Continuous Morbidity Registration Dutch Sentinel General Practice Network 2012

Mrs. Dr. G.A. Donker

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Foreword

The year 2012 was characterized for the Dutch Sentinel General Practice (GP) Network by two new subjects: the registration of skin complaints caused by the oak processionary larvae and policy in case of complaints or symptoms of the mamma. The influenza season 2012-2013 showed the longest epidemic period in the past 25 years caused by 3 cocirculating virus sub-types: influenza A(H1N1)pdm09, influenza A(H3N2) and influenza B.

In the first year of the surveillance of skin complaints as a result of the oak processionary larvae less complaints were registered than anticipated. The most complaints were registered in the months June through August, when the larvae develop hairs containing toxin and when these spread from the caterpillars and the nests. In 2012, the degree of nuisance was generally low, as other sources also indicated. In our registration most complaints were reported in the eastern parts of our country, mainly pruritus. Of the patients, no one had been exposed to the hairs of the caterpillar during their work. Continued reporting in 2013 should make clear whether the Sentinel GP Network is dense enough to map adequately the complaints caused by the oak processionary larvae in the whole country. This annual report presents a first glance of the subject.

The new registration subject regarding GPs' policy in case of mamma complaints of women shows how GPs act for women with this complaint from the age of 25; for women within the age group (50-75 years) who are eligible for breast screening, as well as for women who are not yet eligible because of their age. Nearly all women were further examined or referred, also often to reassure them. The registration of this subject will also be continued in 2013. This annual report presents the first results of this subject.

The year 2012 showed a strong whooping cough epidemic with the highest incidence among teenagers. Comparison of data of the Sentinel GP Network with the compulsory notification of the GGD (Municipal Health Service) did not show a striking difference in age distribution. From 2005 up to then, the usual whole cell vaccine has been replaced by acellular whooping cough vaccine for babies of zero years; this had already been introduced in 2001 for four years old toddlers. Young children seem to be well protected this way, but the vaccinations are not a lifelong protection. About this epidemic an article has been published in “Huisarts & Wetenschap” in 2012; this annual report also describes the epidemic.

After a short influenza season in the beginning of 2012, 2012/2013 showed the longest influenza season in the past 25 years: 18 consecutive weeks. The GPs of the Sentinel GP Network sent during that period over 1100 nose and throat samples for virological diagnosis. In 384 samples the influenza virus was found, more than half of which was influenza B, a quarter A(H1N1)pdm09 and a quarter influenza A(H3N2). Initially, this season the influenza A viruses prevailed, with a come-back of A(H1N1)pdm09, but in the last months of the season influenza B prevailed.

The weekly pneumonia surveillance and reporting about this surveillance has been reintroduced in 2012, however, without obtaining samples for bacteriological examination. In case of suspected virological causes the usual nose and throat samples were taken for virological examination. No striking fluctuations were seen in the incidence of pneumonia in 2012.

The data in this annual report are this year again taken from the sentinel GP Network in which GPs, often year after year, are willing to systematically collect information about these diverse subjects. We are very grateful for their cooperation.

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 practitioner GPs. A national network of general practices, covers with the patients registered in these practices about 0.7% of the Dutch population. The network design takes account of the geographical distribution of the population and its distribution over areas with different degrees of population density (see pp 18-21). The GPs participating in the sentinel network, 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 module 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 Sentinel GP Network 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 174-177 for an overview of the years when topics were first included in the registration.

1.1 International cooperation

The 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.

That is also the case for research started in 2011 into early diagnosis of abdominal tumours. The data collection in the sentinel practices for this study is part of a comparable data collection in eight countries, led from the university of Tromsö. In addition to the Dutch Sentinel GP Network, GP practices in Canada, Scotland, Belgium, Australia, Sweden, Denmark and Norway also take part in the study. In the prospective study systematic data are registered about symptoms of patients consulting the GP and after 6 months it is checked which of these patients have had the diagnosis of a tumour.

2 Counselling Committee

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

The committee members in 2012 were:

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

The counselling committee met twice in 2012.
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 Sentinel General Practice Network 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	Mrs. P. ten Veen, Mr. J. Gravestein and Mr. R Davids (NIVEL) Mr. W Tiersma (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 2012

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 Netherlands Information Network of GPs (LINH). The GPs could assemble their own programme by choosing from the various workshops that were provided. This meeting was highly appreciated.

During the meeting held on January 14, 2012, zoönoses were chozen as the main theme

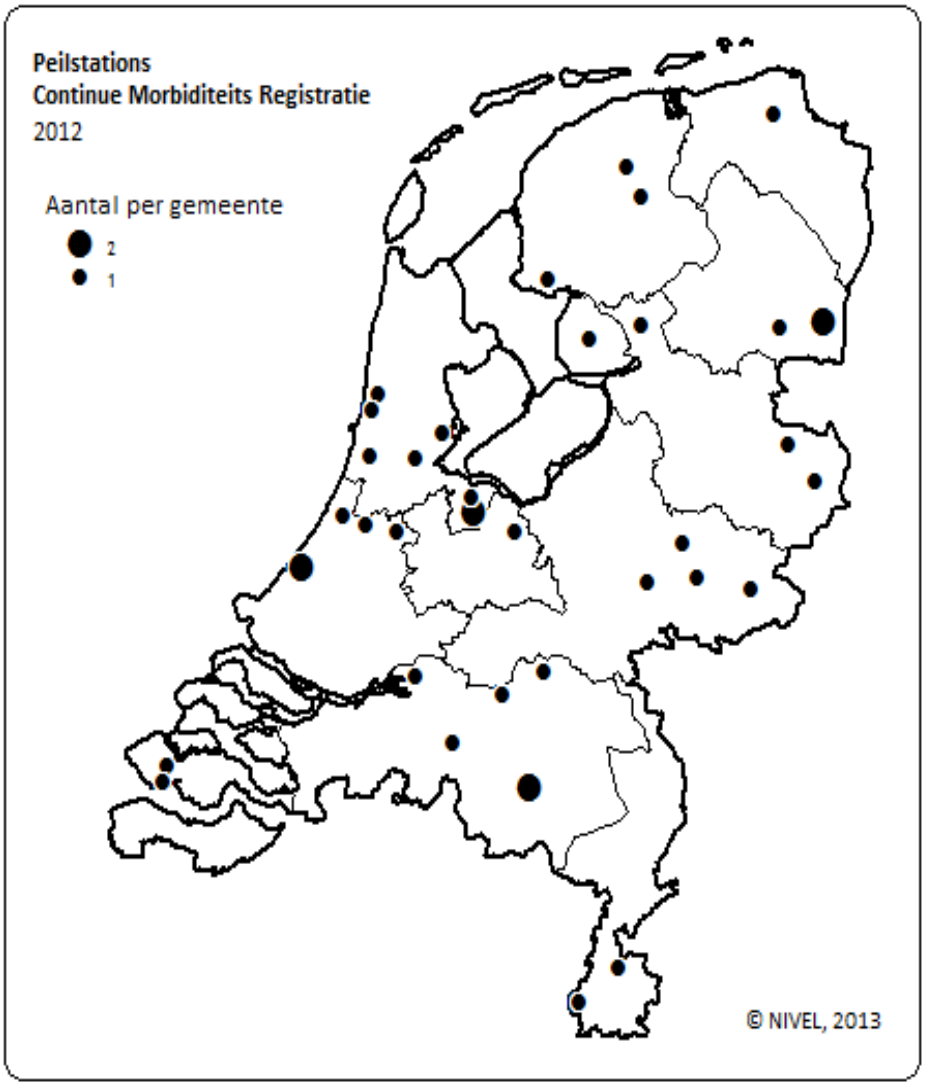
The program contained presentations on the following subjects:

Drs. H. Jans (medical environmentalist Brabant).	The GP, zoönoses and environment..
Prof. Dr. P.J. van den Broek (LUMC).	Lyme disease – preventive antibiotics? The new CBO guidelines.
Dr. R. van Gageldonk (RIVM).	Pneumonia registration and influenzasurveillance – strong together.
Drs. J. de Wolf (GGD IJsselland en Twente).	Registration health complaints oak processionary larvae by GPs.
Dr. M. Hooiveld (NIVEL).	Intervention complaints and symptoms mamma.

Drs. C.J. Den Heijer	Urinary Tract infection in men – evidence based treatment.
Dr. J. Salverda (RIVM).	Skin complaints – reporting beauty.
Drs. L. Wennekes (IQ health care).	Exchange, questions, quality indicators.
Dr. L. van Dijk (NIVEL). Dr. K. Njoo (NHG)	Drug reimbursement and the impact on prescription: statins and benzodiazepines. s. ADEPD registration.
Dr. R. Verheij (NIVEL).	To an integrated Dutch primary Care Database

4 Distribution of sentinel practices in the Netherlands

Figure 4.1



For location level practice see p. 172-173

4.1 Practices

There were 39 sentinel practices in the Netherlands in 2012. The number of participating GPs working in the sentinel practices was 55.

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 (pp172-173) contains a list of the GPs who participated in the sentinel practices in 2012. Two or more GPs cooperate at nine of the sentinel practices (two GPs cooperate in 6 practices, three in 2 practices, and four in one practice). The percentage of GPs working in a group practice nationwide in January 2012 was 82.6%; but 45% for the sentinel practices. In the sentinel practices a relative overrepresentation of single practice exists. There were ten dispensing sentinel doctors, nine in rural areas and 1 in an urbanised rural municipality, which is 25.6% of the total number of sentinel GPs. The figure for the Netherlands as a whole is 6.3%.[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 2002-2012 period.

Table 4.1 Distribution of sentinel GPs and sentinel practices per province group in the 2003-2012 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
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
2011	7	7	14	9	18	15	15	9
2012	7	7	10	8	21	14	17	10

Table 4.2 Distribution of sentinel GPs and sentinel practices per address density in the 2003-2012 period

	1; rural municipalities < 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
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
2011	14	11	28	20	12	9	54	40
2012	14	11	30	21	11	7	55	39

4.2 Practice populations

A census of most practice populations was held in 2012. The results of the census have been used in processing the CMR Sentinel General Practice Network data from 1 January 2012. The Sentinel GP Network was organised with the aim of achieving a sample of approximately 1% of the population of

the Netherlands. The design of the project aims to be representative by geographical distribution (the 'province groups' referred to above) and distribution over areas with differing population density). A check was done to see whether these criteria were still met. The tables show that he northern part of the country is overrepresented, whereas the eastern regions are underrepresented. In the last few years, the Sentinel GP Network represents 0.7% of the Dutch population. This is accounted for in the recruitment of new practices.

Table 4.3 Comparison of the population of the sentinel practices with the total population of the Netherlands, 2012

	population of the Netherlands**	population of sentinel practices* (with percentages)	
province group:			
N	1,718,896	16,832	(1.0)
E	3,543,938	22,360	(0.6)
W	7,499,346	49,126	(0.7)
S	3,968,168	33,048	(0.8)
gender:			
men	8,282,871	60,147	(0.7)
women	8,447,477	61,219	(0.7)
total (1-1-2012)	16,730,348	121,366	(0.7)

* Practices census 2012

** 1-1-2012 Netherlands Statistics *(Centraal Bureau voor de Statistiek).*

The total practice population of all Sentinel Practices at the beginning of 2012 was 121,366 persons, 0.7% of the Dutch population consisting of almost 17 million inhabitants. The table below shows the percentages of men and women in the Dutch population who are registered with the sentinel practices in 2012, with a breakdown by age group and province group 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 a whole in 2012

	province group								Netherlands	
	N		E		W		S			
	m	f	m	f	m	f	m	f	m	f
0-4	0.9	0.9	0.6	0.6	0.6	0.7	0.8	0.8	0.7	0.7
5-9	1.1	1.1	0.7	0.7	0.7	0.6	0.8	0.8	0.7	0.7
10-14	1.1	1.0	0.7	0.7	0.7	0.6	0.8	0.8	0.8	0.7
15-19	1.0	1.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
20-24	0.9	0.9	0.6	0.5	0.6	0.6	0.8	0.9	0.7	0.7
25-29	0.8	0.9	0.5	0.5	0.6	0.7	1.0	1.0	0.7	0.7
30-34	0.8	0.8	0.5	0.6	0.6	0.7	1.0	0.9	0.7	0.7
35-39	1.0	1.0	0.6	0.6	0.6	0.6	1.0	0.9	0.8	0.7
40-44	1.1	1.1	0.7	0.7	0.6	0.7	0.9	0.8	0.8	0.7
45-49	1.2	1.1	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7
50-54	1.1	0.9	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
55-59	0.9	1.0	0.6	0.6	0.7	0.7	0.7	0.6	0.7	0.7
60-64	1.0	1.0	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
65-69	1.0	1.0	0.7	0.7	0.6	0.7	0.9	0.9	0.7	0.8
70-74	1.1	1.0	0.8	0.7	0.7	0.7	1.0	1.0	0.8	0.8
75-79	1.0	0.9	0.7	0.7	0.7	0.6	1.0	1.0	0.8	0.8
80-84	0.9	0.8	0.7	0.7	0.7	0.6	1.0	0.9	0.8	0.7
>85	1.0	0.8	0.7	0.6	0.7	0.7	0.9	0.9	0.8	0.7
total	1.0	1.0	0.6	0.6	0.7	0.7	0.9	0.8	0.7	0.7

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 2012 was 9,605: 52 weeks x 5 days x 35 sentinel practices; 4 practices registered 18, 20, 27 and 36 weeks, due to the discontinuation or the start of their participation during the year.

In table 4.5 the absolute numbers and percentages are presented.

Table 4.5 Maximum number and actual number of reporting days per year (2003-2012)

year	maximum number of reporting days	actual number (absolute)	reporting day percentage
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%
2011	10,140	9,432	93.0%
2012	9,605	8,831	92.0%

The percentage of reporting days in 2012 is lower than in 2011
The table below contains a breakdown by province group and address density.

Table 4.6 Reporting by province group and address density in 2012

province group		address density	
N	96.4%	1	94.2%
E	87.2%	2	93.6%
W	93.2%	3	90.4%
S	93.5%		

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 of all sentinel practices together per week is 15 (maximum is 195 days).

