feelings”. They described the different aspects of “gut feelings”. The GPs participating in the study indicated that the “gut feeling” is sometimes almost a physical sensation. Often there is a “gut feeling” without any objective arguments, distrust in the situation because of insecurity about the prognosis of complaints and the need to intervene. It can be a sudden feeling, but also a slowly arising feeling. Knowledge of the history of a patient and the context of a patient play a role. But that may go in two directions. Knowing the patient may facilitate the “gut feeling”, but it may also interfere by way of sympathy or reluctance, feeling guilty. Training and experience also play a role. Often experienced GPs report this feeling. It is part of a rather automatic process. GP trainers say it can be learned: reflection on one’s own acting is a way to use one’s feelings as part of the process of making a diagnosis. GPs differ in the extend of experience and/or use of “gut feelings”. Men, as well as women, indicate to know this feeling. Rational GPs don’t like the “gut feelings”. They consider it to be a trap not to be lured into.
Stolper [16,17] et al. conclude that the “gut feeling” often acts as a diagnostic instrument. The “gut feeling” mainly works as an alarm bell or a compass. It stimulates to find objective reasons for this feeling, and stimulates, as such, the diagnostic process.

The existence of a “gut feeling” is broadly considered as shown in the assertion of the “Centraal Tuchtcollege voor de Gezondheidszorg” (Central Disciplinary Committee for Health Care) at 11 December 2008, as published

in “Medisch Contact”. The Disciplinary Committee judged that “the internist wrongly ignored his ‘gut feeling’.
Stolper et al. (2010) [16-18] studied the conceptual backgrounds of the concept “gut feeling”. They clarified the diagnostic meaning of the “gut feeling” in GP practice with literature search, focus groups of GPs and by consulting experts in a Delphi consensus procedure.
In addition to Stolper’s study we have conducted quantitative research from the beginning of 2010 and we have monitored in daily GP practice to what extent GPs intuition (“gut feeling”) may contribute to an early diagnosis of cancer. This pilot project may serve as a preparation of an international research project.
Objective of this study is to highlight the following aspects:

- Characterise patients that arouse GPs feeling (intuition, gut feeling) that cancer may exist in this case
- Make explicit the factors that cause this gut feeling/intuition in GPs
- Make explicit the characteristics of GPs as well as patients that could possibly partly influence the “gut feeling” , such as gender, age, number of years of experience as a GP and study the other factors of the meaning of this clinical intuition for forecasting the diagnosis cancer.

Method

1 GPs fill in a questionnaire for this study, for every patient that gives them a feeling that something is not right and that cancer might be diagnosed.
2 GPs registrate the diagnostic ICPC code “A29” for every patient that gives them a feeling that something is not right and that cancer is possible, in the patient’s electronic file. It concerns all patients where the GP suspects cancer: from those patients that give the GP only a vague gut feeling, to those patients whose diagnosis is 100% sure at the first examination. After registration of this diagnostic code the GP is automatically asked to fill in a questionnaire and to send this to NIVEL.
3 The same diagnose code “A29”is used to (anonymously) extract patient data from the electronic file. The GP receives a reminder if he does not fill in the questionnaire.

4 Patient and care data are extracted from the electronic medical files every week.
5 Three months after the consultation, the GP receives a second questionnaire to evaluate the result of the gut feeling case.
6 The results of the questionnaire are reported separately.

Results

Table 16.1 Number of patients per 10,000 inhabitants who gave the GP a gut feeling of possible cancer, per province group, by address density and for the Netherlands as a whole in 2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2010	6	13	15	7	13	9	14	11

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

At this stage of the study, regional differences in the frequency of occurring gut feelings cannot be considered yet as very meaningful. A first analysis of the first year of the data collection via questionnaires is done in 2011 and will be reported elsewhere.

Age distribution

Table 16.2 Number of patients per 10,000 inhabitants according to age group, who gave the GP a gut feeling of possible cancer in 2010

	2010		
age group	m	f	t
< 1	0	0	0
1-4	0	0	0
5-9	0	(3)	(1)
10-14	(3)	(3)	(3)
15-19	(3)	0	(1)
20-24	(6)	0	(3)
25-29	0	(8)	(4)
30-34	(6)	0	(3)
35-39	0	(2)	(1)
40-44	(2)	21	11
45-49	(6)	(4)	5
50-54	16	12	14
55-59	23	20	21
60-64	37	15	26
65-69	30	(13)	21
70-74	39	(12)	25
75-79	36	(9)	21
80-84	37	30	41
> 85	(29)	49	43
total	12	10	11

In general, the frequency of gut feelings increases as the patients are older, in line with the increasing incidence of cancer at that age. It is more frequent for men and here the peak is at a slightly younger ager than for women, in line with the shorter life expectancy for men.

Extrapolation

Table 16.3 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
gut feeling						
2010	12	10	11	9,000	8,000	17,000

* number of patients, consultations, etc. per 10,000 men and women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

Gut feelings in GPs about possible cancer occur more often as patients are older and slightly more with men than with women. This is consistent with the increasing incidence at higher age and the slightly lower life expectancy for men than for women. The incidence of 11 gut feelings per 10,000 registered patients, that we found in 2010, seems low compared to the reported incidence at the web site of the union of integrated cancer centers of 54 new invasive and 6 in situ tumors per 10,000 inhabitants in 2008.[19] Analysis of questionnaires will have to show more characteristics of the gut feeling of symptoms, patients and GPs. The analyses of the questionnaires are reported separately.

The topic is continued in 2011. The foundation Stoffels-Hornstra has awarded a subsidy for the analyses of the questionnaires in 2012.

Publications based fully or partly on continuous morbidity registration data

Donker G en Dorsman S. *Niet-pluisgevoel: een diagnostisch instrument*. Huisarts & Wetenschap 2011;54(8): 449.

17 Diabetes mellitus

Topic owner: Prof. Dr. G. Nijpels, Free Medical Center, Amsterdam (2007-2010)

Introduction

The number of patients with diabetes type 2 will increase in the coming years, especially due to increasing population ageing. It is known that diabetes is associated with an increased mortality risk, predominantly due to cardiovascular complications. Structured diabetes care may lead to a better regulation of therapy and may have a favorable effect on complications compared to standard care. The aim of the present study is to compare the efficacy and costs of different types of primary diabetes care in the Netherlands. This chapter describes the concept of the study and its participants. The results will be described in the coming years.

Method

Study design

Three types of diabetes care will be compared. The first group consists of GPs belonging to the CMR sentinel practices. This group is considered to provide standard diabetes care according to the guidelines prepared by the National Association of General Practitioners (NHG). The second group consists of GPs from the Amstelland region. A structured program of diabetes care has been implemented by this group. Important characteristics of this program include a centralized registration system which is accessible for different disciplines involved in diabetes care, and the supervision by a diabetes nurse practitioner who takes care of quality control. The third study group concerns diabetes care as is provided by the diabetes care system (DZS) in the West Friesland region. For their annual check-up the patients in this group are not consulting a GP but a specialized diabetes center. Apart from the annual check-up education is provided and self management is stimulated. The diabetes care is coordinated by this centre and a centralized

registration system provides insight into patient data for involved care givers. Twice a year a diabetes nurse visits the GP to discuss individual patients. The GP also receives information about the mean values of risk factors of the patients in his practice, compared with values from other practices.

Patients

Patients suffering from diabetes type 2 for at least 2 years in the age group 40-75 years are eligible to be included in the study. Mastering of the Dutch language is mandatory in order to allow independent completion of questionnaires. Patients are excluded from participation when, according to the GP, participation is too much of a burden for the patient personally. This is only the case for a very few patients. A drop-out of 25% after one year is anticipated.

Evaluation

The study will last for 2 years during which evaluations will take place at 3 time points: at baseline and after 1 and 2 years. At each evaluation the patient completes a questionnaire and a diary about costs. The questionnaire includes questions concerning satisfaction about the received diabetes care and the (perceived) health status of the patient. The diary contains questions about the care the patient has used and about possible absence from work as a consequence of the disease. This diary will be kept for 3 months.
The first evaluation was done in the summer of 2007 and was completed in 2008. The second evaluation started in 2008 and was completed in 2009. In the summer of 2009 the third evaluation was started. The study was approved by the medical ethical committee of the Free University; all patients have given their informed consent.

Primary end results

1 (Changes in) the risk to develop coronary heart disease, measured by the UKPDS (United Kingdom Prospective Diabetes Study)-risk score.
2 All direct and indirect costs related to diabetes care that was provided and the effects of this care, absence from work included.

Results

1 Seventeen CMR sentinel practices participated in the study. In these practices a total of 1098 patients were invited to join the study; 482 (44%) agreed to participate.
2 The group in Amstelland consists of 12 GPs. They invited 802 patients with diabetes, 293 (37%) were included in the study.
3 From the database in West Friesland 450 patients with diabetes were randomly selected to participate in the study, 164 (36%) agreed to be included. They are patients of 84 GPs.

In the table the response rates to the questionnaires and cost diaries are presented, by the three study groups. The two groups belonging to the CMR sentinel practices and Amstelland are more or less comparable. The percentage of patients that completed and returned the questionnaires is 90% for the CMR sentinel practices and 89% for the Amstelland group. The provisional response rates show that the average percentage of patients that completed and returned their cost diaries amounts to about 80%. The collection of data in West Friesland started later.

Table 17.1 Summary of response rates per questionnaire and cost diary by diabetes patients from three groups of GPs

GP group	CMR-sentinel practices	Amstelland	DZS West-Friesland
Questionnaire 1	482	293	286
Cost diary 1	435 (90%)	260 (89%)	242 (85%)
Questionnaire 2	370 (77%)	223 (76%)	216 (76%) ongoing
Cost diary 2	347 (72%)	201 (69%)	152 (53%) ongoing
Questionnaire 3	318 (66%) ongoing	168 (57%) ongoing	
Cost diary 3	217 (45%) ongoing	106 (36%) ongoing	

Patient satisfaction

Using the QUOTE questionnaire the patients were asked to value the different aspects of care provided by the different care systems and to share their experience with these aspects. Their satisfaction with the GP, diabetes nurse and dietician were judged separately.

Aspects that were considered important were: information about diabetes and good guidance when therapy was changed and laboratory results are discussed. Aspects of care that were rated high by patients, considering all care givers in all groups, were:

1 information about diabetes,
2 discussion of laboratory results,
3 discussion about aims and course of therapy,
4 discussion of current therapy.

Information about new developments and proper guidance when therapy had to be changed were points of improvement for all care givers in all groups. Patients belonging to the DZS group were more satisfied about the dietician and the continuity of care (at least 1 annual control of feet and eyes, and measurement of weight, blood pressure and kidney function), than patients in the other groups. It may be concluded that there is room for improvement of diabetes care. Patients are clear about this. There are some indications that patients participating in a structured care system are satisfied about more aspects than when standard care is given.

Diabetes care and costs

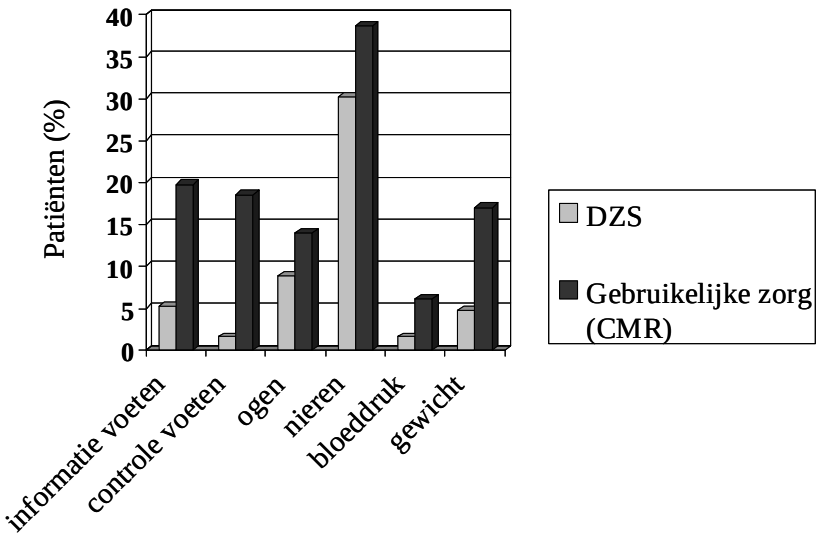
Care and the costs of care for patients with diabetes treated by DZS were compared with care and costs for patients receiving the current standard diabetes care. Using QUOTE questionnaires it was asked which measurements were done in the past year, such as control of complications in feet, eyes and kidney and measurement of blood pressure and weight. Via the cost diaries that were completed at regular intervals by the patient, the average use of care and absence of work were estimated, and the corresponding costs were calculated.

The percentage of patient indicating that the regular controls mentioned above were not performed was significantly higher when patients were

treated with regular care than when patients were treated by DZS. (see figure 17.1). The latter patients were referred less frequently to an internal or eye specialist, but consulted a dietician more often.

The costs made by diabetes patients was generally lower in the DZS group than in the group receiving standard care. However, this difference was only statistically significant for patients who were diabetic for at least 6 years.

Figure 17.1: Percentage of self reported missed controls in the previous year



Conclusion

The participation of patients in this study is good. At the start of the study the total study population consisted of 939 patients. We anticipated a drop-out of about 25% after 1 year, in 2008 the drop-out was about 20%. The currently available data have been used for analysis of patient satisfaction, process of care and costs. The data that have been collected at the end of

2010 are used for long term cost efficiency analysis. The study shows that structured diabetes care delivers higher client satisfaction, more check-ups of feet, eyes, kidneys, blood pressure and weight and cut in cost with more than six years existing diabetes mellitus.

Publications based fully or partly on continuous morbidity registration data

Amber AWA van der Heijden AWA, De Bruijne MC, Dekker JM, Baan CA, Bot SDM, Feenstra TL en Nijpels G. *Cost-effectiveness of integrated care for patients with type 2 diabetes. Design of a pragmatic controlled clinical trial.* Aangeboden voor publicatie

Van der Heijden AWA, De Bruijne MC, Feenstra TL, Dekker JM, Baan CA, Bot SM, Donker GA, Rootjes IG, Kaiser P en Nijpels G. *Integrated care for type 2 diabetes patients. An analysis of resource use and costs.* Aangeboden voor publicatie

Van der Heijden AWA, Rene L, De Bruijne MC, Dekker JM, Baan CA, Bot SDM, Feenstra TL, Donker GA, Nijpels G. *Quality of care from the perspective of patients with type 2 diabetes. A comparison between integrated and usual diabetes care*. Aangeboden voor publicatie

18 Requests for Euthanasia

Topic owner: Dr. G.A. Donker, (NIVEL) (1976-2010)

Introduction

Since 1976 consultations about the end of life, during which the GP is requested to apply euthanasia, are reported. It is not registered whether the GP has granted the request or not. Only patients with an incurable disease are included in the study.

Methods

At the start of the year, the sentinel doctors are informed that a study is going to be conducted. At the end of the year, all sentinel doctors receive a form on which they are asked to state whether patients with incurable disease have requested euthanasia or assistance in suicide in the past year and, if so, the reason for the requests. The doctors are also asked to state the age, gender, disease and nursing location and whether or not a ‘euthanasia declaration' was signed.[20] The data per patient can be found at the end of this section.

Results

In 2010 the number of requests is 55 (28 men and 27 women) from 41 reporting practices. This amounts to 4.2 per 10,000, more than in 2009 (3.2 per 10,000) and 2008 (3.5 per 10,000). Of the patients who requested euthanasia in 2010 73% had a malignancy, which is comparable to previous years (76% in the period 1976-2010). Most patients were tended at home. In 78% of the cases (43) the request is supported by a living will. Fifty three patients asked for euthanasia. Two patients asked for or assisted euthanasia or assisted suicide. Two patients asked for assisted suicide alone. In 51% of the cases the GP consulted a colleague. If no other GP was consulted, this

was mostly due to the fact that the eventual application of euthanasia or assisted suicide was not yet relevant, or the patient died without intervention.

Requests for euthanasia 2000-2010

Table 18.1 shows the distribution of the number of requests by province group by address density and by gender.

Table 18.1 Absolute numbers of patients who asked GPs to participate actively in euthanasia, by gender, province group, address density and for the Netherlands as a whole, 2001-2010

			province group				address density			Netherlands
absolute	m	f	N	E	W	S	1*	2*	3*	
2001	19	18	4	8	16	9	5	21	11	37
2002	19	11	4	7	17	4	4	19	9	32
2003	16	21	4	8	21	4	3	25	9	37
2004	15	13	3	3	16	6	2	19	7	28
2005	13	22	2	7	23	3	5	24	6	35
2006	11	18	2	4	21	5	4	18	10	32
2007	16	16	9	7	14	2	9	18	5	32
2008	17	20	7	5	19	6	8	20	9	37
2009	20	18	5	5	22	6	3	21	14	38
2010	28	27	8	12	23	12	12	37	6	55

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The data per 10,000 inhabitants (not shown because of small numbers) indicate that in 2010 relatively few patients in big cities asked for euthanasia.

Age distribution

The age distribution of patients who requested euthanasia is shown in table 18.2

Table 18.2 Absolute numbers of patients asking their GP for euthanasia or assisted suicide per age group, 2001-2010

	<54	55-64	65-74	75-84	>85	total
2001	8	3	9	12	5	37
2002	6	5	6	9	6	32
2003	5	6	12	6	8	37
2004	3	6	13	5	1	28
2005	4	8	13	8	2	35
2006	3	5	10	7	7	32
2007	3	5	12	7	5	32
2008	5	8	8	12	4	37
2009	8	5	14	6	5	38
2010	10	8	11	12	14	55

Overview of reported requests

Since 1976 the sentinel general practice network has collected data on 1241 requests for euthanasia or physician assisted suicide, 628 (51%) by men. The International Classification of Diseases (1975, 9th version) was used to obtain insight into the illnesses that gave rise to requests for euthanasia or assisted suicide. One of the problems in classification is the co-morbidity, which is inherent to old age. Another problem is that sometimes no disease is reported at all: in the ICD-9-group of symptoms and not fully described diseases the request of a 93 year old and a 84 year old lady are included with motivation “completed life”, a 91 year old lady who was “tired of life” and a

99 year old bedridden patient without described disease.

Five categories of illnesses are used:
- malignant neoplasms;
- cardiovascular diseases;
- chronic obstructive pulmonary diseases;
- symptoms and insufficiently defined illnesses;
- other diseases, including neurological and endocrine illnesses and AIDS.

Table 18.3 indicates the diseases that led to request for euthanasia or assisted suicide. In 2010 the distribution is comparable to previous years.

Table 18.3 Diseases leading to euthanasia requests, 1976-2010

	N	%
malignant neoplasms	939	76
cardiovascular diseases	71	6
chronic obstructive pulmonary diseases	51	4
symptoms and insufficiently defined diseases	60	5
other diseases	120	10
total	1241	100

Over the years, the reported percentage of living wills has increased from 15% in 1984 to 78% in 2010. This percentage was the highest in 2009 with 92% living wills in the reported requests.

Discussion

The registration of the requests for euthanasia or assisted suicide by the Dutch CMR Sentinel General Practices Network shows consistently a slightly higher percentage in men, around 51% versus 49% in women over the period 1976-2010. In the mentioned studies so far one other result is consistently present: mainly patients with a malignant disease ask for euthanasia and in this group euthanasia is practised relatively more frequently. Also, it is concluded that the percentage of patients with a malignant disease at higher age is decreasing. The data of the Dutch CMR Sentinel General Practice Network show this too: over the period 1976-2010 76% of the patients who asked for euthanasia or assisted suicide had cancer. In the age group 75-84 this percentage decreases to 63%, from 85 years it is only 32%.

Data that have been collected over a longer period of time, on requests for euthanasia and assisted suicide, show a gradual change in reasons to ask the GP for euthanasia. Unbearable pain and physical suffering are becoming less important motives: hopelessness and loss of dignity due to the disease are now more important reasons to request euthanasia.[21] Loss of dignity turns out to be more often the motive for men than for women to ask for euthanasia.[21]
Alzheimer's disease is apparently no longer an absolute contra-indication for euthanasia, unless the request was done when the patient was coherent.

Until the early 1990s, hardly any possibilities existed to compare data collected in the Dutch CMR Sentinel General Practice Network on requests for euthanasia and physician assisted suicide with the findings of other data registration projects and research.[22] Since then, major studies have been carried out to determine the action taken by GPs and other doctors in the Netherlands with regard to euthanasia, assisted suicide and decisions concerning the end of life of patients.[23-26]In 2001 and 2005, another large-scale study was conducted into euthanasia and other end-of-life medical practices.[27, 28]

Substantial methodological differences exist between the above-mentioned studies and the registration of data by GPs participating in the CMR Sentinel General Practice Network. An extensive discussion of these differences is

beyond the scope of this report. However, there is one difference that bears mentioning: unlike the recent studies mentioned above, the data of the CMR Sentinel General Practice network are derived exclusively from GPs, and not only deal with applied cases of euthanasia, but also with discussions and deliberations about requests for euthanasia which in due course may be granted.

Also the annual reports of the Regional Assessment Committee Euthanasia provide useful information. From the 2008 annual report we know that 2331 cases of executed euthanasia or assisted suicide are reported to the Committee.[29] In 2008 the number was about higher than in previous years, most likely because the percentage of cases actually reported to the Assessment Committees has increased.[29, 30]In most reported cases the physicians had strictly followed the rules required by law. Only in 10 instances this was not the case at a national level. The increase noted by the Regional Assessment Committee is consistent with the slightly higher number of reports by the CMR sentinel practices in 2010, although differences in study design should be taken into consideration. The percentage of living wills has increased during the past years; from 15% in 1984 to 78% in 2010. However, in 2009 it was 92%. Although a higher percentage can be considered as an indicator for the quality of care between patient and GP, when discussing decisions at the end of life, the percentage could also decrease if these discussions took place at an earlier stage in the illness, long before euthanasia is a topical issue. This appears to be a plausible reason for the higher number of reported requests in 2010, because relatively often no living will existed and no second GP had been consulted. Many of these requests were not yet topical issues, apparently.

The study will be continued in 2011.

Publications based fully or partly on continuous morbidity registration data

Donker GA and Alphen van JE (2011). *The Impact of the Dutch Euthanasia Act on the Number of Requests for Euthanasia and Physician Assisted Suicide* - A Cohort Study in General Practice between 1977 and 2007
In: Euthanasia - The "Good Death" Controversy in Humans and Animals, Josef Kuře (Ed.), ISBN: 978-953-307-260-9, InTech, Available from: http://www.intechopen.com/articles/show/title/the-impact-of-the-dutch-euthanasia-act-on-the-number-of-requests-for-euthanasia-and-physician-assist

Alphen van JE, Donker GA, Marquet RL. *Euthanasieverzoeken voor en na de euthanasiewet.* Huisarts en Wetenschap 2011;54(1):18-22

Alphen van Jojanneke E, Donker Gé A, Marquet Richard L. *Request for euthanasia in general practice before and after implementation of the Dutch Euthanasia Act.* British Journal of General Practice: 2010;60:263-267

Abstract:

Alphen van Jojanneke E, Donker Gé A, Marquet Richard L. *Request for euthanasia in general practice before and after implementation of the Dutch Euthanasia Act.* British Journal of General Practice 2010;60:263-267

Background: The Netherlands was the first country in the world to implement a Euthanasia Act in 2002. It is unknown whether legalising euthanasia under strict conditions influences the number and nature of euthanasia requests.

Aim: To investigate changes in the number of, and reasons for, requests for euthanasia in Dutch general practice after implementation of the Dutch Euthanasia Act.

Design of study: Retrospective dynamic cohort study comparing five years before (1998-2002) and five years after (2003-2007) implementation.

Method: Standardized registration forms were used to collect data on requests for euthanasia via the Dutch Sentinel Practice Network. This network of 45 general practices is nationally representative by age, gender, geographic distribution and population density.

Results: The mean annual incidence before implementation amounted to 3.1/10,000, thereafter to 2.8/10,000. However, trends differed by gender. The number of requests by men decreased significantly from 3.7/10,000 to 2.6/10,000 (($p< 0.008$); the requests by women increased from 2.6/10,000 to 3.1/10,000. Before and after implementation, cancer remained the major underlying disease for requesting euthanasia: 82% vs. 77% for men;

73% vs. 75% for females. Pain was a major reason for a request, increasing in the period before implementation (mean 27%), but declining in the period thereafter (mean 22%). Loss of dignity became a less important reason after implementation (from18% to 10% , p=0.04), predominantly due to a marked decrease in women (from17% to 6%, p< 0.02). Trends in unbearable suffering and hopelessness as reasons remained unchanged after implementation of the Act.

Conclusions: There was no increase in demand for euthanasia after implementation of the Euthanasia Act. Pain as a reason for requesting euthanasia showed an increasing trend before implementation, but declined thereafter. Loss of dignity as a reason declined, especially in females.

Donker GA, Van Alphen JE, Marquet RL. The impact of the Euthanasia Act on the number of requests for Euthanasia and Physician assisted suicide. European Journal of Public Health 2009;19(S1):110 (Oral Presentation 2nd European Public Health Conference Lodz, November 2009)

Marquet RL, Bartelds A, Visser GJ, Spreeuwenberg P, Peters L. *Twenty five years of requests for euthanasia and physician assisted suicide in Dutch general practice: trend analysis.* BMJ 2003;327:201-2

Appendix 1

Table 18.4 Requests made by patients for active euthanasia in 2010

age	gender	disease reported	reason for request
99	f	old age	bed-ridden
97	f	chronic heart failure	dyspnoea, exhaustion
91	f	old age, renal failure	fast deterioration
90	f	metastatic breast cancer	cerebral metastases with increasing paralysis limbs, helplessness
89	m	malignancy with unknown primary cancer	extremely tired and impaired
89	m	lung fibrosis, heart failure	deterioration, dyspnoea, tiredness
89	m	metastatic lung cancer	dyspnoea
88	m	tumor, obstruction due to abscess	extremely impaired
87	m	prostate cancer, recurrent lumbal hernia, diabetes mellitus, arteriosclerosis, rheumatic polymyalgia	pain, helplessness
87	f	deterioration, dysfunction	poor wellbeing
87	f	cancer	deterioration
86	f	diabetes mellitus	threatening lower limb amputation
86	f	lung cancer	pain, dependancy
85	f	renal failure	tired of life
84	f	atrium fibrillation, depression, dementia	wish for prevention of senseless suffering
84	f	no disease, old age	completed life
83	m	myelodysplastic syndrome	pain, tiredness
83	m	liver carcinoma	pain, ascites
82	m	heart failure	recent myocardial infarction, bed-ridden

Table 18.4 Requests made by patients for active euthanasia, 2010 (cont.)

age	gender	disease reported	reason for request
82	m	metastatic gastric carcinoma	unbearable pain, extremely tired
82	f	renal carcinoma	terminal phase
81	m	cardial arytmia, pacemaker	unknown
81	f	pancreas carcinoma, metastases lung and bone	dyspnoea
80	f	colorectal carcinoma	refractive dyspnoea, pleuritis, metastases
80	f	coecum carcinoma	pain, loss of prospect
77	f	depression post CVA, personality problem	pain, tired of life
73	m	prostate carcinoma	loss of prospect
72	m	prostate carcinoma	bipyramidal syndrome
72	f	early Alzheimer disease	recently diagnosed, prefers timely arrangements
72	f	metastatic endometrium carcinoma	loss of prospect
72	f	terminal COPD	loss of prospect, impairment daily life activities
71	m	duodenal carcinoma with peritonitis carcinomatosis	progressive pain
71	m	metastatic melanoma	tiredness, senseless suffering, itching, icterus, dullness
70	m	bladder carcinoma	aphasia due to CVA
70	f	ovary and uterus carcinoma	loss of prospect, refractive pain and nausea
69	f	metastatic ovary carcinoma	deterioration
65	f	lung cancer	exhaustion
63	m	metastatic colon carcinoma	loss of prospect
62	m	metastatic tumor, unknown origin	refractive pain, loss of prospect
61	m	esophagus carcinoma	infaust prognosis
61	m	metastatic lung cancer	senseless suffering, dyspnoea, refractive pain

Table 18.4 Requests made by patients for active euthanasia, 2010 (cont.)

age	gender	disease reported	reason for request
59	m	cholangiocarcinoma	pain, itching, loss of prospect, nausea
58	m	metastatic nasopharynx and esophagus carcinoma	pain, dyspnoea, exhaustion
57	m	nasopharynx carcinoma	recent recurrency with loss of prospect
57	m	metastatic melanoma	senseless suffering, itching, icterus, tiredness, dullness
54	m	lung carcinoma with vertebral metastases	infaust prognosis
54	m	gallbladder carcinoma	deterioration
53	f	bacterial meningitis, arteriosclerosis	refractive pain
52	f	metastatic lung cancer	dyspnoea
49	m	brain cancer	wish for early arrangements in case of loss of future communication abilities
47	f	metastatic lung cancer	infaust prognosis
45	m	metastatic rectal carcinoma	infaust prognosis, wish for self-efficacy
44	m	lung cancer and vertebral metastases	hemiplegia
40	f	brain cancer	anxiety, helplessness
31	f	astrocytoma gr. IV, multiform glioblastoma	deterioration

19 Palliative Sedation

Topic owner: Mrs. Dr. G.A. Donker, NIVEL (2005-2010)

Introduction

Even when palliative care is optimal at the terminal phase of a disease process, situations may arise in which treatment no longer provides sufficient alleviation of symptoms. Predominant features are severe agitation, dyspnoea, pain, nausea, vomiting and fear. They leave a dreadful impression on all persons concerned in palliative care. The patient is suffering severely and may become desperate, family and friends are hardly able to stand the situation, and doctors and caregivers feel they have failed.

In the past years severe suffering at the end of life is increasingly considered as unacceptable. Caregivers are requested to alleviate this suffering, which is felt as meaningless. Doctors may then decide, on certain conditions, to apply deep sedation: decrease consciousness to a moderate or severe degree, short term or intermittent, using sedative drugs (sleeping agents). The objective is to alleviate suffering, not to end life.

In 2002 terminal sedation was applied by Dutch GPs in 2.5% of all deaths and has found to be increasingly applied.[26,27] The end of life study reports in its fourth national survey that continuous deep sedation is applied in 12.8% of all deaths occurring at home, hospital or nursing home.[29]

The question has been raised whether the strict criteria formulated for a request for euthanasia, should also be followed for palliative sedation. When discussing this issue, fear has been expressed that in doing so terminal sedation will become an alternative for euthanasia, which is scrutinized by an external evaluation committee. It remains to be seen to what extent euthanasia and palliative sedation are complimentary in alleviating suffering at the end-of-life. Investigations into the practice of palliative sedation by GPs may provide some answers to these questions.

Method

Sentinel GPs were requested to register each case of palliative sedation in their practice. At the end of each year they provide additional information by completing a questionnaire in which questions are being asked about the reason why palliative sedation was applied, the nature of the underlying disease, whether the patient also requested for euthanasia, and who was involved in the decision-making for palliative sedation. In 2007 it was asked for the first time which circumstance had been the predominant factor to decide for palliative sedation when a request for euthanasia has been posed as well.

Results

In 2010 41 sentinel GPs reported 31 patients (15 men, 16 women) who were treated with palliative sedation, which is 5.2% of all reported deaths in 2010. This is absolute and relatively comparable with 2009. In 2010 the decision for sedation was taken in 17 men and 14 women. Of the patients 31 had cancer, i.e. 71%.
GPs reported that for 23 patients (74%) the presence of 2 or more refractory symptoms had prompted the decision to decrease the consciousness of the patient. In 8 patients only 1 refractory symptom was indicated (six with dyspnoea, one with fear and one white untreatable pain (see also appendix).

Untreatable pain (23 patients, 74%) was the most prominent reason to decide for palliative sedation in 2010, whereas in previous years, also untreatable dyspnoea (17 patients, 55%), nausea (9 patients, 29%) vomiting (6 patients, 19%) and fear (6 patients, 26%).

From the 31 reported patients 6 (19%) also requested for euthanasia. The reasons to apply palliative sedation and not euthanasia in these 6 patients were: not meeting the criteria for euthanasia, the request for euthanasia not confirmed in writing, the family's preference, hospitalization, increase dyspnoea and short life expectancy.

Table 19.1 Absolute number of patients treated by their GP with palliative sedation, per province group, address density and for the Netherlands in 2005-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2005	4	4	15	3	7	17	2	26
2006	5	4	18	4	4	23	4	31
2007	4	2	18	6	5	24	1	30
2008	3	2	10	3	4	9	5	18
2009	7	10	9	5	7	21	3	31
2010	5	10	8	8	5	23	3	31

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

In 2010 the highest number of patients (absolute and per 10,000) are reported in the eastern provinces (table 19.1 and 19.2). Sorted by address density most patients per 10,000 were reported to live in cities with 500-2500 inhabitants per km^2.

Table 19.2 Number of patients per 100,000 treated by their GP with palliative sedation, per province group, address density and for the Netherlands as a whole in 2005-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2005	(1,8)	(1,5)	2,5	(1,2)	3,0	1,9	(0,9)	2,0
2006	3,0	(2,3)	4,0	(2,5)	(2,4)	4,2	(1,7)	3,3
2007	(1,6)	(0,9)	4,4	3,2	2,8	3,5	(0,5)	2,8
2008	(1,2)	(0,8)	2,9	(1,5)	(2,0)	1,4	3,1	1,7
2009	2,6	4,1	1,9	2,5	2,5	2,7	(1,1)	2,7
2010	1,9	3,8	1,9	2,5	1,9	3,0	(1,4)	2,5

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The age distribution is given in table 19.3.

Table 19.3 Absolute number of patients per age group treated with palliative sedation by their GP in 2005-2010

	<54	55-64	65-74	75-84	>85	total
2005*	3	9	3	8	2	26
2006	2	6	8	8	7	31
2007	1	5	10	8	6	30
2008	4	3	2	5	4	18
2009	7	4	7	7	6	21
2010	2	7	9	6	7	31

*In 2005 the age of one patient was unknown.

Palliative sedation sometimes is applied at a relatively young age and does not seem to be related to age.

Summary of reported requests

Similarly as for the topic ‘requests for euthanasia’ (see chapter 18) five major disease groups were used to obtain insight into the disorders underlying the use of palliative sedation.

Table 19.4 Disorders for which palliative sedation was applied in 2005-2010

	N	%
malignant tumors	123	74
cardio-vascular diseases	19	11
chronic obstructive pulmonary disease	5	3
symptoms and incompletely described diseases	7	4
other diseases	13	8
total	167	100

Discussion

Similarly as for request of euthanasia (chapter 18), cancer is the most prominent disease leading to the decision for palliative sedation.
Mostly the presence of more than one refractory symptom is the reason to apply palliative sedation. Untreatable pain and dyspnoe play a major role. In 2010 palliative sedation was applied in 5.2% of the reported deaths. This is considerably lower than the 12.8% mentioned in the fourth national survey concerning medical decisions at the end of life.[25] However, this latter study involves also deaths in hospitals and nursing homes and at home and therefore is not comparable with our study in a general practice population, in which patients in nursing homes normally are not included. Our study shows annual fluctuations, but no increasing trend since the start of the study in 2005. This is an unexpected finding because in the past couple of years the literature reported an increasing trend of palliative sedation.[27,28]
In the 6 patients who had also asked for euthanasia there was no indication that palliative sedation had been applied to avoid euthanasia. The reasons for palliative sedation were clearly defined and sometimes the family's preference played an important role. These results indicate that requests for euthanasia and palliative sedation largely relate to different motives, despite similarities in the nature of the symptoms. The study does not support the

notion that the boundary between euthanasia and palliative sedation is becoming indistinct. This is also supported by the thesis about palliative sedation by Jeroen Hesselaar 2009.[31]The guideline on palliative sedation issued by the KNMG in 2005 (www.knmg.nl), undoubtedly has contributed to professionalize this intervention.

The topic will be continued 1n 2011

Appendix 1

Table 19.5 Characteristics of patients treated with palliative sedation in 2010

age	gender	disease reported	reason for request
91	f	bladder carcinoma	anxiety
91	f	heart failure	dyspnoea
90	m	pain symptoms, deterioration	pain, nausea, anxiety, completed life
90	f	colon carcinoma	pain
88	f	necrosis of feet due to atherosclerosis	dyspnoea, pain
87	f	cervical carcinoma	pain
85	f	renal failure	dyspnoea, pain, vomiting
79	f	chronic obstructive pulmonary disease	dyspnoea
78	m	renal/bladder carcinoma	pain, anxiety, exhausted care taking relatives
78	f	lung carcinoma	dyspnoea, pain, cachexia
77	m	lung carcinoma	dyspnoea, pain, vomiting, refractive coughing
77	f	metastatic ovary carcinoma	dyspnoea, anxiety
76	f	duodenal carcinoma	pain, nausea
74	f	lung carcinoma	dyspnoea, pain, nausea
73	m	terminal COPD and pancreatic carcinoma	dyspnoea, pain, anxiety
72	m	gastric carcinoma	pain, nausea, vomiting
72	m	terminal heart failure	dyspnoea
71	m	metastatic carcinoma of unknown origin	dyspnoea, senseless suffering
70	m	acute myeloid leukaemia (AML)	pain, nausea

Table 19.5 Characteristics of patients treated with palliative sedation, 2010(cont.)

age	gender	disease reported	reason for request
66	m	bronchial carcinoma	dyspnoea, pain, vomiting
65	m	metastatic colon carcinoma	pain, nausea, anxiety
65	m	terminal COPD	dyspnoea, pain
64	m	idiopathic lung fibrosis	dyspnoea
62	f	metastatic colon carcinoma	pain, nausea
61	m	metastatic pancreatic carcinoma	delirium, pain, nausea, vomiting
61	m	colon carcinoma	delirium, dyspnoea, pain
61	f	uterine carcinoma with lung metastases	dyspnoea
59	m	metastatic prostate cancer	delirium, pain
55	m	colon carcinoma	delirium, pain, anxiety
52	m	bronchial carcinoma with brain metastases	delirium, pain, anxiety
39	f	metastatic ovary carcinoma	refractive pain, muscle spasms

20 Eating disorders

Topic owner: Prof. H.W. Hoek, Parnassia Bavo group
(1985-1989, 1995-2010)

Introduction

It is unclear whether the incidence rate of serious eating disorders such as anorexia nervosa and bulimia nervosa is increasing. Sentinel doctors registered both of these disorders between 1985 and 1989. By a renewal of registration from 1995 it is studied whether these disorders are on the rise. This chapter only provides an indication of trends in the number of patients with eating disorders in general practice. Results emerging from the questionnaires will be published separately.

Methods

The trend in the incidence of eating disorders from 1995 onward will be calculated per age group, province group and address density and will be compared with the period 1985-1989. These data are not corrected yet for double counts and contain figures about incidence as well as prevalence. The numbers should therefore be interpreted with caution. For that reason no extrapolation to a national level is presented.
The sentinel GPs have been asked to complete a questionnaire with additional information for each registered patient. Was the eating disorder diagnosed in 2010 and was the patient referred to a different caregiver? In addition, information was gained about the family of the patient and the physical aspects of the disease. The results of this study are published elsewhere.

Results

In table 20.1 the distribution is shown of the number of patients diagnosed by the GP with an eating disorder, per 10,000 inhabitants, per province group and address density and for the Netherlands as a whole, from 1985-1989 and from 1995-2010. In 2010 eating disorders are diagnosed in 34 women and 0 man.

Table 20.1a Absolute numbers of patients for whom GPs diagnosed an eating disorder, per province group, address density and for the Netherlands as a whole, 1985-1989 and 1995-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
absolute/year average:								
1985-1989	7	10	35	10	6	33	24	61
1995	11	11	26	16	5	49	10	64
1996	6	8	22	9	3	37	5	45
1997	12	10	11	9	8	29	4	42
1998	10	17	15	9	5	36	10	51
1999	4	14	12	13	1	38	4	43
2000	4	9	13	9	3	26	6	34
2001	5	6	6	7	4	19	1	24
2002	2	12	14	8	5	24	7	36
2003	1	14	24	4	2	29	12	43
2004	3	11	14	11	3	30	6	37
2005	4	8	15	1	10	16	2	28
2006	2	8	16	6	5	19	8	32
2007	4	8	19	9	5	27	8	40
2008	8	12	16	13	11	31	7	49
2009	5	8	22	9	5	26	13	44
2010	6	7	16	5	6	20	8	34

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Table 20.1b Numbers of women for whom GPs diagnosed an eating disorder, per province group, address density and for the Netherlands as a whole, 1995-2010, per 10,000 women

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
per 10,000 women								
1995	8,9	6,4	8,1	9,1	5,2	10,5	6,9	8,1
1996	4,7	4,7	8,9	4,8	3,0	8,9	3,3	6,2
1997	7,8	5,5	4,2	4,8	6,5	5,3	4,3	5,3
1998	7,2	9,1	6,7	5,6	8,6	7,1	11	7,1
1999	(3,3)	8,5	5,4	8,4	(1,1)	7,9	4,4	5,2
2000	(3,2)	4,6	3,9	6,1	(2,3)	4,9	3,8	4,2
2001	3,4	4,0	2,5	4,6	(4,4)	4,0	0,9	3,6
2002	(1,5)	7,3	5,4	3,5	4,9	4,5	4,5	4,6
2003	(0,8)	11,6	7,8	(2,3)	(1,8)	5,9	9,0	6,0
2004	(1,3)	7,0	2,6	2,9	(2,9)	3,5	2,3	3,0
2005	(3,3)	5,4	4,1	(0,6)	8,2	4,9	(1,2)	3,5
2006	(2,4)	9,2	6,6	7,5	6,0	6,6	6,5	6,4
2007	(3,2)	7,3	9,1	9,5	(5,5)	7,1	8,0	7,0
2008	6,0	8,8	8,7	12,4	10,5	8,3	8,4	8,7
2009	3,7	6,3	9,8	9,8	5,2	7,4	5,2	7,6
2010	4,5	4,5	8,0	4,9	3,1	6,2	7,5	5,8

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The absolute and relative number of reports in 2010 is lower than in previous years. In 2010 it concerns exclusively women.
During the past 10 years the reported number of female patients with an eating disorder has been the lowest in the northern province group. In 2010 the number of eating disorders was the highest in the western part of the country and in big cities.

Age distribution

Table 20.2 shows the distribution of reported eating disorders by age group.

Table 20.2 Absolute numbers of patients for whom GPs reported an eating disorder, by age, 1985-1989 and 1995-2010

women	1985-1989	1995	1996	1997	1998	1999	2000	2001
1-4	-	-	-	1	-	-	-	-
5-9	-	-	-	1	-	-	-	1
10-14	1	1	1	0	2	-	1	1
15-19	8	13	15	10	9	7	9	6
20-24	12	14	9	11	14	74	5	2
25-29	14	10	7	7	5	6	9	4
30-34	6	9	4	3	4	6	4	5
35-39	7	8	6	3	11	91	3	3
40-44	4	2	2	4	4	6	1	-
45-49	1	4	1	1	1	-	1	-
50-54	1	2	-	-	-	-	1	1
55-59	1	-	-	-	1	1	-	-
60-64	-	-	-	-	-	-	-	-
65-69	-	-	-	-	-	-	-	-
70-74	-	-	-	-	-	-	-	-

Table 20.2 Absolute numbers of patients for whom GPs reported an eating disorder, by age, 1985-1989 and 1995-2010 (cont.)

women	2002	2003	2004	2005	2006	2007	2008	2009	2010
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-
10-14	1	-	1	1	-	3	1	2	2
15-19	5	5	5	9	5	6	12	7	11
20-24	3	7	10	2	9	7	2	9	7
25-29	8	7	8	2	4	4	5	7	3
30-34	2	5	-	6	3	5	7	4	1
35-39	5	5	2	1	6	3	7	5	2
40-44	4	6	5	6	1	3	3	3	3
45-49	2	5	4	-	1	5	6	4	-
50-54	2	2	-	-	1	1	3	-	2
55-59	-	-	-	-	-	-	1	3	1
60-64	-	1	-	1	1	1	-	-	1
65-69	-	-	-	-	-	-	-	-	1
70-74	-	-	-	-	1	-	-	-	-
75-79	-	-	-	-	-	-	-	-	-
80-84	-	-	-	-	-	1	-	-	-

The peak incidence in 2010 lies in the age groups 15-19 years. Also, it is remarkable that eating disorders sometimes still occur at old age.

Discussion

In 2010, there are relatively few reported eating disorders. In 2010 the highest incidence occurred in big cities and in the western part of the country. Previous studies have shown that living in big cities is a risk factor for bulimia nervosa.[32,33]

The study will be continued in 2011

Publications based fully or partly on continuous morbidity registration data

Son van GE. *Eating disorders in a primary care based cohort*. Dissertation 2010

Son van Gabriëlle E, Hoeken van Daphne, Furth van Eric F, Donker Gé A, Hoek Hans W. *Course and Outcome of Eating Disorders in a Primary Care-Based Cohort*. International Journal of Eating Disorders 2010;43(2):130-8

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Son van GE, Hoeken van D, Bartelds AIM, Furth van EF, Hoek HW. *Urbanisation and the incidence of eating disorders.* Brit J Psychiatry 2006;189:562-563

Son van GE, Hoeken van D, Bartelds AIM, Furth van EF, Hoek H.W. *Time trends in the incidence of eating disorders: A primary care study in the Netherlands* Int Eat Disord 2006;39:565-569

21 General comments

1 The Counselling Committee has decided to include the following topics on the weekly returns in 2011.

   a Influenza and influenza-like illnesses
   b Research on end-of-live decisions
   c Suicide and attempted suicide
   d STD
   e Gastro-enteritis
   f Unwanted pregnancy
   g Urinary tract infection
   h Whooping cough
   i Cosmetic allergy
   j Gut feeling related to cancer

2 Incidental studies on euthanasia, eating disorders, palliative sedation and diabetes mellitus will be conducted in 2011.

3 The Counselling Committee welcomes suggestions concerning new topics and adjustments of existing topics.

4 Data contained in this report may be reproduced provided that the source is acknowledged.

5 A Dutch version of the report is available on request.

22 Literature list

List of other publications based fully or partly on the data from Continuous Morbidity Registration Sentinel Practices

General

Santing L, Van der Eijk R, Donker GA. *Cholesteatoom: een wolf in schaapskleren.* Huisarts en Wetenschap 2012;55(2):78-81

Van den Wijngaard CC, Dijkstra F, Van Pelt W, Van Asten L, Kretzschmar M, Schimmer B, Nagelkerke NJD, Vellema P, Donker GA, Koopmans MPG. *In search of hidden Q-fever outbreaks: linking syndromic hospital clusters to infected goat farms.* Epidemiol Infect 2011;Jan:139(1):19-26

Santing-Winter L, Van der Eijk R, Donker GA. *Even een trommelvlies beoordelen: meerdere valkuilen.* Bijblijven 2011;2:20-24

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Nielen MMJ, Spreeuwenberg P, Paget WJ, Donker GA, Meijer A, Schellevis FG. *The age-specific impact of influenza on hospital admissions and mortality in five countries in Europe.* Utrecht, NIVEL 2010, report

Donker GA. *Peilstations meten trends in de huisartsenpraktijk.* Huisarts in de praktijk 2007;18(12):10-12

Antibioticaresistentie

Donker GA, Deurenberg RH, Driessen C, Sebastian S, Nys S, Stobberingh EE. *The population structure of Staphylococcus aureus among general practice patients from The Netherlands.* Clin Microbiol Infect 2009;15(2):137-43

Donker G, Stobberingh E. *Ligt MRSA overal op de loer?* Huisarts & Wetenschap 2008;51:113

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ARI-EL study

Gageldonk van Rianne, Donker Gé, Peeters Marcel. *Voorspellen klachten een bacteriële bovensteluchtweginfectie?* Huisarts en Wetenschap 2007,50(3)85

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Chronic benign pain

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Consultation for smoking addiction

Jacobs-van der Bruggen Monique, Donker Gé, Verkleij Harry, Baan Caroline. *Stoppen met roken: hoe pakken wij dat aan?* Huisarts & Wetenschap 2007;50:198-202

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Sportletsels

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Otto Suzie J, Cruijsen van der Ingrid W, Liem Michael K, e.a. *Effective PSA contamination in the Rotterdam section of the European randomized study of screening for prostate cancer.* Int J Cancer 2003;105:394-399

Resistance against antibiotics of uropathogens

Knottnerus BJ, Nys S, Riet ter G, Donker G, Geerlings SE, Stobberingh E. *Fosfomycin tromethamine as second agent for the treatment of acute, uncomplicated urinary tract infections in adult female patients in The Netherlands?* Antimicrob Chemotherapy 2008;62:356-359

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   c At least one of the following symptoms must be present: cough, coryza, sore throat, frontal headache, retrosternal pain, myalgins.
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Appendix 1: participating doctors in 2010

Name:	Location:	Province:
J. Mulder*	't Zand	Groningen
P.S. Wiersema*	Oostermeer	Friesland
W.J.M. Brunninkhuis	Drachten	Friesland
H.J. Dijkstra*	Bakhuizen	Friesland
H.D.W.A. van Gijsel/B. Barla		
Mw. M. Schellens/Mw. I. Hummelen		
Mw. C.A. Hoeksema-de Vries/S.A. van Dijk	Assen	Drenthe
Mw. F.B. van Heest*	Schoonoord	Drenthe
S.M. Handgraaf	Nieuw Weerdinge	Drenthe
J.H. Vaartjes	Emmen	Drenthe
J.F.E. Borm*	Albergen	Overijssel
Dr. R.A. de Groot/Mw. J.T. Bos		
Mw. E.J.A. Idema *	Oldemarkt	Overijssel
J. Rauws	Almelo	Overijssel
P.J. van Beek	Oldenzaal	Overijssel
D.G. de Jong	Barneveld	Gelderland
H. Rademaker	Barneveld	Gelderland
M.T.W. van der Velden	Dieren	Gelderland
J.H.M. van der Holst	Groenlo	Gelderland
L.B.P.M. Hendrikx*	Steenderen	Gelderland
R.J.M. Kimmenaede	Zutphen	Gelderland
J.A. Nielen	Emmeloord	Flevoland
Mw. I.K.I.de Jongh-Kilian /Mw. M.G.C.L. Smit		
L.J.A.L. Kroft	Amersfoort	Utrecht
P.B. den Hertog	Utrecht	Utrecht
Mw. Y.E.V. van Hazel/P. Olie	Amsterdam	Noord-Holland

Appendix 1: participating doctors in 2010 (continued)

H.R. Neijs*)	Broek in Waterland	Noord-Holland
Mw. A. Verdam-de Witte	Hilversum	Noord-Holland
Mw. M.H. Brooks	Hilversum	Noord-Holland
J.V.M. Noordeloos	Bloemendaal	Noord-Holland
A. Leemhuis/W. van der Maarel	Castricum	Noord-Holland
A.M. van Meurs	Den Haag	Zuid-Holland
J.C.B.M. Rensing/Mw. A. Rensing-van Dijk	Den Haag	Zuid-Holland
Mw. E. Sleeboom	Voorhout	Zuid-Holland
Mw. D. Nijman*	Nieuwveen	Zuid-Holland
W.H. van der Linden/Mw. E.A.A. van Rosmalen*	Leimuiden	Zuid-Holland
Mw. M. Heijmans/K. van de Bent/K. Jonker/ C. Douma	Den Haag	Zuid-Holland
R.R. Lankhorst	Middelburg	Zeeland
P.B.A. Crama	Vlissingen	Zeeland
M.G.A.M. de Gouw	Rosmalen	Noord-Brabant
W.L.M. Rijnders/J.A.M. Disseldorp	Etten-Leur	Noord-Brabant
J.J.J. Meulenberg/J.D.M. schelfhout	Eindhoven	Noord-Brabant
P. Meulesteen/L. Kessels/ L. Klinkers		
L. Burghout/J. Landaete	Eindhoven	Noord-Brabant
R.J.P. de Gardeyn	Sleeuwijk	Noord-Brabant
M.J.F.M. Klaassen*	Oirsbeek	Limburg
P.H.M. Vaissier)	Maastricht	Limburg

*) With dispensary

Appendix 2: registered topics 1970-2011 (alphabetical)

abortion, spontaneous	1982-1983
abortion, induced	1971-1979
abortion requests	1970-1975
accidents	1971
accidents in a private setting	1981-1983
acute atypical headache	1988-1992
acute otitis media	1971 and 1986
acute respiratory infection	2001-2004
addiction to smoking (consultation)	1974 and 2003-2006
AIDS (fear of)	1988-2007
alcoholism	1975
anti-hypertensives and/or diuretics (prescription of)	1976
bee or wasp stings	1992-1993
bites by household pets	1986
burns	1988-1989
cerebrovascular accident	1986-1987
cervical smear	1976-1998
chickenpox	2000-2010
childbirth (at ≥ 28 weeks)	1982-1983
child abuse (suspicion of)	1973-1974
chronic benign pain disturbance	1995-1996
dementia	1987-1988
depression	1983-1985 and 2000-2002
diabetes mellitus	1980-1983 and 1990-1994 and 2000-2002
diarrhoea of unknown origin (acute)	1970
dog bite	1987 and 1998-1999
drug use (consultation)	1972-1973 and 1979-1981

Appendix 2: registered topics 1970-2011 (alphabetical) (cont.)

dwelling (certificate issued for another)	1975
echography requests	1988
environment-related health complaints	2003
exanthema of unknown origin	1970
family planning (advice)	1970-1976
gastro-enteritis	1992-1993 and 1996-2011
hay fever	1978-1982
hepatitis	1994
herpes zoster	1997-2001
gut feeling related to cancer	2010-2011
infectious mononucleosis	1977-1979 and 1991
influenza and influenza-like illnesses	1970-2011
injuries to the skeletal and locomotor systems	1984-1985
liver, gall bladder and pancreas diseases	1995-1997
malignancies	1984-1985
mammography (outpatient)	1988-2000
measles	1975-1979
measles/mumps	1990
medical aids	1999-2002
mental health care (referral)	2001-2003
morning-after pill, prescription of	1972-1991
myocardial infarction	1978 and 1983-1985 and 1991-1994
neuraminidase inhibitor (prescription)	2003-2004
oestrogen, prescription of	1994-1998
Parkinson’s disease	1980-1985
penicillin, prescriptions and side effects	1982-1983
peptic ulcer (first time/relapse)	1985-1986
physical violence	1996-1999
p.i.d. (pelvic inflammatory disease)	1994-1998
pneumonia	2008-2010
pregnancy (despite contraception)	1987-1991

Appendix 2: registered topics 1970-2011 (alphabetical) (cont.)

premature birth	1982-1983
prostate complaints	1997-2002
psoriasis	1976-1977
psychiatric patients	
- discharged	1986-1988
- admitted	1988
referrals to a specialist	1984
referrals to a speech-language pathologist	1988-1989
referral/authorization for physiotherapy	1985
referral for psychosocial problems	1986-1987
research on end-of-live decisions	2005-2011
rohypnol prescriptions	1987-1988
rubella and rubella-like illnesses	1971
sexual problems and sexual violence	2003-2008
side-effects of cosmetics (suspected)	1992-1993 and 2009-2011
sports injuries	1979-1983 and 2005 2007
skull traumas in traffic accidents	1975-1977
sterilization of men (performed)	1972-1999
sterilization of women (performed)	1974-1999
sexually transmitted diseases (STD)	2008-2011
suicide and attempted suicide	1970-1972 and 1979-2011
tonsillectomy or adenotomy	1971
tranquillizer prescribed	1972-1974
unwanted pregnancy	2003-2011
urethritis in men	1992-2007
urinary tract infection (medicine prescribed)	1977
urinary tract infection	2003-2004 and 2009-2011
ventricular/duodenal ulcer	1975
whooping cough	1998-2011
zanamivir (Relenza)	2000-2002

Appendix 3: list of incidental studies

Incidental studies and other additional studies 1977-2011 (alphabetical)

acute intoxication at work	1994-1995
aggression against GP and practice staff	1997-2000
alternative treatments (registration possible?)	1980
anorexia nervosa and bulimia	1985-1989 and 1995-2011
antibiotic resistance of Staphylococcus in general practice	2005-2006
diabetes mellitus (prevalent cases)	2000 and 2007-2011
euthanasia (request for)	1976-2011
incest	1988
lyme disease	1991-1994
malignancies	1982-1983
multiple sclerosis	1977-1982
puerperal mastitis	1982
regret after sterilization	1980-1984
serum collection	1980 and 1985
palliative sedation	2005-2011
vaccination against influenza	1992

Appendix 4: age population of the Netherlands

Age distribution of the population of the Netherlands, by gender, in thousands, 1 January 2010 (CBS)

age	men	women	total
0-4	473	452	925
5-9	513	490	1,003
10-14	504	481	985
15-19	519	496	1,015
20-24	512	501	1,013
25-29	503	496	999
30-34	501	498	999
35-39	591	590	1,181
40-44	656	641	1,297
45-49	650	639	1,289
50-54	591	586	1,177
55-59	544	539	1,083
60-64	537	533	1,070
65-69	383	393	776
70-74	292	327	619
75-79	215	280	495
80-84	134	218	352
>85	85	212	297
total	8,203	8,372	16,575

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
age group by topic

all practices			year 2010				weeks 1 t/m 52					
age group	population			Influenza		Pneumonia		Chicken-pox	Whooping-cough	Gut feeling related to cancer		
	M	F	M+F	M+F	M	F	M+F	M+F	M+F	M	F	M+F
<1	678	671	1349	695	146	67	107	230	7	0	0	0
1-4	2669	2572	5241	333	133	69	101	274	4	0	0	0
5-9	3847	3555	7403	119	43	47	45	39	4	0	3	1
10-14	3930	3642	7572	65	31	43	36	5	11	3	3	3
15-19	3865	3711	7576	119	14	0	7	0	4	3	0	1
20-24	3597	3666	7263	120	31	9	20	4	4	6	0	3
25-29	2481	3611	7092	85	19	15	17	1	1	0	8	4
30-34	3450	3514	6964	109	6	19	13	6	3	6	0	3
35-39	4181	4227	8407	94	30	42	36	4	0	0	2	1
40-44	4790	4809	9600	123	44	44	44	0	3	2	21	11
45-49	4959	4816	9775	109	44	30	37	1	3	6	4	5
50-54	4391	4298	8689	102	35	21	28	0	1	16	12	14
55-59	3916	4000	7916	124	23	47	35	0	1	23	20	21
60-64	4028	3984	8011	110	74	85	80	0	2	37	15	26
65-69	2970	3108	6078	115	82	114	98	0	2	30	13	21
70-74	2311	2467	4778	115	120	63	91	0	2	39	12	25
75-79	1648	2141	3789	145	146	52	93	0	0	36	9	21
80-84	1050	1663	2713	166	256	145	188	0	0	57	30	41
>84	681	1645	2326	193	335	311	319	0	0	29	49	43
Total	60442	62100	122542	128	56	52	54	18	3	12	10	11

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
age group by topic
year 2010 weeks 1 t/m 52

all practices age group	population			Gastro-enteritis no feces test			Gastro-enteritis feces test			STD*		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
<1	678	671	1349	737	745	741	15	15	15	0	0	0
1-4	2669	2572	5241	300	326	313	37	23	31	0	0	0
5-9	3847	3555	7403	91	124	107	13	6	9	0	0	0
10-14	3930	3642	7572	74	41	58	5	11	8	0	6	3
15-19	3865	3711	7576	44	78	61	10	22	16	51	145	97
20-24	3597	3666	7263	72	98	85	6	16	11	165	263	215
25-29	2481	3611	7092	69	89	79	9	11	10	150	140	145
30-34	3450	3514	6964	64	85	75	12	14	13	80	100	90
35-39	4181	4227	8407	36	61	49	2	7	5	60	76	68
40-44	4790	4809	9600	44	46	45	6	10	8	30	48	39
45-49	4959	4816	9775	44	48	46	10	8	9	22	41	32
50-54	4391	4298	8689	52	37	45	2	9	6	17	25	21
55-59	3916	4000	7916	38	47	43	3	7	5	22	19	20
60-64	4028	3984	8011	55	65	60	5	5	5	13	8	11
65-69	2970	3108	6078	54	29	41	7	19	13	0	3	2
70-74	2311	2467	4778	78	69	73	13	16	15	5	4	5
75-79	1648	2141	3789	79	103	92	6	5	5	0	5	3
80-84	1050	1663	2713	133	132	133	10	6	7	0	6	4
>84	681	1645	2326	220	219	219	0	6	4	0	0	0
Total	60442	62100	122542	79	90	84	8	11	10	39	55	47

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
age group by topic

all practices		year 2010		weeks 1 t/m 52								
age group		population		Unwanted pregnancy	Cosmetic allergy			Urinary tract infection*			End-of-life* study	Suicide
	M	F	M+F	F	M	F	M+F	M	F	M+F	M+F	M+F
<1	678	671	1349	0	0	15	7	136	61	98	0	0
1-4	2669	2572	5241	0	4	8	6	92	516	300	4	4
5-9	3847	3555	7403	0	3	20	11	72	509	282	0	0
10-14	3930	3642	7572	0	3	14	8	29	264	142	0	0
15-19	3865	3711	7576	40	0	27	13	47	950	489	3	3
20-24	3597	3666	7263	76	11	27	19	36	1061	553	1	1
25-29	2481	3611	7092	69	6	17	11	45	907	480	1	1
30-34	3450	3514	6964	37	6	37	22	67	830	451	1	1
35-39	4181	4227	8407	33	0	24	12	67	737	402	4	4
40-44	4790	4809	9600	12	0	23	11	104	772	437	8	8
45-49	4959	4816	9775	8	4	12	8	66	736	396	9	9
50-54	4391	4298	8689	0	7	33	20	138	720	426	27	27
55-59	3916	4000	7916	0	8	33	20	159	878	521	40	40
60-64	4028	3984	8011	0	5	23	14	241	958	597	56	56
65-69	2970	3108	6078	0	3	16	10	298	1118	714	87	87
70-74	2311	2467	4778	0	13	20	17	416	1456	953	143	143
75-79	1648	2141	3789	0	18	19	18	624	1706	1238	227	227
80-84	1050	1663	2713	0	10	6	7	905	2295	1753	358	358
>84	681	1645	2326	0	0	12	9	1319	2506	2161	808	808
Total	60442	62100	122542	17	5	22	13	156	922	543	51	51

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
province group by topic

year 2010 weeks 1 t/m 52

all practices province group	population			Influenza	Pneumonia*			Chickenpox	Whooping cough	Gut feeling related to cancer		
	M	F	M+F	M+F	M	F	M+F	M+F	M+F	M	F	M+F
GR+FR+DR	12947	13226	26173	90	72	65	68	18	3	8	5	6
OV+GLD+FLE	13267	13429	26696	197	53	40	47	13	2	15	12	13
UTR+NH+ZH	19612	21142	40753	130	73	71	72	19	3	15	15	15
ZLD+NB+LIM	14616	14303	28920	94	21	23	22	20	3	10	4	7
Total	60442	62100	122542	128	56	52	54	18	3	12	10	11

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
province group by topic

year 2010 weeks 1 t/m 52

all practices province group	population			Gastro-enteritis no feces test			Gastro-enteritis feces test			STD*		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
GR+FR+DR	12947	13226	26173	86	110	99	14	17	15	25	49	37
OV+GLD+FLE	13267	13429	26696	57	57	57	8	7	8	25	40	32
UTR+NH+ZH	19612	21142	40753	75	83	79	6	11	9	52	67	60
ZLD+NB+LIM	14616	14303	28920	96	112	104	7	10	9	44	56	50
Total	60442	62100	122542	79	90	84	8	11	10	39	55	47

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
province group by topic
year 2010 weeks 1 t/m 52

all practices province group	population			Unwanted pregnancy	Cosmetic allergy			Urinary tract infection*			End-of-life study*	Suicide
	M	F	M+F	F	M	F	M+F	M	F	M+F	M+F	M+F
GR+FR+DR	12947	13226	26173	14	3	11	7	144	776	463	50	4
OV+GLD+FLE	13267	13429	26696	9	3	15	9	150	959	557	50	2
UTR+NH+ZH	19612	21142	40753	22	6	22	14	119	795	468	52	5
ZLD+NB+LIM	14616	14303	28920	20	6	36	21	212	1157	679	50	3
Total	60442	62100	122542	17	5	22	13	156	922	543	51	4

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
address density by topic
year 2010 weeks 1 t/m 52

all practices address density	population			Influenza	Pneumonia*			Chickenpox	Whoopinp-cough	Gut feeling related to cancer		
	M	F	M+F	M+F	M	F	M+F	M+F	M+F	M	F	M+F
<500/KM2	13210	12823	26033	179	89	58	74	13	1	13	14	13
500-2500/KM2	37060	38553	75612	112	46	52	49	16	3	11	7	9
>2500/KM2	10172	10724	20897	122	45	46	45	31	3	16	13	14
Total	60442	62100	122542	128	56	52	54	18	3	12	10	11

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
address density by topic
year 2010 weeks 1 t/m 52

all practices address density	population			Gastro-enteritis no feces test			Gastro-enteritis fecestest			STD*		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
<500/KM2	13210	12823	26033	80	95	88	6	10	8	24	41	32
500-2500/KM2	37060	38553	75612	73	87	80	10	11	10	40	54	48
>2500/KM2	10172	10724	20897	97	95	96	7	15	11	49	71	60
Total	60442	62100	122542	79	90	84	8	11	10	39	55	47

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
address density by topic
year 2010 weeks t/m 52

all practices address density	population			Unwanted pregnancy	Cosmetic allergy			Urinary tract infection*			End-of Life study*	Suicide
	M	F	M+F	F	M	F	M+F	M	F	M+F	M+F	M+F
<500/KM2	13210	12823	26033	5	2	13	8	150	915	528	43	3
500-2500/KM2	37060	38553	75612	16	4	21	12	158	905	538	52	3
>2500/KM2	10172	10724	20897	33	13	34	24	156	984	579	53	7
Total	60442	62100	122542	17	5	22	13	156	922	543	51	4

* not all GPs were included

Continuous Morbidity Registration at Dutch Sentinel General Practice Network 2010

Mrs. Dr. G.A. Donker

nivel

ISBN 978-94-6122-130-8

http://www.nivel.nl
nivel@nivel.nl
Telephone 030 2 729 700
Fax 030 2 729 729

Contents

Foreword

For the sentinel practices Continuous Morbidity Registration (CMR) the year 2010 was – with the flu pandemic fresh in our memories – more like business as usual with the continuation, amendment or cancelling of old topics and the start of a few new ones.