Figure 4.2 Number of days in 2012 that data were recorded

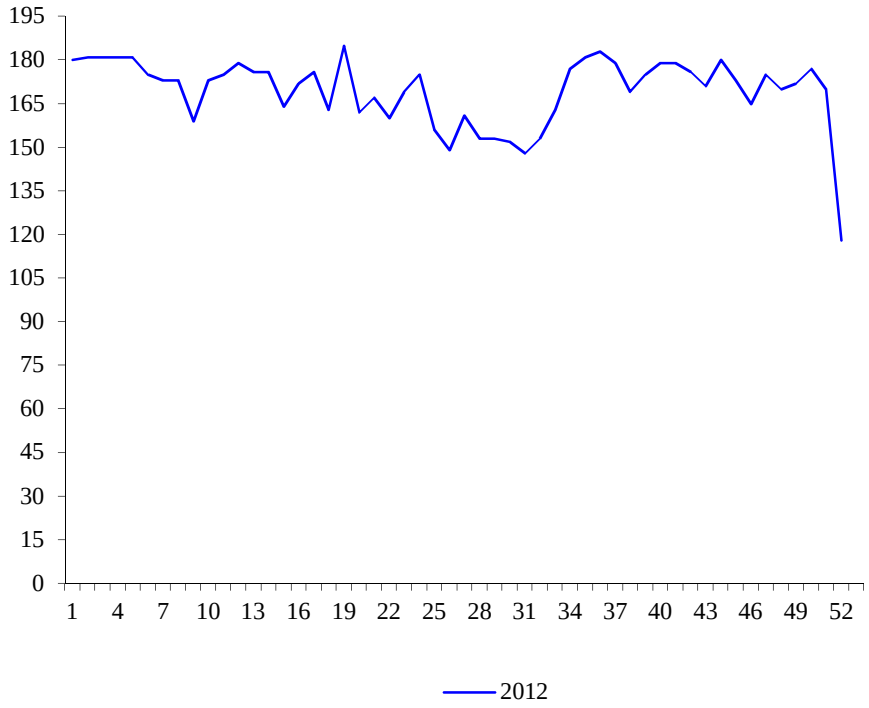


Table 4.7 shows the frequency distribution of the number of non-reporting days at each sentinel practice. The average number of non-reporting days per sentinel practice in 2012 was 20, which is more than in 2011 (19).
A breakdown into single and group practices reveals a significant difference, i.e. 23 and 10 days, respectively. This is in agreement with the hypothesis 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 (2002-2012)

number of non reporting days	number of sentinel stations									
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
0	2	2	1	2	3	8	-	5	7	4
1-9	1	-	-	1	8	3	7	18	12	18
10-19	1	-	1	1	6	15	8	8	10	6
20-29	2	3	4	3	5	4	10	4	5	3
30-39	5	3	7	4	5	2	9	5	1	2
40-49	12	9	12	8	6	4	4	1	2	1
50-59	7	15	11	8	5	1	1	-	-	1
60-69	3	2	4	7	2	2	1	-	1	1
70-79	1	-	2	-	1	2	-	-	1	1
80-89	-	1	2	1	-	1	-	-	-	1
90-99	-	-	1	1	2	1	-	-	-	-
>99	8	3	4	6	2	2	2	-	1	1
total number of sentinel practices	42	38	49	42	45	45	42	41	40	39
average	59	55	56	61	37	31	33	13	19	20
median	48	52	49	66	31	17	23	7	11	8

Closer examination of the table reveals an increase in non reporting days over the years until 2006, after which it decreased but increased again in 2011 and 2012. A major failure to report i.e. no reporting by a sentinel practice on more than 50 days per year does occur in 2012 in five practices (12.8%). The five practices that did not report in 2012 for more than 50 days

did so for reasons of problems with the electronic registration. Illness of the GP, moving of the practice and shift to a new ICT system were the most frequent reasons for non-reporting over a prolonged period of time in the previous years.

4.4 Surveillance topics

In 2012 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 Pneumonia (2012);
3 Streptococcus surveillance (2011);
4 Whooping cough (1998);
5 Gastro-enteritis (1996);
6 STD (2008);
7 Oak Processionary Larvae (2012)
8 End-of-Life study (2005);
9 Suicide (and attempted suicide) (1979);
10 Policy for symptoms mamma (2012);
11 Gut feeling (2010);
12 Abdominal symptoms and cancer (2011);
13 Request for euthanasia (1976);
14 Palliative sedation (2005);
15 Eating disorders (1985).

In principle, a weekly report is the base. This means that also patients that are seen by a locum doctor outside office hours, are reported, except influenza(like illness). Diagnosis by telephone or advices given by telephone are not reported; influenza is also here an exception.

An alphabetical list of all topics since 1970 is provided in appendix 2 (pp 174), together with the years during which the data were registered.

4.5 Analyses

This report contains the results of registration of topics in 2012. 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. For the participating doctors a feedback report is produced for each sentinel practice, presenting the average score per topic per 10,000 patients of the practice and this is compared to the averages of all sentinel practices.

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 178) shows the age structure of the Dutch population on 1 January 2012, 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 records, 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 179-185).

1 Cumulative, i.e. all sentinel practices in a standardised format, year 2012, weeks 01-52, pp 1-3.[4]
2 Province group standardised according to illness, year 2012, weeks 01-52 pp 1-3.[4]
3 Address density, standardised according to illness, year 2012, 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 extrapolated 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 Sentinel GP Network. 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 19-21), 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. Variations 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: end-of-life, pneumonia and sexually transmitted diseases only practices reporting these items in 2012 and previous years were included in the analysis in order to decrease underreporting. 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 in table 4.8, in thousands.

Table 4.8 Dutch population by gender, in thousands, 2003-2012 (CBS)*

year	men	women	total
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
2011	8,244	8,412	16,656
2012	8,283	8,447	16,730

* 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 121,366 patients (1st column), the 95% confidence interval is 0.44 – 1.56 per 10,000 (2nd column). It then follows that the estimated absolute number in the Dutch population is 1673 (3rd column), and that the 95% confidence interval is between 732 and 2614. 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	0,44 - 1,56	1673	732 – 2614
10	8,22 – 11,78	16730	13755 – 19705
100	94,40 – 105,60	167303	157938 – 176669
1,000	983,12 - 1016,088	1673035	1644797 – 1701273

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 Dr. C. van Dijk, NIVEL).

5 Influenza(-like illness)

Topic owner: National Influenza Centre *(National Influenza Centre)* (1970-2012)

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 43 years of registration of ILI in the 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 a number of descriptions of (sometimes worldwide) outbreaks of what appeared to be influenza do exist.
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 pieces of the influenza puzzle started to fall into place and the influenza virus 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 Sentinel General Practice Network 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 GPs 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 illness known as ILI, that meets the Pel criteria.[6] These are defined as follows: (Pel.1965)*)

1 An acute start, so a maximum prodromal stage of three to four days (included pre-existing infection of the respiratory system at not-ill-making level).
2 The infection should also involve rise in temperature of at least 38^0, rectal.
3 At least one of the following symptoms should occur: cough, nasal catarrh, sore throat, frontal headache, retrosternal pain, myalgia.

*) Pel, J.Z.S., 1965 Proefonderzoek naar de frequentie en de aetiologie van griepachtige ziekten in de winter 1963-1964. Huisarts en Wetenschap 1965:86:321.

The age of the patient is also recorded.
The doctor is asked to take a nose and throat swab from 2 patients with ILI per week which are then sent for further testing to the National Institute for Public Health (RIVM) (Infectious Diseases Diagnostics and Screening Laboratory). In case no patient with ILI consults the GP in a week the GP is requested to swab a patient with another acute respiratory tract infection (ARI) for virological determination. The registration form accompanying the swabs contains besides the diagnosis (ILI or ARI) also information about symptoms, influenza vaccination (yes or no), use of antiviarals and recent travel history. In the RIVM laboratory since 2008 the swabs are assessed for respiratory syncytial virus (RSV), rhinovirus and enterovirus. The number of pathogens for which tests are performed may be adapted when necessary. 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 2012/2013 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 epidemic period. Increased influenza activity is defined as 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 previously functioning European Influenza Surveillance Scheme (EISS) in order to harmonize the baselines of the various European Countries, taking into account the variety in health systems.
The season 2012/2013 was characterized by a long lasting epidemic of 18 weeks, the longest lasting epidemic in the past 25 years. In week 51 of 2012 the incidence peaked for the first time above the baseline of 5.1 per 10,000 inhabitants. At the same time, the weekly number of virus detections and hospital admissions increased. In week 5 of 2013 the peak of the mild epidemic was reached with 15.4 per 10,000 inhabitants after which the

incidence decreased gradually to the baseline in week 17. The peak incidence was lower than during the pandemic in 2009, but the totally reported number of patients with ILI higher due to the long duration of the epidemic. The surveillance activities in the sentinel practices were maintained also in this year during the whole year.

Between week 40 of 2012 through week 20 2013 695 ILI and 481 ARI swabs were sent to the RIVM by the sentinel GPs. In total influenzavirus was found in 388 ILI and ARI swabs of which 96 times (25%) A(H1N1)pdm09, 93 times (24%) A(H3N2) and 199 times (51%) type B. This season was originally dominated by type A influenza viruses, especially type A(H1N1)pdm09, but the last months of the epidemic influenza virus B prevailed.

During the peak of the epidemic influenza virus was found in 65% of the swabs of ILI patients and in the two weeks thereafter 61% and 65% respectively. After influenza virus type A(H3N2) dominated the previous season and influenza virus type A(H1N1)pdm09 the two preceeding seasons this season was increasingly dominated by influenza virus B, thus virologically a surprising season. In 6% of the samples from patients with ILI and 3,5% of the samples of patients with ARI RSV was found. All 90 A(H3N2), 84 A(H1N1)pdm09 en 6 type B influenza viruses that were tested on sensitivity to the antivirals oseltamivir and zanamivir turned out to be normally sensitive to it.
All 15 A(H3N2) en 10 A(H1N1)pdm09 influenza viruses that were tested on sensitivity to the adamantine antivirals (amantadine and rimantadine) turned out to be resistant for these drugs.

No marked regional differences in influenza activity were observed. The highest ILI incidence (20.5 per 10,000 inhabitants, figure 5.2) was noted in week 8 in the southern part of the country.
The incidence was the highest in the rural area (Figure 5.3). As usual, the highest ILI incidence did occur in the age group 0-4 years, which was not vaccinated this season, like the previous two seasons (Figure 5.4). This season, relatively more people of the age over 65 years were suffering from ILI later in the season.
Detailed analyses of viruses in the WHO-collaborating centre in London showed that the viruses in this season’s flu vaccine were similar to the

circulating A(H1N1)pdm09 viruses, but differed with the circulating A(H3N2) and B viruses. Possibly, therefore, protection by vaccination was suboptimal.

Figure 5.1 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, for the Netherlands in, 2010/2011, 2011/2012 and 2012/2013

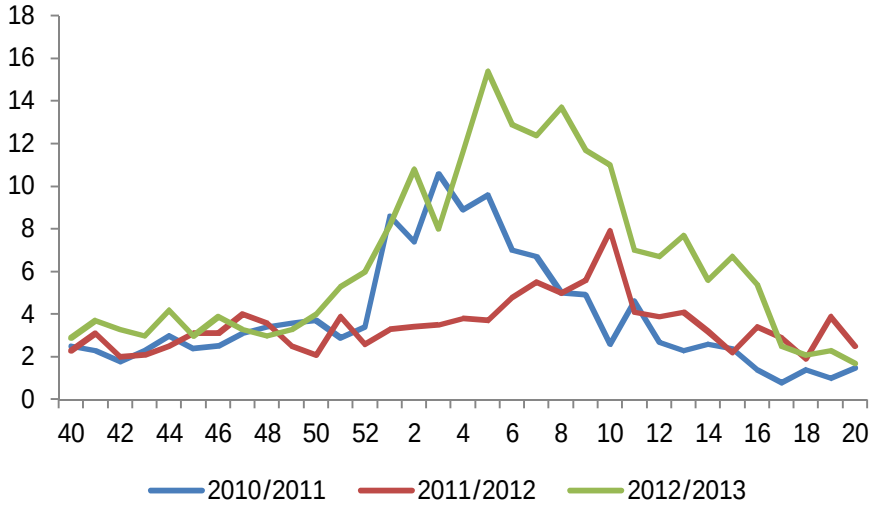


Figure 5.2 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, according to population density in 2012/2013

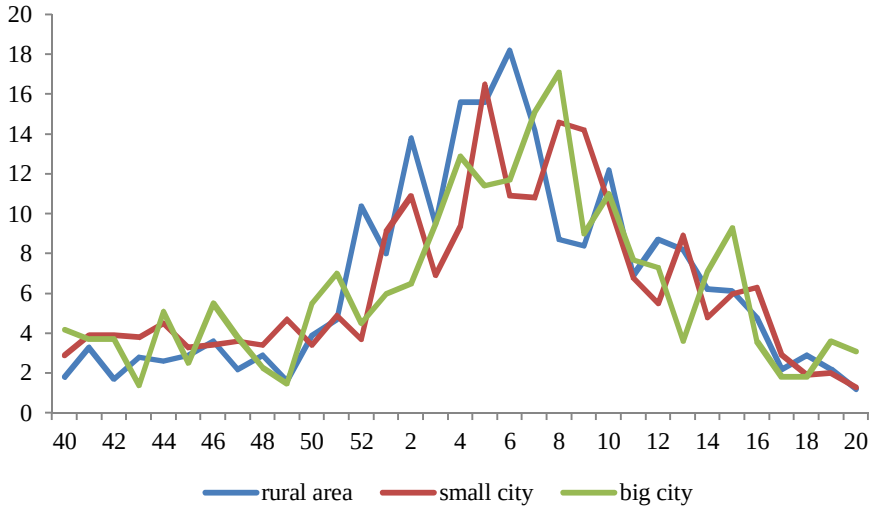


Figure 5.3 Number of incidental patients with influenza-like illness per week per 10,000 inhabitants, per province group in 2012/2013

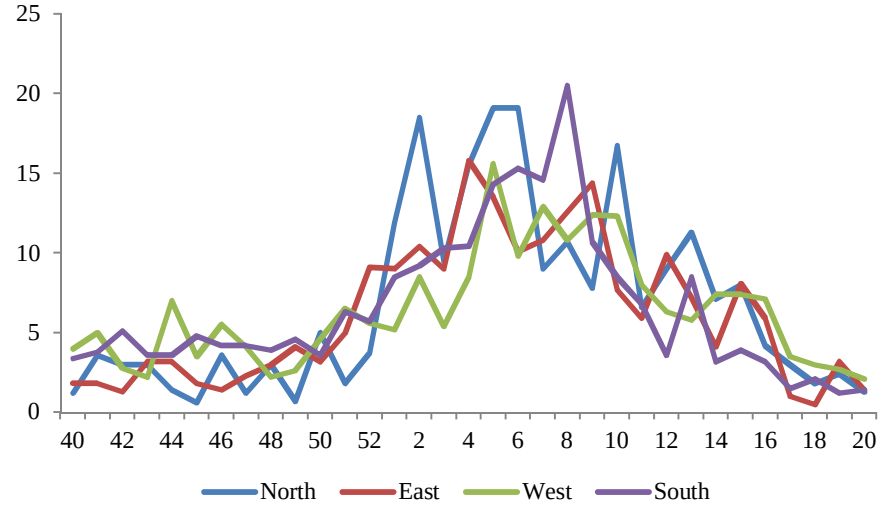


Figure 5.4 Number of incidental patients with influenza-like –illness, per 10,000 per age group, season 2012-2013

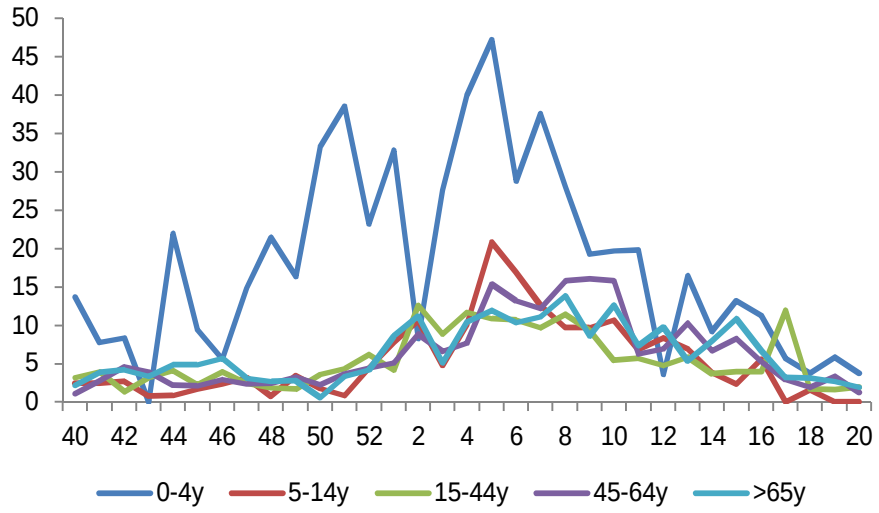


Table 5.1 Number of incidental patients with influenza(-like illness), per 10,000 inhabitants, 2003-2013

year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
total calendar year	122	71	208	190	141	168	275	128	186	147	
highest weekly incidence per 'season'		15	26	14	8	7	15	19	11	8	15

Extrapolation

Table 5.2 Extrapolation of incidence rates influenza like illness to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
influenza like illness		
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
2011	186	310,000
2012	147	246,000

* number influenza like complaints 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 season 2012/2013 was characterized by a long lasting epidemic of 18 weeks, the longest lasting epidemic of the past 25 years. During the season three influenza virus subtypes cocirculated: A(H1N1)pdm09, A(H3N2) en

type B. During the season influenza virus B gained dominance In 51% of the positive samples in ILI and ARI patients this subtype was found. The surveillance by the sentinel practices was this year also maintained during the whole year. The epidemic started in week 51 of 2012 and lasted for eighteen weeks. The peak incidence was reached in week 5 of 2013; 15.4/10,000 were reported that week by the GPs. Thereafter the incidence decreased gradually and the percentage of nose- and throat swabs of patients with ILI containing influenza virus remained high for weeks. 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 incidence among persons > 65 years was higher in the last part of the season. Analyses by the WHO showed that the viruses of this season's influenza vaccine showed less similarity with the circulating influenza viruses A(H3N2) and B, possibly causing suboptimal protection by the vaccine.