As a matter of content, the beginning of a new topic “gut feeling of the GP” regarding cancer is important. During their study, GPs are learning to make a diagnosis systematically, by asking questions and by examination. In practice, GPs not only apparently go for a structured approach, but also use their intuition and experience. The distinction “right versus not-right” plays a role in this respect. The importance of this intuition is broadly recognised, even in findings of disciplinary courts, however, quantitative studies into this matter never took place before. In the questionnaires, filled in at the moment that the gut feeling occurs and three months after that, the cause of the gut feeling is explored, the follow-up strategy of the GP and compared in the end with the diagnosis. In this annual report you will find a first account of the meaning of this intuition for the diagnosis of cancer.

In 2010, Gabriëlle van Son took her doctor’s degree in research regarding eating disorders, mainly using data from the CMR sentinel practices. The research that was started in 1985 in the sentinel practices shows the link between boulimia and urbanisation and it shows that early diagnosis in the GP practice leads to a better prognosis. This research is an important addition to eating disorder research that is normally done in specialised centres for eating disorders. The findings of this research have been presented at several international conferences and have been published in international as well as Dutch scientific journals.

The topic urinary tract infections, that was started in 2009 was continued in 2010 for the target groups with less frequent occurrence of urinary tract infections but for whom specific treatment directions are necessary for various reasons, like pregnant women, children and men. Data on antibiotic

sensitivity of uropathogens isolated in men are hardly available. Increasing (multi) resistance reported in the hospital population and the increasing prevalence of the so-called Extended Spectrum Beta-lactamases (ESBL) in the veterinary sector stress the importance to gain insight into the antibiotic sensitivity of unselected uropathogens derived from patients in the GP practice. The GPs send urine samples of these patients with urinary tract infections to Maastricht University Medical Centre for bacterial analysis and for defining the resistance. In this way, the sentinel practices enable us to gain insight into the resistance patterns in the extramural setting, also for men, children and pregnant women. Generally speaking these data show a more favourable picture, fortunately, regarding antibiotic resistance than the data from hospitals. In this way, the sentinel practices make an important contribution to the objectives of the SWAB ("Stichting Werkgroep Antibioticabeleid", Foundation Working Group Policy on Antibiotics).

The increased attention for adverse effects of cosmetics has lead to the beginning of a registration concerning side effects of cosmetics in the sentinel practices in 2009. In 2010, a questionnaire was added to the registration of this topic. This research in the sentinel practices runs parallel with research into symptoms caused by cosmetics reported by dermatologists and directly reported by consumers via a web site of the RIVM (National Institute for Public Health and the Environment). Information from these sources is put together and this has lead to a warning in 2010 to the Dutch Food and Consumer Product Safety Authority (VWA: Voedsel en Waren Autoriteit) on the relevant side effects caused by some cosmetic products. In this report, the extent of this problem in the GP practice with special attention for differences between men and women is described.

Research that has been running since 1979 regarding (attempts to) suicide in the CMR Sentinel practices was presented at several international conferences. No clear growing trend is seen, however, recent incidents in Apeldoorn and Alphen aan de Rijn focus the attention again on sensitive persons and groups with, sometimes, far-reaching consequences for society.

After the flu pandemic in 2009 there was no flu epidemic in the year 2010, but indeed right in the beginning of 2011. In the flu season 2010/2011 the new flu variant A(H1N1)2009 turned out to have developed into a normal seasonal flu virus. The epidemic of this season was caused by influenza

A(H1N1), as well as influenza B; both strains were incorporated in the flu vaccine.
Most GP Information Systems (“Huisartsen InformatieSystemen, HISsen”) consist of an application, the so-called sentinel module, that enables us to record the data of the sentinel topics. In participating practices that use a HIS but in which this module could not yet be integrated, a comparable web application is available. Additional data by questionnaires are mainly recorded on paper. This annual report is exclusively based on electronically recorded data via the sentinel module or the web application.

Prof. dr. F.G. Schellevis
Chairman of the Counseling Committee

1 Introduction

Continuous Morbidity Registration (CMR) is an information system based on records kept by general practitioners. A national network of general practices, covers with the patients registered in these practices about 0.8% of the Dutch population. The network structure takes account of the geographical distribution of the population and its distribution over areas with different degrees of urbanisation (see pp 17-20). The GPs in the network, the sentinel doctors, weekly assess and deliver data with regard to certain illnesses, events and procedures in general practice.

Since 2009, the data on the topics are exclusively electronically registered and delivered. Most GP-information systems now contain an application, the so-called sentinel module, that facilitates the registration of these data. For participating practices, not having the integrated model at their disposal yet, a web application has been made available. Supplementary data gathered via questionnaires still are mostly registered by pencil and paper. This annual report is based on data assembled electronically, either via the sentinel module or via the web application.

Each year an update is made of the composition of populations of the sentinel practices by gender and age. Consequently it is known to what population the gathered data are related (the epidemiological denominator). Usually, data are presented as frequencies per 10,000 men or women (see page 30). Each year the Counselling Committee selects the topics for which data will be registered. The Committee also considers requests and suggestions for new topics by other parties. If a decision is made for the inclusion of a new topic a supervisor working at Nivel or from outside who is responsible for the registration is assigned.
At least five conditions must be met for a disease or occurrence to be registered:

1 The importance of the topic must be described.
2 Strict and unambiguous criteria must be definable for the disease or occurrence to be registered.
3 Application of these criteria must not take too much time and must fit in with the GP's work.
4 A need must exist for representative information at the national level.
5 The CMR Sentinel Practices must be the best source of information.

The recording of data for a topic is discontinued if the topic ‘owner’ feels that data has been collected for a sufficiently long period of time, or if a different registration system is going to gather more or less the same information, or if insurmountable problems have arisen in the recording of data.

This report provides background information on each topic included in the registration for the first time. Refer to previous reports for information about "old" topics. See pages 179-183 for an overview of the years when topics were first included in the registration.
In 1976, besides collection of regular weekly data, CMR sentinel practitioners also started to provide data from so-called "incidental studies". These studies focus on relatively uncommon diseases and occurrences. Appendix 3 lists the subjects covered by the studies. Here we report the data assembled in 2010. The difference with other topics is that the data are requested only once a year, usually immediately after the end of the year. This approach allows data to be gathered retrospectively on subjects for which the need for registration did not become apparent until after the start of the year. One condition is that the subject must be well imprinted in the memory of the doctor, as may be the case with topics as requests for euthanasia or the implementation of palliative sedation.

1.1 International cooperation

The CMR Sentinel General Practice Network has been participating in international projects since 1985.
At present the oldest international project is the European Influenza Surveillance Scheme (EISS). From August 2008 this international collaborative program of, among others, all EU-countries is executed by the

European Center of Disease Control (ECDC) in Stockholm. In ECDC sentinel networks of GPs and national influenza centers of participating countries collaborate. Apart from all EU countries also Norway, Ukraine, Switzerland, Serbia and Turkey are involved. At the same time, flu data delivered to the ECDC are also delivered to the World Health Organization (WHO).

In end-of-life research also from the beginning (2005) work has been done in international cooperation, initially only with Belgium, but over the past years with more European countries, such as Spain and Italy.

2 Counselling Committee

A condition of the grant received from the Ministry of Health, Welfare and Sport is that the Counselling Committee that oversees the registration system must in principle consist of:

The committee members in 2010 were:

Counselling Committee:	Mrs. Dr. Ir. B.H.B. van Benthem, (RIVM)
	Drs. R. Poos, (RIVM)
	S.M. Handgraaf, Sentinel GP
	Mrs. Dr. E.E. Stobberingh, MD PhD, microbiologist (Maastricht University Medical Centre)
	Prof. Dr. F.G. Schellevis, PhD Chairman, (NIVEL)
Project leader:	Mrs. Dr. G.A. Donker, (GP and Epidemiologist)
Secretary:	Mrs. M. Heshusius-van Valen

The counselling committee met twice in 2010.
In close collaboration with the National Information Network of GPs (LINH), in which NIVEL, IQ Healthcare*, the National GP Association (LHV), and the Dutch GP Society (NHG) are partners, the CMR project team consists of the following persons:

Project leader	Mrs. Dr. G.A. Donker, (GP and Epidemiologist)
Secretary	Mrs. M. Heshusius-van Valen (NIVEL)
ICT support	Mr. J. Gravestein and Mr. R Davids (NIVEL) Mr. H. van den Hoogen, Mr. S. Visscher, Mr. W Tiersma and Mrs. J. Donkers (IQ healthcare)
Contact	Mrs. C. Walk and Mrs. E. Wentink (IQ healthcare)

* IQ Healthcare is a Department of Radboud UMC Nijmegen.

3 Sentinel General Practice Network staff seminar in 2010

For the appropriate functioning of the Sentinel Network it is of utmost importance that Sentinel GPs and their co-workers, the Counselling Committee, the topic managers and project leaders meet regularly. Every year, at the start of a new registration period, which runs from the first of January to December 31, an annual meeting is held. From 2009, this annual meeting is combined with participants and GPs of the National GP information system (LINH). The GPs could assemble their own programme by choosing from the various workshops that were provided. This meeting was highly appreciated.

The meeting was held on January 15 2010 and contained presentations on the following subjects:

PLENARY SESSION

10.15-10.30	Opening by Prof. Dr. P.P. Groenewegen, program director (NIVEL)
10.30-10.55	Flu pandemic with influenza AH1N1 – what do we learn from it? Prof. dr. A.D.M.E. Osterhaus

SEPARATE SESSIONS FOR CMR SENTINEL GENERAL PRACTICE NETWORK AND LINH

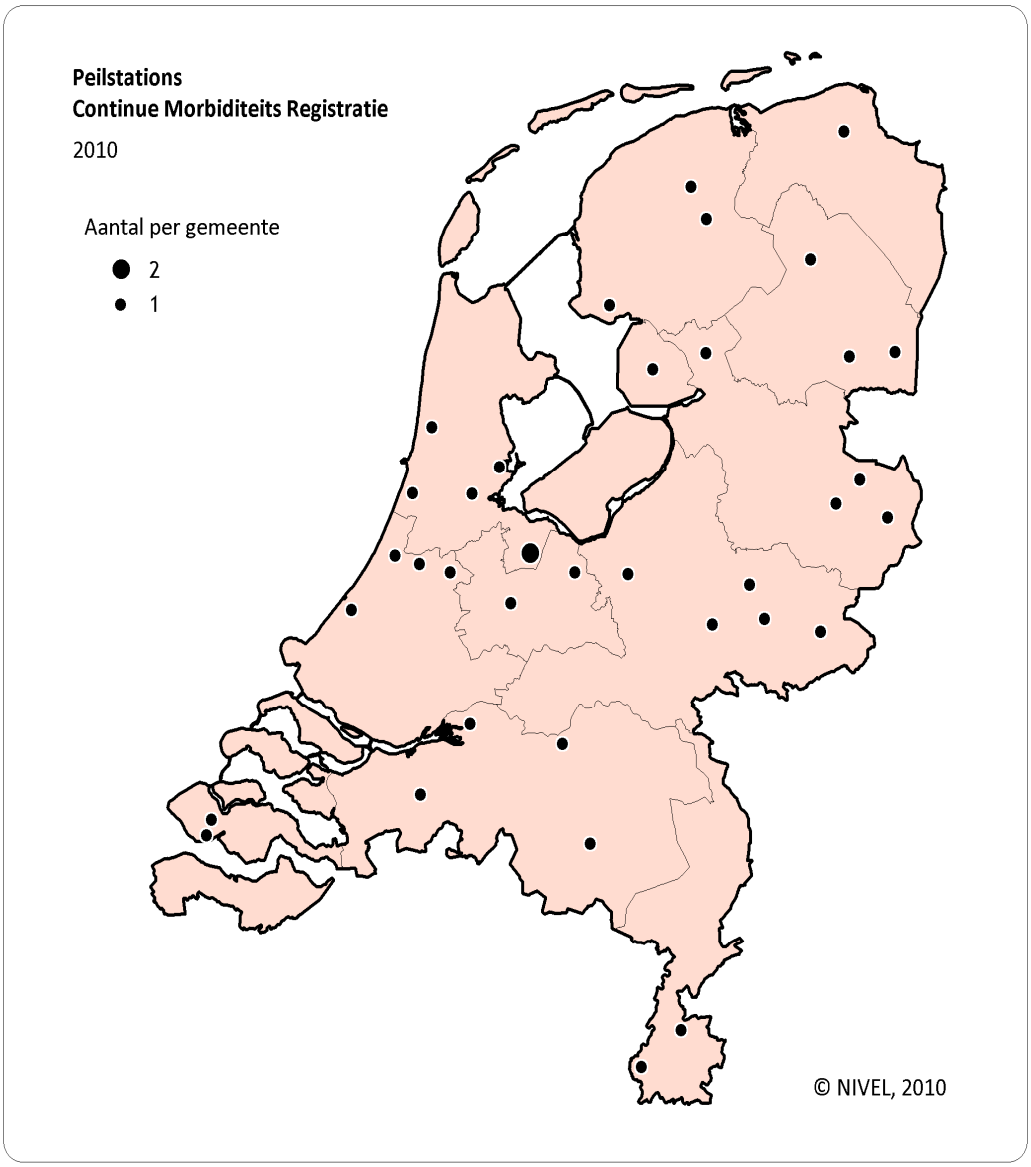
	CMR sentinel general practice network	LINH
11.00-11.15	From Hong Kong flu to Mexican flu and what do we monitor in 2010 and how? Gé Donker (NIVEL)	An interactive program concerning: - How do we register multidisciplinary care in GP-information systems? - Indicators for quality of GP care
11.15-11.30	Gut feeling. A new international study in the sentinel practices. Lea Jabaaij (NIVEL)	- Episode-focused monitoring. - The LINH-registration agreements and the interpretation of these by GPs and researchers
11.30-11.45	Cosmetic allergy: what is known and what not? Explanation of a new questionnaire. Joanne Nijhof (RIVM)	With the cooperation of , among others, Lianne Wennekes (IQ), Stefan Visscher (NIVEL), Robert Verheij (NIVEL), Jozé Braspenning (IQ)

OPTIONAL SESSIONS

	Parallel session 1	*Parallel session 2*
12.10-12.25	Unwanted pregnancy, what to do? Ciel Wijsen (Rutgers WPF)	Trends in incidence of std and std-medication in the electronic records of the LINH-practices. I. van den Broek (RIVM)
12.30-12.45	The std-consultation in the GP practice, the state of the art. Jan van Bergen, GP (SoaAids Ned.)	Meeting the costs functionally. Christel van Dijk (NIVEL)
12.50-13.05	Knowledge quiz GP care: Ingrid van den Broek (RIVM), Ellen Stobberingh (SWAB), Michael Echteld (VU), Adam Meijer (NIC), Gabriëlle van Son (Centrum voor Eetstoornissen Parnassia), Gé Donker (NIVEL)	Self-test via the internet: effects of the kidney-check in GP practice. Mark Nielen (NIVEL)

4 Distribution of sentinel practices in the Netherlands

Figure 4.1



For location level practice see p. 177-178

4.1 Practices

There were 41 sentinel practices in the Netherlands in 2010. The number of participating general practitioners working in the sentinel practices was 63.

In this annual report the following breakdown and codes are used in processing and discussing the data:

N stands for the Groningen, Friesland and Drenthe province group (northern provinces);
O stands for the Overijssel, Gelderland and Flevoland province group (eastern provinces);
W stands for the Utrecht, Noord Holland and Zuid Holland province group (western provinces);
Z stands for the Zeeland, Noord Brabant and Limburg province group (southern provinces);
1 stands for address density category 5 (rural municipalities);[1]
2 stands for address density category 4-3-2 (urbanised rural municipalities and municipalities with urban features):
3 stands for address density category 1 (municipalities with 100,000 or more inhabitants).

Appendix 1 (pp177-179) contains a list of the GPs who participated in the sentinel practices in 2010. Two or more GPs cooperate at eleven of the sentinel practices (two GPs cooperate in 6 practices, three in 2 practices, 1 in four practices, 1 in five practices, and six in 1 practice). The percentage of GPs working in a group practice nationwide in January 2010 was 82%; but 52% for the sentinel practices. In the sentinel practices there exists a relative overrepresentation of single practice exist. There were eleven dispensing sentinel doctors, ten in rural areas and 1 in an urbanised rural municipality, which is 18% of the total number of sentinel doctors. The figure for the Netherlands as a whole is 7%.[2]

Tables 4.1 and 4.2 show the distribution of the number of sentinel doctors and sentinel practices in each province group and address density group in the 2000-2010 period.

Table 4.1 Distribution of sentinel physicians (GPs) and sentinel practices per province group in the 2001-2010 period[3]

	N; Groningen, Friesland and Drenthe		E; Overijssel, Gelderland and Flevoland		W; Utrecht, Noord- and Zuid- Holland		S; Zeeland, Noord-Brabant and Limburg	
province-group	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices
2001	13	6	15	10	23	19	14	10
2002	13	6	15	10	23	18	14	10
2003	11	5	14	9	24	18	14	10
2004	12	5	7	6	23	17	14	10
2005	12	5	12	11	28	24	13	9
2006	10	4	9	9	25	22	9	7
2007	14	8	12	10	25	20	10	7
2008	14	8	12	10	24	19	11	8
2009	13	8	12	10	23	16	11	8
2010	12	8	13	10	23	14	15	9

Table 4.2 Distribution of sentinel physicians (GPs) and sentinel practices per address density in the 2001-2010 period

	1; rural municipalitie < 500/km^2		2; urbanised rural municipalities together with municipalities with urban characteristics 500-2500/km^2		3; municipalities with 100,000 or more inhabitants >2500/km^2		total	
address density	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices	GPs	sentinel practices
2001	10	7	43	27	13	11	66	45
2002	10	7	43	27	12	10	65	44
2003	8	5	44	28	11	9	63	42
2004	6	4	39	25	11	9	56	38
2005	11	9	43	31	11	9	65	49
2006	11	9	28	21	18	14	53	42
2007	12	10	36	26	13	9	61	45
2008	14	11	33	25	14	9	61	45
2009	10	9	32	24	17	9	59	42
2010	14	11	36	23	13	7	63	41

4.2 Practice populations

A census of most practice populations was held in 2010. The results of the census have been used in processing the CMR Sentinel General Practice Network data from 1 January 2010. The CMR project was organised with the aim of achieving a sample of approximately 1% of the population of the

Netherlands. The structure of the project takes geographical distribution (the 'province groups' referred to above) into account, plus distribution over areas with differing population density ('urbanisation degree'). A check was done to see whether these criteria still were met. The tables show that he northern part of the country is overrepresented, whereas the western regions are underrepresented. In the last few years, the CMR population represents 0.8% of the Dutch population. This is accounted for in the recruitment of new practices.

The population of the Netherlands increased in 2009 by 89,202 and stood at 16,574,989 on 1 January 2010 (www.cbs.nl).

Table 4.3 Comparison of the population of the sentinel practices with the total population of the Netherlands, 2010

	population of the Netherlands**	population of sentinel practices* (with percentages)	
province group:			
N	1,713,954	27,328	(1.6)
E	3,517,162	30,442	(0.9)
W	7,395,605	43,846	(0.6)
S	3,948,268	32,799	(0.8)
gender:			
men	8,203,476	66,293	(0.8)
women	8,371,513	68,122	(0.8)
total (1-1-2010)	16,574,989	134,415	(0.8)

* Practices census 2010

** 1-1-2010 Netherlands Statistics *(Centraal Bureau voor de Statistiek)*.

The total practice population of all Sentinel Practices at the beginning of 2010 was 134,415 persons, 0.8% of the Dutch population consisting of > 16 million inhabitants. The table below shows the percentages of men and women in the Dutch population who are registered with the sentinel practices in 2010, with a breakdown according to age group and province group are presented in table 4.4.

Table 4.4 Percentage of men and women in the Dutch population registered with sentinel practices, by age group, province group and for the Netherlands as whole in 2010

	province group								Netherlands	
	N		E		W		S			
	m	f	m	f	m	f	m	f	m	f
0-4	1,6	1,6	0,9	0,9	0,6	0,6	0,8	0,8	0,8	0,8
5-9	1,7	1,7	1,0	0,9	0,6	0,6	0,8	0,7	0,8	0,8
10-14	1,7	1,7	1,0	1,0	0,6	0,6	0,8	0,7	0,9	0,8
15-19	1,6	1,6	1,0	0,9	0,6	0,6	0,7	0,8	0,8	0,8
20-24	1,4	1,5	0,8	0,8	0,6	0,6	0,9	1,0	0,8	0,8
25-29	1,4	1,6	0,7	0,8	0,5	0,6	1,1	1,0	0,8	0,8
30-34	1,4	1,5	0,8	0,8	0,5	0,6	1,0	1,0	0,8	0,8
35-39	1,6	1,6	0,8	0,8	0,5	0,6	0,9	0,8	0,8	0,8
40-44	1,7	1,8	0,9	0,9	0,6	0,6	0,8	0,8	0,8	0,8
45-49	1,8	1,8	0,9	0,9	0,6	0,6	0,8	0,7	0,8	0,8
50-54	1,6	1,6	0,8	0,8	0,6	0,6	0,8	0,7	0,8	0,8
55-59	1,4	1,6	0,8	0,8	0,6	0,7	0,7	0,7	0,8	0,8
60-64	1,6	1,6	0,8	0,8	0,6	0,6	0,8	0,8	0,8	0,8
65-69	1,6	1,6	0,9	0,9	0,6	0,6	0,9	0,9	0,8	0,9
70-74	1,7	1,6	0,9	0,9	0,6	0,6	0,9	0,9	0,9	0,8
75-79	1,5	1,5	0,9	0,9	0,6	0,6	0,9	1,0	0,8	0,8
80-84	1,5	1,3	0,9	0,9	0,6	0,6	1,0	1,0	0,9	0,8
>85	1,4	1,3	0,9	0,8	0,7	0,7	1,0	0,9	0,9	0,9
total	1,6	1,6	0,9	0,9	0,6	0,6	0,8	0,8	0,8	0,8

4.3 Scale and continuity of reporting

The number of days per year that each sentinel practice reports and the combined number of reporting days per week of all sentinel practices have been checked and processed since 1975. This check is made to monitor the completeness and continuity of reporting. The sentinel doctors are requested to let it be known when they are unable to report due to holidays or personal circumstances.
The maximum number of days on which reporting is possible depends on the number of weeks in the year and on the number of sentinel practices. The number in 2010 was 10,480: 52 weeks x 5 days x 38 sentinel practices; 3 practices registered 38, 41, and 40 weeks, due to the start of their participation during the year.

In table 4.5 the absolute numbers and percentages are given.

Table 4.5 Maximum number and actual number of reporting days per year (2001-2010)

year	maximum number of reporting days	actual number (absolute)	reporting day percentage
2001	11,700	9,455	80,8%
2002	11,440	8,948	78,2%
2003	10,920	8,445	77,3%
2004	10,070	7,983	79,3%
2005	12,740	10,011	78,6%
2006	10,465	7,905	75,5%
2007	10,860	9,205	84,8%
2008	10,450	9,087	87,0%
2009	10,755	9,381	87,0%
2010	10,480	9,965	95,0%

The percentage of reporting days in 2010 is much higher than in 2009 The table below contains a breakdown by province group and address density.

Table 4.6 Reporting by province group and address density in 2010

province group		address density	
N	95,2%	1	93,4%
E	94,4%	2	96,1%
W	93,1%	3	94,9%
S	97,7%		

Figure 4.2 shows the weekly reporting of all sentinel practices. The influence of public holidays is clearly visible. The average number of non-reporting days per week is 26 (maximum is 210 days).

Figure 4.2 Number of days in 2010 that data were recorded

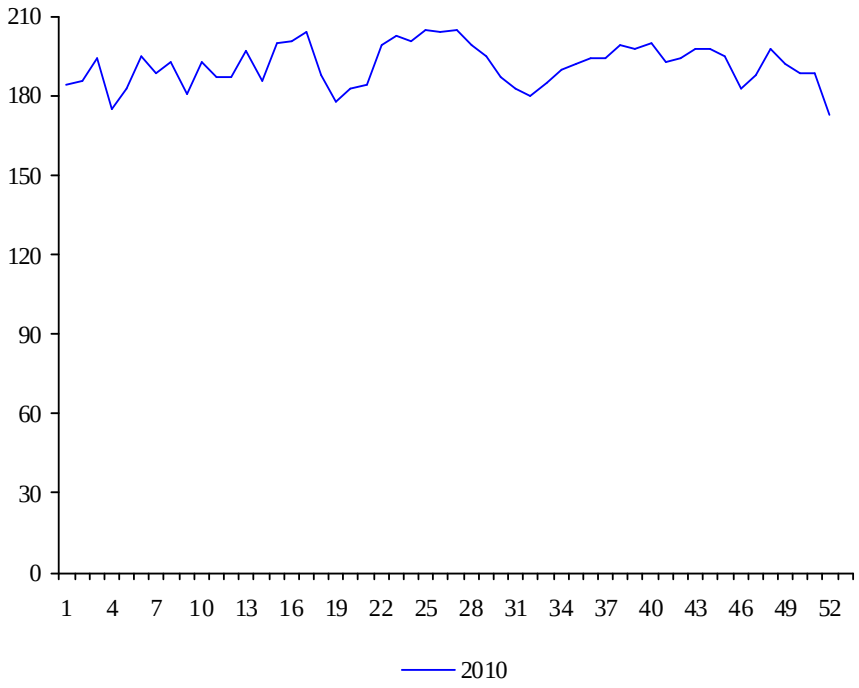


Table 4.7 shows the frequency distribution of the number of non-reporting days at each sentinel practice. The average number of non-reporting days per sentinel practice in 2010 was 13, which is less than in 2009 (33).
A breakdown into single and group practices reveals a significant difference, i.e. 15 and 7 days, respectively. This is in agreement with the expectation that in collaborative practices the continuity of reporting is better guaranteed.

Table 4.7 Frequency distribution of the number of non-reporting days per sentinel practice (2001-2010)

number of non reporting days	number of sentinel practices									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
0	3	3	2	2	1	2	3	8	-	5
1-9	1	1	1	-	-	1	8	3	7	18
10-19	2	1	1	-	1	1	6	15	8	8
20-29	1	-	2	3	4	3	5	4	10	4
30-39	3	7	5	3	7	4	5	2	9	5
40-49	14	12	12	9	12	8	6	4	4	1
50-59	7	8	7	15	11	8	5	1	1	-
60-69	5	2	3	2	4	7	2	2	1	-
70-79	3	1	1	-	2	-	1	2	-	-
80-89	3	2	-	1	2	1	-	1	-	-
90-99	2	-	-	-	1	1	2	1	-	-
>99	1	7	8	3	4	6	2	2	2	-
total number of sentinel practices	45	44	42	38	49	42	45	45	42	41
average	49	56	59	55	56	61	37	31	33	13
median	48	48	48	52	49	66	31	17	23	7

Closer examination of the table reveals an increase in non reporting days over the years until 2006, after which it decreased. A major failure to report i.e. no reporting by a sentinel practice on more than 50 days per year does not occur in 2010, in 2009 at 10 % and in 2008 at 20% of the sentinel practices. The three practices that registrated in 2010 not for more than 50

days were all practices that started to participate during the year. Illness of the GP, moving of the practice and shift to a new His-system were the most frequent reasons for non-reporting over a prolonged period of time in the previous years.

4.4 Surveillance topics and incidental studies

In 2010 data were registered from the following topics. Between brackets the year is given in which the topic was entered for the first time.

1 Influenza (and influenza-like illnesses) (1970);
2 End-of-Life study (2005);
3 Chickenpox (2000);
4 Pneumonia (2007);
5 Suicide (and attempted suicide) (1979);
6 STD (2008);
7 Gastro-enteritis (1996);
8 Unwanted pregnancy (2003);
9 Urinary tract infections (2009);
10 Whooping cough (1998);
11 Cosmetic allergy (2009);
12 Gut feeling (2010);

A weekly report is the norm. Consequently, a sentinel doctor also reports patients seen after office hours by a locum (with the exception of influenza and influenza-like illnesses). Diagnoses and advice given by telephone are not reported, with the exception of those concerning influenza.

In addition data were registered in 2010 for the following incidental studies (between brackets the year is shown in which the topic was started).

13 Eating disorders (1985)
14 Request for euthanasia (1976)
15 Palliative sedation (2005)
16 Diabetes mellitus (2007)

An alphabetical list of all topics since 1970 is provided in appendix 2 (pp 179), together with the years during which the data were registered.

4.5 Analyses

This report contains the results of registration of topics in 2010. The data were processed at NIVEL.

Three tables are presented routinely for each subject:
1 absolute number of patients by gender and age group;
2 absolute number of patients by gender and province group;
3 absolute number of patients by gender and address density.

Tables 1, 2 and 3 are produced each week for surveillance purposes and each quarter and year for annual reporting purposes.

With the exception of the information provided per sentinel practice, the data is also presented per 10,000 of the total practice population (relative frequencies). Frequencies have been rounded off. A frequency below 0.5 per 10,000 inhabitants is rounded off to '0'. '_' denotes that no cases were reported.
A frequency based on fewer than five reported cases is stated in brackets. A frequency of new cases of a disease in a certain period of time is referred to as 'incidence' or 'incidence rate' in epidemiology. The term 'prevalence' refers to all cases of the disease that exist in a certain period of time or at a certain moment in time. There are also absolute and relative incidences and prevalences.
The cumulative incidence of periodic prevalence (per year) in general practice is calculated in this report in all instances per 10,000 inhabitants, men or women. Appendix 4 (p 184) shows the age structure of the Dutch population on 1 January 2010, which can be used to calculate absolute numbers for the Netherlands.

Data from practices reporting only 0, 1 or 2 days of the week are not processed i.e. the reported cases are not included in the "numerator" and the practice population not included in the "denominator". Data from practices reporting more than 2 days per week were processed normally.
A correction factor used to be applied because enquiries among sentinel doctors revealed that an absence of 1 or 2 days merely meant that the work was shifted to a different time.

The tables were produced using the weekly returns, with frequencies being calculated on the basis of the average population present in the period concerned.

As mentioned in the introduction, the purpose of this report is to present data, not to provide a complete analysis of that data.

The following annual tables are included (pp 185-190).

1 Cumulative, i.e. all sentinel practices in a standardised format, year 2010, weeks 01-52, pp 1-3.[4]
2 Province group standardised according to illness, year 2010, weeks 01-52 pp 1-3.[4]
3 Address density, standardised according to illness, year 2010, weeks 01-52, pp 1-3.[4]

4.6 Extrapolation of observed frequencies to the Dutch population as a whole

For each topic a general impression is given of the numbers of patients, consultations, actions and events in the Netherlands. The figures presented are based on frequencies calculated using data recorded by sentinel practices in the Continuous Morbidity Registration programme. As pointed out in previous reports, readers should bear in mind when examining the tables that while the populations of the sentinel practices represent the Dutch population as a whole with reasonable accuracy (see also pages 18-20), the sentinel doctors are a select group. Consequently it is impossible to determine conclusively to what extent the results vary from the situation that exists in reality. Variances may differ depending on the nature of the topic. Caution should be exercised when examining topics that include intervention by a GP. Similarly, the 'suicide and attempted suicide'[5] topic appears to differ from data recorded elsewhere, probably because these occurrences are not always reported to a GP. With regard to the topics: sexually transmitted diseases and pneumonia, only practices reporting these items in 2010 and previous years were included in the analysis in order to decrease underreporting. As regards the registration of data in general, the sentinel doctors almost definitely act as a select group, but this must inevitably benefit the project. Nevertheless, readers should examine **not only** the extrapolated numbers, but should also refer to the chapters concerned. To allow correct interpretation of the extrapolated figures, the details of the total Dutch population per year are presented first, in thousands.

Table 4.8 Dutch population by gender, in thousands, 2001-2010 (CBS)*

year	men	women	total
2001	7,910	8,077	15,987
2002	7,972	8,133	16,105
2003	8,016	8,177	16,193
2004	8,046	8,212	16,258
2005	8,066	8,240	16,306
2006	8,077	8,257	16,334
2007	8,089	8,269	16,358
2008	8,112	8,293	16,405
2009	8,156	8,329	16,486
2010	8,203	8,372	16,575

* Numbers as on 1 January of each year.

4.7 Confidence intervals

Reliability margins have to be applied when examining the incidence rates and prevalence rates estimated for the entire Dutch population. The table below provides an impression of the incidence rates and prevalence rates, for relative and absolute numbers.

The table should be read in the following way. If a frequency of 1 per 10,000 patients is observed in the sentinel practices' total population of approximately 134,415 patients (1st column), the 95% confidence interval is 0.47 – 1.53 per 10,000 (2nd column). It then follows that the estimated absolute number in the Dutch population is 1658 (3rd column), and that the 95% confidence interval is between 772 and 2545. The table shows how these estimates relate to a frequency at the sentinel practices of 1 to 1,000 per 10,000 patients with some intermediate 'steps'. The confidence intervals are particularly high at the lower frequencies.

Table 4.9 Confidence intervals of estimates of incidence and prevalence and sentinel station practices per 10,000 and the absolute numbers

frequency per 10,000		Netherlands (absolute numbers)	
frequency	95%CI	absolute number	95%CI
1	0,47 - 1,53	1658	772 – 2,545
10	8,31 – 11,69	16575	13,785 – 19,390
100	94,68 – 105,32	165750	157,052 – 174,698
1,000	983,96 - 1016,04	1657500	1.632,147 – 1.685,353

For the total groups of men and women separately, each comprising about half of the total population, the confidence intervals are only a little wider than shown in the table. For separate 5 or 10-year age groups, the intervals obviously are much wider, because these groups are smaller in size (with thanks to Mrs. C. van Dijk, NIVEL).

5 Influenza(-like illness)

Topic owner: National Influenza Centre *(Nationaal Influenza Centrum)*
(1970-2010)

Introduction

Influenza is an important health care and public health problem.
Influenza has been linked to an increase in the number of consultations and visits by GPs, as well as to an increased workload in health care and nursing institutions, an extra load on hospitals as a result of more referrals and admissions and an increase in the mortality rate. In addition, absenteeism due to influenza means loss of production from the workforce and pupils not attending school.

Cases of influenza occur every year in the Netherlands and throughout the rest of the world. The usual 'influenza season' runs from week 40 to week 20 of the following year. In the so-called inter pandemic situation an influenza epidemic actually only occurs in the winter in the northern hemisphere. A pandemic also may occur outside this season and this phenomenon did happen in 2009. Since registration of influenza-like illness (ILI) began, the influenza epidemics have always started between mid-November and the beginning of March, except for the pandemic in 2009, that from the beginning of October (week 41) lead to an epidemic in the Netherlands, earlier than ever before over the 40 years of registration of IAZ in the CMR sentinel practices.

The history of well-described outbreaks of respiratory infections dates from 1173-1174. The incidence of airway infection described in that winter is considered to be a good description of an influenza epidemic. Since the end of the 12th century there have been a number of descriptions of (sometimes worldwide) outbreaks of what appeared to be influenza.
In the 20th and 21st century the world was hit by four pandemics (the Spanish flu (1918-1919), the Asian flu (1957-1958), the Hong Kong flu (1968-1970) and the Mexican flu (2009-2010) of which the flu outbreak in 1918-1919 made the most impression and left frightened people in its wake:

approximately 40 million dead throughout the entire world.
In 1933 various parts of the influenza puzzle started to fall into place and the influenzavirus was identified and held responsible for small or larger outbreaks of acute respiratory infections where it was not unusual for the infected person to die. It was also proven that influenza could be transmitted from animal to animal, from animal to human and from human to human.

After the 2nd World War the newly set up World Health Organisation decided in 1949 to monitor influenza. National Influenza Centres were established to track the occurrence of influenza and report to the WHO. However, it was only at the start of the 1960s that sentinel doctors began to register the occurrence of influenza among the population (in England and Wales). Other European countries followed. For example, the Netherlands set up the CMR Sentinel General Practice Network system in 1970 as a representative national network that succeeded the local networks in a number of large cities.
At the start of the 1990s the quality of the influenza surveillance system was further improved. From 1992/1993, sentinel doctors in an increasing number of European countries took a nose and/or throat swab from patients with an influenza-like illness (ILI) or an acute respiratory infection. These swabs were then sent for further tests at the laboratory of the National Influenza Centre for virological determination. This procedure is also applied in the Netherlands.

Method

The GPs register patients who consult them for an acute influenza-like infection known as ILI, that meets the Pel criteria.[6] The age of the patient is also recorded.
The doctor is asked to take a nose and throat swab from 2 patients per week which are then sent for further testing to the National Institute for Public Health (RIVM) (Infectious Diseases Diagnostics and Screening Laboratory). This laboratory tests for a number of pathogens, including the influenza and RS viruses. The number of pathogens for which tests are performed can differ from year to year.
The results are analysed and reported throughout the year but they are presented in this report from week 40 to week 20 of the following year.

Results

In the 2009/2010 season the baseline above which raised level of flu activity can be observed, was maintained at 51 per 100,000. This line is based on statistical analysis of the incidence of ILI during the last 10 seasons outside the endemic period. Increased influenza activity is supposed to be increased if the incidence of ILI surpasses the baseline of 51 per 100,000 for two consecutive weeks and if samples sent to RIVM are found to contain influenza viruses. The method for calculation of the baseline was developed by the European Influenza Surveillance Scheme (EISS) in order to harmonize the baselines of the various European Countries, taking into account the variety in health systems.
After the pandemic in 2009, no flu epidemic occurred in the year 2010, but that changed shortly after the new year. At the start of January (week 1) the ILI-incidence amply surpassed the background level. At the same time the weekly number of virus detections and hospital admissions increased. The third week in January 2011, with the highest incidence of 11 cases per 10,000 inhabitants, a (mild) epidemic was reached. In the Netherlands, less people had the flu than during the pandemic in 2009, In week 8 all clinical and virological parameters had returned to background levels and that continued to be so until the end of the season. The epidemic lasted for 7 consecutive weeks. (Figure 5.1). The surveillance activities in the sentinel practices were maintained also in this year for the whole year.

RIVM received 698 samples over the whole year from patients with ILI and 673 samples of patients with other respiratory tract infections (ARI). During the week with the highest incidence of the epidemic, in 75% of the samples of patients with ILI the influenza virus was found. In over 40% of all patients in which influenza was demonstrated in the samples the causal virus was the AH1NI pandemic influenza virus of 2009, which was seen as a normal seasonal flu virus. Influenza virus type B co-circulated with the A(H1N1)2009 influenza virus and ultimately in nearly 60% of the patients with influenza positive samples influenza virus B was found. Influenza virus A(H3N2) was detected sporadically. In 6% of the samples from patients with ILI and also in 6% of the samples of patients with ARI RS-virus was found. All types A and B influenza viruses that were tested on sensitivity to the antiviral remedies oseltamivir and zanamivir turned out to be sensitive to it. All influenza A(H1N1) 2009 and A(H3N2) viruses that were tested on

sensitivity to the adamantine antiviral remedies (amantadine and rimantadine) turned out to be resistant.

No marked regional differences in influenza activity were observed. The highest incidence (15 per 10.000 inhabitants) was noted in week 3 in the northern part of the country (Figure 5.2).
In contrast to previous seasons the incidence was higher in the big cities (Figure 5.3). As usual, the highest incidence did occur in the age group 0-4 years, who were not vaccinated this season, in contrast to the previous year(Figure 5.4). This year too, relatively few 65-plus people were suffering from ILI.

Figure 5.1 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, for the Netherlands in, 2008/2009 and 2009/2010 and 2010/2011

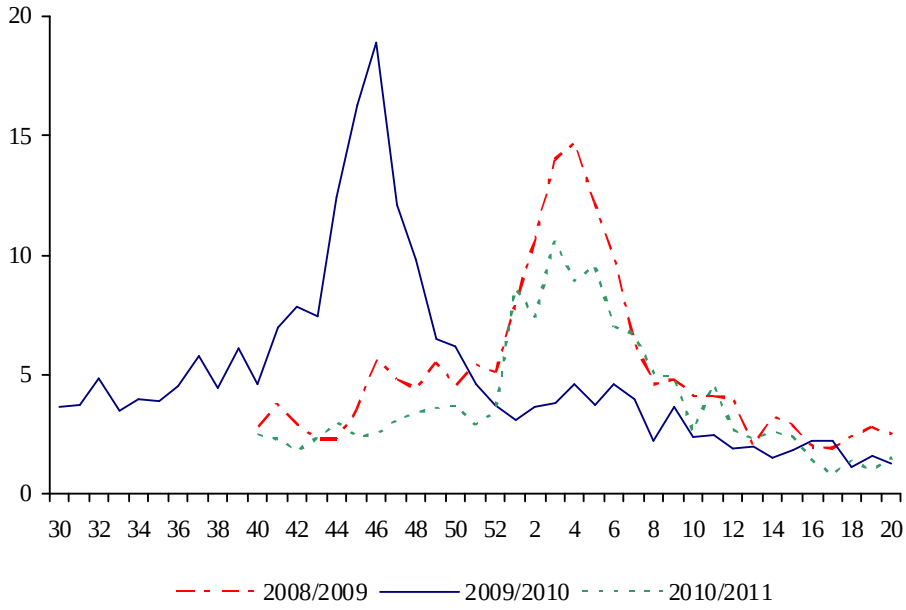


Figure 5.2 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, according to population density in 2010/2011

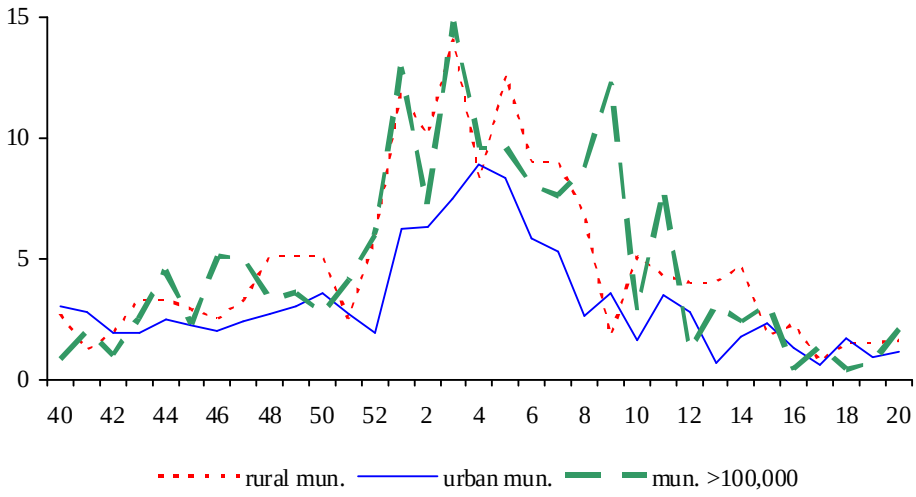


Figure 5.3 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, per province group in 2010/2011

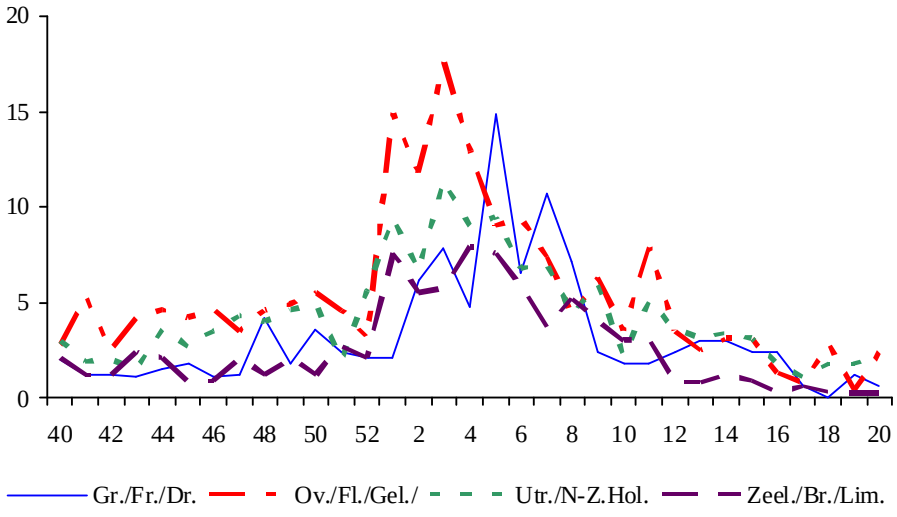


Figure 5.4 Number of incidental patients with influenza-like –illness, per 10,000 per age group, season 2010-2011

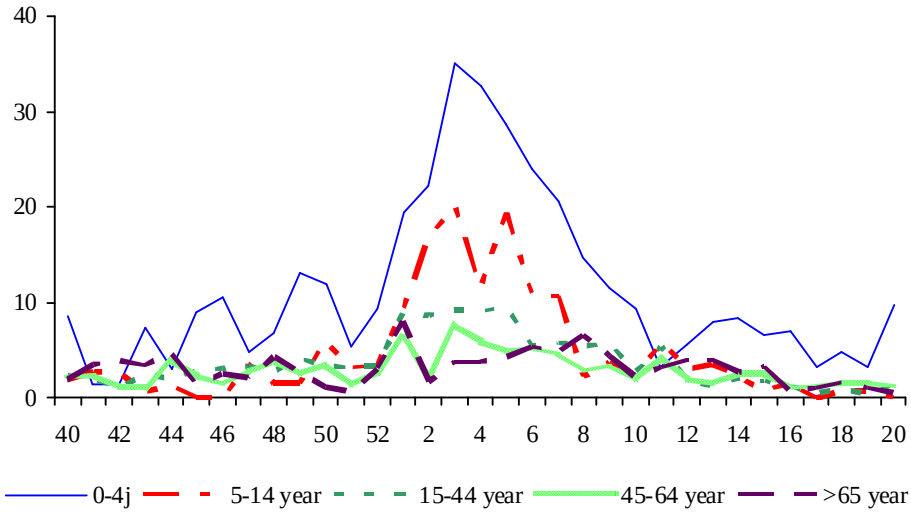


Table 5.1 Number of incidental patients with influenza(-like illness), per 10,000 inhabitants, 2001-2011

year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
total calendar year	113	157	122	71	208	190	134	131	168	275	128
highest weekly incidence per 'season'		13	7	15	26	14	8	7	15	19	11

Extrapolation

Table 5.2 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
influenza like complaints		
2001	113	181,000
2002	157	253,000
2003	122	198,000
2004	71	116,000
2005	208	339,000
2006	190	310,000
2007	131	219,000
2008	168	276,000
2009	275	442,000
2010	128	212,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

During this season too, the flu epidemic was mainly caused by the in 2009 pandemic A(H1N1) virus and the influenza virus B. In the Netherlands, less patients were reported with ILI by the GP than during the pandemic in 2009. The surveillance by the sentinel practices was this year also maintained

during the whole year. The epidemic started in week 1 2011 and lasted for seven weeks. The peak incidence was reached in week 3; 11/10,000 were reported that week by the GPs. Thereafter the incidence decreased slowly. The background level was reached in week 8. No extra risk groups were vaccinated outside the usual ones. As usual the highest incidence did occur in the age group 0-4 year. The low incidence among persons > 65 years was also in this season noteworthy.

This topic remains on the weekly returns

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6 Pneumonia

Topic owner: Mrs. Dr. E.E. Stobberingh SWAB (2007-2010)

Introduction

In primary care respiratory infections, notably pneumonia's, are an important reason to prescribe antibiotics. Although previous investigations indicated that antibiotic resistance of respiratory pathogens (the ARI-EL study) was not a major problem, there were arguments to start a new study on this subject 4 years later. Surveillance of resistance requires regular monitoring of the micro-organisms involved (www.swab.nl). This study may serve also as a description of the point zero situation after the implementation of pneumococcal vaccination in 2006.

The aims of the study are to assess the incidence of pneumonia in general practice and to identify the causing pathogens.

The bacteriological swabs will be analyzed for the presence of the most common pathogens. In addition, the sensitivity of these pathogens for antibiotics frequently used in general practice is determined.

The sampling will provide insight into the prevalence of bacterial pathogens in the Netherlands in patients with suspected lower respiratory tract infection, and in the prevalence of antibiotic resistance for these pathogens. The results will have direct clinical relevance for the management of low respiratory infections in general practice and will be used in adjusting the guidelines composed by the Dutch Society of General Practitioners.

Method

The general practitioners are asked to register new patients with the clinical diagnosis of pneumonia with ICPC-code R81. It is not essential that the diagnosis has been confirmed by x- ray. Still, it is asked whether a thorax photo has been made and whether the patient has been hospitalized.
The following questions are asked:
- Has a sample been taken for culturing?
- Has the diagnosis been confirmed by x-ray?
- Is the CRP level increased?
- Is there leukocytosis (leukocytes > 10 per mm^3)?

The GPs are also asked to take a sample for bacteriological investigation from every new patient suspected for pneumonia and send it to the Maastricht University Medical Center. The samples are analyzed for the most common respiratory pathogens. The sensitivity for various antibiotics, notably those frequently used in general practice, are determined. The swabs plus send and return envelopes are provided by the Maastricht University Medical Center (MUMC) and are analyzed at the department of microbiology of MUMC. GPs are informed on the results of the bacteriological investigation within about one week. If ILI is the cause of pneumonia, this will be reported electronically and the GPs should also send samples for virological identification to RIVM. This also takes one week. Data from sentinel practices reporting about pneumonia not only once were excluded from the annual analysis because it is unlikely that pneumonia does not occur in a whole year in a given practice. Including the data of these practices would lead to an underestimation of the incidence in general practice.

Results

Table 6.1 shows the number of patients with pneumonia per province group and address density. The incidence of 54 cases per 10,000 is at comparable level as in 2009 (therefore, in the year of the pandemic there was no increased incidence) and is, like the previous years the highest in rural areas. The results relate to 36 reporting sentinel practices.

Table 6.1 Number of patients with pneumonia per 10,000 inhabitants, per province group, address density and for the Netherlands, 2007-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2007	39	47	62	61	73	45	68	54
2008	48	47	76	64	94	48	69	59
2009	63	65	56	26	94	40	65	55
2010	68	47	72	22	74	49	45	54

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Seasonal influence

Comparison of the incidence per season shows that pneumonia occurs mostly in winter and less often in summer. In 2010 this was also the case and the peak was in the three months after the influenza epidemic (table 6.2).

Table 6.2 Number of patients with pneumonia per 10,000 inhabitants per quarter, 2007-2010

	weeks 1-13	weeks 14-26	weeks 27-39	weeks 40-52
2007	18	11	9	15
2008	19	13	9	17
2009	18	10	10	18
2010	20	13	9	13

Age distribution

The incidence of pneumonia is the highest in infants (1-4 year) and the elderly (65 years and older). The highest incidence occurs in persons of 85 years and older: 134 per 10,000. In elderly persons above 70 years the incidence is higher in men than in women. In the younger age groups the differences between men and women are inconsistent (table 6.3).

Table 6.3 Number of male and female patients with pneumonia per 10,000; per age group and for the Netherlands, 2007-2010

	2007			2008			2009			2010		
age group	m	f	t	m	f	t	m	f	t	m	f	t
<1	(65)	(33)	49	107	75	92	(17)	(18)	(17)	145	(67)	107
1-4	139	92	103	116	69	93	110	46	78	133	69	101
5-9	32	48	40	73	46	60	39	31	35	43	47	45
10-14	15	23	19	31	11	21	35	44	39	31	43	36
15-19	25	23	24	31	(7)	19	38	21	29	14	(0)	7
20-24	(10)	(10)	10	20	(8)	14	16	25	21	31	(9)	20
25-29	(7)	(6)	(7)	(8)	12	10	10	16	13	19	15	17
30-34	15	30	23	31	38	34	24	32	28	(6)	19	13
35-39	38	36	37	39	40	40	44	48	46	30	42	36
40-44	26	47	36	59	42	50	33	46	39	44	44	44
45-49	35	38	36	44	31	37	45	47	46	44	30	37
50-54	34	37	35	67	44	56	35	46	40	35	21	28
55-59	81	78	80	29	68	48	58	62	60	23	47	35
60-64	43	71	57	65	68	67	70	56	63	74	85	80
65-69	128	77	102	77	83	80	75	73	74	82	113	98
70-74	124	88	105	122	50	84	122	106	114	120	63	91
75-79	200	92	138	198	143	167	122	92	105	145	52	93
80-84	225	152	178	466	119	249	291	123	181	255	145	188
>85	492	258	323	518	281	349	296	301	300	335	310	319
total	55	54	54	67	52	59	55	55	55	56	52	54

Extrapolation

Table 6.4 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total (m+f)	m	f	total (m+f)
Pneumonia						
2007	55	54	54	44,000	45,000	89,000
2008	67	52	59	54,000	43,000	97,000
2009	55	55	55	45,000	46,000	91,000
2010	56	52	54	46,000	44,000	90,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

The registration of pneumonia shows a clear correlation with the seasons: the highest incidence occurs in the first trimester of 2010, straight after the influenza epidemic in 2009. There was no increase during the influenza pandemic in 2009. Only at old age the incidence in men is higher than in women, probably due to more co-morbidity in men related to smoking in these age categories (COPD and cardiovascular disease). It would be interesting to know which bacteriological pathogens were isolated from these patients and for which antibiotic they were susceptible. This item will be addressed in a separate publication. Also extension of the diagnostic

armamentarium with virological studies may be of interest. This has already been performed in patients with ILI and pneumonia. This item too will be addressed in a separate publication.

This topic was discontinued in 2011 and will be started in 2012 without bacteriological sampling.

7 Chickenpox

Topic owner: Dr. G.A. Donker (2000-2010)

Introduction

Chickenpox is one of the infectious illnesses that can be treated by primary health care providers, in cases where people are unable to handle the situation themselves. Specialised hospital care is only required in cases in which dangerous complications arise, such as Varicella pneumonia or Varicella meningitis, especially among adults. Chickenpox infection at the end of pregnancy is a very serious condition, both for mother and child.[7] A study may serve as baseline before the eventual implementation of vaccination. In the USA and Japan vaccination against chickenpox is common practice since 1995 and in Germany since 2004. In the Netherlands a vaccine against chickenpox with live weakened virus has been registered since 2007, to be used in special cases such as patients with a transplant or patients undergoing chemotherapy, but thus far is not added to the national vaccination program.

Method

In 2001-2010 only the number of patients which the GP diagnosed as having chickenpox was recorded. In 2000 additional information was gathered about the incidence of chickenpox in groups of patients consulting or not consulting their GP.

This report exclusively contains information about the results of the registration of chickenpox in the electronic records. The additional information from 2000 has been published elsewhere (Fleming et al.). See the list of publications below.

Results

The number of chickenpox patients per 10,000 inhabitants is shown in Table 7.1 by province group, address density and for the Netherlands as a whole.

Table 7.1 Number of chickenpox patients per 10,000 inhabitants by province group, address density and for the Netherlands as a whole in 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	17	28	25	22	17	24	27	24
2002	18	45	31	30	21	33	32	32
2003	15	38	27	28	46	22	26	27
2004	9	29	29	31	39	18	36	25
2005	10	18	24	17	14	18	28	19
2006	21	20	35	36	31	25	39	30
2007	10	11	29	28	17	21	27	21
2008	11	7	25	16	10	13	35	16
2009	10	7	17	4	9	10	16	11
2010	18	13	19	20	13	16	31	18

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Following the epidemic in 2002 and the stepwise decrease in the years thereafter, 2006 showed an epidemic comparable to 2002, predominantly striking the western and southern part of the country. The incidence in 2010 was higher than in the previous 2 years. The incidence was the highest in the big cities like in the previous years.

Seasonal influences

Patient numbers per 10,000 persons reported by GPs per quarter are presented in table 7.2.

Table 7.2 Number of patients with chickenpox per 10,000 persons per quarter in 2001-2010

	weeks 1-13	weeks 14-26	weeks 27-39	weeks 40-52
2001	9	8	5	3
2002	9	11	7	5
2003	10	8	6	3
2004	8	9	5	3
2005	6	5	4	4
2006	10	10	6	4
2007	7	8	2	4
2008	5	5	2	3
2009	3	3	3	2
2010	5	6	4	4

The incidence of chickenpox was higher in the first half of 2010 than in the second half. This was also the case in the previous years 2000-2009.

Age distribution

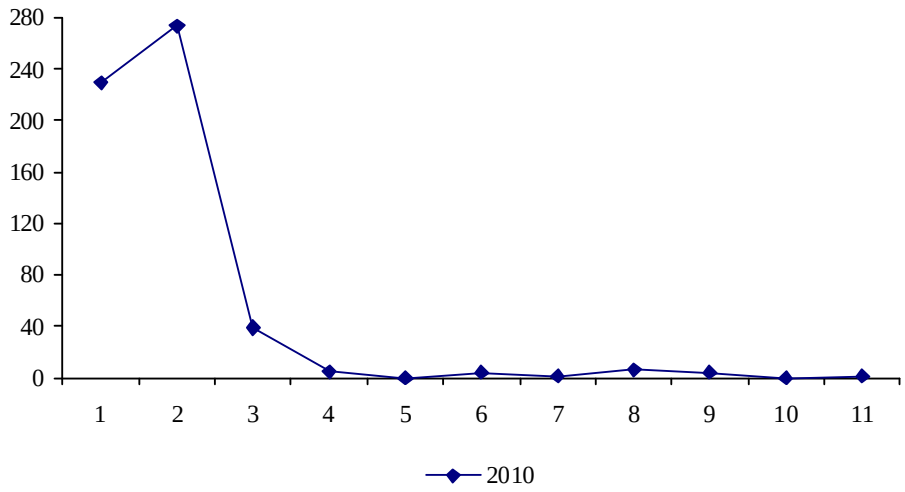
The incidence of chickenpox in the Netherlands per 10,000 persons is shown by age group in Table 7.3.

Table 7.3 Number of patients with chickenpox per 10,000 persons by age group and for the Netherlands as a whole in 2001-2010

age group	<1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
2001	320	281	70	12	(4)	6	7	5	(3)	(3)	-
2002	301	359	136	11	(3)	(4)	8	6	(3)	(3)	(1)
2003	284	358	63	9	(3)	8	(4)	7	(4)	-	-
2004	225	311	85	(5)	(7)	(6)	(6)	(5)	(5)	(2)	-
2005	217	232	44	(6)	(4)	(6)	(4)	(3)	(2)	(3)	(2)
2006	305	331	102	7	(2)	13	(4)	(5)	8	(0)	(1)
2007	235	278	53	(2)	(3)	(2)	(3)	(3)	(5)	(1)	(1)
2008	207	199	41	8	(5)	(3)	(2)	(2)	(0)	(2)	(1)
2009	90	159	21	(3)	(0)	(2)	(2)	(2)	(4)	(1)	(0)
2010	230	274	39	(5)	(0)	(4)	(1)	(6)	(4)	(0)	(1)

Chickenpox predominantly affects children younger than 10 years. The incidence in 2010 was considerably higher than in the previous year, for all age groups. Above the age of 50 chickenpox occurs sporadically (data not in table).

Figure 7.1 Number of cases of chickenpox per 10,000 persons by age group and for the Netherlands as a whole in 2010



Age groups

1=< 1 years	2=1-4 years	3=5-9 years	4=10-14 years	5=15-19 years
6=20-24 years	7=25-29 years	8=30-34 years	9=35-39 years	10=40-44 years
11=45-49 years				

Extrapolation

Table 7.4 Extrapolation of incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
chickenpox		
2001	24	38,500
2002	32	51,500
2003	27	44,000
2004	25	40,500
2005	19	31,000
2006	30	49,000
2007	21	34,000
2008	16	26,000
2009	11	18,000
2010	18	30,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

After the epidemics in 2002 and 2006 the incidence in 2010 is higher than in the previous 2 years, possibly a mild or starting epidemic. Epidemics of chickenpox usually occur once every 3-4 years. Similarly as in previous years the incidence was the highest in the more densily populated parts of

The Netherlands. Chickenpox mostly affects children younger than 10 years, predominantly children younger than 5 years. Only a few patients consult their GP for this. One consequence of the frequent occurrence of chickenpox in the youngest age groups (< 5 years old) is that women who are pregnant for at least the second time run a greater risk of coming into contact with chickenpox. However, also among this group the degree of protection is high, because more than 90% has endured the disease at a young age. The Health Counsel has advised first to monitor the number of complications evoked by chickenpox, before it will advise about the possible inclusion of chickenpox vaccination into the national vaccination program.

This topic of chickenpox was discontinued in 2011, because data on this topic are also available via other sources.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, Haar van der Ella. *Waterpokken: vaccinatie invoeren of niet?* Huisarts en Wetenschap 2009;52(4):165

Boot HJ, Melker de HE, Stolk EA, Wit de GA, Kimman TG, *Assessing the introduction of universal varicella vaccination in the Netherlands.* Vaccine 2006;24(37-39):6288-99

Melker de HE, Berbers G, Hahné S, Rümke S, Hof van den S, Wit de A, Root H. *The epidemiology of varicella and Herpes Zoster in The Netherlands: implications for varicella zoster virus vaccination.* Vaccine 2006;24(18):3946-52

Fleming DM, Schellevis FG, Paget WJ. *Health Monitoring in Sentinel Practice Networks.* Final Report to the EU, Nivel, 2002

Fleming DM, Schellevis FG, Falcao I, Alonso TV, Padilla ML. *The incidence of chickenpox in the community. Lessons for disease surveillance in sentinel practice networks.* Eur J Epidemiol 2002;17:1023-1027

8 Whooping cough

Topic owner: Dr. H. de Melker, (RIVM) (1998-2010)

Introduction

Whooping cough is an acute, very infectious disease of the upper airways that is caused by the bacteria *Bordetella pertussis* and in some cases by *Bordetella parapertussis*.
Notably in children younger than 3 months whooping cough may have very serious complications such as brain damage and convulsions**,** actelectasis of the lungs, pneumothorax, and pulmonary emphysema and even death.
Immunity is built up both after having had whooping cough and after having a vaccination, but in both cases the immunity decreases again with the passage of time.
Vaccination against *Bordetella pertussis* has been included in the Dutch government's vaccination programme 1952. The percentage of people reached by this programme is high (> 96%).

The vaccine that was developed in the 1950s was effective in preventing the infection but did not wipe out the bacteria. The bacteria remained in circulation and in spite of the large numbers of people who have been vaccinated the incidence of whooping cough in the Netherlands has been increasing since 1996. Every few years it reaches epidemic levels. Analysis of the available data showed that the proportion of vaccinated people among the indicated disease cases of whooping cough had increased.[8] From July 2001 children at the age of 4 are therefore re-vaccinated with a specific a-cellular vaccine.
Since 2005 vaccination with a cellular vaccine in the first year of life have been substituted by an a-cellular vaccine.

Whooping cough is one of the diseases included in the national mandatory notification. However, the development of the illness and the criteria for registration lead to significant under-reporting and the number of notifications do not reflect the real picture. Underreporting can be caused by

3 reasons. Firstly, many people, notably adults who have been coughing for a few weeks, do not quickly decide to consult a doctor. Secondly, if a patient consults a doctor and the doctor suspects whooping cough, then a laboratory test will not always be requested. Thirdly, not all GPs report all proven cases of chickenpox to the health authorities.

Direct registration of whooping cough in general practice is one way of gaining insight in to the extent of under-reporting. At the end of the 1990s information about the incidence of whooping cough was not available in general practice and was just as difficult to obtain from other sources. Further research into the changes in the epidemiology of whooping cough was considered desirable, especially after the introduction of an improved vaccine in 1998. In 1998, it was decided to explore prevention of whooping cough and the diagnostic method in the sentinel surveillance. Because of the recent changes in the strategy of vaccination against whooping cough it is desirable that monitoring will be continued. In 2010, further analysis into the shifts in epidemiology and age distribution took place, since the in introduction of the acellular vaccine (Donker and Van der Gevel).

Method

The sentinel doctor is asked to register every patient with whooping cough, divided up into gender and age group. A case description is not easy because of the often atypical development of whooping cough in vaccinated people. The sentinel doctors use the following definition for whooping cough: Long-term cough (longer than 3 weeks) with more or less typical characteristics and/or proof of *Bordetella pertussis/parapertussis* infection (according to the protocol of the National Coordination Centre for Combating Infectious Diseases (*Landelijke Coördinatiestructuur Infectieziektebestrijding*).

Using an additional questionnaire, a difference is made between clinical whooping cough that is not laboratory-confirmed and a symptomatic infection (typically or not) with *Bordetella pertussis/Bordetella parapertussis* that is confirmed by a laboratory test. By making this distinction, insight may be obtained into the frequency of whooping cough diagnosed by the GP on basis of clinical signs only.