This topic remains on the weekly returns

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6 Pneumonia

Topic owner: Mw. Dr. R. van Gageldonk, RIVM (2007-2010, 2012)

Introduction

Thanks to the registration in the Sentinel GP Network since years a good overview is available of the incidence of influenza like illness (ILI) and influenza virus in the Dutch population[7].
Pneumonia is one of the most important complications of ILI and a potentially life threatening disease. Most information concerning incidence, risk factors, ethiology at the moment is generated from secondary care, reason why population incidence and trends are unknown. This is the reason that important information is lacking for adequate disease management.[8]

The pneumonia surveillance was initiated in 2007 to support 'pandemic preparedness'. As pneumonia is one of the most important complications of influenza, a combination of influenza and surveillance strengthens the knowledge of epidemiology of both diseases. Pandemic preparedness remains important after the 2009 pandemic, especially due to the circulation of highly pathogenic avian influenza viruses. To enhance successful interpretation of fluctuations during a pandemic knowledge of historical patterns is essential, reason why continuous surveillance of influenza and pneumonia is necessary.

The goal of the pneumonia surveillance is a nationally representative overview of geographic and seasonal trends in the incidence of pneumonia in primary care, stratified by age and gender, compared to incidence of ILI incidence and trends.

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)?

During the years 2007-2010 a nose and throat swab was sent for bacteriological examination to Maastricht University Medical Center, but after restarting the topic in 2012 this was not requested.
When the pneumonia is caused by ILI this will be recorded in the patient record and usual virological examination for ILI will take place by sending nose and throat swabs to RIVM. Results of the virological examination are reported after about one week.

Data from sentinel practices reporting about pneumonia not at all or only once were excluded from the annual analysis because it is unlikely that pneumonia does not or hardly 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

In 2012 the results are based on 22 reporting sentinel practices. Results of 17 practices were not included, 11 practices reporting no case and 6 practices reporting only one case of pneumonia. Table 6.1 shows the number of patients with pneumonia per province group and address density. The incidence of 40 cases per 10,000 is lower than in the period 2007-2010. The incidence is in contrast to previous years lowest in rural areas.

Table 6.1 Number of patients with pneumonia per 10,000 inhabitants, per province group, address density and for the Netherlands, 2007-2010, 2012

	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
2012	13	29	53	34	15	57	25	40

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

Seasonal influence

Comparison of the incidence per season during the period 2007-2010 shows that pneumonia occurs mostly in winter (first trimester) and less often in summer (third trimester). In 2012 this was also the case and the peak was in the first trimester concurrent with the influenza epidemic (table 6.2).

Table 6.2 Number of patients with pneumonia per 10,000 inhabitants per quarter, 2007-2010, 2012

	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
2012	17	8	5	9

Age distribution

The incidence of pneumonia is the highest in babies (<1 years) and the elderly (65 years and older). The highest incidence occurs in persons of 85 years and older: 200 per 10,000. In elderly persons between 75 and 85 years of age 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, 2012

	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

The numbers between bracket are based on N<5

Table 6.3 Number of male and female patients with pneumonia per 10,000; per age group and for the Netherlands, 2007-2010, 2012 (cont.)

age group	2012 m	f	t
< 1	182	(30)	106
1-4	56	67	61
5-9	(21)	(11)	16
10-14	(19)	(16)	18
15-19	(21)	(16)	19
20-24	0	(5)	(3)
25-29	(15)	34	24
30-34	(19)	(20)	20
35-39	18	14	16
40-44	32	20	26
45-49	32	36	34
50-54	(13)	27	20
55-59	51	58	54
60-64	46	66	56
65-69	59	93	77
70-74	81	100	91
75-79	91	64	76
80-84	157	57	97
> 85	(104)	241	200
total	36	43	40

The numbers between bracket are based on N<5

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
2012	36	43	40	30,000	36,000	67,000

* number of patients with pneumonia 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 2012, concurrent with the influenza epidemic. Only at old age (75-84 years) 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). The incidence of pneumonia is in 2012 at a lower level compared to the previous registration period 2007-2010. Results of 17 practices were not included due to probable underreporting.

This topic will be continued in 2013.

Publications based fully or partly on continuous morbidity registration data

Spuesens EBM, Meijer A, Bierschenk D, Hoogenboezem T, Donker GA, Hartwig NG, Koopmans MPG, Vink C, Van Rossum AMC. *Macrolide resistance determination and molecular typing of Mycoplasma pneumoniae in respiratory specimens collected between 1997 and 2008 in The Netherlands*. J Clin Microbiol 2012;50(6):1999-2004. DOI:10.1128/JCM.00400-12

7 Streptococcus Surveillance

Topic owner: Ellen Stobberingh (SWAB) (2011-2012)

Introduction

Streptococcus haemolyticus, also called S. Pyogenes, is part of the commensal throat flora, but is also the pathogen of several less serious to (very) serious diseases. It is often the pathogen of tonsillitis and pharyngitis in children, but may also cause life-threatening infections such as sepsis, necrotizing fasciitis and toxic shock syndrome. Because of the last mentioned infections the bacteria is also in popular speech indicated as "carnivorous bacteria". Streptococcus are, so far, still sensitive to penicillin. Frequently, a macrolide is applied as an alternative therapy, especially the long acting medicines (azitromycine) are popular with prescribers and patients, because the ease of use. Drawback of these slowly excreted medicines is the risk of macrolide resistance. Updated data on the resistance to antibiotics of Dutch patients in the GP practice are not available. The most recent data are from a study in 1995.[9] A surveillance of clinical isolates identified in a university hospital in 2005 and 2006 has recently been described (van Leer Buter et al.). During a two-years study period an increase in macrolide resistance was observed from 4.5% in the beginning to 8% in 2006. Because macrolides are the drugs of choice in case of penicillin hypersensitivity knowledge of the resistance is important.

Objective:

The objective of this survey is the determination of antibiotic resistance in B-haemolytic streptococcus isolated in primary care patients. The reason is that up to date resistance data in primary care are lacking and that an increase in resistance is anticipated due to increasing use of (long acting) macrolides. As macrolides are first choice in case of penicillin allergy resistance knowledge is crucial.

Method

- All patients, children too, who visit the physician, ares eligible to participate in the study. It is advised to take swabs, during several days a week in the beginning of the week, from the first patient every day and every patient with a sore throat (one per day).
- The examination consists of taking a throat swab and filling in some patient characteristics, such as: date of birth and gender of the patient and the sentinel practice number.
- The questionnaire also asks questions about the use of antibiotics, in addition to the above mentioned questions, the use at the moment as well as the use in the last three months, and the reason of the visit; does the patient have throat complaints or not?
- The swabs are sent to the Maastricht University Medical Centre (MUMC) in Maastricht, at the same day they are taken, in a prepaid envelop, preferably more samples in one envelop to reduce the cost of sending.
- In the MUMC the swabs are analysed on occurrence of β-haemolytic streptococcus. Also, the sensitivity to antibiotics is established (penicillin, macrolides, clindamycine, doxycycline).
- All necessary materials are delivered by the MUMC.

Results

Table 7.1 The number of received samples per province group, by address density and for the Netherlands in 2011-2012

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2011	337	282	539	744	173	1266	463	1902
2012	143	73	405	932	103	1120	330	1553

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

In 2012 less swabs were obtained than in 2011 consistent with a lower number of sentinel practices in 2012, but the total number of 3455 swabs in the two years period is sufficiently spread by region and population density.

Age distribution

Table 7.2 Number of samples by gender per age group in 2011-2012

	2011			2012		
age group	m	f	t	m	f	t
< 1	0	2	2	1	2	3
1-4	22	16	38	29	22	51
5-9	29	37	66	47	50	97
10-14	41	31	72	63	48	111
15-19	48	60	108	85	108	193
20-24	57	89	146	93	140	233
25-29	41	63	104	72	111	183
30-34	40	77	117	73	126	199
35-39	61	52	113	95	108	203
40-44	52	80	132	97	155	252
45-49	48	92	140	94	160	254
50-54	70	97	167	130	177	307
55-59	70	77	147	123	154	277
60-64	83	69	152	133	140	273
65-69	63	63	126	145	130	275
70-74	51	70	121	94	124	218
75-79	51	28	79	104	73	177
80-84	11	24	35	33	46	79
> 85	8	13	21	20	27	47
unknown	-	-	-	7	16	23
total	851	1051	1902	1538	1917	3455

The total number of 3455 swabs is adequately spread over the different age groups and were taken a bit more often from women than from men with a woman-man ratio of 1.25 consistent reflecting a higher consultation rate of women in primary care.

Micro-organisms

Table 7.3 shows the total number of samples sent in 2011 and 2012 and the percentage of throat complaints within these and the percentage of samples in which β-haemolytic streptococcus were found.

Table 7.3 Number of samples by morbidity and micro-organisms found in 2011 and 2012

jaar	Aantal monsters	< 3mnd keelklachten		micro-organisme	
		absoluut	relatief	S. pneumoniae	β-haemolytische streptococ
2011	1902	678	35.6%	87 (4.6%)	32 (1.7%)
2012	1553	471	30.3%	39 (2.5%)	30 (1.9%)

The number of samples in which Streptococcus pneumonia or β-haemolytic streptococcus were found is rather low, i.e. respectively 3.6% and 1.8% over the two years combined. Antibiotic resistance results will be reported separately.

Discussion

The number of swabs with Streptococcus pneumoniae or β-haemolytic streptococcus is rather low, respectively 3.6% and 1.8%. Antibiotic resistance results will be reported separately.

This topic will not be continued in 2013.

8 Whooping cough

Topic owner: Dr. H. de Melker, (RIVM) (1998-2012)

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 since 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.[10] Therefore, since July 2001 children at four years of age received revaccination with acellular whooping cough vaccine. Since 2005 the whole cell whooping cough vaccine has been replaced by a combination vaccine with an acellular whooping cough component.

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 may 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 whooping cough to the health authorities.

Direct registration of whooping cough in general practice is one way of gaining insight into 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 introduction of the acellular vaccine and in 2012 this was done as well and compared to the national mandatory notification register (Donker and van dr Maas).[11,12]

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 2012 86 patients were reported with whooping cough amounting to 8 per 10,000 patients. This incidence is considerably higher than in the previous years (see table 8.1) due to an epidemic in 2012 An epidemic occurs 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 were supposed to be decreasing, but the contrary appeared to be true in 2012.[11] The incidence in 2012 is comparable to the incidence in 2004, after implementation of the revaccination at four years of age, but before introduction of the accellular vaccine.

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, 2003-2012

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
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
2011	-	3	2	4	2	2	3	2
2012	22	4	7	6	9	9	8	8

* 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, 2003-2012

age group	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<1	(7)	(29)	(8)	(18)	(8)	9	-	(7)	(18)	(29)
1-4	14	35	30	17	17	8	17	(4)	11	12
5-9	11	33	18	(7)	10	9	7	(4)	(3)	12
10-14	(3)	23	10	10	17	24	7	10	(5)	27
15-19	(4)	10	(3)	(7)	14	6	7	(4)	8	15
20-24	-	(3)	-	-	(3)	(2)	(2)	(4)	(3)	12
25-29	(2)	-	-	-	0	(3)	-	(1)	-	(7)
30-34	(1)	6	5	(3)	(6)	(2)	(2)	(3)	(2)	(5)
35-39	(3)	6	4	(1)	(1)	(4)	-	-	-	(3)
40-44	-	-	(1)	-	(5)	6	(3)	(3)	(1)	9
45-49	(1)	(3)	6	-	6	(1)	(1)	(3)	(1)	9
50-54	(1)	(6)	(4)	-	0	(1)	-	(1)	(1)	(4)
55-59	-	(3)	(5)	-	(1)	(4)	(1)	(1)	-	(5)
60-64	(2)	-	(6)	-	(2)	(2)	-	(2)	(1)	(3)
65-69	-	(5)	-	-	0	-	-	(2)	(2)	(6)
>70	-	(0)	(2)	-	-	-	-	(2)	-	(3)

The numbers between bracket are based on N<5

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.[11] In 2012, the highest incidence is found in the age groups 10-19 years (teenagers).

Extrapolation

Table 8.3 Extrapolation of incidence rates whooping cough to the Dutch population

	frequency incidence rate (per 10,000)*	Netherlands** (absolute numbers)
topic	total	total
year	(m+f)	(m+f)
whooping cough		
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
2011	2	3,000
2012	8	13,000

* number whooping cough per 10,000 inhabitants (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 spite of the large number of people being vaccinated against whooping cough it still does occur relatively often in the population and 2012 showed an obvious epidemic. Whooping cough occurs in all age groups. Since the introduction in 2001 of vaccination with an acellular vaccine at the age of 4 years and the replacement of a cellular vaccine by an acellular vaccine in the

first year after birth in 2005, the peak incidence gradually shifts towards teenage groups. During the 2012 epidemic the highest incidence was also found in teenagers. In the mandatory notification reports the incidence up to and including 7 years is low and the peak incidence occurs in children and adolescents from 8 years old. A comparison of mandatory notification reports and the sentinel surveillance does not show a difference in age distribution. A publication of the whooping cough epidemic in 2012 comparing mandatory notified cases and the sentinel surveillance was published in December 2012 in Huisarts & Wetenschap (Donker en Van der Maas).[12]

The topic will be continued in 2013.

Publications based fully or partly on continuous morbidity registration data

Donker Gé, van der Maas Nicoline. *De kinkhoestepidemie van 2012.* Huisarts en Wetenschap 2012;55(12):571

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) (1996-2012)

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.[13]
Gastro-enteritis was added again to the surveillance of the Sentinel GP Network 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.[14]
In 2012 data were used to compare the incidence of gastro-enteritis in children in the general population to children in day care centres. These data are published in 2013 (Enserink et al., 2013).[15]

Method

Sentinel GPs 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.

Since 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 stools 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, 2003-2012

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2003	male	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
2011		52	46	58	50	62	42	64	52
2012		51	62	51	84	66	63	57	62
2003	female	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
2011		66	71	80	74	74	60	99	74
2012		60	67	67	105	85	68	85	76

* 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 2003-2012 (cont.)

		province group				address density			Netherlands
		N	E	W	S	1*	2*	3*	
2003	total	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
2011		59	59	69	62	68	51	82	63
2012		55	65	59	94	75	66	71	69

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

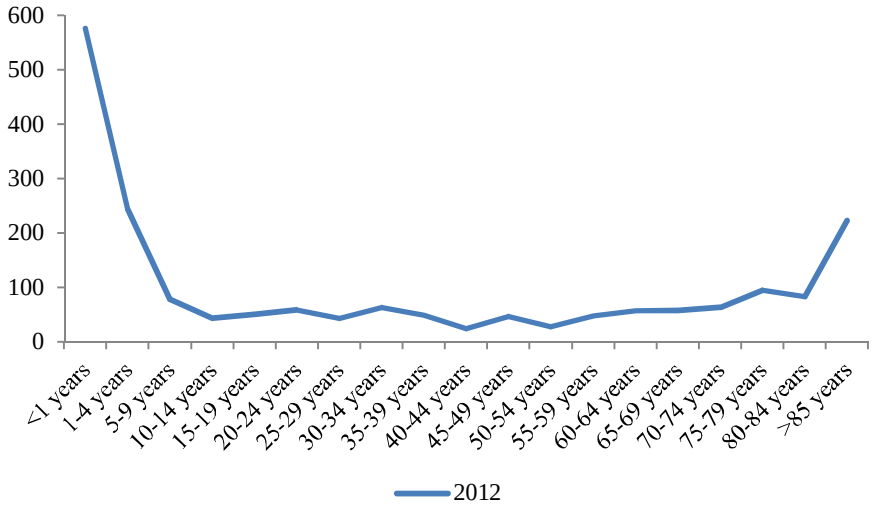
The highest incidence for men and women was seen in 2006.
In 2012 the incidence is not higher than average in the preceeding years. The highest incidence is found in 2012 in the rural areas and the southern part of the country. The difference between men and women has been inconsistent for several years.

Age distribution

Table 9.2 Numbers of patients with acute gastro-enteritis per 10,000 inhabitants, 2003-2012

	total									
age group (year)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<1	613	765	687	690	588	689	432	741	692	576
1-4	437	341	296	472	349	368	267	313	228	245
5-9	197	136	163	156	114	114	85	107	74	79
10-14	125	80	79	107	56	61	76	58	33	43
15-19	83	82	100	84	53	54	49	61	53	50
20-24	118	99	80	121	84	85	53	85	64	59
25-29	95	87	72	104	82	80	46	79	42	44
30-34	94	99	67	80	84	83	64	75	41	64
35-39	84	71	56	86	44	72	35	49	32	49
40-44	52	55	55	61	38	56	42	45	34	25
45-49	66	70	49	65	49	44	36	46	34	47
50-54	65	67	57	67	57	42	28	45	29	28
55-59	54	57	57	67	76	53	41	43	49	48
60-64	68	48	78	61	48	54	36	60	40	58
65-69	56	58	76	92	63	73	65	41	54	57
70-74	72	54	82	102	100	61	35	73	41	63
75-79	49	101	98	125	131	119	72	92	78	95
80-84	110	115	131	193	152	141	88	133	78	83
>85	81	104	131	166	152	174	178	219	228	224

Figure 9.1 Numbers of patients with acute gastro-enteritis in 2012, by age group per 10,000 inhabitants



During the whole registration period, most cases of acute gastro-enteritis were diagnosed among babies and 1-4 years olds. In 2012 this was also the case. Similarly as during the years 2003-2011, a higher incidence was found once again for persons older than 75 years in 2012.

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 2003-2012, arranged per quarter

quarter	1 : weeks 1-13	2 : weeks 14-26	3 : weeks 27-39	4 : weeks 40-52
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
2011	23	14	12	15
2012	19	17	15	18

Similarly as in most earlier years the highest incidence in 2012 is seen during winter time (first quarter), but less pronounced compared to previous years.

Faeces test in cases of acute gastro-enteritis

Table 9.4 shows 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 2003-2012

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
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
2011	3	6	11	3	5	4	10	6
2012	7	14	12	9	6	11	16	11

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

The number of requests for faeces tests in 2012 was higher than in 2011, but comparable to the preceeding years. In 2012, the number of requests for a test was the highest in the big cities and in the eastern 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 2003-2012

age group (year)	2003	%	2004	%	2005	%	2006	%	2007	%
<1	90	15	49	6	82	11	45	6	118	17
1-4	78	18	45	13	57	16	61	13	77	18
5-9	36	18	30	15	18	10	25	16	27	19
19-14	15	12	15	19	24	23	19	17	9	14
15-19	13	16	17	21	32	24	26	31	21	29
20-24	32	27	22	22	17	17	42	35	29	26
25-29	32	34	22	25	16	19	41	39	35	30
30-34	26	31	27	27	22	25	31	38	25	23
35-39	19	37	17	24	20	27	19	22	24	35
40-44	22	33	23	42	22	28	23	38	13	25
45-49	19	29	20	29	19	28	10	15	22	31
50-54	19	29	24	36	12	18	22	33	18	24
55-59	16	30	23	40	16	22	19	28	14	15
60-64	11	16	12	25	17	18	27	43	26	35
65-69	17	30	32	60	25	25	20	22	23	27
70-74	15	21	19	32	13	14	21	21	15	13
75-79	31	63	(7)	7	3	3	26	19	10	7
80-84	13	12	(10)	9	20	13	31	16	17	10
>85	(5)	6	(7)	7	0	0	(7)	4	(12)	7

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

Numbers in brackets are based on N<5

Table 9.5 Number of requests for a faeces test in cases of acute gastro-enteritis per age group per 10,000 inhabitants for 2003-2012

age group (year)	2008	%	2009	%	2010	%	2011	%	2012	%
<1	28	4	(16)	4	(15)	2	55	7	49	9
1-4	30	8	31	112	31	10	27	10	35	14
5-9	(6)	5	(6)	7	9	8	8	10	13	16
19-14	(3)	5	(3)	4	8	14	3	(9)	10	23
15-19	(8)	15	(1)	2	16	26	-	-	13	26
20-24	12	14	12	23	11	13	6	(9)	10	17
25-29	13	16	14	30	10	13	5	(10)	10	23
30-34	10	12	(6)	9	13	17	5	(10)	13	20
35-39	12	17	11	31	(5)	10	9	21	16	33
40-44	(9)	16	(6)	26	8	18	4	(10)	6	24
45-49	(9)	20	(5)	14	9	20	5	(13)	4	9
50-54	12	29	(4)	11	(6)	13	4	(12)	(1)	(4)
55-59	15	28	11	39	(5)	12	10	18	11	23
60-64	(8)	15	(4)	10	(5)	8	4	(10)	6	10
65-69	(9)	12	15	42	13	32	2	(3)	(4)	(7)
70-74	(5)	8	17	57	15	31	2	(6)	14	22
75-79	(9)	8	(3)	4	(5)	5	3	(4)	(12)	(13)
80-84	13	9	0	0	(7)	5	4	(5)	13	16
>85	(2)	1	(14)	8	(4)	2	5	(2)	(5)	(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 2012 for 0-4 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 of 39-44 years of age consult their GP with the symptoms of acute gastro-enteritis the GP will relatively more often request a faeces test in 2012.

Extrapolation

Table 9.6 Extrapolation of incidence rates gastro-enteritis to the Dutch population

	frequency incidence rate (per 10,000)*			Netherlands** (absolute numbers)		
topic year	m	f	total	m	f	total
gastro-enteritis						
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
2011	52	74	63	43,000	62,000	105,000
2012	62	76	69	51,000	64,000	115,000

* number gastro-enteritis 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 2012 the incidence was higher than in 2011, but comparable to the preceeding years. 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.[16,17]
As part of regular health care GPs request a faeces test relatively more often in 2012 for patients in the age group 39-44. This is also the result of a difference in consultation behaviour between cases of acute gastro-enteritis involving children (< 15 years old) and cases involving 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 adults.[16,17]
A comparison of the incidence of gastro-enteritis in the Sentinel GP Network with the incidence in children visiting day care centres showed a twofold incidence of gastro-enteritis in children 0-4 years of age visiting day care centres. One third of day care centres reported the absence of hand washing protocols before meals (34%) and after visiting the toilet (15%) or to not daily clean the toilets (17%) (see publication Enserink et al. 2013).[16]

This topic is unchanged continued in 2013.

Publications based fully or partly on continuous morbidity registration data

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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

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10 Sexually Transmitted Diseases (STD)

Topic owner: Mrs. dr. I. Van den Broek (RIVM)(2008-2012)

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 municipality 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 municipality 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 Sentinel General Practice Network topic “fear of STD” and from estimates based on LINH data (Netherlands Information Network of General Practices). In previous years GPs have noticed a steady increase in the number of STD-related consultations.[18] This increasing trend is also described in the annual surveillance report of the RIVM.[19] Therefore, registration by the Sentinel GP Network, 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 an STD test. In consultation with the RIVM and STD-AIDS the Netherlands, the topics ’fear of HIV’ and ‘urethritis in men’ have been replaced by ‘STD’ in men and women from 1-1-2008 onwards. 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 consultation 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, genital Herpes infection, hepatitis B, HIV and/or syphilis are performed by the regional laboratory of the participating practice. Only sentinel practices reporting STD at least once per year were included, as in practices without any STD diagnosis underreporting is assumed.

Results

The results are based on data from 38 reporting practices. Only 1 practice was excluded for assumed underreporting.
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 and in the big cities. The number of STD-related consultations is in 2012 slightly lower than in 2011, but higher than in the preceeding three 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 2008-2012

	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
2011	35	41	91	62	35	61	89	66
2012	38	34	65	64	35	56	68	54

* 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 35 years consults the GP most frequently for these problems. More women than men consult the GP for STD and/or fear for HIV.

Table 10.2 Number of new STD-related consultations per age group and per 10,000 inhabitants, 2008-2012

	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

The numbers between bracket are based on N<5

Table 10.2 Number of new STD-related consultations per age group and per 10,000 inhabitants, 2008-2012(cont.)

	2011			2012		
age group	m	f	t	m	f	t
10-14	0	4	2	-	-	-
15-19	66	246	155	50	146	97
20-24	236	342	209	157	239	198
25-29	143	274	210	156	291	224
30-34	135	156	146	102	122	112
35-39	63	70	67	69	87	78
40-44	60	64	62	48	36	42
45-49	47	12	30	37	31	34
50-54	27	47	37	22	33	27
55-59	14	13	14	32	19	25
60-64	13	16	15	(9)	(12)	10
65-69	9	0	4	20	(8)	14
70-74	11	0	6	0	-	-
75-79	0	0	0	(21)	-	(9)
80-84	0	0	0	-	-	-
>85	-	-	-	-	(7)	(5)
total	53	78	66	45	62	54

The numbers between bracket are based on

Extrapolation

Table 10.3 Extrapolation of incidence rate STD-related consultations 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
2011	53	78	66	44,000	66,000	110,000
2012	45	62	54	37,000	52,000	90,000

* number STD 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 35 years. GPs are consulted more frequently by women than by men for STD and/or fear of HIV.

The incidence rates from the sentinel practices are lower than from the Dutch Primary Care Database which also includes the sentinel practices 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 in the Dutch Primary Care Database. The additional data from the questionnaires will be compared with the data from the Dutch Primary Care Database and other sources. These will be reported separately.

This topic will be continued in 2013.

Publications based fully or partly on continuous morbidity registration data

Trienekens Suzan CM, van den Broek Ingrid VF, Gonker Gé A, van Bergen Jan EAM, van der Sande Marianne AB. *Consultations for sexually transmitted infections in the general practices in the Netherlands: an oppertunity to improve STI/HIV testing.* BMJ Open; doi:10.1136/bmjopen-2013-003687

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11 Oak Processionary Larvae

Topic owner: Ir. A.G. Zijlstra, GGD region Twente and GGD IJsselland, department Environment and Health (2012)

Introduction

From 1987 the oak processionary larvae are a yearly returning problem in a large part of the Netherlands. In the past, the oak processionary larvae mainly occurred in the south of the province North-Brabant and the adjacent part of the province of Limburg. The populations reached in the south a provisional peak in 1996. A year later, far less were spotted and it was anticipated that the insect would leave the Netherlands or that a natural balance would be created. However, from 2003 the larvae spread further over the Netherlands.[20,21] By now, the geographical range of the larvae covers all provinces. In 2010 the most northern nests have been found in the city of Groningen.
The spread of the oak processionary larvae has increased dramatically in the past few years throughout the Netherlands, therefore, the complaints about the hairs of the oak processionary caterpillar too are anticipated to rise dramatically. During the months of June up to and including August people will be most troubled, as the caterpillars develop hairs containing an irritant toxin and these spread from caterpillars and the nests.[22,23] Health complaints related to the hairs of the oak processionary caterpillar may also occur during these months. Almost everybody who has been in contact with the hairs is troubled by minuscule barbs in the skin, eyes and respiratory tract. How big and serious the complaints are differs from person to person.

Health complaints
GPs often see patients with complaints of skin, eyes and respiratory tract that have possibly been caused by contact with the characteristic hairs of the oak processionary caterpillar. [21] Especially during the months June up to and including August, these hairs may cause serious complaints. But also in later months people may have complaints when the hairs spread from the empty nests. The hairs easily penetrate the skin, the eyes and the respiratory tract

and stay there because they have barbs. This way, they may cause painful little wounds. In addition to this “mechanical effect” of the hairs, an allergy-like effect may occur. The toxins from the hairs cause an allergy-like skin rash, swellings, red eyes and itching (pseudo-allergic reaction). Also, part of the population may develop an allergy from the proteins that are released from the hairs. Not all people do react the same to the hairs of the caterpillar. However, once someone has been in contact with the hairs of the oak processionary caterpillar more often, the reaction can be even much stronger. Research shows that complaints such as itching and skin rash occur most often. Of the people with complaints related to the oak processionary caterpillar 89% turn out to report itching as well as skin rash as effect on their health.[24]

The oak processionary larvae have dramatically expanded their habitat in the Netherlands over the past few years and they occur now everywhere in the Netherlands. The trouble and health complaints caused by the hairs of the caterpillar are expected to grow in the whole country. However, insight in the number of reported cases in the country by GPs and pressure on the general health care is lacking. Reported health problems related to the hairs of the caterpillar are not being registered adequately. The registration in the Sentinel GP Network aims to acquire insight into the incidence and trends of the skin complaints reported to GPs that are related to the hairs of the oak processionary larvae.