A few weeks after registering a case of whooping cough the GP is asked to provide additional information about the registration and about the results of the laboratory test if one was requested. The GP will also be asked whether the patient has ever been vaccinated against whooping cough and if so, how many doses of inoculation have been applied.
The information, together with other sources of information about the occurrence of whooping cough, is used by the Centre for Infectious Diseases, Epidemiology and Surveillance of the RIVM at Bilthoven to interpret the progress of whooping cough in the Netherlands.

Results

Distribution by province group and address density.

In 2010 35 patients were reported with whooping cough, which amounts to 3 per 10,000 patients. This incidence is comparable with the incidence in the previous year (see Table 8.1). There is an epidemic every three to four years. Since the introduction of the acellular vaccine - for four year olds in 2001 and for zero year olds in 2005 – the epidemics are decreasing (Donker and Van der Gevel Huisarts en Wetenschap 2011;54(2):53).

Table 8.1 Number of patients with whooping cough by province group, address density and for the Netherlands as a whole, per 10,000 people, 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	3	5	15	7	6	9	22	11
2002	2	2	5	6	2	4	7	4
2003	0	(1)	4	3	(0)	2	7	3
2004	6	10	8	9	7	7	12	8
2005	0	6	6	11	6	6	5	6
2006	1	7	2	1	7	2	2	3
2007	4	6	4	8	7	5	3	5
2008	3	1	3	15	5	5	2	5
2009	2	5	4	1	2	4	2	3
2010	3	2	3	3	1	3	3	3

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

No consistent differences have been found in province group and population density during all the years of registration.

Distribution by age group

Table 8.2 shows the numbers of patients with whooping cough per 10,000 inhabitants and per age group.

Table 8.2 Number of patients with whooping cough by age group per 10,000 inhabitants, 2001-2010

age group	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<1	29	5	(7)	(29)	(8)	(18)	(8)	9	-	(7)
1-4	99	21	14	35	30	17	17	8	17	(4)
5-9	15	20	11	33	18	(7)	10	9	7	(4)
10-14	19	10	(3)	23	10	10	17	24	7	10
15-19	9	(2)	(4)	10	(3)	(7)	14	6	7	(4)
20-24	-	(1)	-	(3)	-	-	(3)	(2)	(2)	(4)
25-29	(2)	(2)	(2)	-	-	-	0	(3)	-	(1)
30-34	4	(1)	(1)	6	5	(3)	(6)	(2)	(2)	(3)
35-39	6	(1)	(3)	6	4	(1)	(1)	(4)	-	-
40-44	(2)	(0)	-	-	(1)	-	(5)	6	(3)	(3)
45-49	6	-	(1)	(3)	6	-	6	(1)	(1)	(3)
50-54	0	(1)	(1)	(6)	(4)	-	0	(1)	-	(1)
55-59	(2)	-	-	(3)	(5)	-	(1)	(4)	(1)	(1)
60-64	(4)	(2)	(2)	-	(6)	-	(2)	(2)	-	(2)
65-69	-	-	-	(5)	-	-	0	-	-	(2)
>70	(1)	(1)	-	(0)	(2)	-	-	-	-	(2)

Whooping cough may occur at any age. Analysis of the period 1998-2009 in three groups of 4 years shows that since the introduction of the acellular vaccine – for four year olds in 2001 and for zero year olds in 2005 – the peak incidence gradually shifts from toddler to teenager (Donker and Van der Gevel 2011). In 2010, the highest incidence is also found in the age groups 0-19 years, especially the sub group 10-14 years.

Extrapolation

Table 8.3 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
whooping cough		
2001	11	17,500
2002	4	6,500
2003	3	5,000
2004	8	13,000
2005	6	9,800
2006	3	4,900
2007	5	8,000
2008	5	8,000
2009	3	5,000
2010	3	5,000

* number of patients, consultations, etc. per 10,000 men and women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

The results on diagnostics are published in medical articles.

Discussion

In spite of the large number of people being vaccinated against whooping cough it still does occur relatively often in the population. The incidence of whooping cough recorded in general practice is higher than the officially declared incidence. However, this difference has become smaller during the last years, as the incidences in both registrations are decreasing.
Whooping cough occurs in all age groups. According to the registration by GPs whooping cough has the highest incidence between 0-19 years. Since the introduction in 2001 of vaccination with an a-cellular vaccine at the age of 4 years and the replacement of a cellular vaccine by an a-cellular vaccine in the first year after birth in 2005, the peak incidence gradually shifts towards teenage groups. This was also the case in 2010, with a peak incidence in the age group 10-14 years.

The topic will be continued in 2011.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, van der Gevel Joost. *Kinkhoest van kinder- naar tienerziekte.* Huisarts en Wetenschap 2011;54(2):53

Greeff de Sabine C. Lugnér Anna K. Heuvel van den Danielle M, Mooi Frits R, Melker de Hester E. *Economic analysis of pertussis illness in the Dutch population: Implications for current and future vaccination strategies.* Vaccine 2009;(27):1932-1937

9 Acute gastro-enteritis

Topic owner: Dr. W. van Pelt (RIVM-CIE) (1992-1993) (1996-2010)

Introduction

Gastro-enteritis is among the top ten illnesses in the Netherlands in terms of incidence. It is an illness that places a considerable burden on the primary health care system.[9]
Gastro-enteritis was added again to the surveillance of the Continuous Morbidity Registration Sentinel Practices in the Netherlands in 1996. Also in 1992 and 1993 the subject has been registered by the sentinel practices. Initially (until 1999) the investigation mainly focused on the assessment of trends in the incidence of gastro-enteritis, campylobacteriosis and salmonellosis and the burden of health care involved, also with regard to specific pathogens. The results of this research have been published before.

Since 2000 this topic has been maintained in accordance with the first of the above aims: the monitoring of trends in the incidence of acute gastro-enteritis in general practice. In 2001-2002 supplementary information was collected about laboratory diagnosis of patients sent in for consultation within the frame-work of regular health care. The results of this study are published elsewhere (van den Brandhof et al. 2006).

Method

Sentinel doctors are asked to report patients with a new episode of gastro-enteritis. A new episode includes that the patient is seen for the first time during the current episode and has not shown symptoms for at least 14 days following an earlier report. Patients who consult their GP solely by phone are not reported.
In 2001 and 2002 the doctors were also asked to indicate when the GP decided as part of regular health care to perform a faeces test. The doctors

were asked to indicate the reason why the test was requested, the micro-organisms for which the test was performed and whether antibiotics were prescribed.

In 2003 it was requested to only report the occurrence of acute gastro-enteritis and to indicate whether or not a faeces test was performed. No other questions with regard to the indication or result of the test are asked.

The sentinel doctors adhere to the following definition of gastro-enteritis:
- thin bowel movements three or more times a day, differing from the normal situation for the person concerned, or
- thin stools and two of the following symptoms: fever, vomiting, nausea, stomach ache, stomach cramps, blood or mucus in the stools or
- vomiting and two of the following symptoms: fever, nausea, stomach ache, blood or mucus in the stools.

Results

Table 9.1 shows the number of reports of acute gastro-enteritis, by province group, address density and for the Netherlands as a whole.

Table 9.1 Numbers of cases of acute gastro-enteritis by province group, address density and for the Netherlands as a whole, per 10,000 men and per 10,000 women, 2001-2010

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2001	male	76	98	78	122	102	90	95	93
2002		65	109	106	113	81	99	151	104
2003		111	127	103	104	121	103	117	109
2004		76	115	90	135	141	91	109	103
2005		73	125	90	101	131	82	117	96
2006		85	135	112	167	121	119	126	121
2007		69	36	110	110	66	77	135	86
2008		92	53	89	130	105	71	150	90
2009		73	43	72	59	64	56	84	64
2010		86	57	75	96	80	73	97	79
2001	female	55	108	97	169	100	106	127	109
2002		58	108	113	110	70	95	135	98
2003		93	142	103	118	134	104	115	112
2004		61	102	98	107	136	82	97	94
2005		45	112	96	108	100	87	107	93
2006		71	124	122	143	107	122	112	117
2007		67	36	122	139	56	95	134	95
2008		83	57	91	152	88	79	158	93
2009		68	62	77	65	73	60	92	70
2010		110	57	83	112	95	87	95	90

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Table 9.1 Numbers of cases of acute gastro-enteritis, by province group, address density and for Netherlands as a whole, per 10,000 men and per 10,000 women 2001-2010 (cont.)

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2001	total	65	103	88	145	101	98	112	101
2002		58	109	113	110	76	97	143	101
2003		102	134	103	111	128	103	116	110
2004		68	109	94	121	138	86	103	98
2005		59	119	93	104	116	85	112	94
2006		78	129	117	155	114	120	119	119
2007		69	36	116	124	61	86	135	90
2008		88	55	90	141	92	75	154	91
2009		70	53	75	61	69	58	88	67
2010		99	57	79	104	88	80	96	84

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

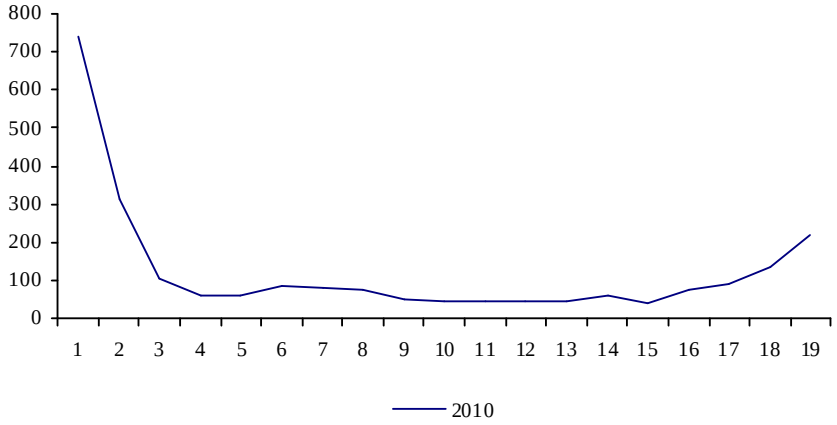
The highest incidence for men and women was seen in 2006.
In 2010 the incidence is higher than in 2009, but lower than in the years before 2009, for men and women. The highest incidence is found in the big cities and in the northern part of the country. The difference between men and women is inconsistent.

Age distribution

Table 9.2 Numbers of patients with acute gastro-enteritis per 10,000 inhabitants, 2001-2010

	total									
age group (year)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<1	823	653	613	765	687	690	588	689	432	741
1-4	397	412	437	341	296	472	349	368	267	313
5-9	170	195	197	136	163	156	114	114	85	107
10-14	84	96	125	80	79	107	56	61	76	58
15-19	92	86	83	82	100	84	53	54	49	61
20-24	105	101	118	99	80	121	84	85	53	85
25-29	73	105	95	87	72	104	82	80	46	79
30-34	70	72	94	99	67	80	84	83	64	75
35-39	75	69	84	71	56	86	44	72	35	49
40-44	66	63	52	55	55	61	38	56	42	45
45-49	50	48	66	70	49	65	49	44	36	46
50-54	62	59	65	67	57	67	57	42	28	45
55-59	59	50	54	57	57	67	76	53	41	43
60-64	99	46	68	48	78	61	48	54	36	60
65-69	57	65	56	58	76	92	63	73	65	41
70-74	67	63	72	54	82	102	100	61	35	73
75-79	82	38	49	101	98	125	131	119	72	92
80-84	70	58	110	115	131	193	152	141	88	133
>85	67	86	81	104	131	166	152	174	178	219

Figure 9.1 Numbers of patients with acute gastro-enteritis in 2010, by age group per 10,000 inhabitants



Age group distribution (years) X-axis

1=< 1 years	2=1-4 years	3=5-9 years	4=10-14 years	5=15-19 years
6=20-24 years	7=25-29 years	8=30-34 years	9=35-39 years	10=40-44 years
11=45-49 years	12=50-54 years	13=55-59 years	14=60-64 years	15=65-69 years
16=70-74 years	17=75-79 years	18=80-84 years	19=> 85 years	

During the whole registration period, most cases of acute gastro-enteritis were diagnosed among babies and 1-4 years olds. In 2010 this was also the case, but especially for babies, the incidence was slightly lower than in the previous years. Similarly as during the years 2003-2009, a higher incidence was found once again for persons older than 75 years in 2010.

Seasonal influences

Table 9.3 shows the numbers of cases of acute gastro-enteritis that were reported per season.

Table 9.3 Numbers of patients with acute gastro-enteritis per 10,000 inhabitants from 2001-2010, arranged per quarter

quarter	1 : weeks 1-13	2 : weeks 14-26	3 : weeks 27-39	4 : weeks 40-52
2001	30	23	27	20
2002	27	25	23	25
2003	40	23	28	18
2004	25	22	24	27
2005	30	19	24	21
2006	41	28	27	23
2007	25	24	18	22
2008	37	18	17	16
2009	24	11	15	14
2010	32	18	17	19

Similarly as in most earlier years the highest incidence in 2010 is seen during winter time (first quarter).

Faeces test in cases of acute gastro-enteritis

Table 9.4 gives a summary of the number of reports of acute gastro-enteritis for which the GP requested a faeces test, arranged per province group, by address density and for the Netherlands as a whole.

Table 9.4 Number of times that the GP requested a faeces test in cases of acute gastro-enteritis, per province group by address density and for the Netherlands as a whole, per 10,000 inhabitants for 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	5	16	16	15	17	13	14	14
2002	7	11	16	19	14	13	19	14
2003	20	31	26	25	34	23	20	25
2004	17	29	24	20	30	15	34	22
2005	21	13	25	22	18	19	33	21
2006	35	10	32	18	22	24	34	26
2007	20	33	29	13	16	25	31	25
2008	6	3	13	22	9	11	13	11
2009	10	5	11	7	8	7	13	9
2010	15	8	9	9	8	10	11	10

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The number of requests in 2010 was similar to that in 2009, but lower than in the years before 2009. In 2010, the number of request for a test was the highest in the big cities and in the northern provinces, which is consistent with the higher incidence in these areas.

Age distribution

Table 9.5 shows the number of requests for a faeces test in cases of acute gastro-enteritis per age group and per 10,000 persons.

Table 9.5 Number of requests for a faeces test in cases of acute gastro-enteritis per age group per 10,000 inhabitants from 2001-2010

age group (year)	2001	%	2002	%	2003	%	2004	%	2005	%
<1	69	7	86	13	90	15	49	6	82	11
1-4	39	10	50	12	78	18	45	13	57	16
5-9	13	8	11	6	36	18	30	15	18	10
19-14	7	8	13	13	15	12	15	19	24	23
15-19	12	12	19	22	13	16	17	21	32	24
20-24	13	12	17	17	32	27	22	22	17	17
25-29	9	11	13	12	32	34	22	25	16	19
30-34	14	19	15	21	26	31	27	27	22	25
35-39	10	15	13	18	19	37	17	24	20	27
40-44	9	15	10	17	22	33	23	42	22	28
45-49	14	26	9	19	19	29	20	29	19	28
50-54	17	26	6	10	19	29	24	36	12	18
55-59	12	20	14	28	16	30	23	40	16	22
60-64	11	12	12	26	11	16	12	25	17	18
65-69	8	17	(4)	6	17	30	32	60	25	25
70-74	10	17	(5)	7	15	21	19	32	13	14
75-79	8	10	(6)	15	31	63	(7)	7	3	3
80-84	23	31	-	0	13	12	(10)	9	20	13
>85	23	33	-	0	(5)	6	(7)	7	0	0

% = number of faeces tests: number of reports of acute gastro-enteritis x 100

Table 9.5 Number of requests for a faeces test in cases of acute gastro-enteritis per age group per 10,000 inhabitants for 2001-2010

	2006	%	2007	%	2008	%	2009	%	2010	%
<1	45	6	118	17	28	4	(16)	4	(15)	2
1-4	61	13	77	18	30	8	31	112	31	10
5-9	25	16	27	19	(6)	5	(6)	7	9	8
19-14	19	17	9	14	(3)	5	(3)	4	8	14
15-19	26	31	21	29	(8)	15	(1)	2	16	26
20-24	42	35	29	26	12	14	12	23	11	13
25-29	41	39	35	30	13	16	14	30	10	13
30-34	31	38	25	23	10	12	(6)	9	13	17
35-39	19	22	24	35	12	17	11	31	(5)	10
40-44	23	38	13	25	(9)	16	(6)	26	8	18
45-49	10	15	22	31	(9)	20	(5)	14	9	20
50-54	22	33	18	24	12	29	(4)	11	(6)	13
55-59	19	28	14	15	15	28	11	39	(5)	12
60-64	27	43	26	35	(8)	15	(4)	10	(5)	8
65-69	20	22	24	27	(9)	12	15	42	13	32
70-74	21	21	15	13	(5)	8	17	57	15	31
75-79	26	19	10	7	(9)	8	(3)	4	(5)	5
80-84	31	16	17	10	13	9	0	0	(7)	5
>85	(7)	4	(12)	7	(2)	1	(14)	8	(4)	2

% = number of faeces tests: number of reports of acute gastro-enteritis x 100

Overall, the number of registered requested faeces tests per 10,000 people per age group shows the same pattern as for the total number of reports of acute gastro-enteritis per age group. In absolute numbers most requests for a faeces test were made in 2010 for 1-4 years olds.

However, this is not the case for the number of faeces tests per age group as a percentage of the total number of reported cases of acute gastro-enteritis in that age group. In adults a faeces test is performed more often.

Children (< 15 years old) with acute gastro-enteritis consult their GP more often than older children or adults. When people older than 14 years of age consult their GP with the symptoms of acute gastro-enteritis the GP will relatively more often request a faeces test, with the exception of the age group ≥ 75 years.

Extrapolation

Table 9.6 Extrapolation of incidence rates to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total	m	f	total
gastro-enteritis						
2001	93	103	101	74,000	83,000	157,000
2002	104	98	101	83,000	80,000	163,000
2003	109	112	110	88,000	91,000	179,000
2004	103	94	98	83,000	86,000	164,000
2005	96	93	94	77,000	77,000	154,000
2006	121	117	119	98,000	97,000	194,000
2007	86	95	90	71,000	80,000	151,000
2008	90	93	91	73,000	77,000	150,000
2009	64	70	67	52,000	58,000	110,000
2010	79	90	84	65,000	75,000	139,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

In 2010 the incidence was higher than in 2009, but lower than in the years before 2009. In 2006 the incidence was the highest, predominantly in the first quarter. Similarly as in 2002/2003 this coincided with a high incidence of Norovirus and the occurrence of a Rotavirus epidemic.[10, 11]
As part of regular health care GPs request a faeces test relatively more often for patients who are older than 14 years. This is the result of a difference in consultation behaviour between cases of acute gastro-enteritis involving children (< 15 years old) and cases involving young people and adults (> 15 years old). This second group consults the doctor when they have more serious symptoms that last longer. Diarrhoea following a trip abroad occurs more often in young people and adults.

This topic was continued in 2010.

Publications based fully or partly on continuous morbidity registration data

Pelt W van, Notermans D, Mevius DJ, Vennema H, Koopmans MPG, Duynhoven YTHP van. *Trends in gastro-enteritis van 1996 – 2006: Verdere toename van ziekenhuisopnames, maar stabiliserende sterfte.* Infectieziekten Bulletin 2008;19(1)

Pelt van W, Friesema I, Doorduyn Y, Jager de CM, Duynhoven YTHP. *Trends in gastro-enteritis in Nederland; notitie met betrekking tot 2007.* RIVM project V/210221/TS. RIVM, Bilthoven, December 2008

Pelt van W, Notermans D, Giessen AW, Mevius DJ, Vennema H, Koopmans M, Asten van L, Duynhoven van YTHP. *Trends in gastro-enteritis van 1996-2005; Toename van ziekenhuisopnames en sterfte: een toenemende rol van virale infecties?* Infectieziekten Bulletin 2006;10:364-70

Brandhof van den WE, Bartelds AIM, Koopmans MPG, Duynhoven van YTHP. *General practitioner practices in requesting laboratory tests for patients with gastro-enteritis in the Netherlands,* 2001-2002; BMC Family Practice 2006;7:56

Pelt van W, Wannet WJB, Giessen van de AW, Mevius DJ, Koopmans MPG, Duynhoven van YTHP. *Trends in gastro-enteritis van 1996 tot en met 2004: hoogste aantal ziekenhuisopnames sinds 1996, maar afnemende trend van laboratoriumbevestigde salmonellose en campylobacteriose*. Infectieziekten Bulletin 2005;16:250-6

Pelt van W, Duynhoven van YTHP. *Trends in gastro-enteritis in Nederland; notitie met betrekking tot 2004.* Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu, (juli) 2005

Kroneman A, Vennema H, Duynhoven van YTHP, Duizer E, Koopmans M. *High number of norovirus outbreaks associated with a GGII.4 variant in the Netherlands: does this herald a world-wide increase?* http://www.eurosurveillance.org/ew/2004/041223.asp#1)

Duynhoven van YTHP. *Gastro-enteritis in the Netherlands: studies on risk factors and burden of illness.* Proceedings EU-RAIN Conference: Food pathogen epidemiology: microbes, maladies and methods, 2-3 december 2004, Padua, Italy

Brandhof van den W, Wit de GA, Wit de MAS, Duynhoven van YTHP. *Costs of gastro-enteritis in the Netherlands.* Epidemiol Infect. 2004; 132:211-21

10 Sexually Transmitted Diseases (STD)

Topic owner: Mrs. dr. I. Van den Broek (RIVM)(2010)

Introduction

Together with respiratory, gastro-intestinal and urinary tract infections, Sexually Transmitted Diseases (STD) are the most frequently occurring infectious diseases in the Netherlands. Chlamydia, gonorrhea, syphilis, HPV-infection, hepatitis-B and HIV infection are the most important STDs.

National surveillance of STD is predominantly performed by the electronic SOAP registration of the RIVM, used since 2004 by the STD out patients clinics of the municipal health agencies (GGD), and through registration of infections by the HIV Monitoring Foundation. The GGD out patients clinics offer low threshold STD-care to high risk groups and persons who prefer to remain anonymous. In recent years the number of STD consultations at the GGD out patients clinics has increased substantially.

However, it is estimated that GPs account for 65-75% of all STD-related consultations. This was recently confirmed by the results from the CMR topic " fear of STD" and from estimates based on LINH data ("Landelijk Informatienetwerk Huisartspraktijken" or Netherlands Information Network for General Practice). In previous years GPs have noticed a steady increase in the number of STD-related consultations (see van den Broek et al, 2010). This increasing trend is also described in the annual surveillance report of the RIVM (Koedijk et al., 2010). Therefore, registration by CMR sentinel practices, may serve as a welcome addition to these data, especially because the questionnaires that have been included will provide insight into the background and reasons of a request for a STD test. In consultation with the RIVM and STD-AIDS the Netherlands, the topics 'fear of AIDS' and 'urethritis in men' have been replaced by 'STD' in men and women from 1-1-2008 onward. In this chapter only data regarding STD-related consultations by sentinel GPs are being reported. The collected additional data are published separately.

Method

The sentinel GPs are instructed to register this topic as a new STD consultation, except if a consultation was asked for information on i.e. prescription of anticonceptives. Proof of STD is not mandatory for registration. Also fear of STD and the possibility of STD and/or AIDS should be registered. In addition a questionnaire addressing additional information emerging from the consult should be completed. If diagnostic STD-tests are requested, a form with the test results should be added to the questionnaire. The diagnostic tests for chlamydia, gonorrhea, trichomonas, HIV and/or syphilis are performed by the regional laboratory of the participating practice. Only sentinel practices reporting SOA at least once per year were included.

Results

The results are based on data from 37 reporting practices. The number of STD-related consultations per10,000 patients per province group and address density are presented in table 10.1.The incidence is the highest in the western part of the Netherlands (60/10,000) and in the big cities (60/10,000). The number of STD-related consultations was approximately the same in recent years.

Table 10.1 Number of new STD-related consultations per province group, address density and for the Netherlands as a whole per 10,000 in 2008-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2008	35	38	65	50	20	46	88	49
2009	37	22	64	46	21	37	85	45
2010	37	32	60	50	32	48	60	47

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

In table 10.2 the data on new STD-related consultations are shown per age group. The age group between 20 and 30 years consults the GP the most for these problems. More women than men consult the GP for STD and/or fear for AIDS.

Table 10.2 Number of new STD-related consultations per age group and per 10,000 inhabitants, 2009-2010

	2008			2009			2010		
age group	m	f	t	m	f	t	m	f	t
10-14	0	12	6	0	15	7	0	(6)	3
15-19	32	121	76	57	137	97	51	145	97
20-24	178	302	241	148	217	183	165	263	215
25-29	141	175	158	144	169	157	150	140	145
30-34	58	116	87	70	102	87	80	100	90
35-39	64	90	77	68	65	66	60	76	68
40-44	47	49	48	54	28	41	30	48	39
45-49	23	38	31	43	35	37	22	41	32
50-54	10	23	16	19	14	16	17	25	21
55-59	16	14	15	(12)	23	17	22	19	20
60-64	5	15	15	18	0	9	13	(8)	11
65-69	5	10	8	0	(4)	(2)	0	(3)	(2)
70-74	13	0	6	(10)	(14)	12	(5)	(4)	(5)
75-79				(7)	(5)	(6)	(0)	(5)	(3)
80-84	-	-	-	-	-	-	-	(6)	(4)
total	38	60	49	40	51	45	39	55	47

Extrapolation

Table 10.3 Extrapolation of incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
STD						
2008	38	60	49	31,000	50,000	81,000
2009	40	50	45	32,500	41,500	74,000
2010	39	55	47	32,000	46,000	78,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

As expected, the highest incidence of new STD-related consultations were reported in the big cities and the western part of the Netherlands, where most of the big cities are located, with an age peak between 20 and 30 years. GPs are consulted more frequently by women than by men for STD and/or fear of AIDS.

The incidence rates from the sentinel practices are lower than from LINH. LINH estimated the incidence of STD/HIV or fear of STD/HIV on basis of the relevant ICPC codes. The LINH estimate for 2009 was 115 per 10,000. The lower estimates of the sentinel practices are due to differences in the applied criteria for STD-related consultations, for which a questionnaire was filled in at the sentinel practices in comparison with those for the STD-

episodes based on ICPC codes and the lower threshold for including sentinel practices in the analysis. The additional data from the questionnaires will be compared with the data from LINH and other sources. These will be reported separately.

This topic will be continued in 2011.

Publications based fully or partly on continuous morbidity registration data

Vriend HJ, Koedijk FDH, Van den Broek IVF, Van Veen MG, Op de Coul ELM, Van Sighem AI, Verheij RA, Van der Sande MAB *Sexually transmitted infections, including HIV, in the Netherlands in 2010.* Utrecht, RIVM report number: 210261009/2011

Dorsman S, Donker G, Van den Broek IVF, Van Bergen J. Angst voor HIV/AIDS. *Hulpvragen bij de huisarts in de periode van 1988 tot en met 2009.* Rapport NIVEL mei 2011

Van den Broek IVF, Verheij RA, van Dijk CE, Koedijk FDH, van der Sande MAB and van Bergen JEAM. *Trends in sexually transmitted infections in the Netherlands, combining surveillance data from general practices and sexually transmitted infection centers.* BMC Family Practice 2010;May 20:11:39

Vriend HJ, Donker GA, Bergen van JE, Sande van der MAB, Broek van den I. *Urethritis bij de man in de huisartspraktjik. SOA's vooral op jongere leeftijd.* Nederlands Tijdschrift Geneeskunde 2009;153:A323

Koedijk FDH, Vriend HJ, van Veen MG, Op de Coul ELM, van den Broek IVF, van Sighem AI, Verheij RA, van der Sande MAB. *Sexually transmitted infections including HIV, in the Netherlands in 2008.* Annual STI-report RIVM, available at: http://www.rivm.nl/bibliotheek/rapporten/210261005.html

Donker Gé, Wolters Irmin, Bergen van Jan. *Huisartsen moeten risicogroepen testen op hiv.* Huisarts en Wetenschap 2008; 51:(419)

Kerssens JJ, *Vragen aan de huisarts over HIV en AIDS, van 1998-2004.*SOAIDS 2005;2:8-9

Kerssens JJ. Peters L. *Angst voor AIDS: hulpvragen bij de huisarts in de periode van 1988 tot en met 2004.* Utrecht, NIVEL, 2005

11 Urinary tract infection

Topic owner: Dr. E.E. Stobberingh, SWAB (2009-2010)

Introduction

Urinary tract infections are common in general practice. The incidence varies from 40-60 per 1000 patients, depending on the population. The initial treatment with antibiotics by the GP is not based on the outcome of bacteriological analysis. The choice of an antibiotic is predominantly based on the guidelines from the Dutch GP Association and sometimes on other considerations. This approach is also followed if the first treatment has no effect. Only when treatment failure occurs for a second time bacteriological analysis will be performed.
The empirical choice of antibiotics should be based on the actual sensitivity percentages for antibiotics of the microorganisms to be treated, being unselected urological pathogens. For an optimal choice actual data are necessary. The most recent data stem from 2003-2004. In that period research was being performed on the antibiotic sensitivity of unselected micro-organisms isolated from women between 12-70 years consulting their GP for an uncomplicated urinary tract infection. Because of the increasing incidence of (multi) resistance in hospitals (Nethmap 2010) and the increasing prevalence of so-called Extended Spectrum Beta-lactamases (ESBL) in the veterinarian sector (D. Mevius, personal communication) it is important to repeat the 2002-2003 study in order to obtain actual data. It has also become clear that sensitivity data for urological pathogens isolated from men are lacking or scarce. In connection with the extramural antibiotic surveillance of SWAB a surveillance of antibiotic sensitivity for urological pathogens has been started in general practices in 2009. The results will be reported elsewhere.

The aim of the study is:
determination of antibiotic sensitivity of urological pathogens isolated from men and women consulting the GP with symptoms indicative for a urinary tract infection.

Method

- All male and female patients with symptoms of a urinary infection should be included, independent of the applied therapy, including patients with a catheter.
- Incidence and prevalence are determined using ICPC-codes U71 (cystitis) and U70 (pyelitis).
- The usual diagnosis and way of treatment in general practice is continued. This is not excluded by the current study.
- In the freshly produced urine a uricult is immersed, marked with the code of the GP and patient number, to be sent to the bacteriological laboratory of the Maastricht University Medical Centre (MUMC).
- Isolation and determination of the uropathogens will be performed according to the standard microbiological methods of SWAB.
- The GP receives the bacteriological results weekly.
- The project leader and SWAB are informed yearly. The results are published in Nethmap every year.
- If the practice is very busy on a given day the GPs are requested to sent the first 2 samples of that day.

Results

Table 11.1 shows the number of reported episodes with a urinary tract infection stratified by region and address density, men, women and total. The incidences are based on analysis of episodes with the ICPC codes U70 (pyelitis) and U71 (cystitis). Incidences of 2009, too, were recalculated, because the dataset is now more complete than during the previous annual report. For both groups underreporting is likely, because most of the activities were performed by GP assistants and the results were available only one day later. The reported incidences in 2010 are slightly lower than in 2009. As usual, the incidence in women is much higher than in men.

Table 11.1 Number of episodes with a urinary tract infection per province group and address density in the Netherlands, per 10,000 men and 10,000 women in 2009-2010

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2009	m	186	167	111	230	137	181	131	161
2010		144	150	119	212	150	158	156	156
2009	f	946	1054	817	1471	836	1082	955	1014
2010		776	959	795	1157	915	905	984	922
2009	t	570	614	478	849	479	942	557	596
2010		463	557	468	679	528	538	579	543

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The incidence of urinary tract infection in women is almost 6 times higher than in men. For both groups the incidence increases especially after the age of 60 years (Table 11.2). The differences between men and women are reducing with age: at 85+ years the incidence of urinary tract infection in women is about 2 times higher than in men.

Table 11.2 Number of episodes with a urinary tract infection per age group and per 10,000 men, women and total in 2009-2010

	2009			2010		
age group	m	f	t	m	f	t
< 1	14	-	7	136	61	98
1-4	49	275	159	92	14	300
5-9	82	464	264	72	509	282
10-14	33	360	191	29	264	142
15-19	31	824	425	47	950	489
20-24	29	1138	594	36	1061	553
25-29	37	952	507	45	907	480
30-34	60	921	496	67	830	451
35-39	75	724	411	67	737	402
40-44	70	850	458	104	772	437
45-49	103	752	430	66	736	396
50-54	87	794	436	138	720	426
55-59	123	847	490	159	878	521
60-64	310	1171	737	241	958	597
65-69	414	1286	864	298	1118	714
70-74	509	1759	1163	416	1456	953
75-79	498	2274	1508	624	1706	1238
80-84	1138	2818	2174	905	2295	1753
> 85	1653	3512	2979	1319	2506	2161
total	161	1014	596	156	922	543

Extrapolation

Table 13.4 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
Urinary tract infection						
2009	161	1014	596	131,000	845,000	983,000
2010	156	922	543	128,000	772,000	900,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

Regular monitoring of antibiotic sensitivity to unselected urological pathogens is the basis for a grounded empirical choice of antibiotic treatment of a urinary tract infection. The national increase of antibiotic resistance found in human and veterinarian isolates and the fact that the last surveillance took place 5 years ago were the main reasons to start a new surveillance in 2009. The results show that the incidence in women is much higher than in men and that the incidence increases especially after the age of 60 years, both in men and women. The incidence totals found of 60 per 1000 in 2009 and 54 per 1000 in 2010 are consistent with other studies in general practice, showing an incidence of 40-60 per 1000 patients. If underreporting occurs, this will be not larger in this registration than in other studies. By now, sufficient insight has been reached into antibiotic

sensitivity in not-pregnant adult women with urinary tract infections in general practice. Articles on this subject have been published in English as well as Dutch scientific papers.