Method

The registration of health complaints caused by exposure to the hairs of the oak processionary caterpillar is focussed on the ICPC classification ‘Skin and Subcutis (S)’.
The GP reports complaints possibly caused by the oak processionary caterpillar by answering positively a pop-up question in the sentinel-module by the ICPC-codes:

- S01 - Pain/sensitivity skin
- S02 - Pruritus/itching
- S06 – Local redness/erythema skin
- S98 - Urticaria
- S29 – Other skin disease/subcutis

The pop-up question is: ‘Does it concern (possibly) complaints caused by the oak processionary caterpillar?’ In case of a positive answer a short questionnaire is filled in regarding the character, localization and degree of disturbance by the complaints. In this short questionnaire work related exposure to the hairs of the oak processionary caterpillar is also noted.

Results

During the season of the caterpillars in 2012 only a few reports were registered of complaints caused by the oak processionary caterpillar (N=11, of which 7 in the eastern part of the country). The incidence for the Netherlands is calculated, based on that number, at 10.7 per 100,000. Because of the small number, the incidence is not presented per region and address density, but the number of reported cases is presented (table 11.1).

Table 11.1 Number of reported complaints caused by the oak processionary caterpillar in 2012, per region and population density

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2012	2	7	1	1	5	6	-	11

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

Season influences, age, complaints and exposure

The first reported case was in the western part of the country in week 16 and the last reported case of 2012 was in the eastern part of the country in week 34. The reported cases show furthermore that complaints caused by the oak processionary caterpillar occur in children as well as adults and is widely spread over age categories.
The completed in questionnaires show that the oak processionary caterpillar causes itching in all registered patients. Only one patient had in addition to itching also eye complaints. Most patients experience the complaints for the first time. None of the patients reported work related exposure of the hairs of the oak processionary caterpillar (not in table).

Extrapolation

Table 11.2 Extrapolation of reported patients with complaints caused by the oak processionary caterpillar in the Dutch population

	frequency incidence (per 100.000)*	Netherlands** (absolute numbers)
topic year	total (m+f)	total (m+f)
oak processionary caterpillar		
2012	10.7	1,800

* number oak processionary caterpillar per 100,000 men and women (data Sentinel GP Network)

** extrapolation of the incidences in the Dutch population (of the year concerned), rounded off at hundreds

Discussion

During the season of the caterpillar in 2012 only few patients with oak processionary caterpillar related complaints have been registered. The number of patients that consulted the GP in the Netherlands with complaints caused by the oak processionary caterpillar can be estimated, based on the registration of the Sentinel GP Network, at 1800 in 2012 with a wide 95% confidence interval (800-2800). All patients were troubled by itching. None of the patients reported work related exposure to the hairs of the oak processionary caterpillar.
Despite the large error margin it may be concluded that the number of patients reported in the Netherlands is far lower than the anticipated number based on literature. The GGDs of the province of Brabant estimated in 1997 that of the 917,000 inhabitants over 52,000 had health complaints caused by

the hairs of the oak processionary caterpillar. It was estimated that around 33% of these consulted the GP in the period from May to and including August.[25] In 2008 it was estimated that every year around 80,000 people in the Netherlands were experiencing health complaints caused by the oak processionary caterpillar.[21] The oak processionary caterpillar has more widely expanded its habitat in the Netherlands from then onward.
The fact that in the current registration less patients have been registered than anticipated, can have several causes. It is known that the occurrence of complaints follows the curve of the plague; a mild plague season results in less complaints.[25] Also, people may use more self-care (once they are familiar with the complaints) resulting in less GP contacts.
In addition, the policy of control of the caterpillar and the policy of providing more information to the population of the municipalities seems to work. Under-registration may also occur, because the registration of the oak processionary caterpillar was a new topic in 2012 in the Sentinel GP Network and GPs were relatively unfamiliar with the symptoms caused by contact with the hairs of the caterpillar. The registration using ICPC codes has been used to prevent under-registration.

No conclusion can be made based on these low numbers and further monitoring is required. We may conclude that in the Sentinel GP Network low numbers of oak processionary caterpillar related complaints were found in 2012.

The topic will be continued in 2013.

12 End-of–Life research

Topic owner: Prof. L. Deliens, Free University Brussels (2005-2012)

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 in 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 particularly 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, Italy and Spain. The data of these four countries are compared and results are published as a consortium. Only sentinel practices that have registered >1 death are involved in the analyses, because 0 or 1 death in one year is suspect of underreporting.

Results

The number of patients per 10,000 reported for the end-of-life study is presented in table 12.1, per province group and by address density and for the Netherlands from 2005 to and including 2012. The numbers are based on 34 sentinel practices with >1 registration in 2012. Five sentinel practices were excluded in 2012 (2 with 0 registrations and 3 with 1 registration). Most reported cases came from the northern part of the country and from practices in the countryside. In the western part of the Netherlands the registrations are lower than in previous years. It might be that especially in large cities patients have, more than in previous years, spent the last stage in an nursing home or hospice which is not part of the general practice.

Table 12.1 Number of reported End-of-Life study per 10,000 inhabitants, per province group, by address density and for the Netherlands, 2005-2012

	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
2011	47	36	35	35	42	34	37	37
2012	58	51	29	56	55	46	34	45

* 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 12.2.

Table 12.2 Numbers of reported End-of-Life study by quarter, per 10,000 inhabitants, 2005-2012

	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
2011	10	8	7	10
2012	11	11	11	12

In 2012 the reported number of end-of-life cases was the highest in the last quarter. In that quarter no extreme temperatures nor an influenza epidemic occurred.

Age distribution

The age distribution of the patients reported for the end-of-life study in 2012 is presented in table 12.3.

Table 12.3 Numbers of reports End-of-Life-study, per 10,000 inhabitants, by age group, 2005-2012

age group	2005	2006	2007	2008	2009	2010	2011	2012
<1	(26)	(21)	(20)	(22)	(0)	(0)	49	-
1-4	(0)	(0)	(10)	(2)	(0)	(4)	-	-
5-9	-	(0)	(0)	0	(0)	0	(2)	-
10-14	(3)	(0)	(0)	0	(1)	0	-	-
15-19	(3)	0	(0)	0	(1)	(3)	-	(2)
20-24	0	(2)	10	(4)	(3)	(1)	-	4
25-29	(1)	(2)	(2)	0	(3)	(1)	(2)	-
30-34	0	(2)	(2)	(6)	0	(1)	(2)	9
35-39	7	(2)	(5)	(6)	(3)	(4)	(2)	(3)
40-44	10	(6)	(4)	(6)	6	8	(3)	(1)
45-49	10	13	14	11	12	9	9	11
50-54	20	19	24	32	30	27	20	20
55-59	38	21	27	40	25	40	17	32
60-64	68	87	62	62	36	56	41	45
65-69	85	80	120	64	66	87	78	75
70-74	131	173	138	137	134	143	76	119
75-79	268	282	248	201	177	227	177	222
80-84	402	426	413	308	294	358	274	374
>85	1106	915	918	761	626	808	605	651

The numbers between bracket are based on N<5

In the first year of life babies die from, among other things, incurable congenital diseases. In 2012, 2010 and 2009, no cases of end of life in the youngest category were reported in contrast to 2011 (N=5). Subsequently the mortality rates are low until the age of 50, after which they steadily increase.

Extrapolation

Table 12.4 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-Life 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
2011			37			57,000
2012			45			75,000

* number of deaths per 10,000 inhabitants (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 amounted to 140,833 in 2012, 8.4 per 1000 inhabitants. (Dutch Statistics, www.CBS.nl). Part of the patients who die are not under the direct care of a GP, such as patients in nursing homes or hospices. 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.[26] This lower rate may be due to underreporting. In the sentinel registration, with a rate of 45 per 10,000 that appears to be the case too, but to a somewhat lesser extend. Extrapolation shows that 54% of the total number of estimated deceased 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. 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, Italy and Spain has also been published in several scientific papers.

The topic is maintained in 2013 and some subjects in the questionnaire have been changed.

Publications based fully or partly on continuous morbidity registration data

Evans N, Costantini M, Pasman HR, Van den Block L, Donker GA, Miccinesi G, Bertolissi S, Gil M, Boffin N, Zurriaga O, Deliens L, Onwuteaka-Philipsen B. *End-of-life Communication: A Retrospective Survey of Representative General Practitioner Networks in Four Countries.* Journal of Pain and Symptom Management 2013;46: August 7. Available on line: http://dx.doi.org/10.1016/j.jpainsymman.2013.04.008

Claessen SJJ, Francke AL, Echteld MA, Schweitzer BPM, Donker GA, Deliens L. *GP's recognition of death in the foreseeable future and diagnosis of a fatal condition: a national survey.* BMC Family Practice 2013;14(1):104. DOI: 10.1186/1471-2296-14-104

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Evans N, Pasman H.R. Vega Alonso T, Van den Block L, Miccinesi G, van Casteren V, Donker G, Bertolissi S, Zurriage O, Deliens L, Onwuteaka-Philipsen B. *End-of-Life Decicions: A Cross-National Study of Treatment Preference Discussions and Surrogate Decision-Maker Appointments.* PLoS ONE 8(3):e57965. Doi:10.1371/journal.pone0057965

Ko W, Beccaro M, Miccinesi G, Van Casteren V, Donker GA, Onwuteaka-Philipsen B, Miralles Espi MT, Deliens L, Costantini M, Van den Block L. *Awareness of General Practitioners concerning cancer patients' preferences for place of death: Evidence from four European countries.* Eur J Cancer 2013;published on line 18 February 2013. doi:10.1016/j.ejca.2013.01.006

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Abarshi E. *Care in the last months of life. End-of-life Care registration in the Netherlands by a network of General Practitioners.* Dissertatie 2011 VU Amsterdam

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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

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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

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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

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13 (Attempted) suicide

Topic owner: Mrs. Dr. G.A. Donker (NIVEL) (1979-2012)

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 2003-2012 were, 43, 55, 71, 24, 49, 28, 40, 46, 33 and 39 respectively.

The number of attempts per province group and by address density per 10,000 inhabitants is shown in Table 13.1. Breaking down the numbers into subgroups is of limited value in view of the low frequency.
In 2006, 2008 and 2011 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 2002, 2007 and 2012.
The distribution by province group shows a less consistent picture, possibly due to the small number of cases. In the previous 5 years the incidence in the western part of the country was the highest, except for 2012. In this part of the country most big cities are situated.

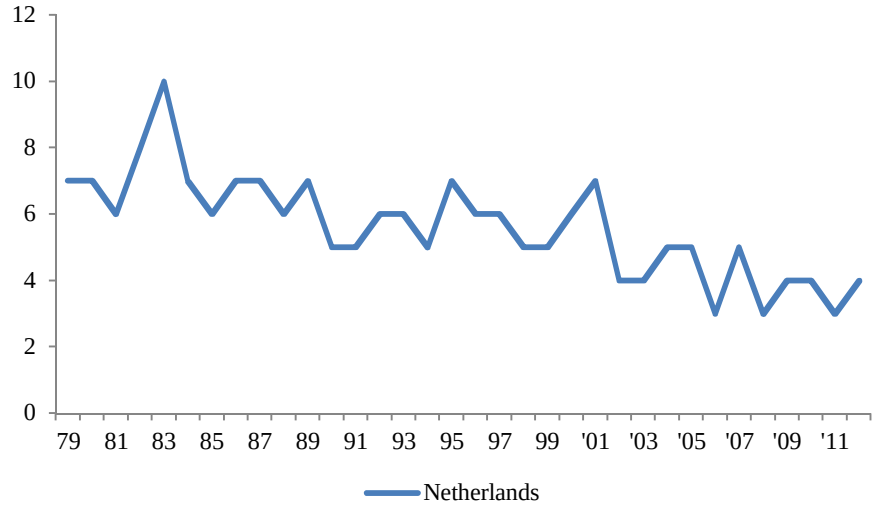
Table 13.1 Number of (attempted) suicides reported per 10,000 inhabitants, per province group, by address density and for the Netherlands as a whole, 2003-2012

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
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
2011	3	1	5	2	4	2	4	3
2012	2	5	3	5	3	5	2	4

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

The figure shows the initially gradually decreasing trend in the number of attempted suicides registered in general practice during a period of 33 years. The past 10 years the incidence is more or less stabile with small fluctuations.

Figure 13.1 Number of (attempted) suicides reported per 10,000 inhabitants for the Netherlands as a whole, 1979-2012



Age distribution

In 2004 a peak incidence was found for adolescents, however in other years 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 and in 2012 the incidence was the highest in the age group 35-44 years.

Table 13.2 shows the frequency of suicide and attempted suicide per 10,000 inhabitants, by age group in the last 10 years.

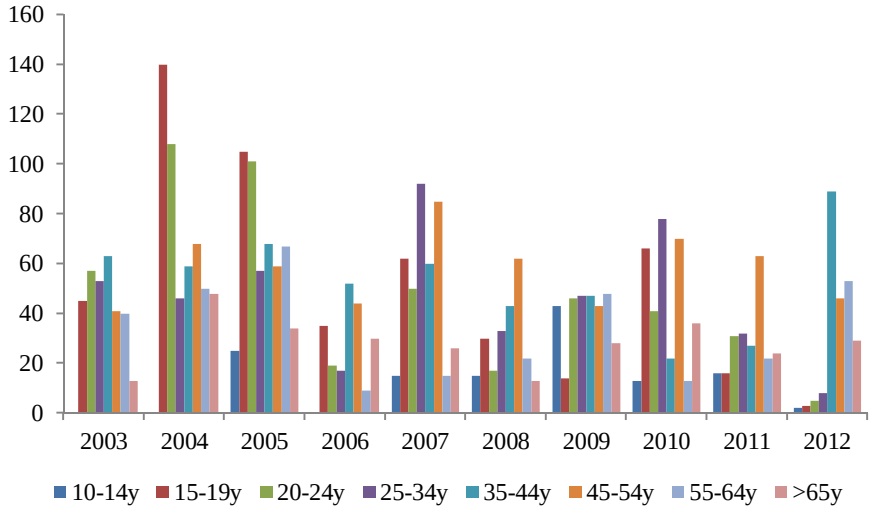
Table 13.2 shows the frequency per 100,000 inhabitants by age group in the last 10 years.

Table 13.2 Number of (attempted) suicides reported per 100,000 inhabitants, by age group, 2003-2012

age group	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
10-14	-	-	(25)	-	(15)	(15)	(43)	(13)	(16)	(2)
15-19	(45)	140	105	(35)	(62)	(30)	(14)	66	(16)	(3)
20-24	57	108	101	(19)	(50)	(17)	(46)	(41)	(31)	(5)
25-34	53	46	57	(17)	92	33	47	78	(32)	(8)
35-44	63	59	68	52	60	43	47	(22)	(27)	89
45-54	41	68	59	44	85	62	43	70	63	46
55-64	40	50	67	(9)	(15)	(22)	48	(13)	(22)	53
>65	(13)	48	34	(30)	(26)	(13)	28	36	(24)	29

The numbers between bracket are based on N<5

Figure 13.2 Number of (attempted) suicides reported per 100,000 inhabitants by age group, 2003-2012



Extrapolation

Table 13.3 Extrapolation of the incidence rate of (attempted)suicide to the Dutch population

	frequency incidence (per 10,000)*	Netherlands** (absolute number)
topic	total	total
year	(m+f)	(m+f)
(attempted)suicide		
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
2011	3	5,000
2012	4	7,000

* number (attempted)suicide per 10,000 inhabitants (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 suicide and attempted suicide in 2012 do not support the concern expressed by others that the incidence of suicide (attempts) is increasing. In 2006, 2008 and 2011 the lowest incidence was reported since the start of the surveillance in 1979. In 2012 the incidence is slightly higher compared to the previous year, but in general the incidence is more or less stabile in the past ten years with small fluctuations and a preceeding declining incidence.
The breakdown in age groups is of limited value due to the small absolute numbers which may lead to large fluctuations. Over the years, the registration does not show a preferential age group. In 2012, the highest incidence occurred in the age group 35 up to and including 44 years.