The topic will be continued in 2011 concerning testing samples of pregnant women, children and men.

Publications based fully or partly on continuous morbidity registration data

Den Heijer CDJ, Donker GA, Maes J, Stobberingh EE. *Antibiotica bij ongecompliceerde urineweginfecties: geen toename van resistentie in de afgelopen 5 jaar*. Nederlands Tijdschrift Geneeskunde 2011;155(3):102-106

Den Heijer CDJ, Donker GA, Maes J, Stobberingh EE. *Antibiotic susceptibility of unselected uropathogenetic Escherichia Coli from female Dutch general practice patients: a comparison of two surveys with a five year interval*. J Antimicrob Chemother 2010;65(10):2128-33. Epub 2010 Aug 3 doi:10.1093/jac/dkq286

Koeijers, J.J., Verbon, A., Kessels, A.G.H., Bartelds, A., Donker, G., Nys, S., Stobberingh, E.E. *Urinary tract infection in male general practice patients: uropathogens and antibiotic susceptibility*. Urology:2010;76(2):336-340

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12 Unwanted pregnancy

Topic owners: Mrs. Dr. C. Wijsen (Rutgers WPF) (2003-2010)

Introduction

Registration of unwanted pregnancy is difficult because there is no objective measure for 'unwanted'. Before unwanted pregnancy was added as topic to the weekly returns in 2003, only the number of abortions served an indicator for its incidence. In the Netherlands the annual abortion rate amounts to about 33,000, of which 4,450 (13%) are performed in women not living in the Netherlands. Since the beginning of the nineties the number of abortions has increased: from 6.0 per 1,000 women in the age group 15-44 years in 1994 to 8.7 per 1,000 more than ten years later and a few years later it has slightly decreased to 8.6 per 1000 women.[12,13]

However, apart from being a good indicator, the data on abortions cannot be used to estimate the true incidence of unwanted pregnancy. The incidence of unwanted pregnancy is higher than the abortion rate because part of the women do not decide for an abortion. In the statistics, these pregnancies cannot be disclosed as unwanted. On the other hand, a number of abortions will be performed on women with a wanted pregnancy, for reasons such as congenital defects. Results from a study on a representative sample of >2000 women between 19-49 years of age indicate that almost 7% of the pregnancies in the last year were unwanted.[14] Insight into the extent of unwanted pregnancy as it presents in general practice, and its developments during a number of years, will be an important supplement to the existing registrations.

Method

The GP is requested to register every patient who seeks advise for unwanted pregnancy. For each case a questionnaire on background information and the

circumstances that have led to the unwanted pregnancy is completed. The questionnaires will be analyzed by the Rutgers WPF. The results will be published separately.

Results

In 2010 the number of unwanted pregnancies was slightly higher than in the previous two years. Extrapolated to the whole population the incidence amounted to 17 per 10,000 reports, representing 9.2% of all pregnancies for which the GP is consulted (table 12.1).

Subdivided to province group and address density, it appears that in preceding years the incidence was the highest in the western provinces and in the big cities.

Table 12.1 Number of women consulting the GP for unwanted pregnancy per 10,000 women, per province group by address density and for the Netherlands, 2003-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2003	29	31	32	17	36	21	39	28
2004	13	23	28	19	14	20	32	22
2005	15	24	24	8	11	18	36	19
2006	16	17	30	15	16	17	40	23
2007	13	11	29	29	13	17	46	21
2008	9	4	31	9	4	11	48	15
2009	10	8	26	9	8	9	38	15
2010	14	9	22	20	5	16	33	17

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The number of women consulting the GP for an unwanted pregnancy, by age group, is shown in table 12.2.

Table 12.2 Number of women consulting the GP for an unwanted pregnancy by age group per 10,000 women, in 2003-2010

age group	2003	2004	2005	2006	2007	2008	2009	2010
10-14	30	60	-	(7)	(3)	-	(3)	0
15-19	79	83	48	58	75	45	42	40
20-24	108	43	57	105	84	68	57	76
25-29	53	54	58	65	71	60	55	69
30-34	48	49	45	56	53	22	27	37
35-39	52	22	45	43	47	29	34	33
40-44	22	(3)	23	21	12	12	27	12
45-49	10	-	(4)	(3)	(0)	10	(2)	(8)
50-54	7	-	-	-	(3)	(0)	(0)	0

In 2010, no unwanted pregnancy was registered in the age group of 10-14 years, and 5 unwanted pregnancies in the age group of 15-19 years, which amounts to 40 per 10,000. This adds up to 5 unwanted teen-age pregnancies, which is less than in previous years. From all registered unwanted pregnancies 24% were from women younger than 20 years (18% in 2008 and 2009, 21% in 2007, 16% in 2006 and 14% in 2005). In 2010, the highest proportion originated from women between 20-24 years. The age pattern in the various age groups has been relatively constant for several years, with exception of the years 2004 and 2005, during which the groups 15-19 years and 25-29 years, respectively, were the highest.

In 2010 no unwanted pregnancies were registered for women above 50 years. In the reproductive period from 15-44 years the incidence of unwanted pregnancies was 44 per 10,000 women.

Extrapolation

Table 12.3. Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic	f	f
year		
unwanted pregnancy		
2003	28	22,000
2004	22	18,000
2005	19	16,000
2006	23	19,000
2007	22	18,000
2008	15	12,000
2009	15	12,000
2010	17	14,000

* number of patients, consultations, etc. per 10,000 women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

If the incidence of 17 unwanted pregnancies per 10,000 women is adjusted for the group in which pregnancy is especially likely to occur (age group between 15 and 44 years), the number of unwanted pregnancies reported to GPs amounts to 44 per 10,000 women.
This is lower than the yearly incidence of abortions (86 per 10,000).[13] There are two possible explanations for this difference. Firstly, data from the National Abortion Registry indicate that three out of ten women, visiting an abortion clinic are not referred by a GP.[13] Secondly, a number of women decide not to have an abortion. Thirdly, some women decide to end an unwanted pregnancy when the results of prenatal tests are unfavorable. Fourthly, in the Netherlands, also women from abroad are having an abortion, especially from Germany, who are not registered with a Dutch general practitioner, however, this number has been decreasing over the past few years.

Before, the total number of unwanted pregnancies that were reported in general practice was shown to be decreasing. In 2010, however, this decrease came to a halt, but the number of teen-age pregnancies registered at general practice continued to decrease. The percentage of unwanted pregnancies is 9.2% of the total number of pregnancies for which the GP is consulted. Because these consultations are optional, the percentage of unwanted pregnancies is likely to be even smaller.

The topic is maintained in 2011.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, Goenee Maaike. *Besluiten bij ongewenste zwangerschap.* Huisarts en Wetenschap 2012;55(2):86

13 End-of–Life research

Topic owner: Prof. L. Deliens, Free University Brussels (2005-2010)

Introduction

The percentage of persons not dying acutely, and therefore needing medical treatment and care at the end of life, is increasing. Most people die at old age, and the mortality per 1000 persons is increasing because of the absolute and relative increase in the number of elderly people. Because of this demographic change it is increasingly important to offer adequate care at the end of life, aiming at the highest quality of life possible.
At population level, nationally and internationally, scientific knowledge is lacking on how patients actually die. Existing epidemiological studies have assessed how many persons die, from what disease, and whether death was preceded by an end of life decision with the intentional or accidental effect that life was shortened. However, information about care at the end of life, the place of death, the specific problems of the patients, the quality of dying and the role of the GP in providing terminal care, is limited.
Therefore, research on these topics is mandatory, to improve the care of patients in the final months before dying. GPs are highly involved with the decease of most patients. If patients die outside the practice (hospital or other institutions), they are informed about this event. Therefore they are exclusively apt to provide data about end of life decisions. With this information indicators for quality of care at the end of life are developed. In this chapter only information is provided on the number of deaths per region, address density, season and age group. Additional research with regard to care provided at the end of life will be published separately.

Methods

Sentinel physicians are asked to report the death of a patient, registered in their practice, who did not die unexpectedly or acutely. The GP is also asked

to provide additional information on the type of care the patient may have received during the last 3 months before dying and from which caregiver, which disease(s) have led to the decease of the patient, what type of care the patient preferred, the place of death, and the amount of suffering the patient has encountered shortly before dying. A similar, but more extensive research program is currently being performed in Belgium.

Results

The number of patients per 10,000 reported in 2010 for the end-of-life study is presented in table 13.1, per province group and per address density. Most reported cases came from big cities and from the western part of the country where most big cities are situated.

Table 13.1 Number of reported End-of-Live study per 10,000 inhabitants, per province group, by address density and for the Netherlands, 2005-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2005	26	50	46	62	40	49	40	48
2006	37	49	53	60	36	54	50	50
2007	43	42	66	52	40	50	83	52
2008	46	44	50	38	50	44	47	46
2009	42	48	37	29	46	34	50	40
2010	50	50	52	50	43	52	53	51

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Seasonal influences

The number of patients per 10,000, reported in the end-of-life study, grouped by quarter is presented in table 13.2.

Table 13.2 Numbers of reported End-of-Live study by quarter, per 10,000 inhabitants, 2005-2010

	weeks 1-13	weeks 14-26	weeks 27-39	weeks 40-52
2005	13	11	12	11
2006	12	12	16	11
2007	14	12	12	13
2008	12	10	13	11
2009	10	10	10	10
2010	14	12	11	13

In 2010 the reported number of end-of-life cases was the highest in the first quarter. In this quarter there was no influenza epidemic.

Age distribution

The age distribution of the patients reported for the end-of-life study in 2010 is presented in table 13.3.

Table 13.3 Numbers of reports End-of-Live-study, per 10,000 inhabitants, by age group, 2005-2010

age group	2005	2006	2007	2008	2009	2010
<1	(26)	(21)	(20)	(22)	(0)	(0)
1-4	(0)	(0)	(10)	(2)	(0)	(4)
5-9	-	(0)	(0)	0	(0)	0
10-14	(3)	(0)	(0)	0	(1)	0
15-19	(3)	0	(0)	0	(1)	(3)
20-24	0	(2)	10	(4)	(3)	(1)
25-29	(1)	(2)	(2)	0	(3)	(1)
30-34	0	(2)	(2)	(6)	0	(1)
35-39	7	(2)	(5)	(6)	(3)	(4)
40-44	10	(6)	(4)	(6)	6	8
45-49	10	13	14	11	12	9
50-54	20	19	24	32	30	27
55-59	38	21	27	40	25	40
60-64	68	87	62	62	36	56
65-69	85	80	120	64	66	87
70-74	131	173	138	137	134	143
75-79	268	282	248	201	177	227
80-84	402	426	413	308	294	358
>85	1106	915	918	761	626	808

In the first year of life babies die from, among other things, incurable congenital diseases. In 2010 and 2009, no cases of end of life in the youngest category were reported. Subsequently the mortality rates are low until the age of 50, after which they steadily increase.

Extrapolation

Table 13.4 Extrapolation of the reported deaths to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total (m+f)	m	f	total (m+f)
End-of-Live study						
2005			48			78,000
2006			50			82,000
2007			52			87,000
2008			46			75,000
2009			40			66,000
2010			51			85,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

In the Netherlands the total mortality showed a gradually decreasing trend, amounting to 136,058 in 2010. (Dutch Statistics, www.CBS.nl). This was higher than in 2009, like it was in our registration. It should be realized that not all patients who die are under the direct care of a GP, such as patients in nursing homes or hospices falling outside the practice area of a GP. Therefore, registration by GPs results in a lower incidence rate than registered by CBS, because nursing homes have a high death rate and admission to a hospice generally is meant for terminal care.

According to the second Dutch National Survey of General Practice the mortality rate reported in general practice is 41 per 10,000.[15] This lower rate may be due to underreporting. In the sentinel registration, with a rate of 51 per 10,000, underreporting seems not to occur to such an extent. Extrapolation shows that 62% of the total number of estimated diseased patients are reported in this registration. Apparently, not all deceased patients are reported by the sentinel GPs, this could be due to the care being taken over by a nursing home or a hospice and patients not being the responsibility anymore of the GP. Underreporting may also be due to the extensive questionnaire that has to be filled in for this project. Nevertheless, the study provides a wealth of information with regard to the primary care provided at the end of life in the Netherlands. It has resulted in various publications and presentations at international meetings. A comparative study with the end of life care in Belgium has been published in several scientific papers.

The topic is maintained in 2010 and some subjects in the questionnaire have been changed.

Publications based fully or partly on continuous morbidity registration data

Claessen SJJ, Echteld MA, Francke AL, Van den Block L, GA Donker, L Deliens. *Important treatment aims at the end of life: a nationwide study among GPs.* Br J Gen Pract 2012;62:86-7. DOI: 10.3399/bjgp12X625184

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Meeussen K, Van den Block L, Echteld M, Bossuyt N, Bilsen J, Van Casteren V, Abarshi E, Donker G, Onwuteaka-Philipsen B, Deliens L. *Advance Care planning in Belgium and The Netherlands: a nationwide retrospective study via sentinel networks of general practitioners.* J Pain Symptom Manage 2011 Apr 27 [Epub ahead of print]

Abarshi E, Echteld MA, Van den Block L, Donker G, Deliens L, Onwuteaka-Philipsen B. *The oldest old and GP end-of-life care in the Dutch community: a nationwide study. Age and Ageing* 2010; 39(6):716-22. Epub 2010 Sep 4. Doi: 10.1093/ageing/afq097

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Abarhi E, Echteld M, Donker GA, van den Block L, Onwuteake-Philipsen B, Deliens L. *Discussing end-of-life issues in the last months of life :a nationwide study among General Practitioners.* J Palliat Med. 2011 Jan 21. [Epub ahead of print] doi 21254811

Abarshi E, Echteld M, Block van den L, Donker G, Bossuyt N, Meeussen K, Bilsen J, Onwuteaka-Philipsen B, Deliens L. *Use of palliative care services and end-of-life GP visits in the Netherlands and Belgium.* Journal of Pain and Symptom Management 2010; accepted for publication

Donker Gé, Abarshi Ebun. *Gewenste plaats van overlijden tijdig bespreken.* Huisarts en Wetenschap:2010;53(5):247

Abarshi E, Echteld M, Van den Block L, Donker G, Deliens L, Onwuteaka-Philipsen B. Transitions between care settings at the end of life in the Netherlands: results of a nationwide study. European Journal of Public Health 2009;19(S1):55 (Oral Presentation 2nd European Public Health Conference Lodz, November 2009)

Abarshi E, Onwuteaka-Philipsen B, Donker G, Echteld M, Van den Block L, Deliens L. GP awareness of preferred place of death and correlates of dying in a preferred place: a nationwide mortality follow-back study in the Netherlands. Suiss Medical Weekly 2009;S175:43S (Oral Presentation 110 15th WONCA-conference Basel, September 2009)

Abarshi E, Onwuteaka-Philipsen B, Donker G, Echteld M, Block van den L, Deliens L. *GP awareness of preferred place of death and correlates of dying in a preferred place: a nationwide mortality follow-back study in the Netherlands.* Journal of Pain of Symptoms management 2009;38:568-77

Abarshi Ebun, Echteld Michael, Block van den Lieve, Donker Gé, Deliens Luc, Onwuteaka-Philipsen Bregje. *Transitions between care settings at the end of life in The Netherlands: results from a nationwide study.* Palliative Medicine:2009;24(2):166-74 doi:10.1177/0269216309351381

Echteld MA, Abarshi E, Block van den L, Deliens L, Donker GA, Onwuteaka-Philipsen B. *Factors associated with well-being at the end of life and good death.* Presentation at the EAPC conference in Vienna 2008

Donker GA, Abarshi E, Echteld M, Block van den L, Deliens L, Onwuteaka-Philipsen B. *GP awareness of patients' preferred place of death and predictors of dying in a preferred place: a nationwide general practice study in The Netherlands.* Presentation at the 14th WONCA Europe Conference in Istanbul, September 2008

Abarshi E, Echteld M, Block van den L, Donker G, Onwuteaka-Philipsen B. *Care setting transitions at the end of life in The Netherlands.* 9th Public Health Symposium: Public Health at the end of life, Jette, Belgium, 14 December 2007. In: Archives of Public Health 2007

Abarshi E, Echteld M, Philipsen B, Donker G, Block van den L, Deliens L. *Transities in zorgsetting aan het levenseinde in Nederland. Vijfde onderzoeksforum Nederland-Vlaanderen*, workshop 17 november 2007

Block van den L, Bossuyt N, Meeussen K, Abarshi E, Deliens L. *Monitoring end-of-life care via general practice in Europe: a study with the Sentinel Surveillance Networks of General Practitioners.* Workshop at the 13th WONCA Europe Conference in Paris, October 2007

14 (Attempted) suicide

Topic owner: Mrs. Dr. G.A. Donker (NIVEL) (1979-2010)

Introduction

In consultation with the Health Care Inspectorate, this topic is included in the sentinel surveillance since 1979.
Research on suicide is also carried out in other institutions (e.g. hospitals, prisons) in order to gain insight into the scope, trend and other aspects of suicide and attempted suicide.

Method

The name of the topic is also its definition. The primary question is not whether the patient's attempt was successful, but whether the patient intended to commit suicide.
At the same time the Health Care Inspectorate made a request for additional data to be collected about the reported cases. To this end a questionnaire was designed. The form included questions about whether the attempt had been successful and about the method employed. Other questions relate to characteristics of the patient and features of care, such as contacts with health care institutions prior to the suicide (attempted suicide).

Results

The absolute numbers of reported cases (which exceeds the number of patients as recurrence is not rare) in the years 2001-2010 were 93, 47, 43, 55, 71, 24, 49, 28, 40 and 46 respectively.

The number of attempts per province group and by address density per 10,000 inhabitants is shown in Table 14.1. Breaking down the numbers into subgroups is of limited value in view of the low frequency.
In 2006 and 2008 the lowest number of suicide (attempts) of the last 10 years is reported. When address density is taken into account the highest incidence is consistently found in the big cities, except for 2000, 2002 and 2007. This was also the case in 2010.
The distribution by province group shows a less consistent picture, possibly due to the small number of cases. In the previous 4 years the incidence in the western part of the country was the highest. In this part of the country most big cities are situated.

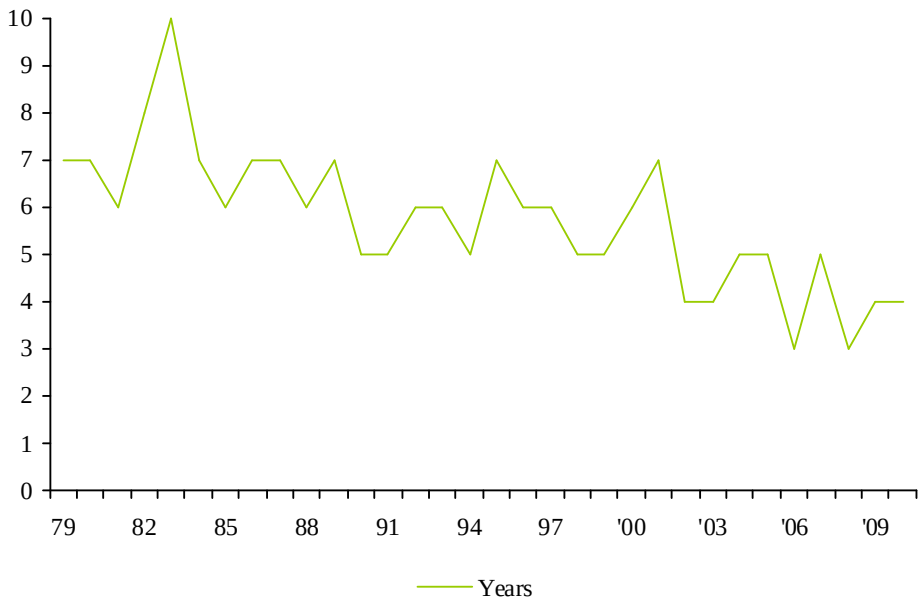
Table 14.1 Number of (attempted) suicides reported per 10,000 inhabitants, per province group, by address density and for the Netherlands as a whole, 2001-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2001	6	5	7	11	5	7	10	7
2002	3	5	4	3	5	4	4	4
2003	(1)	5	3	6	4	3	6	4
2004	2	3	6	6	3	5	9	5
2005	4	9	6	2	2	6	8	5
2006	1	4	3	1	1	3	3	3
2007	3	4	6	4	6	4	6	5
2008	1	3	4	2	1	3	4	3
2009	3	4	4	3	3	3	6	4
2010	4	2	5	3	3	3	7	4

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The figure shows the gradually decreasing trend in the number of attempted suicides registered in general practice during a period of 30 years.

Figure 14.1 Number of (attempted) suicides reported per 10,000 inhabitants for the Netherlands as a whole, 1979-2010



Age distribution

In 2004 a peak incidence was found for adolescents, however in other years and also in 2010 no specific age group was prominent. On the other hand, through the years the lowest incidences were found in the youngest age group (0-14 years) and in the age group > 65 years.

Table 14.2 shows the frequency of suicide and attempted suicide per 10,000 inhabitants, by age group in the last 10 years.

Table 14.2 Number of (attempted) suicides reported per 10,000 inhabitants, by age group, 2001-2010

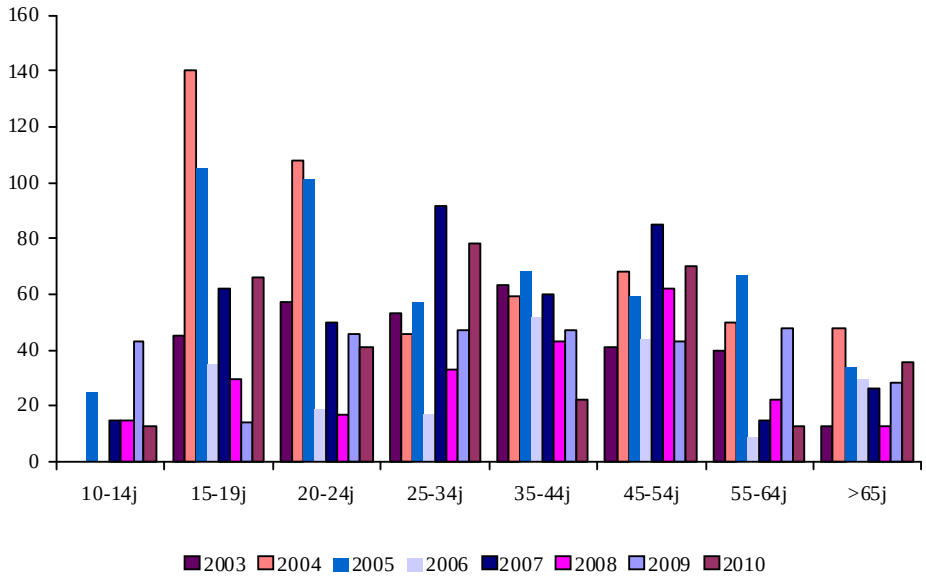
age group	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>65
2001	(3)	11	8	7	15	8	3	7
2002	-	(4)	8	3	6	5	4	(3)
2003	-	(4)	6	5	6	4	4	(1)
2004	-	14	11	5	6	7	5	5
2005	(3)	11	10	6	7	6	7	3
2006	0	(3)	(2)	2	5	4	(1)	(3)
2007	(2)	(6)	(5)	9	6	9	(2)	(3)
2008	2	(3)	(2)	(3)	4	5	(2)	(1)
2009	(4)	(1)	(5)	5	5	4	5	3
2010	(1)	7	(4)	8	(2)	7	(1)	4

Table 14.3 shows the frequency per 100,000 inhabitants by age group in the last 10 years.

Table 14.3 Number of (attempted) suicides reported per 100,000 inhabitants, by age group, 2001-2010

age group	10-14	15-19	20-24	25-34	35-44	45-54	55-64	>65
2001	(28)	(110)	76	76	151	77	39	56
2002	-	(43)	78	34	65	45	38	(25)
2003	-	(45)	57	53	63	41	40	(13)
2004	-	140	108	45	59	68	50	48
2005	(25)	105	101	57	68	59	70	34
2006	-	(35)	(19)	(17)	52	44	(9)	(30)
2007	(15)	(62)	(50)	92	60	85	(15)	(26)
2008	(15)	(30)	(17)	33	43	62	(22)	(13)
2009	(43)	(14)	(46)	47	47	43	48	28
2010	(13)	66	(41)	78	(22)	70	(13)	36

Figure 14.2 Number of (attempted) suicides reported per 100,000 inhabitants by age group, 2003-2010



Extrapolation

Table 14.4 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute number)
topic year	total (m+f)	total (m+f)
(attempted) suicide		
2001	6	10,000
2002	4	7,000
2003	4	7,000
2004	5	8,000
2005	5	8,000
2006	3	5,000
2007	5	8,000
2008	3	5,000
2009	4	7,000
2010	4	7,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

The numbers of 2010 do not support the concern expressed by others that the incidence of suicide (attempts) is increasing. In 2006 and 2008 the lowest incidence was reported since the start of the surveillance in 1979. The breakdown in age groups is of limited value due to the small absolute

numbers which may lead to large fluctuations. The registration does not show a preferential age group.

This topic is continued in 2011

Publications based fully or partly on continuous morbidity registration data

Donker GA, Wolters I, Schellevis F. *Risk factors and trends in attempting or committing suicide in Dutch general practice in 1983-2009 and tools for early recognition.* European Journal of Public Health 2010;20(S1):50 (Oral Presentation 3rd European Public Health conference Amsterdam, November 2010)

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15 Cosmetic allergy

Topic owner: Mw. Dr. Ir. J.Salverda-Nijhof (RIVM) (2009-2010)

Introduction

The interest in unwanted side effects of consumer products, including cosmetics, has increased markedly in recent years. Consumers may sometimes experience complaints after having used cosmetics, despite EU-rules and monitoring the safety of cosmetics. In literature, several different health complaints caused by the use of cosmetics have been described: hair loss due to shampoo, chemically induced burns caused by hair dye and a raised risk for cancer due to skin beaching agents (J.Salverda-Nijhoff et a. CESES-jaarrapportage 2010). However, most cosmetics complaints concern reactions of the mucosae and the skin. Irritating contact eczema and allergic contact eczema are the most important skin complaints. Irritating contact eczema occurs most frequently and this concerns an inflammation caused by damaged skin due to irritating substance.

Stimulated by a recently adopted resolution by the European Council, the Dutch Food and Wares Authority (VWA) has indicated the necessity to install a surveillance system on unwanted skin reactions provoked by specified consumer products in the Netherlands. By order of VWA the RIVM has established a registration system named: Consumer Exposure, Skin Effects Surveillance (CESES). In 1992-1993 the sentinel practices already reported about GP consultations for skin and other reactions caused by cosmetics. The current registration may be considered as its follow-up and extension.

Within the CESES project four aims can be distinguished:

1 ***Incidence/prevalence:***
More information will be obtained about incidence, prevalence and severity of skin symptoms by consumers and patients after the use of cosmetics.

2 ***Identification:***
Based on the reports and the ensuing dermatological investigations cosmetic products and/or ingredients can be identified which evoke unwanted side effects and therefore pose a risk for public health.

3 ***Intervention:***
The project will enable VWA to intervene better and more rapidly if complaints about cosmetic products involve a risk for the safety of the consumer, so that escalation of the problem can be prevented or limited.

4 ***Data-sharing:***
Through the project participating physicians will receive description of complaints evoked by specific cosmetic products, which enables a rapid diagnosis if similar complaints do occur in their practice.

The ultimate aim of the project is to test, based on the reported cases, whether the current European safety net for unwanted side effects of cosmetics suffices. This is relevant for policy advice and policy making regarding cosmetic products.

Since July 2009 registration of symptoms in the clinical setting is performed by dermatological clinics spread over the country, and since January 2009 by the GPs of the sentinel practices, who register unwanted skin reactions after the use of cosmetics. In 2010, a questionnaire has been added to this registration, to obtain more specific information about the complaints and possible causes.

Method

In connection with the CESES project GPs report skin complaints after the use of cosmetics. In 2010, additional data were collected via questionnaires, enabling reporting identifying by age, gender, geographic area, address density, type of complaints and the products causing the complaints.

Results

The number of reported patients with complaints about cosmetics per 10,000 persons, per province group, address density and for the Netherlands in 2010 is presented in table 15.1. Most reports about cosmetics complaints are coming from the big cities, as was the case in previous years. The incidence of complaints is especially in the big cities lower than in 2009.

Table 15.1 Number of patients with cosmetics complaints reported per 10,000 inhabitants, per province group, by address density and for the Netherlands as a whole, 2009-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2009	17	14	23	25	8	15	43	20
2010	7	9	14	21	8	12	24	13

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The age distribution of reported patients with a cosmetic complaint in 2010 is presented in table 15.2. It is noteworthy that cosmetic allergy may occur already at an early age, albeit with a low incidence. The incidence in women is more than four times higher than in men.

Table 15.2 Number of patients with cosmetics complaints per age group, per 10,000 inhabitants in 2009-2010

	2009			2010		
age group	m	f	t	m	f	t
< 1	0	0	0	0	(15)	(7)
1-4	19	(12)	16	(4)	(8)	(6)
5-9	(5)	15	10	(3)	20	11
10-14	(8)	15	11	(3)	14	8
15-19	(6)	39	22	0	27	13
20-24	25	45	35	(11)	27	19
25-29	(10)	34	22	(6)	17	11
30-34	(6)	30	19	(6)	37	22
35-39	(8)	24	16	0	24	12
40-44	(7)	20	14	0	23	11
45-49	(7)	33	20	(4)	12	8
50-54	13	28	20	(7)	33	20
55-59	(1)1	24	18	(8)	33	20
60-64	16	33	25	(5)	23	14
65-69	23	29	26	(3)	16	10
70-74	(10)	40	26	(13)	20	17
75-79	(20)	(10)	14	(18)	19	18
80-84	(43)	(21)	29	(10)	(6)	(7)
> 85	(51)	61	58	0	(12)	(9)
total	12	28	20	5	22	13

Extrapolation

Table 15.3 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
cosmetic allergy						
2009	12	28	20	10,000	23,000	33,000
2010	5	22	13	4,000	18,000	22,000

* number of patients, consultations, etc. per 10,000 men and/or women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

Cosmetics complaints may already occur at an early age, albeit at a low incidence. The incidence in women is more than four times higher than in men and the highest incidence is in big cities. The reason for this is obvious: women use more cosmetic products than men. Literature shows, however, that women also develop complaints caused by cosmetic products relatively more often than men. In 2010 the incidence is lower than in 2009, especially in the big cities. The introduction of the questionnaire in 2010 might have prevented positive reports or one might have forgotten to fill in the questionnaire which resulted in a slight under-registration. It is possible that the fact that no questionnaire existed in 2009 caused over-registration, because the questionnaire is also a kind of control system on the registration.

The topic will be continued in 2011, with questionnaire.

Publications based fully or partly on continuous morbidity registration data

Salverda-Nijhof JGW, Kooi MW, De Wit-Bos L, Bourgeois FC, Van Gorcum TF, Colijn JJ, Van Engelen JGM, Donker GA. *Huidklachten door cosmetische producten.* Eindrapportage CESES. RIVM Rapport 320113004/2011

16 Gut feeling related to cancer diagnosis

Topic owner: Dr. G.A. Donker, NIVEL (2010)

Introduction

During their training, GPs learn systematically and by asking questions and by examination, to make a diagnosis. In practice, GPs not apply a only structured approach, but also use their intuition and experience. The difference between “feeling right versus not-right” plays a role in this. Stolper et al (1009) in Maastricht studied the concept “gut feelings”. They discussed with focus groups of GPs about the “gut feelings”. They described the different aspects of “gut feelings”. The GPs participating in the study indicated that the “gut feeling” is sometimes almost a physical sensation. Often there is a “gut feeling” without any objective arguments, distrust in the situation because of insecurity about the prognosis of complaints and the need to intervene. It can be a sudden feeling, but also a slowly arising feeling. Knowledge of the history of a patient and the context of a patient play a role. But that may go in two directions. Knowing the patient may facilitate the “gut feeling”, but it may also interfere by way of sympathy or reluctance, feeling guilty. Training and experience also play a role. Often experienced GPs report this feeling. It is part of a rather automatic process. GP trainers say it can be learned: reflection on one’s own acting is a way to use one’s feelings as part of the process of making a diagnosis. GPs differ in the extend of experience and/or use of “gut feelings”. Men, as well as women, indicate to know this feeling. Rational GPs don’t like the “gut feelings”. They consider it to be a trap not to be lured into.
Stolper [16,17] et al. conclude that the “gut feeling” often acts as a diagnostic instrument. The “gut feeling” mainly works as an alarm bell or a compass. It stimulates to find objective reasons for this feeling, and stimulates, as such, the diagnostic process.