This topic is continued in 2013

Publications based fully or partly on continuous morbidity registration data

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Donker GA, Wolters I, Schellevis F. *Trends and determinants in attempting or committing suicide in Dutch general practice and the role of the general practitioner in 1983-2009.* Oral Presentation 16th WONCA-conference Malaga, October 2010

Marguet RL, Donker G, *Praten over suicidegedachten.* Huisarts en Wetenschap 2009;52(6):267

14 Policy for symptoms mamma

Topic owner: Mrs. Dr. M. Hooiveld, NIVEL (2012)

Introduction

In the past few years, the number of new diagnoses of breast cancer in women between 40 and 49 years has increased considerably. It is anticipated that the peak in breast cancer incidence has not yet been reached and that the incidence will continue to grow over the next 10 years. However, women of 50 years and older are being invited for breast cancer screening and not younger women. The introduction of the digital mammography, providing better results for young women and women with a dense breast pattern, has aroused the discussion again about the lowest age limit. With the increased attention in the media and more awareness concerning breast cancer, however, the question arises “how many women, regardless of their age, consult their GP because of complaints or abnormalities of the mamma or fear for breast cancer and what is GPs’ policy in these cases?” Information about the current state of affairs is extremely relevant for policy makers when the expected turnout and the cost effectiveness in lowering the age limit for screening is discussed. This information is not available from primary care at the moment.
The topic in the Sentinel GP Network is part of a broader project concerning breast cancer screening in women. Other planned parts of the project are in-depth interviews focused on the opinion about and support of mammography of Dutch women and their GPs; the reasons for women to ask, via their GP, for a mammography; and their preferences regarding a possible lower age limit for the population screening for breast cancer. A group of women of the NIVEL Consumer Panel will be consulted to find out what women belief and expect regarding mammograms and what they think about the extension of the screening program to women younger than 50 years.

Objective

This topic aims to quantify the policy of GPs in case of complaints or symptoms of the mamma and the underlying reasons to act as they do.

Method

The structure of the topic is in agreement with the NHG-Guideline Diagnostic of mamma carcinoma. The registration is based on answering a few questions after registration in the HIS of one of the following ICPC-codes:
X18 – pain in breast(s)
X19 – lump/swelling breast
X20 – symptoms/complaints nipple
X21 – other symptoms/complaints breasts
X26 – fear for breast cancer
X76 – malignancy breast
X79 – benign neoplasm breast
X88 – mastopathy/cyst breast

There is no specific ICPC-code for a familial burden for breast cancer, therefore, this is separately questioned in the questionnaire.

When the woman is in the target group a questionnaire is filled in and sent in. The first question of the questionnaire is whether the registered ICPC-code is new or belongs to an already known episode. An interval of 2 years is followed, comparable to the population screening. When a women has consulted the GP during the past two years, i.e. after 1-1-2010, for one of the complaints or abnormalities of the mamma, then we can call this a known episode. When a patient has never before consulted the GP for this health problem or when it is a repeated presentation with an interval of more than 2 years (for example a relapse), we can call it a new disease episode.
A problem that has never been presented before to the GP could have been presented to another GP in the past two years (for example when the patient has changed GPs recently); in this case it is of course a known disease episode.
The second question is whether further diagnostic examination or referral

has been indicated. The following different answers are possible in this case:
1 No indication for further diagnostic examination. This includes also, for example, a follow-up when the woman is in another stage of the cycle, or when it concerns a check-up for the results of a mammogram or echoscopy without indications for malignancy.
2 Referral to an outpatients' mamma clinic.
3 Referral to a department of radiology for mammography or echographic examination.
4 Referral to a department of Clinical Genetics or an outpatients' clinic Inheritable Tumours.
5 Otherwise, i.e. (description).

The third question concerns the underlying motivation for further diagnostic examination or a referral (if applicable). The following aspects can be distinguished:
1 Indications for possible malignancy, for example a lump, nipple discharge, skin changes, etc.
2 Local palpable abnormality in gland tissue without indications for malignancy, including mastopathy.
3 Referral based on the results of a mammogram or echoscopy, possible malignancy.
4 Check-up after breast cancer treatment.
5 Localized and persistent complaints about pain or sensitivity or a lump that the woman does feel but the doctor does not feel.
6 Preventive reasons in case of a familial burden in breast cancer.
7 For reassurance in case of fear for breast cancer without any of the above mentioned indications.
8 Otherwise, i.e. (description).

Because complaints about the breasts and breast cancer are rare for people younger than 25 years, only women of 25 years and older are asked to answer the questions.

Results

Analysis of the data per region and address density shows that in the western part of the country less women than the average number consulted the GP with these complaints and that practices in rural areas score higher than the practices in the cities (Table 14.1).

Table 14.1 Number of women > 25 years per 10,000 where the GP was consulted for complaints regarding the breast(s), per province group, in address density and for the Netherlands, 2012

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2012	228	221	97	239	255	158	159	181

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

Age distribution

The number of reported women who consult the GP with complaints of the breast(s) is rather high in all age groups from 25 to 80 years. Above the age of 80 years this number is much lower. The number is not strikingly lower in the age group of 50 to 75 years, the group that is screened for breast cancer every other year.

Table 14.2 Number of women per 10,000 per age group >25 years who consulted the GP with complaints of the breasts, 2012

age group	2012
25-29	184
30-34	210
35-39	194
40-44	187
45-49	241
50-54	240
55-59	134
60-64	179
65-69	180
70-74	155
75-79	145
80-84	44
> 85	80
total	181

Numbers between brackets are based on N<5

Extrapolation

Table 14.3 Extrapolation of women >25 years who consult the GP every year for new complaints of the breast(s), of the Dutch population.

	frequency number (per 10,000) women >25 years*	Netherlands** (absolute numbers)
topic	v	v
year		
mammary cancer		
2012	181	109,000

* number screening breast cancer per 10.000 women >25 years (data CMR sentinels)
** extrapolation of the numbers at the Dutch population (of the year concerned), rounded at thousands

Discussion

The first year of registration of women >25 years who visit the GP with complaints of the breast(s) show that many women consult their GP for this problem. The difference between the group of women of 50-75 years who get every other year a mammogram in the national population screening program and the younger women is small. From the age of 80 the number of women who consult the GP fort his problem is much lower.

This topic will be continued in 2013.

15 Gut feeling related to cancer diagnosis

Topic owner: Dr. G.A. Donker, NIVEL (2010-2012)

Introduction

During their training, GPs learn systematically by asking questions and by examination, to synthesize a diagnosis. In practice, GPs not only apply a 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 (2009) in Maastricht studied the concept "gut feelings".[27] They discussed with focus groups of GPs about the concept and 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 may be a sudden feeling, but also a slowly arising feeling. Knowledge of the history 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 a 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 professional behaviour 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.
Stolper et al. conclude that the "gut feeling" often acts as a diagnostic instrument.[27,28] 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 of 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) clarified the diagnostic meaning of the “gut feeling” in general practice with literature search, focus groups of GPs and by consulting experts in a Delphi consensus procedure.[27-29]
In addition to Stolper’s study we have conducted quantitative research from the beginning of 2010 and we have monitored in daily general 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 register 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 this feeling is aroused related to cancer: from those patients that give the GP only a vague gut feeling, to those patients whose diagnosis is almost sure at the first examination.
3 The GP fills in the questionnaire with patient data and the care provided.
4 Three months after the consultation, the GP receives a second questionnaire to evaluate the diagnosis of the case arousing the gut feeling.
5 The results of the questionnaire are reported separately.

Results

Table 15.1 Number of patients per 10,000 inhabitants causing the GP a gut feeling of possible cancer, per province group, by address density and for the Netherlands as a whole in 2010-2012

	province group				address density			Netherlands
	N	E	W	S	1*	2*	3*	
2010	6	13	15	7	13	9	14	11
2011	9	12	9	8	17	9	7	10
2012	2	10	5	5	7	6	2	5

* 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 has been published in 2011 in Huisarts & Wetenschap.[30]
Reporting of gut feeling has declined in 2012 compared to the two previous years.

Age distribution

Table 15.2 Number of patients per 10,000 inhabitants according to age group, causing the GP a gut feeling of possible cancer in 2010-2012

	2010			2011			2012		
age group	m	f	t	m	f	t	m	f	t
40-44	(2)	21	11	-	(5)	(2)	(2)	-	(1)
45-49	(6)	(4)	5	(7)	(2)	(5)	-	-	-
50-54	16	12	14	16	(3)	9	-	(6)	(3)
55-59	23	20	21	(12)	(12)	12	(6)	-	(3)
60-64	37	15	26	25	23	24	(12)	30	21
65-69	30	(13)	21	39	23	31	19	(15)	17
70-74	39	(12)	25	(15)	(9)	12	(1)9	-	(9)
75-79	36	(9)	21	56	50	53	34	(17)	25
80-84	37	30	41	(33)	57	48	(22)	(7)	(13)
> 85	(29)	49	43	(51)	45	47	(17)	44	36
total	12	10	11	10	9	10	6	5	5

The numbers between bracket are based on N<5

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 in men and here the peak is at a slightly younger age (75-79 years) than for women (>85 years) in 2012, in line with the shorter life expectancy for men. Patients younger than 40 years sporadically cause gut feelings concerning cancer. These data have been collected, however, they are not shown in the table above. The incidence in the higher age groups is therefore, higher, than in the general population, where the group of younger than 40 years has been included in the calculation.

Extrapolation

Table 15.3 Extrapolation of the incidence rate of gut feeling in GPs 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
2011	10	9	10	8,000	8,000	16,000
2012	6	5	5	5,000	4,000	8,000

* number gut feeling 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 in men than in 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 5 gut feelings per 10,000 registered patients, that we found in 2012, 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.[31] The reporting declined compared to the two previous years, possibly by a lack of automatic alert for reporting.

Less serious cases of cancer, like skin cancer, is expected to be diagnosed by GPs and treated without causing any gut feeling.

Analysis of questionnaires will have to show more characteristics of the gut

feeling of symptoms, patients and GPs. The analyses of the questionnaires have been published in 2011 in Huisarts & Wetenschap[30] and these data have been presented at the international Ca-PRI conference in 2011 and 2013. The presentation in 2013 won the best abstract price.[32]

The topic will not be continued in 2013. The foundation Stoffels-Hornstra has awarded a grant for the analyses of the questionnaires in 2012.

Publications based fully or partly on continuous morbidity registration data

Donker GA, Dorsman S. *Cancer-related gut feelings among Dutch general practitioners.* Oral Presentation Ca-PRI conference Birmingham 14-16 April 2013, United Kingdom. Abstract book Ca-PRI conference 2013, best abstract price

Korevaar J, Heins M, Donker G, Rijken M, Schellevis F. *Oncologie in de huisartsenpraktijk.* Huisarts & Wetenschap 2013;56(1):6-10

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

Donker GA. *Cancer-related gut feelings among general practitioners in the Netherlands.* Oral Presentation Ca-PRI conference 25-27 May 2011, Noordwijkerhout, The Netherlands. Abstract book Ca-PRI conference 2011

16 Abdominal symptoms and cancer

Topic owner: Dr. Knut Holtedahl, Norwegian Research Council(2011-2012)

Introduction

Previous studies into early diagnosis of abdominal tumors showed that it is not clear which symptoms are specific for the growth of these tumors. Researchers hope to find characteristic symptoms, by collecting and analyzing clinical data, for the diagnosis of abdominal tumors in general practice, in order to improve the diagnostic trajectory in general practice. The focus is on abdominal tumors, such as colorectal cancer, ovarian cancer, bladder cancer and other types of abdominal cancer.
The data collection in the sentinel practices is part of a similar data collection in eight countries, led by the Norwegian Research Council. The GPs score symptoms in a random sample of 200 patients who visit them at consulting-hours during two weeks and they are asked 6 months later about diagnoses concerning abdominal tumors in this group of patients.
It is anticipated that per two fte GPs one patient will have had the diagnosis abdominal cancer. The following countries participate in this study: Canada, Scotland, The Netherlands (Sentinel GP Network), Belgium, Australia, Sweden, Denmark and Norway.

Objective of the study

Studies on the predictive value of symptoms and the judgment of the GP on patients consulting with abdominal cancer.

Method

GPs were asked to fill in a score-list (on paper) during 10 working days within one month for the first 20 patients per day. The registration period was in May 2011.

Six months after the registration, GPs received lists of the initially scored patients and were asked to indicate in which patients a tumor had been established. As the initial registration could not be realized in all practices in May 2011, the follow-up data were collected in the beginning of 2012.

Results

Participation of the GPs was good. Almost all practices succeeded in delivering a complete set of data of the 200 patients with the scored symptoms and the results half a year later. The data collection of the follow-up questionnaires continued during 2012 and resulted in 42 complete datasets of scored symptoms and the diagnosis 6 months later. The number of patients with an abdominal tumor was as anticipated. The study collected data of 70,000 patients of whom 600 (0.9%) developed cancer in the half year thereafter of whom half concerned abdominal cancer. The Dutch Sentinel GP Network contributed almost 10% of the total number of patients in the study. The data collection reached an acceptable size to test the hypotheses. The data of the various European countries together will be published in international literature.

This topic will not be continued in 2013.

17 Requests for Euthanasia

Topic owner: Dr. G.A. Donker, (NIVEL) (1976-2012)

Introduction

Since 1976 requests for euthanasia to the GP of patients with incurable disease are reported. Since 2011 a question has been added whether the euthanasia request resulted in performing euthanasia.

Methods

At the start of the year, the sentinel doctors are informed that the annual monitoring will be conducted. At the end of the year, all sentinel doctors receive a form in 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 report the age, gender, disease and nursing location and whether or not a 'euthanasia declaration' was signed.[33] Since 2011 a question was added whether the euthanasia was performed and if so whether the euthanasia was reported at the Regional Assessment Committee for Euthanasia.

Results

In 2012 no patient requested for assisted suicide. In 2012 the number of requests is 43 (24 men and 19 women) from 38 reporting practices. This amounts to 4.2 per 10,000, comparable to previous years (2.4, 4.2, 3.2 and 3.5 per 10,000 in 2011, 2010, 2009 and 2008, respectively). Of the patients who requested euthanasia in 2012 79% had a malignancy, which is slightly more than in previous years (76% in the period 1976-2011). Most patients were tended at home, only one patient in a hospice. In 79% of the cases (N=34) the request is supported by a living will. Forty three patients asked for euthanasia. In 58% of the cases the SCEN-doctor (Support and

Consultation in Euthanasia in the Netherlands) was called in and 20 out of 43 (47%) euthanasia requests were carried out. These were all reported to the Regional Assessment Committee for Euthanasia. If the SCEN-doctor is not called in, the reason is (almost always) that the eventual application of euthanasia or physician assisted suicide was not yet relevant, or the patient died without intervention. Patient data are reported at the end of the paragraph.

Requests for euthanasia 2003-2012

Table 17.1 shows the distribution of the number of requests by province group by address density and by gender.

Table 17.1 Absolute numbers of patients who requested GPs to participate actively in euthanasia, by gender, province group, address density and for the Netherlands as a whole, 2003-2012

			province group				address density			Netherlands
absolute	m	f	N	E	W	S	1*	2*	3*	
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
2011	24	12	6	8	15	7	12	18	6	36
2012	24	19	7	14	15	7	13	23	7	43

* 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 2012 like in previous years relatively few patients in big cities asked for euthanasia.

Age distribution

The age distribution of patients who requested euthanasia is shown in table 17.2

Table 17.2 Absolute numbers of patients asking their GP for euthanasia or physician assisted suicide per age group, 2003-2012

	<54	55-64	65-74	75-84	>85	total
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
2011	3	3	11	13	6	36
2012	5	7	17	9	5	43

Overview of reported requests

Since 1976 the sentinel general practice network has collected data on 1320 requests for euthanasia or physician assisted suicide, 677 (51%) by men. The International Classification of Diseases (1975, 9th version) was used to obtain insight into the illnesses underlying the requests for euthanasia or physician 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 dementia, neurological and endocrine illnesses and AIDS.

Table 17.3 indicates the diseases underlying the request for euthanasia or physician assisted suicide. In 2012 the distribution is comparable to previous years.

Table 17.3 Diseases leading to euthanasia requests, 1976-2012

	N	%
malignant neoplasms	998	76
cardiovascular diseases	74	6
chronic obstructive pulmonary diseases	56	4
symptoms and insufficiently defined diseases	67	5
other diseases	125	9
total	1320	100

Over the years, the reported percentage of living wills has increased from 15% in 1984 to 79% in 2012. This percentage was the highest in 2009 with 92% living wills in the reported requests. Discussing a request for euthanasia

in an early stage of the illness is expected to have led to a slight decrease of this percentage in the last years. Nowadays more requests for euthanasia are reported at an earlier stage of disease where performing the euthanasia is not yet a wish.

Discussion

The registration of the requests for euthanasia or physician assisted suicide by the Dutch CMR Sentinel General Practice Network shows consistently a slightly higher percentage in men, around 51% versus 49% in women over the period 1976-2012. 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 practiced 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 Sentinel General Practice Network show this too: over the period 1976-2012 76% of the patients who asked for euthanasia or physician assisted suicide had cancer. In the higher age group this is also the most frequently occurring reason, but COPD, heart failure and Alzheimer disease are also frequently occurring reasons.

Data that have been collected over a longer period of time, on requests for euthanasia and physician 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.[34] Loss of dignity turns out to be more often the motive for men than for women to request euthanasia.[34]
Alzheimer's disease is apparently no longer an absolute contra-indication for euthanasia, provided the request was done when the patient was coherent.

Until the early 1990s, hardly any possibilities existed to compare data collected in the Dutch Sentinel General Practice Network on requests for euthanasia and physician assisted suicide with the findings of other data registration projects and research.[35] 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, physician assisted suicide and

decisions concerning the end of life of patients.[36-39] In 2001 and 2005, another large-scale study was conducted into euthanasia and other end-of-life medical practices.[40,41]

Substantial methodological differences exist between the above-mentioned studies and the registration of data by GPs participating in the 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 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. Since 2011 a question was added concerning whether the euthanasia was finally applied we know the percentage of euthanasia requests carried out and whether the euthanasia was reported to the Regional Evaluation and Examination Committee for Euthanasia. In 2012 47% of the requests for euthanasia was applied, comparable to other studies. All patients with applied euthanasia were also reported to the Regional Assessment Committee for Euthanasia.

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 physician assisted suicide are reported to the Committee.[42] In 2008 the number was higher than in previous years, most likely because the percentage of cases actually reported to the Assessment Committees has increased.[42-44] 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 not found in the Sentinel GP Network, however, 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 79% in 2012. However, in 2009 it was 92%. Although a higher percentage can be considered as an indicator for the quality of care 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 an actual issue. This appears to be a plausible explanation for the slightly deceasing percentage in the last years. Many of these requests were not yet actual issues, apparently.

The study will be continued in 2013.

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

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 17.4 Requests made by patients for active euthanasia in 2012

age	gender	disease reported	reason for request
96	v	blindness, deafness, completely dependant	suffering without prospect
88	m	lung carcinoma	terminal phase
88	v	deterioration	suffering without prospect
85	m	pancreatic carcinoma	suffering without prospect
85	v	heart and kidney failure, COPD	deterioration, dependance
84	m	bladder carcinoma	suffering without prospect and increasing dependance
84	m	colon carcinoma	deterioration
79	m	colon carcinoma	suffering without prospect
79	v	metastatic ovary carcinoma	suffering without prospect
78	m	abdominal leiomyosarcome	Suffering without prospect, increasing dependance
77	m	DM, lower leg amputation, kidney failure	tired of life
77	v	several osteoporotic fractures	untreatable pain with paretic legs
76	m	lung carcinoma	diarrea, incontinence, deterioration, dependance
76	m	lung carcinoma	pain
76	v	glioblastoma multiforme	afasia, hemiparesis
74	m	bladder carcinoma	pain, exhaustion
74	m	metastatic prostate carcinoma	too much pain, loss of initiative and mobility

Table 17.4 Requests made by patients for active euthanasia, 2012 (cont.)

age	gender	disease reported	reason for request
73	m	lung carcinoma	dyspnoea, pain, terminal phase
73	v	bladder carcinoma, DM, cardiovascular disease	partner died
73	v	metastatic mamma carcinoma	unbearable suffering with loss of perspective
72	m	COPD, M. Alzheimer, cardiovascular disease	dementia
71	m	metastatic prostate carcinoma	no treatment options left
71	v	ovary carcinoma	unbearable suffering
70	m	colon carcinoma	loss of perspective, end of life
68	m	diabetes mellitus	dementia
68	v	mamma carcinoma	deterioration
66	v	lung carcinoma	pain, nausea, unbearable suffering, loss of perspective
65	m	pancreatic carcinoma	loss of perspective
65	m	colon carcinoma	diarroea, exhaustion, loss of dignity
65	v	colon carcinoma	unbearable suffering
65	v	metastatic colon carcinoma	unbearable suffering
64	m	diffuse Lewis body disease	loss of autonomy, deterioration
64	v	metastatic extrarenal carcinoma	unbearable suffering, exhaustion, untreatable pain
61	v	metastatic colon carcinoma	unbearable suffering without prospect, loss of dignity

Table 17.4 Requests made by patients for active euthanasia, 2012 (cont.)

age	gender	disease reported	reason for request
60	v	lung and kidney carcinoma	untreatable metastatic bone pain
58	m	M. Alzheimer	deterioration
58	m	metastatic lung carcinoma	terminal phase
58	v	melanoma of vagina	metastatic untreatable pain
52	v	metastatic cervical carcinoma	deterioration
51	m	malignant brain tumor	loss of dignity, terminal phase
48	m	gastro-esophagal carcinoma	unbearable suffering
35	v	mamma carcinoma	unbearable suffering, terminal phase
34	m	testis carcinoma	untreatable neuropathic pain

18 Palliative Sedation

Topic owner: Mrs. Dr. G.A. Donker, NIVEL (2005-2012)

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 for example severe agitation, dyspnea, 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 often 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 by patients and/or relatives. 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 intermittantly, using sedative drugs (sleeping agents). The objective is to alleviate suffering, not to terminate life.

In 2002 palliative sedation was performed by Dutch GPs in 2.5% of all deaths and has found to be increasingly applied.[39,40] The end of life study reports in its fourth national survey in 2008 that continuous deep sedation is applied in 12.8% of all deaths occurring at home, hospital or nursing home.[42,43]

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 palliative 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 2012 38 sentinel practices reported 21 patients who were treated with palliative sedation, which is 4.9% of all reported deaths in 2012. This is comparable to the previous years. In 2012 the decision for sedation was taken in 12 men and 9 women. Of these 21 patients 14 had cancer, i.e. 67%. GPs reported that for 13 patients (62%) the presence of 2 or more refractory symptoms had prompted the decision to decrease the consciousness of the patient. For 8 patients only 1 refractory symptom was indicated (four times pain, two times delirium and two times dyspnea) (see also appendix 1, table 18.5).

Untreatable pain (13 patients, 62%) was the most prominent reason to decide for palliative sedation in 2012, like in previous years. Also delirium (7 patients, 33%), anxiety (6 patients, 29%), untreatable dyspnea (4 patients, 19%), nausea (5 patients, 24%) and vomiting (3 patients, 14%) are prominent reasons to sedate and often occur in combination with pain.

From the 21 reported patients 6 (29%) also requested for euthanasia. The reasons to apply palliative sedation and not euthanasia in these 6 patients were, respectively: lack of effective communication possibilities due to

dementia or delirium (three times) and lack of time to start a euthanasia procedure due to severe symptoms (three times).

Table 18.1 Absolute number of patients decreased after palliative sedation, per province group, address density and for the Netherlands in 2005-2012

	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
2011	4	1	8	2	4	6	5	15
2012	7	2	6	6	7	12	2	21

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

In 2012 the highest number of patients (absolutely and per 10,000) are reported in the northern provinces. Sorted by address density most patients per 10,000 in 2012 were reported to live in middle large and small cities. (table 18.1 and 18.2)

Table 18.2 Number of patients per 10,000 deceased after palliative sedation, per province group, address density and for the Netherlands as a whole in 2005-2012

	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
2011	(3.8)	(0.4)	2.1	(0.7)	(2.3)	1.1	1.6	1.5
2012	4.2	(0.9)	1.4	2.3	2.8	2.2	(0.9)	2.1

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

The numbers between bracket are based on N<5

Age distribution

The age distribution is given in table 18.3.

Table 18.3 Absolute number of patients per age group treated with palliative sedation by their GP in 2005-2012

	<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
2011	3	2	4	4	2	15
2012	1	2	2	10	6	21

*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 17) five major disease groups were shown to obtain insight into the disorders underlying the use of palliative sedation.

Table 18.4 Disorders for which palliative sedation was applied in 2005-2012

	N	%
malignant tumors	149	73
cardio-vascular diseases	25	12
chronic obstructive pulmonary disease	5	2
symptoms and incompletely described diseases	8	4
other diseases	16	8
total	203	100

Discussion

Similarly as for requests of euthanasia (chapter 17), 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 dyspnea play a major role. In 2012 palliative sedation was applied in 4.9% of the by the sentinel GPs reported deaths. This is considerably lower than the 12.8% mentioned in the fourth national survey concerning medical decisions at the end of life.[38] However, this latter study involves also deaths in hospitals, 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. Probably palliative sedation is more frequently applied in nursing homes and hospitals than in general practice. 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.[40,41]
In the 4 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. These results indicate that requests for euthanasia and palliative sedation largely relate to different motives,

despite similarities in the nature of underlying diseases. 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 Hasselaar in 2009.[45] The guideline on palliative sedation issued by the KNMG in 2005 (www.knmg.nl), undoubtedly has contributed to professionalize this intervention. The results of 2005 to and including 2011 were analysed and published in the British Journal of General Practice in 2013.

The topic will be continued in 2013.

Publications based fully or partly on continuous morbidity registration data

Donker GA, Slotman FG, Spreeuwenberg P, Francke AL. *Palliatieve sedatie in Nederlandse huisartspraktijken. Dynamische cohortstudie van trends en redenen in de periode 2005-2011.* Ned Tijdschr Geneeskd 2014;158:A7213

Donker GA, Slotman FG, Spreeuwenberg P, Francke AL. *Palliative sedation in Dutch general practice from 2005 to 2011: a dynamic cohort study of trends and reasons.* Brit J Gen Pract 2013; DOI: 10.3399/bjgp13X673676

Appendix 1

Table 18.5 Characteristics of patients treated with palliative sedation in 2012

age	gender	disease reported	reason for request
101	v	heart failure	dyspnea
93	m	deterioration	delirium, pain
90	v	heart failure, dementia	pain, restlessness, exhaustion, delirium
89	v	heart failure, collum fracture	pain
85	m	pancreatic carcinoma	pain, nausea, vomiting
85	v	heart failure	delirium
84	v	colon carcinoma	dyspnea, exhaustion
81	m	metastatic colon carcinoma	pain
80	m	gastric carcinoma	nausea, vomiting
79	m	heart failure	dyspnea
79	m	prostate carcinoma	restlessness, severe delirium
77	m	colon carcinoma	delirium, pain, anxiety
76	m	lung carcinoma	delirium, pain, anxiety
76	v	brain tumor	pain, anxiety
76	v	terminal kidney failure	pain, nausea
75	v	lung carcinoma	pain, unbearable suffering
68	m	esophagus carcinoma	delirium, pain, nausea, anxiety

Table 18.5 Characteristics of patients treated with palliative sedation in 2012 (cont.)

age	gender	disease reported	reason for request
67	m	pancreatic carcinoma	dyspnea, nausea, vomiting, ileus
63	m	acute myeloid leucaemia	deterioration
63	m	metastatic rectum carcinoma	pain, anxiety
48	v	sinus pyriformis carcinoma	pain

19 Eating disorders

Topic owner: Prof. H.W. Hoek, Parnassia Bavo group
(1985-1989, 1995-2012)

Introduction

It is unclear whether the incidence rate of serious eating disorders such as anorexia nervosa and boulimia nervosa is increasing. Sentinel GPs registered both of these disorders between 1985 and 1989. By a renewal of registration from 1995 it is studied whether these disorders are increasing.
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 newly diagnosed in 2012 and was the patient referred to a different care provider? In addition, information was gained about some demographic data of the patient, the physical aspects of the disease and referral. The results of this study are published elsewhere.

Results

In table 19.1 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 1995-2011. In 2012 eating disorders are diagnosed in 29 women and one man.

Table 19.1a Absolute numbers of patients for whom GPs diagnosed an eating disorder (boulimia and/or anorexia nervosa), per province group, address density and for the Netherlands as a whole, 1985-1989 and 1995-2012

	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
2011	1	9	12	7	6	16	7	29
2012	7	7	7	9	8	19	3	30

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

Table 19.1b Numbers of women for whom GPs diagnosed an eating disorder (boulimia and/or anorexia nervosa), per province group, address density and for the Netherlands as a whole, 1995-2012, 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
2011	1.3	7.9	6.4	5.0	6.4	5.8	4.8	5.5
2012	8.8	5.7	3.1	7.5	5.8	6.4	3.6	5.7

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

The absolute and relative number of reports in 2012 is comparable to previous years. No consistent differences were found by region and address density.

Age distribution

Table 19.2 shows the distribution of reported eating disorders by age group.