The existence of a “gut feeling” is broadly considered as shown in the assertion of the “Centraal Tuchtcollege voor de Gezondheidszorg” (Central Disciplinary Committee for Health Care) at 11 December 2008, as published

in “Medisch Contact”. The Disciplinary Committee judged that “the internist wrongly ignored his ‘gut feeling’.
Stolper et al. (2010) [16-18] studied the conceptual backgrounds of the concept “gut feeling”. They clarified the diagnostic meaning of the “gut feeling” in GP practice with literature search, focus groups of GPs and by consulting experts in a Delphi consensus procedure.
In addition to Stolper’s study we have conducted quantitative research from the beginning of 2010 and we have monitored in daily GP practice to what extent GPs intuition (“gut feeling”) may contribute to an early diagnosis of cancer. This pilot project may serve as a preparation of an international research project.
Objective of this study is to highlight the following aspects:

- Characterise patients that arouse GPs feeling (intuition, gut feeling) that cancer may exist in this case
- Make explicit the factors that cause this gut feeling/intuition in GPs
- Make explicit the characteristics of GPs as well as patients that could possibly partly influence the “gut feeling” , such as gender, age, number of years of experience as a GP and study the other factors of the meaning of this clinical intuition for forecasting the diagnosis cancer.

Method

1 GPs fill in a questionnaire for this study, for every patient that gives them a feeling that something is not right and that cancer might be diagnosed.
2 GPs registrate the diagnostic ICPC code “A29” for every patient that gives them a feeling that something is not right and that cancer is possible, in the patient’s electronic file. It concerns all patients where the GP suspects cancer: from those patients that give the GP only a vague gut feeling, to those patients whose diagnosis is 100% sure at the first examination. After registration of this diagnostic code the GP is automatically asked to fill in a questionnaire and to send this to NIVEL.
3 The same diagnose code “A29”is used to (anonymously) extract patient data from the electronic file. The GP receives a reminder if he does not fill in the questionnaire.

4 Patient and care data are extracted from the electronic medical files every week.
5 Three months after the consultation, the GP receives a second questionnaire to evaluate the result of the gut feeling case.
6 The results of the questionnaire are reported separately.

Results

Table 16.1 Number of patients per 10,000 inhabitants who gave the GP a gut feeling of possible cancer, per province group, by address density and for the Netherlands as a whole in 2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2010	6	13	15	7	13	9	14	11

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

At this stage of the study, regional differences in the frequency of occurring gut feelings cannot be considered yet as very meaningful. A first analysis of the first year of the data collection via questionnaires is done in 2011 and will be reported elsewhere.

Age distribution

Table 16.2 Number of patients per 10,000 inhabitants according to age group, who gave the GP a gut feeling of possible cancer in 2010

	2010		
age group	m	f	t
< 1	0	0	0
1-4	0	0	0
5-9	0	(3)	(1)
10-14	(3)	(3)	(3)
15-19	(3)	0	(1)
20-24	(6)	0	(3)
25-29	0	(8)	(4)
30-34	(6)	0	(3)
35-39	0	(2)	(1)
40-44	(2)	21	11
45-49	(6)	(4)	5
50-54	16	12	14
55-59	23	20	21
60-64	37	15	26
65-69	30	(13)	21
70-74	39	(12)	25
75-79	36	(9)	21
80-84	37	30	41
> 85	(29)	49	43
total	12	10	11

In general, the frequency of gut feelings increases as the patients are older, in line with the increasing incidence of cancer at that age. It is more frequent for men and here the peak is at a slightly younger ager than for women, in line with the shorter life expectancy for men.

Extrapolation

Table 16.3 Extrapolation of the incidence rate to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute number)		
topic year	m	f	total (m+f)	m	f	total (m+f)
gut feeling						
2010	12	10	11	9,000	8,000	17,000

* number of patients, consultations, etc. per 10,000 men and women (data from sentinel practices)

** extrapolation of the incidence rates to the Dutch population as a whole (for the year in question), rounded off to the nearest thousand

Discussion

Gut feelings in GPs about possible cancer occur more often as patients are older and slightly more with men than with women. This is consistent with the increasing incidence at higher age and the slightly lower life expectancy for men than for women. The incidence of 11 gut feelings per 10,000 registered patients, that we found in 2010, seems low compared to the reported incidence at the web site of the union of integrated cancer centers of 54 new invasive and 6 in situ tumors per 10,000 inhabitants in 2008.[19] Analysis of questionnaires will have to show more characteristics of the gut feeling of symptoms, patients and GPs. The analyses of the questionnaires are reported separately.

The topic is continued in 2011. The foundation Stoffels-Hornstra has awarded a subsidy for the analyses of the questionnaires in 2012.

Publications based fully or partly on continuous morbidity registration data

Donker G en Dorsman S. *Niet-pluisgevoel: een diagnostisch instrument*. Huisarts & Wetenschap 2011;54(8): 449.

17 Diabetes mellitus

Topic owner: Prof. Dr. G. Nijpels, Free Medical Center, Amsterdam (2007-2010)

Introduction

The number of patients with diabetes type 2 will increase in the coming years, especially due to increasing population ageing. It is known that diabetes is associated with an increased mortality risk, predominantly due to cardiovascular complications. Structured diabetes care may lead to a better regulation of therapy and may have a favorable effect on complications compared to standard care. The aim of the present study is to compare the efficacy and costs of different types of primary diabetes care in the Netherlands. This chapter describes the concept of the study and its participants. The results will be described in the coming years.

Method

Study design

Three types of diabetes care will be compared. The first group consists of GPs belonging to the CMR sentinel practices. This group is considered to provide standard diabetes care according to the guidelines prepared by the National Association of General Practitioners (NHG). The second group consists of GPs from the Amstelland region. A structured program of diabetes care has been implemented by this group. Important characteristics of this program include a centralized registration system which is accessible for different disciplines involved in diabetes care, and the supervision by a diabetes nurse practitioner who takes care of quality control. The third study group concerns diabetes care as is provided by the diabetes care system (DZS) in the West Friesland region. For their annual check-up the patients in this group are not consulting a GP but a specialized diabetes center. Apart from the annual check-up education is provided and self management is stimulated. The diabetes care is coordinated by this centre and a centralized

registration system provides insight into patient data for involved care givers. Twice a year a diabetes nurse visits the GP to discuss individual patients. The GP also receives information about the mean values of risk factors of the patients in his practice, compared with values from other practices.

Patients

Patients suffering from diabetes type 2 for at least 2 years in the age group 40-75 years are eligible to be included in the study. Mastering of the Dutch language is mandatory in order to allow independent completion of questionnaires. Patients are excluded from participation when, according to the GP, participation is too much of a burden for the patient personally. This is only the case for a very few patients. A drop-out of 25% after one year is anticipated.

Evaluation

The study will last for 2 years during which evaluations will take place at 3 time points: at baseline and after 1 and 2 years. At each evaluation the patient completes a questionnaire and a diary about costs. The questionnaire includes questions concerning satisfaction about the received diabetes care and the (perceived) health status of the patient. The diary contains questions about the care the patient has used and about possible absence from work as a consequence of the disease. This diary will be kept for 3 months.
The first evaluation was done in the summer of 2007 and was completed in 2008. The second evaluation started in 2008 and was completed in 2009. In the summer of 2009 the third evaluation was started. The study was approved by the medical ethical committee of the Free University; all patients have given their informed consent.

Primary end results

1 (Changes in) the risk to develop coronary heart disease, measured by the UKPDS (United Kingdom Prospective Diabetes Study)-risk score.
2 All direct and indirect costs related to diabetes care that was provided and the effects of this care, absence from work included.

Results

1 Seventeen CMR sentinel practices participated in the study. In these practices a total of 1098 patients were invited to join the study; 482 (44%) agreed to participate.
2 The group in Amstelland consists of 12 GPs. They invited 802 patients with diabetes, 293 (37%) were included in the study.
3 From the database in West Friesland 450 patients with diabetes were randomly selected to participate in the study, 164 (36%) agreed to be included. They are patients of 84 GPs.

In the table the response rates to the questionnaires and cost diaries are presented, by the three study groups. The two groups belonging to the CMR sentinel practices and Amstelland are more or less comparable. The percentage of patients that completed and returned the questionnaires is 90% for the CMR sentinel practices and 89% for the Amstelland group. The provisional response rates show that the average percentage of patients that completed and returned their cost diaries amounts to about 80%. The collection of data in West Friesland started later.

Table 17.1 Summary of response rates per questionnaire and cost diary by diabetes patients from three groups of GPs

GP group	CMR-sentinel practices	Amstelland	DZS West-Friesland
Questionnaire 1	482	293	286
Cost diary 1	435 (90%)	260 (89%)	242 (85%)
Questionnaire 2	370 (77%)	223 (76%)	216 (76%) ongoing
Cost diary 2	347 (72%)	201 (69%)	152 (53%) ongoing
Questionnaire 3	318 (66%) ongoing	168 (57%) ongoing	
Cost diary 3	217 (45%) ongoing	106 (36%) ongoing	

Patient satisfaction

Using the QUOTE questionnaire the patients were asked to value the different aspects of care provided by the different care systems and to share their experience with these aspects. Their satisfaction with the GP, diabetes nurse and dietician were judged separately.

Aspects that were considered important were: information about diabetes and good guidance when therapy was changed and laboratory results are discussed. Aspects of care that were rated high by patients, considering all care givers in all groups, were:

1 information about diabetes,
2 discussion of laboratory results,
3 discussion about aims and course of therapy,
4 discussion of current therapy.

Information about new developments and proper guidance when therapy had to be changed were points of improvement for all care givers in all groups. Patients belonging to the DZS group were more satisfied about the dietician and the continuity of care (at least 1 annual control of feet and eyes, and measurement of weight, blood pressure and kidney function), than patients in the other groups. It may be concluded that there is room for improvement of diabetes care. Patients are clear about this. There are some indications that patients participating in a structured care system are satisfied about more aspects than when standard care is given.

Diabetes care and costs

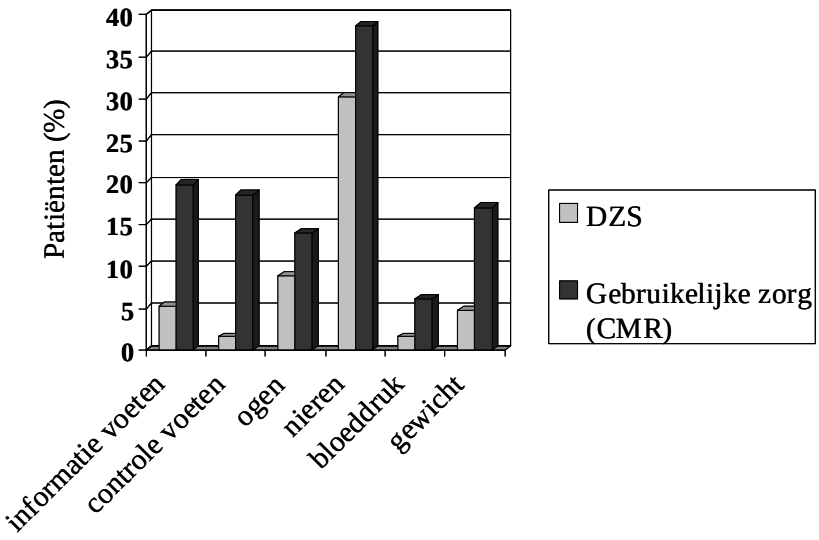
Care and the costs of care for patients with diabetes treated by DZS were compared with care and costs for patients receiving the current standard diabetes care. Using QUOTE questionnaires it was asked which measurements were done in the past year, such as control of complications in feet, eyes and kidney and measurement of blood pressure and weight. Via the cost diaries that were completed at regular intervals by the patient, the average use of care and absence of work were estimated, and the corresponding costs were calculated.

The percentage of patient indicating that the regular controls mentioned above were not performed was significantly higher when patients were

treated with regular care than when patients were treated by DZS. (see figure 17.1). The latter patients were referred less frequently to an internal or eye specialist, but consulted a dietician more often.

The costs made by diabetes patients was generally lower in the DZS group than in the group receiving standard care. However, this difference was only statistically significant for patients who were diabetic for at least 6 years.

Figure 17.1: Percentage of self reported missed controls in the previous year



Conclusion

The participation of patients in this study is good. At the start of the study the total study population consisted of 939 patients. We anticipated a drop-out of about 25% after 1 year, in 2008 the drop-out was about 20%. The currently available data have been used for analysis of patient satisfaction, process of care and costs. The data that have been collected at the end of

2010 are used for long term cost efficiency analysis. The study shows that structured diabetes care delivers higher client satisfaction, more check-ups of feet, eyes, kidneys, blood pressure and weight and cut in cost with more than six years existing diabetes mellitus.

Publications based fully or partly on continuous morbidity registration data

Amber AWA van der Heijden AWA, De Bruijne MC, Dekker JM, Baan CA, Bot SDM, Feenstra TL en Nijpels G. *Cost-effectiveness of integrated care for patients with type 2 diabetes. Design of a pragmatic controlled clinical trial.* Aangeboden voor publicatie

Van der Heijden AWA, De Bruijne MC, Feenstra TL, Dekker JM, Baan CA, Bot SM, Donker GA, Rootjes IG, Kaiser P en Nijpels G. *Integrated care for type 2 diabetes patients. An analysis of resource use and costs.* Aangeboden voor publicatie

Van der Heijden AWA, Rene L, De Bruijne MC, Dekker JM, Baan CA, Bot SDM, Feenstra TL, Donker GA, Nijpels G. *Quality of care from the perspective of patients with type 2 diabetes. A comparison between integrated and usual diabetes care*. Aangeboden voor publicatie

18 Requests for Euthanasia

Topic owner: Dr. G.A. Donker, (NIVEL) (1976-2010)

Introduction

Since 1976 consultations about the end of life, during which the GP is requested to apply euthanasia, are reported. It is not registered whether the GP has granted the request or not. Only patients with an incurable disease are included in the study.

Methods

At the start of the year, the sentinel doctors are informed that a study is going to be conducted. At the end of the year, all sentinel doctors receive a form on which they are asked to state whether patients with incurable disease have requested euthanasia or assistance in suicide in the past year and, if so, the reason for the requests. The doctors are also asked to state the age, gender, disease and nursing location and whether or not a ‘euthanasia declaration' was signed.[20] The data per patient can be found at the end of this section.

Results

In 2010 the number of requests is 55 (28 men and 27 women) from 41 reporting practices. This amounts to 4.2 per 10,000, more than in 2009 (3.2 per 10,000) and 2008 (3.5 per 10,000). Of the patients who requested euthanasia in 2010 73% had a malignancy, which is comparable to previous years (76% in the period 1976-2010). Most patients were tended at home. In 78% of the cases (43) the request is supported by a living will. Fifty three patients asked for euthanasia. Two patients asked for or assisted euthanasia or assisted suicide. Two patients asked for assisted suicide alone. In 51% of the cases the GP consulted a colleague. If no other GP was consulted, this

was mostly due to the fact that the eventual application of euthanasia or assisted suicide was not yet relevant, or the patient died without intervention.

Requests for euthanasia 2000-2010

Table 18.1 shows the distribution of the number of requests by province group by address density and by gender.

Table 18.1 Absolute numbers of patients who asked GPs to participate actively in euthanasia, by gender, province group, address density and for the Netherlands as a whole, 2001-2010

			province group				address density			Netherlands
absolute	m	f	N	E	W	S	1*	2*	3*	
2001	19	18	4	8	16	9	5	21	11	37
2002	19	11	4	7	17	4	4	19	9	32
2003	16	21	4	8	21	4	3	25	9	37
2004	15	13	3	3	16	6	2	19	7	28
2005	13	22	2	7	23	3	5	24	6	35
2006	11	18	2	4	21	5	4	18	10	32
2007	16	16	9	7	14	2	9	18	5	32
2008	17	20	7	5	19	6	8	20	9	37
2009	20	18	5	5	22	6	3	21	14	38
2010	28	27	8	12	23	12	12	37	6	55

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The data per 10,000 inhabitants (not shown because of small numbers) indicate that in 2010 relatively few patients in big cities asked for euthanasia.

Age distribution

The age distribution of patients who requested euthanasia is shown in table 18.2

Table 18.2 Absolute numbers of patients asking their GP for euthanasia or assisted suicide per age group, 2001-2010

	<54	55-64	65-74	75-84	>85	total
2001	8	3	9	12	5	37
2002	6	5	6	9	6	32
2003	5	6	12	6	8	37
2004	3	6	13	5	1	28
2005	4	8	13	8	2	35
2006	3	5	10	7	7	32
2007	3	5	12	7	5	32
2008	5	8	8	12	4	37
2009	8	5	14	6	5	38
2010	10	8	11	12	14	55

Overview of reported requests

Since 1976 the sentinel general practice network has collected data on 1241 requests for euthanasia or physician assisted suicide, 628 (51%) by men. The International Classification of Diseases (1975, 9th version) was used to obtain insight into the illnesses that gave rise to requests for euthanasia or assisted suicide. One of the problems in classification is the co-morbidity, which is inherent to old age. Another problem is that sometimes no disease is reported at all: in the ICD-9-group of symptoms and not fully described diseases the request of a 93 year old and a 84 year old lady are included with motivation “completed life”, a 91 year old lady who was “tired of life” and a

99 year old bedridden patient without described disease.

Five categories of illnesses are used:
- malignant neoplasms;
- cardiovascular diseases;
- chronic obstructive pulmonary diseases;
- symptoms and insufficiently defined illnesses;
- other diseases, including neurological and endocrine illnesses and AIDS.

Table 18.3 indicates the diseases that led to request for euthanasia or assisted suicide. In 2010 the distribution is comparable to previous years.

Table 18.3 Diseases leading to euthanasia requests, 1976-2010

	N	%
malignant neoplasms	939	76
cardiovascular diseases	71	6
chronic obstructive pulmonary diseases	51	4
symptoms and insufficiently defined diseases	60	5
other diseases	120	10
total	1241	100

Over the years, the reported percentage of living wills has increased from 15% in 1984 to 78% in 2010. This percentage was the highest in 2009 with 92% living wills in the reported requests.

Discussion

The registration of the requests for euthanasia or assisted suicide by the Dutch CMR Sentinel General Practices Network shows consistently a slightly higher percentage in men, around 51% versus 49% in women over the period 1976-2010. In the mentioned studies so far one other result is consistently present: mainly patients with a malignant disease ask for euthanasia and in this group euthanasia is practised relatively more frequently. Also, it is concluded that the percentage of patients with a malignant disease at higher age is decreasing. The data of the Dutch CMR Sentinel General Practice Network show this too: over the period 1976-2010 76% of the patients who asked for euthanasia or assisted suicide had cancer. In the age group 75-84 this percentage decreases to 63%, from 85 years it is only 32%.

Data that have been collected over a longer period of time, on requests for euthanasia and assisted suicide, show a gradual change in reasons to ask the GP for euthanasia. Unbearable pain and physical suffering are becoming less important motives: hopelessness and loss of dignity due to the disease are now more important reasons to request euthanasia.[21] Loss of dignity turns out to be more often the motive for men than for women to ask for euthanasia.[21]
Alzheimer's disease is apparently no longer an absolute contra-indication for euthanasia, unless the request was done when the patient was coherent.

Until the early 1990s, hardly any possibilities existed to compare data collected in the Dutch CMR Sentinel General Practice Network on requests for euthanasia and physician assisted suicide with the findings of other data registration projects and research.[22] Since then, major studies have been carried out to determine the action taken by GPs and other doctors in the Netherlands with regard to euthanasia, assisted suicide and decisions concerning the end of life of patients.[23-26]In 2001 and 2005, another large-scale study was conducted into euthanasia and other end-of-life medical practices.[27, 28]

Substantial methodological differences exist between the above-mentioned studies and the registration of data by GPs participating in the CMR Sentinel General Practice Network. An extensive discussion of these differences is

beyond the scope of this report. However, there is one difference that bears mentioning: unlike the recent studies mentioned above, the data of the CMR Sentinel General Practice network are derived exclusively from GPs, and not only deal with applied cases of euthanasia, but also with discussions and deliberations about requests for euthanasia which in due course may be granted.

Also the annual reports of the Regional Assessment Committee Euthanasia provide useful information. From the 2008 annual report we know that 2331 cases of executed euthanasia or assisted suicide are reported to the Committee.[29] In 2008 the number was about higher than in previous years, most likely because the percentage of cases actually reported to the Assessment Committees has increased.[29, 30]In most reported cases the physicians had strictly followed the rules required by law. Only in 10 instances this was not the case at a national level. The increase noted by the Regional Assessment Committee is consistent with the slightly higher number of reports by the CMR sentinel practices in 2010, although differences in study design should be taken into consideration. The percentage of living wills has increased during the past years; from 15% in 1984 to 78% in 2010. However, in 2009 it was 92%. Although a higher percentage can be considered as an indicator for the quality of care between patient and GP, when discussing decisions at the end of life, the percentage could also decrease if these discussions took place at an earlier stage in the illness, long before euthanasia is a topical issue. This appears to be a plausible reason for the higher number of reported requests in 2010, because relatively often no living will existed and no second GP had been consulted. Many of these requests were not yet topical issues, apparently.

The study will be continued in 2011.

Publications based fully or partly on continuous morbidity registration data

Donker GA and Alphen van JE (2011). *The Impact of the Dutch Euthanasia Act on the Number of Requests for Euthanasia and Physician Assisted Suicide* - A Cohort Study in General Practice between 1977 and 2007
In: Euthanasia - The "Good Death" Controversy in Humans and Animals, Josef Kuře (Ed.), ISBN: 978-953-307-260-9, InTech, Available from: http://www.intechopen.com/articles/show/title/the-impact-of-the-dutch-euthanasia-act-on-the-number-of-requests-for-euthanasia-and-physician-assist

Alphen van JE, Donker GA, Marquet RL. *Euthanasieverzoeken voor en na de euthanasiewet.* Huisarts en Wetenschap 2011;54(1):18-22

Alphen van Jojanneke E, Donker Gé A, Marquet Richard L. *Request for euthanasia in general practice before and after implementation of the Dutch Euthanasia Act.* British Journal of General Practice: 2010;60:263-267

Abstract:

Alphen van Jojanneke E, Donker Gé A, Marquet Richard L. *Request for euthanasia in general practice before and after implementation of the Dutch Euthanasia Act.* British Journal of General Practice 2010;60:263-267

Background: The Netherlands was the first country in the world to implement a Euthanasia Act in 2002. It is unknown whether legalising euthanasia under strict conditions influences the number and nature of euthanasia requests.

Aim: To investigate changes in the number of, and reasons for, requests for euthanasia in Dutch general practice after implementation of the Dutch Euthanasia Act.

Design of study: Retrospective dynamic cohort study comparing five years before (1998-2002) and five years after (2003-2007) implementation.

Method: Standardized registration forms were used to collect data on requests for euthanasia via the Dutch Sentinel Practice Network. This network of 45 general practices is nationally representative by age, gender, geographic distribution and population density.

Results: The mean annual incidence before implementation amounted to 3.1/10,000, thereafter to 2.8/10,000. However, trends differed by gender. The number of requests by men decreased significantly from 3.7/10,000 to 2.6/10,000 (($p< 0.008$); the requests by women increased from 2.6/10,000 to 3.1/10,000. Before and after implementation, cancer remained the major underlying disease for requesting euthanasia: 82% vs. 77% for men;

73% vs. 75% for females. Pain was a major reason for a request, increasing in the period before implementation (mean 27%), but declining in the period thereafter (mean 22%). Loss of dignity became a less important reason after implementation (from18% to 10% , p=0.04), predominantly due to a marked decrease in women (from17% to 6%, p< 0.02). Trends in unbearable suffering and hopelessness as reasons remained unchanged after implementation of the Act.

Conclusions: There was no increase in demand for euthanasia after implementation of the Euthanasia Act. Pain as a reason for requesting euthanasia showed an increasing trend before implementation, but declined thereafter. Loss of dignity as a reason declined, especially in females.

Donker GA, Van Alphen JE, Marquet RL. The impact of the Euthanasia Act on the number of requests for Euthanasia and Physician assisted suicide. European Journal of Public Health 2009;19(S1):110 (Oral Presentation 2nd European Public Health Conference Lodz, November 2009)

Marquet RL, Bartelds A, Visser GJ, Spreeuwenberg P, Peters L. *Twenty five years of requests for euthanasia and physician assisted suicide in Dutch general practice: trend analysis.* BMJ 2003;327:201-2

Appendix 1

Table 18.4 Requests made by patients for active euthanasia in 2010

age	gender	disease reported	reason for request
99	f	old age	bed-ridden
97	f	chronic heart failure	dyspnoea, exhaustion
91	f	old age, renal failure	fast deterioration
90	f	metastatic breast cancer	cerebral metastases with increasing paralysis limbs, helplessness
89	m	malignancy with unknown primary cancer	extremely tired and impaired
89	m	lung fibrosis, heart failure	deterioration, dyspnoea, tiredness
89	m	metastatic lung cancer	dyspnoea
88	m	tumor, obstruction due to abscess	extremely impaired
87	m	prostate cancer, recurrent lumbal hernia, diabetes mellitus, arteriosclerosis, rheumatic polymyalgia	pain, helplessness
87	f	deterioration, dysfunction	poor wellbeing
87	f	cancer	deterioration
86	f	diabetes mellitus	threatening lower limb amputation
86	f	lung cancer	pain, dependancy
85	f	renal failure	tired of life
84	f	atrium fibrillation, depression, dementia	wish for prevention of senseless suffering
84	f	no disease, old age	completed life
83	m	myelodysplastic syndrome	pain, tiredness
83	m	liver carcinoma	pain, ascites
82	m	heart failure	recent myocardial infarction, bed-ridden

Table 18.4 Requests made by patients for active euthanasia, 2010 (cont.)

age	gender	disease reported	reason for request
82	m	metastatic gastric carcinoma	unbearable pain, extremely tired
82	f	renal carcinoma	terminal phase
81	m	cardial arytmia, pacemaker	unknown
81	f	pancreas carcinoma, metastases lung and bone	dyspnoea
80	f	colorectal carcinoma	refractive dyspnoea, pleuritis, metastases
80	f	coecum carcinoma	pain, loss of prospect
77	f	depression post CVA, personality problem	pain, tired of life
73	m	prostate carcinoma	loss of prospect
72	m	prostate carcinoma	bipyramidal syndrome
72	f	early Alzheimer disease	recently diagnosed, prefers timely arrangements
72	f	metastatic endometrium carcinoma	loss of prospect
72	f	terminal COPD	loss of prospect, impairment daily life activities
71	m	duodenal carcinoma with peritonitis carcinomatosis	progressive pain
71	m	metastatic melanoma	tiredness, senseless suffering, itching, icterus, dullness
70	m	bladder carcinoma	aphasia due to CVA
70	f	ovary and uterus carcinoma	loss of prospect, refractive pain and nausea
69	f	metastatic ovary carcinoma	deterioration
65	f	lung cancer	exhaustion
63	m	metastatic colon carcinoma	loss of prospect
62	m	metastatic tumor, unknown origin	refractive pain, loss of prospect
61	m	esophagus carcinoma	infaust prognosis
61	m	metastatic lung cancer	senseless suffering, dyspnoea, refractive pain

Table 18.4 Requests made by patients for active euthanasia, 2010 (cont.)

age	gender	disease reported	reason for request
59	m	cholangiocarcinoma	pain, itching, loss of prospect, nausea
58	m	metastatic nasopharynx and esophagus carcinoma	pain, dyspnoea, exhaustion
57	m	nasopharynx carcinoma	recent recurrency with loss of prospect
57	m	metastatic melanoma	senseless suffering, itching, icterus, tiredness, dullness
54	m	lung carcinoma with vertebral metastases	infaust prognosis
54	m	gallbladder carcinoma	deterioration
53	f	bacterial meningitis, arteriosclerosis	refractive pain
52	f	metastatic lung cancer	dyspnoea
49	m	brain cancer	wish for early arrangements in case of loss of future communication abilities
47	f	metastatic lung cancer	infaust prognosis
45	m	metastatic rectal carcinoma	infaust prognosis, wish for self-efficacy
44	m	lung cancer and vertebral metastases	hemiplegia
40	f	brain cancer	anxiety, helplessness
31	f	astrocytoma gr. IV, multiform glioblastoma	deterioration

19 Palliative Sedation

Topic owner: Mrs. Dr. G.A. Donker, NIVEL (2005-2010)

Introduction

Even when palliative care is optimal at the terminal phase of a disease process, situations may arise in which treatment no longer provides sufficient alleviation of symptoms. Predominant features are severe agitation, dyspnoea, pain, nausea, vomiting and fear. They leave a dreadful impression on all persons concerned in palliative care. The patient is suffering severely and may become desperate, family and friends are hardly able to stand the situation, and doctors and caregivers feel they have failed.

In the past years severe suffering at the end of life is increasingly considered as unacceptable. Caregivers are requested to alleviate this suffering, which is felt as meaningless. Doctors may then decide, on certain conditions, to apply deep sedation: decrease consciousness to a moderate or severe degree, short term or intermittent, using sedative drugs (sleeping agents). The objective is to alleviate suffering, not to end life.

In 2002 terminal sedation was applied by Dutch GPs in 2.5% of all deaths and has found to be increasingly applied.[26,27] The end of life study reports in its fourth national survey that continuous deep sedation is applied in 12.8% of all deaths occurring at home, hospital or nursing home.[29]

The question has been raised whether the strict criteria formulated for a request for euthanasia, should also be followed for palliative sedation. When discussing this issue, fear has been expressed that in doing so terminal sedation will become an alternative for euthanasia, which is scrutinized by an external evaluation committee. It remains to be seen to what extent euthanasia and palliative sedation are complimentary in alleviating suffering at the end-of-life. Investigations into the practice of palliative sedation by GPs may provide some answers to these questions.

Method

Sentinel GPs were requested to register each case of palliative sedation in their practice. At the end of each year they provide additional information by completing a questionnaire in which questions are being asked about the reason why palliative sedation was applied, the nature of the underlying disease, whether the patient also requested for euthanasia, and who was involved in the decision-making for palliative sedation. In 2007 it was asked for the first time which circumstance had been the predominant factor to decide for palliative sedation when a request for euthanasia has been posed as well.

Results

In 2010 41 sentinel GPs reported 31 patients (15 men, 16 women) who were treated with palliative sedation, which is 5.2% of all reported deaths in 2010. This is absolute and relatively comparable with 2009. In 2010 the decision for sedation was taken in 17 men and 14 women. Of the patients 31 had cancer, i.e. 71%.
GPs reported that for 23 patients (74%) the presence of 2 or more refractory symptoms had prompted the decision to decrease the consciousness of the patient. In 8 patients only 1 refractory symptom was indicated (six with dyspnoea, one with fear and one white untreatable pain (see also appendix).

Untreatable pain (23 patients, 74%) was the most prominent reason to decide for palliative sedation in 2010, whereas in previous years, also untreatable dyspnoea (17 patients, 55%), nausea (9 patients, 29%) vomiting (6 patients, 19%) and fear (6 patients, 26%).

From the 31 reported patients 6 (19%) also requested for euthanasia. The reasons to apply palliative sedation and not euthanasia in these 6 patients were: not meeting the criteria for euthanasia, the request for euthanasia not confirmed in writing, the family's preference, hospitalization, increase dyspnoea and short life expectancy.

Table 19.1 Absolute number of patients treated by their GP with palliative sedation, per province group, address density and for the Netherlands in 2005-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2005	4	4	15	3	7	17	2	26
2006	5	4	18	4	4	23	4	31
2007	4	2	18	6	5	24	1	30
2008	3	2	10	3	4	9	5	18
2009	7	10	9	5	7	21	3	31
2010	5	10	8	8	5	23	3	31

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

In 2010 the highest number of patients (absolute and per 10,000) are reported in the eastern provinces (table 19.1 and 19.2). Sorted by address density most patients per 10,000 were reported to live in cities with 500-2500 inhabitants per km^2.

Table 19.2 Number of patients per 100,000 treated by their GP with palliative sedation, per province group, address density and for the Netherlands as a whole in 2005-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2005	(1,8)	(1,5)	2,5	(1,2)	3,0	1,9	(0,9)	2,0
2006	3,0	(2,3)	4,0	(2,5)	(2,4)	4,2	(1,7)	3,3
2007	(1,6)	(0,9)	4,4	3,2	2,8	3,5	(0,5)	2,8
2008	(1,2)	(0,8)	2,9	(1,5)	(2,0)	1,4	3,1	1,7
2009	2,6	4,1	1,9	2,5	2,5	2,7	(1,1)	2,7
2010	1,9	3,8	1,9	2,5	1,9	3,0	(1,4)	2,5

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Age distribution

The age distribution is given in table 19.3.