Table 19.2 Absolute numbers of patients for whom GPs reported an eating disorder (boulimia and/or anorexia nervosa), by age, 1985-1989 and 1995-2012

women	1985-1989	1995	1996	1997	1998	1999	2000	2001	2002
1-4	-	-	-	1	-	-	-	-	-
5-9	-	-	-	1	-	-	-	1	-
10-14	1	1	1	0	2	-	1	1	1
15-19	8	13	15	10	9	7	9	6	5
20-24	12	14	9	11	14	74	5	2	3
25-29	14	10	7	7	5	6	9	4	8
30-34	6	9	4	3	4	6	4	5	2
35-39	7	8	6	3	11	91	3	3	5
40-44	4	2	2	4	4	6	1	-	4
45-49	1	4	1	1	1	-	1	-	2
50-54	1	2	-	-	-	-	1	1	2
55-59	1	-	-	-	1	1	-	-	-
60-64	-	-	-	-	-	-	-	-	-
65-69	-	-	-	-	-	-	-	-	-
70-74	-	-	-	-	-	-	-	-	-

Table 19.2 Absolute numbers of patients for whom GPs reported an eating disorder (boulimia and/or anorexia nervosa), by age, 1985-1989 and 1995-2012 (cont.)

women	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1-4	-	-	-	-	-	-	-	-	-	-
5-9	-	-	-	-	-	-	-	-	-	-
10-14	-	1	1	-	3	1	2	2	4	2
15-19	5	5	9	5	6	12	7	11	5	5
20-24	7	10	2	9	7	2	9	7	5	4
25-29	7	8	2	4	4	5	7	3	6	4
30-34	5	-	6	3	5	7	4	1	2	4
35-39	5	2	1	6	3	7	5	2	-	4
40-44	6	5	6	1	3	3	3	3	1	3
45-49	5	4	-	1	5	6	4	-	1	-
50-54	2	-	-	1	1	3	-	2	1	2
55-59	-	-	-	-	-	1	3	1	1	-
60-64	1	-	1	1	1	-	-	1	1	2
65-69	-	-	-	-	-	-	-	1	-	-
70-74	-	-	-	1	-	-	-	-	-	-
75-79	-	-	-	-	-	-	-	-	-	-
80-84	-	-	-	-	1	-	-	-	-	-

The peak incidence in 2012 lies in the age group 15-19 years. Also, it is remarkable that eating disorders sometimes still occur at old age.

Discussion

In 2012 the number of patients reported with eating disorders is comparable to previous years. Previous studies have shown that living in big cities is a risk factor for boulimia nervosa.[46,47]

The study will be continued in 2013

Publications based fully or partly on continuous morbidity registration data

Smink FR, van Hoeken D, Hoek HW. *Epidemiology of eating disorders: incidence, prevalence and mortality rates.* Curr Psychiatry Rep. 2012 Aug;14(4):406-14. doi: 10.1007/s11920-012-0282-y

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

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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

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20 General comments

1 The Counselling Committee has decided to include the following topics on the weekly returns in 2013.

   a Influenza and influenza-like illnesses
   b Research on end-of-live decisions
   c Suicide and attempted suicide
   d STD
   e Gastro-enteritis
   f Whooping cough
   g Pneumonia
   h Oak Processionary larve
   i Screening breast cancer > 25 years
   j Gut feeling related to cancer
   k Request for euthanasia
   l Eating disorders
   m Palliative sedation

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

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

4 A translation into English will be published on the web site of NIVEL.

21 Literature list

List of other publications based fully or partly on the data from Continuous Morbidity Registration Sentinel Practices from 2000

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ARI-EL study

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

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Den Heijer CDJ, Van Dongen MCJM, Donker GA, Stobberingh EE. *Diagnostic approach to urinary tract infections in male general practice patients: a national surveillance study.* Brit J Gen Pract 2012;DOI: 10.3399/bjgp12x658313

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   a An acute beginning, therefore a prodromal phase of not more than three to four days (including pre-existing airway infections at a non-pathogenic level).
   b The infection must be accompanied by a rectal temperature increase of at least 38º C.
   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 2012

Name:	Location:	Province:
J. Mulder*	't Zand	Groningen
P.S. Wiersema*	Oostermeer	Friesland
W.J.M. Brunninkhuis	Drachten	Friesland
H.J. Dijkstra*	Bakhuizen	Friesland
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
P.J. van Beek	Oldenzaal	Overijssel
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, L.A. Boom	Amersfoort	Utrecht
Mw. Y.E.V. van Hazel/P. Olie	Amsterdam	Noord-Holland
S. Tedjoe	Broek in Waterland	Noord-Holland
Mw. A. Verdam-de Witte	Hilversum	Noord-Holland
Mw. M.H. Brooks	Hilversum	Noord-Holland
A. Leemhuis/W. van der Maarel	Castricum	Noord-Holland
C. Zwart	Haarlem	Noord-Holland
C. Noordzij	Heemskerk	Noord-Holland
M. Voerknecht	Bussum	Noord-Holland

Appendix 1: participating doctors in 2012 (continued)

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
R.R. Lankhorst	Middelburg	Zeeland
P.B.A. Crama	Vlissingen	Zeeland
M.G.A.M. de Gouw	Rosmalen	Noord-Brabant
J.J.J. Meulenberg/J.D.M. schelfhout		
Mw. A. van Hintum	Eindhoven	Noord-Brabant
R.J.P. de Gardeyn	Sleeuwijk	Noord-Brabant
P. Meulesteen	Eindhoven	Noord-Brabant
P.B.G. Gyselink	Berkel-Enschot	Noord-Brabant
S. Schouten/Mw. H.J.C.M. Schouten-van den Oever	Oss	Noord-Brabant
M.J.F.M. Klaassen*	Oirsbeek	Limburg
P.H.M. Vaissier)	Maastricht	Limburg

*) With dispensary

Appendix 2: registered topics 1970-2013 (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 1970-2013 (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 1996-2013
hay fever	1978-1982
hepatitis	1994
herpes zoster	1997-2001
gut feeling related to cancer	2010-2013
infectious mononucleosis	1977-1979 and 1991
influenza and influenza-like illnesses	1970-2013
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 and 2013
pregnancy (despite contraception)	1987-1991

Appendix 2: registered topics 1970-2013 (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	2005-2013
rohypnol prescriptions	1987-1988
rubella and rubella-like illnesses	1971
screening breast cancer >25 years	2012-2013
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)	2008-2013
suicide and attempted suicide	1970-1972 and 1979-2013
Tree pest	2013
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	1998-2013
zanamivir (Relenza)	2000-2002

Appendix 3: list of incidental studies

Incidental studies and other additional studies 1977-2013 (alphabetical)

acute intoxication at work	1994-1995
aggression against GP and practice staff	1997-2000
alternative treatments (registration possible?)	1980
anorexia nervosa and boulimia	1985-1989 and 1995-2013
antibiotic resistance of Staphylococcus in general practice	2005-2006
diabetes mellitus (prevalent cases)	2000 and 2007-2012
euthanasia (request for)	1976-2013
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	2005-2013
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 2012 (CBS)

age	men	women	total
0-4	470	449	919
5-9	496	473	969
10-14	516	493	1,009
15-19	511	487	998
20-24	531	519	1,050
25-29	509	502	1,011
30-34	505	504	1,009
35-39	535	537	1,072
40-44	648	640	1,288
45-49	655	642	1,297
50-54	611	605	1,216
55-59	554	551	1,105
60-64	536	534	1,070
65-69	433	441	874
70-74	310	340	650
75-79	225	282	507
80-84	144	224	368
>85	94	224	318
total	8,283	8,447	16,730

Appendix 5: annual tables

Continuous Morbidity Registration Sentinel Practices
Age group by topic

all practices		year 2012					weeks 1 t/m 52				
Age group	population			Influenza	STD*			Whooping-cough	Pneumonia*		
	M	F	M+F	M+F	M	F	M+F	M+F	M	F	M+F
<1	499	526	1025	820	0	0	0	29	182	30	106
1-4	2219	2105	4323	414	0	0	0	12	56	67	61
5-9	3035	2897	5932	93	0	0	0	12	21	11	16
10-14	3255	2972	6227	74	0	0	0	27	19	16	18
15-19	3057	2942	5999	90	50	146	97	15	21	16	19
20-24	2982	2985	5967	99	157	239	198	12	0	5	3
25-29	2925	3048	5973	116	156	291	224	7	15	34	24
30-34	2975	3003	5978	129	102	122	112	5	19	20	20
35-39	3376	3291	6667	151	69	87	78	3	18	14	16
40-44	4012	3903	7915	131	48	36	42	9	32	20	26
45-49	4098	3904	8003	137	37	31	34	9	32	37	34
50-54	3664	3452	7116	121	22	33	27	4	13	27	20
55-59	3156	3290	6446	150	32	19	25	5	51	58	54
60-64	3417	3358	6774	125	9	12	10	3	46	66	56
65-69	2566	2667	5233	134	20	8	14	6	59	93	77
70-74	2070	2196	4266	160	0	0	0	2	81	100	91
75-79	1458	1794	3252	175	21	0	9	6	91	64	76
80-84	923	1371	2294	166	0	0	0	4	157	57	97
>84	590	1372	1961	255	0	7	5	0	104	241	200
Total	50277	51076	101351	147	45	62	54	8	36	43	40

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices
Age group by topic

year 2012 weeks 1 t/m 52

all practices Age group	population			Gastro-enteritis no feces test			Gastro-enteritis feces test			Gut feeling related to cancer		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
<1	499	526	1025	621	532	576	60	38	49	0	0	0
1-4	2219	2105	4323	257	233	245	41	29	35	0	0	0
5-9	3035	2897	5932	76	83	79	23	3	13	7	0	3
10-14	3255	2972	6227	46	40	43	6	13	10	0	0	0
15-19	3057	2942	5999	49	51	50	20	7	13	0	0	0
20-24	2982	2985	5967	30	87	59	0	20	10	7	0	3
25-29	2925	3048	5973	31	56	44	10	10	10	0	0	0
30-34	2975	3003	5978	44	83	64	17	10	13	0	0	0
35-39	3376	3291	6667	50	49	49	24	9	16	0	3	1
40-44	4012	3903	7915	22	28	25	7	5	6	2	0	1
45-49	4098	3904	8003	37	59	47	2	5	4	0	0	0
50-54	3664	3452	7116	19	38	28	0	3	1	0	6	3
55-59	3156	3290	6446	32	64	49	13	9	11	6	0	3
60-64	3417	3358	6774	50	66	58	3	9	6	12	30	21
65-69	2566	2667	5233	86	30	57	4	4	4	19	15	17
70-74	2070	2196	4266	68	59	63	5	23	14	19	0	9
75-79	1458	1794	3252	82	106	95	7	17	12	34	17	25
80-84	923	1371	2294	65	95	83	11	15	13	22	7	13
>84	590	1372	1961	203	233	224	0	7	5	17	44	36
Total	50277	51076	101351	62	76	69	11	10	11	6	5	5

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Age group by topic

year 2012 weeks 1 t/m 52

All practices Age group	population			Policy for symptoms Mamma	End-of-life* study	Suicide
	M	F	M+F	F	M+F	M+F
<1	499	526	1025	0	0	0
1-4	2219	2105	4323	0	0	0
5-9	3035	2897	5932	0	0	0
10-14	3255	2972	6227	0	0	2
15-19	3057	2942	5999	0	2	3
20-24	2982	2985	5967	0	4	5
25-29	2925	3048	5973	184	0	2
30-34	2975	3003	5978	210	9	0
35-39	3376	3291	6667	194	3	1
40-44	4012	3903	7915	187	1	15
45-49	4098	3904	8003	241	11	4
50-54	3664	3452	7116	240	20	6
55-59	3156	3290	6446	134	32	3
60-64	3417	3358	6774	179	45	7
65-69	2566	2667	5233	180	75	0
70-74	2070	2196	4266	155	119	7
75-79	1458	1794	3252	145	222	0
80-84	923	1371	2294	44	374	4
>84	590	1372	1961	80	651	5
Total	50277	51076	101351	181	45	4

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Province group by topic

year 2012 weeks 1 t/m 52

All practices				Influenza			STD*		Whooping		Pneumonia*	
Province group	population								cough			
	M	F	M+F	M+F	M	F	M+F	M+F	M	F	M+F	
GR+FR+DR	8066	7973	16038	106	36	40	38	22	13	13	13	
OV+GLD+FLE	10477	10569	21045	146	32	35	34	4	23	34	29	
UTR+NH+ZH	17942	19153	37095	166	50	78	65	7	48	57	53	
ZLD+NB+LIM	13792	13381	27173	146	53	75	64	6	33	35	34	
Total	50277	51076	101351	147	45	62	54	8	36	43	40	

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Province group by topic

jaar 2012 weeks 1 t/m 52

All practices				Gastro-enteritis			Gastro-enteritis			Gut feeling related		
Province group	population			no feces test			Feces test			to cancer		
	M	F	M+F	M	F	M+F	M	F	M+F	M	F	M+F
GR+FR+DR	8066	7973	16038	51	60	55	10	4	7	4	1	2
OV+GLD+FLE	10477	10569	21045	62	67	65	15	13	14	12	8	10
UTR+NH+ZH	17942	19153	37095	51	67	59	12	11	12	4	5	5
ZLD+NB+LIM	13792	13381	27173	84	105	94	7	11	9	4	6	5
Total	50277	51076	101351	62	76	69	11	10	11	6	5	5

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Province group by topic

year 2012 weeks 1 t/m 52

All practices Province group	population			Policy for symptoms mamma	End-of-live research*	Suicide
	M	F	M+F	F	M+F	M+F
GR+FR+DR	8066	7973	16038	228	58	2
OV+GLD+FLE	10477	10569	21045	221	51	5
UTR+NH+ZH	17942	19153	37095	97	29	3
ZLD+NB+LIM	13792	13381	27173	239	56	5
Total	50277	51076	101351	181	45	4

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Address density by topic

year 2012 weeks 1 t/m 52

All practices Adress density	population			Influenza	STD*			Whooping cough	Pneumonia*		
	M	F	M+F	M+F	M	F	M+F	M+F	M	F	M+F
<500/KM2	12514	12114	24628	144	30	40	35	9	12	18	15
500-2500/KM2	27055	27907	54961	155	48	64	56	9	50	63	57
>2500/KM2	10708	11055	21763	129	54	82	68	8	27	23	25
Total	50277	51076	101351	147	45	62	54	8	36	43	40

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Address density by topic

year 2012 weeks 1 t/m 52

All practices Adress density	population			Gastro-enteritis no feces test			Gastro-enteritis Feces test			Gut feeling relatedl to cancer		
	M	V	M+V	M	V	M+V	M	V	M+V	M	V	M+V
<500/KM2	12514	12114	24628	66	85	75	8	5	6	8	6	7
500-2500/KM2	27055	27907	54961	63	68	66	11	10	11	6	6	6
>2500/KM2	10708	11055	21763	57	85	71	15	16	16	2	2	2
Total	50277	51076	101351	62	76	69	11	10	11	6	5	5

* not all GPs were included

Continuous Morbidity Registration Sentinel Practices

Address density by topic

year 2012 weeks 1 t/m 52

All practices Adress density	population			Policy for symptoms mamma	End-of-live research	Suicide
	M	V	M+V	V	M+V	M+V
<500/KM2	12514	12114	24628	255	55	3
500-2500/KM2	27055	27907	54961	158	46	5
>2500/KM2	10708	11055	21763	159	34	2
Total	50277	51076	101351	181	45	4

* not all GPs were included