Table 19.3 Absolute number of patients per age group treated with palliative sedation by their GP in 2005-2010

	<54	55-64	65-74	75-84	>85	total
2005*	3	9	3	8	2	26
2006	2	6	8	8	7	31
2007	1	5	10	8	6	30
2008	4	3	2	5	4	18
2009	7	4	7	7	6	21
2010	2	7	9	6	7	31

*In 2005 the age of one patient was unknown.

Palliative sedation sometimes is applied at a relatively young age and does not seem to be related to age.

Summary of reported requests

Similarly as for the topic ‘requests for euthanasia’ (see chapter 18) five major disease groups were used to obtain insight into the disorders underlying the use of palliative sedation.

Table 19.4 Disorders for which palliative sedation was applied in 2005-2010

	N	%
malignant tumors	123	74
cardio-vascular diseases	19	11
chronic obstructive pulmonary disease	5	3
symptoms and incompletely described diseases	7	4
other diseases	13	8
total	167	100

Discussion

Similarly as for request of euthanasia (chapter 18), cancer is the most prominent disease leading to the decision for palliative sedation.
Mostly the presence of more than one refractory symptom is the reason to apply palliative sedation. Untreatable pain and dyspnoe play a major role. In 2010 palliative sedation was applied in 5.2% of the reported deaths. This is considerably lower than the 12.8% mentioned in the fourth national survey concerning medical decisions at the end of life.[25] However, this latter study involves also deaths in hospitals and nursing homes and at home and therefore is not comparable with our study in a general practice population, in which patients in nursing homes normally are not included. Our study shows annual fluctuations, but no increasing trend since the start of the study in 2005. This is an unexpected finding because in the past couple of years the literature reported an increasing trend of palliative sedation.[27,28]
In the 6 patients who had also asked for euthanasia there was no indication that palliative sedation had been applied to avoid euthanasia. The reasons for palliative sedation were clearly defined and sometimes the family's preference played an important role. These results indicate that requests for euthanasia and palliative sedation largely relate to different motives, despite similarities in the nature of the symptoms. The study does not support the

notion that the boundary between euthanasia and palliative sedation is becoming indistinct. This is also supported by the thesis about palliative sedation by Jeroen Hesselaar 2009.[31]The guideline on palliative sedation issued by the KNMG in 2005 (www.knmg.nl), undoubtedly has contributed to professionalize this intervention.

The topic will be continued 1n 2011

Appendix 1

Table 19.5 Characteristics of patients treated with palliative sedation in 2010

age	gender	disease reported	reason for request
91	f	bladder carcinoma	anxiety
91	f	heart failure	dyspnoea
90	m	pain symptoms, deterioration	pain, nausea, anxiety, completed life
90	f	colon carcinoma	pain
88	f	necrosis of feet due to atherosclerosis	dyspnoea, pain
87	f	cervical carcinoma	pain
85	f	renal failure	dyspnoea, pain, vomiting
79	f	chronic obstructive pulmonary disease	dyspnoea
78	m	renal/bladder carcinoma	pain, anxiety, exhausted care taking relatives
78	f	lung carcinoma	dyspnoea, pain, cachexia
77	m	lung carcinoma	dyspnoea, pain, vomiting, refractive coughing
77	f	metastatic ovary carcinoma	dyspnoea, anxiety
76	f	duodenal carcinoma	pain, nausea
74	f	lung carcinoma	dyspnoea, pain, nausea
73	m	terminal COPD and pancreatic carcinoma	dyspnoea, pain, anxiety
72	m	gastric carcinoma	pain, nausea, vomiting
72	m	terminal heart failure	dyspnoea
71	m	metastatic carcinoma of unknown origin	dyspnoea, senseless suffering
70	m	acute myeloid leukaemia (AML)	pain, nausea

Table 19.5 Characteristics of patients treated with palliative sedation, 2010(cont.)

age	gender	disease reported	reason for request
66	m	bronchial carcinoma	dyspnoea, pain, vomiting
65	m	metastatic colon carcinoma	pain, nausea, anxiety
65	m	terminal COPD	dyspnoea, pain
64	m	idiopathic lung fibrosis	dyspnoea
62	f	metastatic colon carcinoma	pain, nausea
61	m	metastatic pancreatic carcinoma	delirium, pain, nausea, vomiting
61	m	colon carcinoma	delirium, dyspnoea, pain
61	f	uterine carcinoma with lung metastases	dyspnoea
59	m	metastatic prostate cancer	delirium, pain
55	m	colon carcinoma	delirium, pain, anxiety
52	m	bronchial carcinoma with brain metastases	delirium, pain, anxiety
39	f	metastatic ovary carcinoma	refractive pain, muscle spasms

20 Eating disorders

Topic owner: Prof. H.W. Hoek, Parnassia Bavo group
(1985-1989, 1995-2010)

Introduction

It is unclear whether the incidence rate of serious eating disorders such as anorexia nervosa and bulimia nervosa is increasing. Sentinel doctors registered both of these disorders between 1985 and 1989. By a renewal of registration from 1995 it is studied whether these disorders are on the rise. This chapter only provides an indication of trends in the number of patients with eating disorders in general practice. Results emerging from the questionnaires will be published separately.

Methods

The trend in the incidence of eating disorders from 1995 onward will be calculated per age group, province group and address density and will be compared with the period 1985-1989. These data are not corrected yet for double counts and contain figures about incidence as well as prevalence. The numbers should therefore be interpreted with caution. For that reason no extrapolation to a national level is presented.
The sentinel GPs have been asked to complete a questionnaire with additional information for each registered patient. Was the eating disorder diagnosed in 2010 and was the patient referred to a different caregiver? In addition, information was gained about the family of the patient and the physical aspects of the disease. The results of this study are published elsewhere.

Results

In table 20.1 the distribution is shown of the number of patients diagnosed by the GP with an eating disorder, per 10,000 inhabitants, per province group and address density and for the Netherlands as a whole, from 1985-1989 and from 1995-2010. In 2010 eating disorders are diagnosed in 34 women and 0 man.

Table 20.1a Absolute numbers of patients for whom GPs diagnosed an eating disorder, per province group, address density and for the Netherlands as a whole, 1985-1989 and 1995-2010

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
absolute/year average:								
1985-1989	7	10	35	10	6	33	24	61
1995	11	11	26	16	5	49	10	64
1996	6	8	22	9	3	37	5	45
1997	12	10	11	9	8	29	4	42
1998	10	17	15	9	5	36	10	51
1999	4	14	12	13	1	38	4	43
2000	4	9	13	9	3	26	6	34
2001	5	6	6	7	4	19	1	24
2002	2	12	14	8	5	24	7	36
2003	1	14	24	4	2	29	12	43
2004	3	11	14	11	3	30	6	37
2005	4	8	15	1	10	16	2	28
2006	2	8	16	6	5	19	8	32
2007	4	8	19	9	5	27	8	40
2008	8	12	16	13	11	31	7	49
2009	5	8	22	9	5	26	13	44
2010	6	7	16	5	6	20	8	34

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

Table 20.1b Numbers of women for whom GPs diagnosed an eating disorder, per province group, address density and for the Netherlands as a whole, 1995-2010, per 10,000 women

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
per 10,000 women								
1995	8,9	6,4	8,1	9,1	5,2	10,5	6,9	8,1
1996	4,7	4,7	8,9	4,8	3,0	8,9	3,3	6,2
1997	7,8	5,5	4,2	4,8	6,5	5,3	4,3	5,3
1998	7,2	9,1	6,7	5,6	8,6	7,1	11	7,1
1999	(3,3)	8,5	5,4	8,4	(1,1)	7,9	4,4	5,2
2000	(3,2)	4,6	3,9	6,1	(2,3)	4,9	3,8	4,2
2001	3,4	4,0	2,5	4,6	(4,4)	4,0	0,9	3,6
2002	(1,5)	7,3	5,4	3,5	4,9	4,5	4,5	4,6
2003	(0,8)	11,6	7,8	(2,3)	(1,8)	5,9	9,0	6,0
2004	(1,3)	7,0	2,6	2,9	(2,9)	3,5	2,3	3,0
2005	(3,3)	5,4	4,1	(0,6)	8,2	4,9	(1,2)	3,5
2006	(2,4)	9,2	6,6	7,5	6,0	6,6	6,5	6,4
2007	(3,2)	7,3	9,1	9,5	(5,5)	7,1	8,0	7,0
2008	6,0	8,8	8,7	12,4	10,5	8,3	8,4	8,7
2009	3,7	6,3	9,8	9,8	5,2	7,4	5,2	7,6
2010	4,5	4,5	8,0	4,9	3,1	6,2	7,5	5,8

* 1: <500/km^2 2: 500-2500/km^2 3: > 2500/km^2

The absolute and relative number of reports in 2010 is lower than in previous years. In 2010 it concerns exclusively women.
During the past 10 years the reported number of female patients with an eating disorder has been the lowest in the northern province group. In 2010 the number of eating disorders was the highest in the western part of the country and in big cities.

Age distribution

Table 20.2 shows the distribution of reported eating disorders by age group.

Table 20.2 Absolute numbers of patients for whom GPs reported an eating disorder, by age, 1985-1989 and 1995-2010

women	1985-1989	1995	1996	1997	1998	1999	2000	2001
1-4	-	-	-	1	-	-	-	-
5-9	-	-	-	1	-	-	-	1
10-14	1	1	1	0	2	-	1	1
15-19	8	13	15	10	9	7	9	6
20-24	12	14	9	11	14	74	5	2
25-29	14	10	7	7	5	6	9	4
30-34	6	9	4	3	4	6	4	5
35-39	7	8	6	3	11	91	3	3
40-44	4	2	2	4	4	6	1	-
45-49	1	4	1	1	1	-	1	-
50-54	1	2	-	-	-	-	1	1
55-59	1	-	-	-	1	1	-	-
60-64	-	-	-	-	-	-	-	-
65-69	-	-	-	-	-	-	-	-
70-74	-	-	-	-	-	-	-	-

Table 20.2 Absolute numbers of patients for whom GPs reported an eating disorder, by age, 1985-1989 and 1995-2010 (cont.)

women	2002	2003	2004	2005	2006	2007	2008	2009	2010
1-4	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-
10-14	1	-	1	1	-	3	1	2	2
15-19	5	5	5	9	5	6	12	7	11
20-24	3	7	10	2	9	7	2	9	7
25-29	8	7	8	2	4	4	5	7	3
30-34	2	5	-	6	3	5	7	4	1
35-39	5	5	2	1	6	3	7	5	2
40-44	4	6	5	6	1	3	3	3	3
45-49	2	5	4	-	1	5	6	4	-
50-54	2	2	-	-	1	1	3	-	2
55-59	-	-	-	-	-	-	1	3	1
60-64	-	1	-	1	1	1	-	-	1
65-69	-	-	-	-	-	-	-	-	1
70-74	-	-	-	-	1	-	-	-	-
75-79	-	-	-	-	-	-	-	-	-
80-84	-	-	-	-	-	1	-	-	-

The peak incidence in 2010 lies in the age groups 15-19 years. Also, it is remarkable that eating disorders sometimes still occur at old age.

Discussion

In 2010, there are relatively few reported eating disorders. In 2010 the highest incidence occurred in big cities and in the western part of the country. Previous studies have shown that living in big cities is a risk factor for bulimia nervosa.[32,33]

The study will be continued in 2011

Publications based fully or partly on continuous morbidity registration data

Son van GE. *Eating disorders in a primary care based cohort*. Dissertation 2010

Son van Gabriëlle E, Hoeken van Daphne, Furth van Eric F, Donker Gé A, Hoek Hans W. *Course and Outcome of Eating Disorders in a Primary Care-Based Cohort*. International Journal of Eating Disorders 2010;43(2):130-8

Son van Gabriëlle, Donker Gé, Hoek Hans Wijbrand. *Eetstoornissen: trend en samenhang met verstedelijking*. Huisarts en Wetenschap 2009;52(3):121

Son van GE, Hoeken van D, Furth van EF, Donker GA, Hoek HW. *Outcome of Eating Disorders in a Primary Care-Based Study.* Oral presentation. International Conference on Eating Disorders, Baltimore, 2-5 Mei, 2007

Son van GE, Hoeken van D, Bartelds AIM, Furth van EF, Hoek HW. *Urbanisation and the incidence of eating disorders.* Brit J Psychiatry 2006;189:562-563

Son van GE, Hoeken van D, Bartelds AIM, Furth van EF, Hoek H.W. *Time trends in the incidence of eating disorders: A primary care study in the Netherlands* Int Eat Disord 2006;39:565-569

21 General comments

1 The Counselling Committee has decided to include the following topics on the weekly returns in 2011.

   a Influenza and influenza-like illnesses
   b Research on end-of-live decisions
   c Suicide and attempted suicide
   d STD
   e Gastro-enteritis
   f Unwanted pregnancy
   g Urinary tract infection
   h Whooping cough
   i Cosmetic allergy
   j Gut feeling related to cancer

2 Incidental studies on euthanasia, eating disorders, palliative sedation and diabetes mellitus will be conducted in 2011.

3 The Counselling Committee welcomes suggestions concerning new topics and adjustments of existing topics.

4 Data contained in this report may be reproduced provided that the source is acknowledged.

5 A Dutch version of the report is available on request.

22 Literature list

List of other publications based fully or partly on the data from Continuous Morbidity Registration Sentinel Practices

General

Santing L, Van der Eijk R, Donker GA. *Cholesteatoom: een wolf in schaapskleren.* Huisarts en Wetenschap 2012;55(2):78-81

Van den Wijngaard CC, Dijkstra F, Van Pelt W, Van Asten L, Kretzschmar M, Schimmer B, Nagelkerke NJD, Vellema P, Donker GA, Koopmans MPG. *In search of hidden Q-fever outbreaks: linking syndromic hospital clusters to infected goat farms.* Epidemiol Infect 2011;Jan:139(1):19-26

Santing-Winter L, Van der Eijk R, Donker GA. *Even een trommelvlies beoordelen: meerdere valkuilen.* Bijblijven 2011;2:20-24

Donker GA, Pruys T. *ICT – vooruitgang met valkuilen*. Bijblijven 2011;2:47-50

Donker GA. *Monitoring en surveillance: is de huidige situatie adequaat*? In: 'Outbreaks', Bijblijven 2010-7:68-75

Nielen MMJ, Spreeuwenberg P, Paget WJ, Donker GA, Meijer A, Schellevis FG. *The age-specific impact of influenza on hospital admissions and mortality in five countries in Europe.* Utrecht, NIVEL 2010, report

Donker GA. *Peilstations meten trends in de huisartsenpraktijk.* Huisarts in de praktijk 2007;18(12):10-12

Antibioticaresistentie

Donker GA, Deurenberg RH, Driessen C, Sebastian S, Nys S, Stobberingh EE. *The population structure of Staphylococcus aureus among general practice patients from The Netherlands.* Clin Microbiol Infect 2009;15(2):137-43

Donker G, Stobberingh E. *Ligt MRSA overal op de loer?* Huisarts & Wetenschap 2008;51:113

Donker GA, Nys S, Driessen C, Deurenberg RH, Stobberingh EE. *Prevalence of antibiotic-resistant S. aureus among general practice patients.* Eur J Public Health 2006;16(1S):186

ARI-EL study

Gageldonk van Rianne, Donker Gé, Peeters Marcel. *Voorspellen klachten een bacteriële bovensteluchtweginfectie?* Huisarts en Wetenschap 2007,50(3)85

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Appendix 1: participating doctors in 2010

Name:	Location:	Province:
J. Mulder*	't Zand	Groningen
P.S. Wiersema*	Oostermeer	Friesland
W.J.M. Brunninkhuis	Drachten	Friesland
H.J. Dijkstra*	Bakhuizen	Friesland
H.D.W.A. van Gijsel/B. Barla		
Mw. M. Schellens/Mw. I. Hummelen		
Mw. C.A. Hoeksema-de Vries/S.A. van Dijk	Assen	Drenthe
Mw. F.B. van Heest*	Schoonoord	Drenthe
S.M. Handgraaf	Nieuw Weerdinge	Drenthe
J.H. Vaartjes	Emmen	Drenthe
J.F.E. Borm*	Albergen	Overijssel
Dr. R.A. de Groot/Mw. J.T. Bos		
Mw. E.J.A. Idema *	Oldemarkt	Overijssel
J. Rauws	Almelo	Overijssel
P.J. van Beek	Oldenzaal	Overijssel
D.G. de Jong	Barneveld	Gelderland
H. Rademaker	Barneveld	Gelderland
M.T.W. van der Velden	Dieren	Gelderland
J.H.M. van der Holst	Groenlo	Gelderland
L.B.P.M. Hendrikx*	Steenderen	Gelderland
R.J.M. Kimmenaede	Zutphen	Gelderland
J.A. Nielen	Emmeloord	Flevoland
Mw. I.K.I.de Jongh-Kilian /Mw. M.G.C.L. Smit		
L.J.A.L. Kroft	Amersfoort	Utrecht
P.B. den Hertog	Utrecht	Utrecht
Mw. Y.E.V. van Hazel/P. Olie	Amsterdam	Noord-Holland

Appendix 1: participating doctors in 2010 (continued)

H.R. Neijs*)	Broek in Waterland	Noord-Holland
Mw. A. Verdam-de Witte	Hilversum	Noord-Holland
Mw. M.H. Brooks	Hilversum	Noord-Holland
J.V.M. Noordeloos	Bloemendaal	Noord-Holland
A. Leemhuis/W. van der Maarel	Castricum	Noord-Holland
A.M. van Meurs	Den Haag	Zuid-Holland
J.C.B.M. Rensing/Mw. A. Rensing-van Dijk	Den Haag	Zuid-Holland
Mw. E. Sleeboom	Voorhout	Zuid-Holland
Mw. D. Nijman*	Nieuwveen	Zuid-Holland
W.H. van der Linden/Mw. E.A.A. van Rosmalen*	Leimuiden	Zuid-Holland
Mw. M. Heijmans/K. van de Bent/K. Jonker/ C. Douma	Den Haag	Zuid-Holland
R.R. Lankhorst	Middelburg	Zeeland
P.B.A. Crama	Vlissingen	Zeeland
M.G.A.M. de Gouw	Rosmalen	Noord-Brabant
W.L.M. Rijnders/J.A.M. Disseldorp	Etten-Leur	Noord-Brabant
J.J.J. Meulenberg/J.D.M. schelfhout	Eindhoven	Noord-Brabant
P. Meulesteen/L. Kessels/ L. Klinkers		
L. Burghout/J. Landaete	Eindhoven	Noord-Brabant
R.J.P. de Gardeyn	Sleeuwijk	Noord-Brabant
M.J.F.M. Klaassen*	Oirsbeek	Limburg
P.H.M. Vaissier)	Maastricht	Limburg

*) With dispensary

Appendix 2: registered topics 1970-2011 (alphabetical)

abortion, spontaneous	1982-1983
abortion, induced	1971-1979
abortion requests	1970-1975
accidents	1971
accidents in a private setting	1981-1983
acute atypical headache	1988-1992
acute otitis media	1971 and 1986
acute respiratory infection	2001-2004
addiction to smoking (consultation)	1974 and 2003-2006
AIDS (fear of)	1988-2007
alcoholism	1975
anti-hypertensives and/or diuretics (prescription of)	1976
bee or wasp stings	1992-1993
bites by household pets	1986
burns	1988-1989
cerebrovascular accident	1986-1987
cervical smear	1976-1998
chickenpox	2000-2010
childbirth (at ≥ 28 weeks)	1982-1983
child abuse (suspicion of)	1973-1974
chronic benign pain disturbance	1995-1996
dementia	1987-1988
depression	1983-1985 and 2000-2002
diabetes mellitus	1980-1983 and 1990-1994 and 2000-2002
diarrhoea of unknown origin (acute)	1970
dog bite	1987 and 1998-1999
drug use (consultation)	1972-1973 and 1979-1981

Appendix 2: registered topics 1970-2011 (alphabetical) (cont.)

dwelling (certificate issued for another)	1975
echography requests	1988
environment-related health complaints	2003
exanthema of unknown origin	1970
family planning (advice)	1970-1976
gastro-enteritis	1992-1993 and 1996-2011
hay fever	1978-1982
hepatitis	1994
herpes zoster	1997-2001
gut feeling related to cancer	2010-2011
infectious mononucleosis	1977-1979 and 1991
influenza and influenza-like illnesses	1970-2011
injuries to the skeletal and locomotor systems	1984-1985
liver, gall bladder and pancreas diseases	1995-1997
malignancies	1984-1985
mammography (outpatient)	1988-2000
measles	1975-1979
measles/mumps	1990
medical aids	1999-2002
mental health care (referral)	2001-2003
morning-after pill, prescription of	1972-1991
myocardial infarction	1978 and 1983-1985 and 1991-1994
neuraminidase inhibitor (prescription)	2003-2004
oestrogen, prescription of	1994-1998
Parkinson’s disease	1980-1985
penicillin, prescriptions and side effects	1982-1983
peptic ulcer (first time/relapse)	1985-1986
physical violence	1996-1999
p.i.d. (pelvic inflammatory disease)	1994-1998
pneumonia	2008-2010
pregnancy (despite contraception)	1987-1991

Appendix 2: registered topics 1970-2011 (alphabetical) (cont.)

premature birth	1982-1983
prostate complaints	1997-2002
psoriasis	1976-1977
psychiatric patients	
- discharged	1986-1988
- admitted	1988
referrals to a specialist	1984
referrals to a speech-language pathologist	1988-1989
referral/authorization for physiotherapy	1985
referral for psychosocial problems	1986-1987
research on end-of-live decisions	2005-2011
rohypnol prescriptions	1987-1988
rubella and rubella-like illnesses	1971
sexual problems and sexual violence	2003-2008
side-effects of cosmetics (suspected)	1992-1993 and 2009-2011
sports injuries	1979-1983 and 2005 2007
skull traumas in traffic accidents	1975-1977
sterilization of men (performed)	1972-1999
sterilization of women (performed)	1974-1999
sexually transmitted diseases (STD)	2008-2011
suicide and attempted suicide	1970-1972 and 1979-2011
tonsillectomy or adenotomy	1971
tranquillizer prescribed	1972-1974
unwanted pregnancy	2003-2011
urethritis in men	1992-2007
urinary tract infection (medicine prescribed)	1977
urinary tract infection	2003-2004 and 2009-2011
ventricular/duodenal ulcer	1975
whooping cough	1998-2011
zanamivir (Relenza)	2000-2002

Appendix 3: list of incidental studies

Incidental studies and other additional studies 1977-2011 (alphabetical)

acute intoxication at work	1994-1995
aggression against GP and practice staff	1997-2000
alternative treatments (registration possible?)	1980
anorexia nervosa and bulimia	1985-1989 and 1995-2011
antibiotic resistance of Staphylococcus in general practice	2005-2006
diabetes mellitus (prevalent cases)	2000 and 2007-2011
euthanasia (request for)	1976-2011
incest	1988
lyme disease	1991-1994
malignancies	1982-1983
multiple sclerosis	1977-1982
puerperal mastitis	1982
regret after sterilization	1980-1984
serum collection	1980 and 1985
palliative sedation	2005-2011
vaccination against influenza	1992

Appendix 4: age population of the Netherlands

Age distribution of the population of the Netherlands, by gender, in thousands, 1 January 2010 (CBS)

age	men	women	total
0-4	473	452	925
5-9	513	490	1,003
10-14	504	481	985
15-19	519	496	1,015
20-24	512	501	1,013
25-29	503	496	999
30-34	501	498	999
35-39	591	590	1,181
40-44	656	641	1,297
45-49	650	639	1,289
50-54	591	586	1,177
55-59	544	539	1,083
60-64	537	533	1,070
65-69	383	393	776
70-74	292	327	619
75-79	215	280	495
80-84	134	218	352
>85	85	212	297
total	8,203	8,372	16,575

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
age group by topic

all practices			year 2010				weeks 1 t/m 52					
age group	population			Influenza		Pneumonia		Chicken-pox	Whooping-cough	Gut feeling related to cancer		
	M	F	M+F	M+F	M	F	M+F	M+F	M+F	M	F	M+F
<1	678	671	1349	695	146	67	107	230	7	0	0	0
1-4	2669	2572	5241	333	133	69	101	274	4	0	0	0
5-9	3847	3555	7403	119	43	47	45	39	4	0	3	1
10-14	3930	3642	7572	65	31	43	36	5	11	3	3	3
15-19	3865	3711	7576	119	14	0	7	0	4	3	0	1
20-24	3597	3666	7263	120	31	9	20	4	4	6	0	3
25-29	2481	3611	7092	85	19	15	17	1	1	0	8	4
30-34	3450	3514	6964	109	6	19	13	6	3	6	0	3
35-39	4181	4227	8407	94	30	42	36	4	0	0	2	1
40-44	4790	4809	9600	123	44	44	44	0	3	2	21	11
45-49	4959	4816	9775	109	44	30	37	1	3	6	4	5
50-54	4391	4298	8689	102	35	21	28	0	1	16	12	14
55-59	3916	4000	7916	124	23	47	35	0	1	23	20	21
60-64	4028	3984	8011	110	74	85	80	0	2	37	15	26
65-69	2970	3108	6078	115	82	114	98	0	2	30	13	21
70-74	2311	2467	4778	115	120	63	91	0	2	39	12	25
75-79	1648	2141	3789	145	146	52	93	0	0	36	9	21
80-84	1050	1663	2713	166	256	145	188	0	0	57	30	41
>84	681	1645	2326	193	335	311	319	0	0	29	49	43
Total	60442	62100	122542	128	56	52	54	18	3	12	10	11

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
age group by topic
year 2010 weeks 1 t/m 52

all practices age group	population			Gastro-enteritis no feces test			Gastro-enteritis feces test			STD*		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
<1	678	671	1349	737	745	741	15	15	15	0	0	0
1-4	2669	2572	5241	300	326	313	37	23	31	0	0	0
5-9	3847	3555	7403	91	124	107	13	6	9	0	0	0
10-14	3930	3642	7572	74	41	58	5	11	8	0	6	3
15-19	3865	3711	7576	44	78	61	10	22	16	51	145	97
20-24	3597	3666	7263	72	98	85	6	16	11	165	263	215
25-29	2481	3611	7092	69	89	79	9	11	10	150	140	145
30-34	3450	3514	6964	64	85	75	12	14	13	80	100	90
35-39	4181	4227	8407	36	61	49	2	7	5	60	76	68
40-44	4790	4809	9600	44	46	45	6	10	8	30	48	39
45-49	4959	4816	9775	44	48	46	10	8	9	22	41	32
50-54	4391	4298	8689	52	37	45	2	9	6	17	25	21
55-59	3916	4000	7916	38	47	43	3	7	5	22	19	20
60-64	4028	3984	8011	55	65	60	5	5	5	13	8	11
65-69	2970	3108	6078	54	29	41	7	19	13	0	3	2
70-74	2311	2467	4778	78	69	73	13	16	15	5	4	5
75-79	1648	2141	3789	79	103	92	6	5	5	0	5	3
80-84	1050	1663	2713	133	132	133	10	6	7	0	6	4
>84	681	1645	2326	220	219	219	0	6	4	0	0	0
Total	60442	62100	122542	79	90	84	8	11	10	39	55	47

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
age group by topic

all practices		year 2010		weeks 1 t/m 52								
age group		population		Unwanted pregnancy	Cosmetic allergy			Urinary tract infection*			End-of-life* study	Suicide
	M	F	M+F	F	M	F	M+F	M	F	M+F	M+F	M+F
<1	678	671	1349	0	0	15	7	136	61	98	0	0
1-4	2669	2572	5241	0	4	8	6	92	516	300	4	4
5-9	3847	3555	7403	0	3	20	11	72	509	282	0	0
10-14	3930	3642	7572	0	3	14	8	29	264	142	0	0
15-19	3865	3711	7576	40	0	27	13	47	950	489	3	3
20-24	3597	3666	7263	76	11	27	19	36	1061	553	1	1
25-29	2481	3611	7092	69	6	17	11	45	907	480	1	1
30-34	3450	3514	6964	37	6	37	22	67	830	451	1	1
35-39	4181	4227	8407	33	0	24	12	67	737	402	4	4
40-44	4790	4809	9600	12	0	23	11	104	772	437	8	8
45-49	4959	4816	9775	8	4	12	8	66	736	396	9	9
50-54	4391	4298	8689	0	7	33	20	138	720	426	27	27
55-59	3916	4000	7916	0	8	33	20	159	878	521	40	40
60-64	4028	3984	8011	0	5	23	14	241	958	597	56	56
65-69	2970	3108	6078	0	3	16	10	298	1118	714	87	87
70-74	2311	2467	4778	0	13	20	17	416	1456	953	143	143
75-79	1648	2141	3789	0	18	19	18	624	1706	1238	227	227
80-84	1050	1663	2713	0	10	6	7	905	2295	1753	358	358
>84	681	1645	2326	0	0	12	9	1319	2506	2161	808	808
Total	60442	62100	122542	17	5	22	13	156	922	543	51	51

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
province group by topic

year 2010 weeks 1 t/m 52

all practices province group	population			Influenza	Pneumonia*			Chickenpox	Whooping cough	Gut feeling related to cancer		
	M	F	M+F	M+F	M	F	M+F	M+F	M+F	M	F	M+F
GR+FR+DR	12947	13226	26173	90	72	65	68	18	3	8	5	6
OV+GLD+FLE	13267	13429	26696	197	53	40	47	13	2	15	12	13
UTR+NH+ZH	19612	21142	40753	130	73	71	72	19	3	15	15	15
ZLD+NB+LIM	14616	14303	28920	94	21	23	22	20	3	10	4	7
Total	60442	62100	122542	128	56	52	54	18	3	12	10	11

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
province group by topic

year 2010 weeks 1 t/m 52

all practices province group	population			Gastro-enteritis no feces test			Gastro-enteritis feces test			STD*		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
GR+FR+DR	12947	13226	26173	86	110	99	14	17	15	25	49	37
OV+GLD+FLE	13267	13429	26696	57	57	57	8	7	8	25	40	32
UTR+NH+ZH	19612	21142	40753	75	83	79	6	11	9	52	67	60
ZLD+NB+LIM	14616	14303	28920	96	112	104	7	10	9	44	56	50
Total	60442	62100	122542	79	90	84	8	11	10	39	55	47

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
province group by topic
year 2010 weeks 1 t/m 52

all practices province group	population			Unwanted pregnancy	Cosmetic allergy			Urinary tract infection*			End-of-life study*	Suicide
	M	F	M+F	F	M	F	M+F	M	F	M+F	M+F	M+F
GR+FR+DR	12947	13226	26173	14	3	11	7	144	776	463	50	4
OV+GLD+FLE	13267	13429	26696	9	3	15	9	150	959	557	50	2
UTR+NH+ZH	19612	21142	40753	22	6	22	14	119	795	468	52	5
ZLD+NB+LIM	14616	14303	28920	20	6	36	21	212	1157	679	50	3
Total	60442	62100	122542	17	5	22	13	156	922	543	51	4

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
address density by topic
year 2010 weeks 1 t/m 52

all practices address density	population			Influenza	Pneumonia*			Chickenpox	Whoopinp-cough	Gut feeling related to cancer		
	M	F	M+F	M+F	M	F	M+F	M+F	M+F	M	F	M+F
<500/KM2	13210	12823	26033	179	89	58	74	13	1	13	14	13
500-2500/KM2	37060	38553	75612	112	46	52	49	16	3	11	7	9
>2500/KM2	10172	10724	20897	122	45	46	45	31	3	16	13	14
Total	60442	62100	122542	128	56	52	54	18	3	12	10	11

* not all GPs were included

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
address density by topic
year 2010 weeks 1 t/m 52

all practices address density	population			Gastro-enteritis no feces test			Gastro-enteritis fecestest			STD*		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
<500/KM2	13210	12823	26033	80	95	88	6	10	8	24	41	32
500-2500/KM2	37060	38553	75612	73	87	80	10	11	10	40	54	48
>2500/KM2	10172	10724	20897	97	95	96	7	15	11	49	71	60
Total	60442	62100	122542	79	90	84	8	11	10	39	55	47

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
address density by topic
year 2010 weeks t/m 52

all practices address density	population			Unwanted pregnancy	Cosmetic allergy			Urinary tract infection*			End-of Life study*	Suicide
	M	F	M+F	F	M	F	M+F	M	F	M+F	M+F	M+F
<500/KM2	13210	12823	26033	5	2	13	8	150	915	528	43	3
500-2500/KM2	37060	38553	75612	16	4	21	12	158	905	538	52	3
>2500/KM2	10172	10724	20897	33	13	34	24	156	984	579	53	7
Total	60442	62100	122542	17	5	22	13	156	922	543	51	4

* not all GPs were included