



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

**Surveillance Network Infectious Diseases
in Nursing homes**

Results from weekly incidence surveillance
2009 - 2013

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1 Summary - Key points

General characteristics

- In 2013, 24 nursing homes participated in the weekly incidence surveillance, which is comparable to previous years (2009 N=25; 2010 N=28; 2011 N=25; 2012 N=19).
- A total of 121,377 resident weeks were included in 2013, which is slightly lower compared to previous years (2009: 177,677, 2010: 158,628, 2011:136,746, 2012:109,452).
- The mean number of beds tended to decrease over time, as did the actual bed capacity in some of the nursing homes participating multiple years in the surveillance network.
- Nursing homes with a higher percentage of private rooms and private bathrooms tended to participate in 2013. Furthermore, the capacity of private rooms and private bathrooms increased in some of the participating nursing homes due to renovation.
- Seasonal influenza vaccination coverage of personnel is still low (median 17%) and even seems to decrease over time (2009: 16%, 2010: 20%, 2011:19%, 2012:17%, 2013:15%).

Gastro-enteritis

- In 2013, a total number of 233 episodes of gastro-enteritis were registered.
- The gastro-enteritis incidence showed a clear seasonal pattern with peaks in winter. In beginning of 2013, the maximum four week average reached a peak (6.4 per 1000 resident weeks), and in weeks 45-48 the incidence increased again (3.7 per 1000 resident weeks).
- Nursing homes with regular interchange of personnel between wards had higher incidences of gastro-enteritis. A hypothesis might be that interchange of personnel facilitates the spread of pathogens that cause gastro-enteritis.

Influenza-like illness

- In total, 100 episodes of influenza-like illness were registered in 2013.
- The year 2013 was a mild influenza season, with a mean incidence of 0.8 influenza-like illness cases per 1000 resident weeks.
- The incidence peaked at the end of 2013 (weeks 41-44) with an incidence of 1.7 per 1000 resident weeks.

Probable pneumonia

- In 2013, 452 episodes of probable pneumonia were registered, which makes probable pneumonia the second most reported infection within the SNIV network.
- In the years 2012 and 2013, a slight seasonal trend may be observed, where the incidence of probable pneumonia peaks in winter (first and last quarter of the year).
- Nursing homes with a higher percentage of private bathrooms had higher incidences of probable pneumonia. Further study of pathogens in residents with probable pneumonia is necessary to gain more insight.

Urinary tract infections

- 1,150 episodes of urinary tract infections were registered in 2013, which makes urinary tract infections the most reported infection within the SNIV network.
- No clear peaks in incidence were observed.

Mortality

- In 2013, a total number of 733 deaths were registered.
- Not surprisingly, mortality was highest amongst residents 85 years or older.

Transitions to and from a hospital

- Since 2012, admissions to hospitals and transfers of patients from a hospital to a nursing home have been registered in the SNIV network.
- In 2013, a total number of 276 hospital admissions and a total number of 800 transfers from a hospital to a nursing home were registered.

2 Samenvatting - Kernpunten

Verpleeghuis kenmerken

- In 2013 namen 24 verpleeghuizen deel aan de incidentiemeting van SNIV, wat vergelijkbaar is met voorgaande jaren (2009 N=25; 2010 N=28; 2011 N=25; 2012 N=19).
- In totaal werden er in 2013 121,377 bewonersweken geregistreerd, wat iets lager is dan in voorgaande jaren (2009: 177.677, 2010: 158.628, 2011: 136.746, 2012: 109.452).
- Het gemiddelde aantal bedden per verpleeghuis neemt af in de tijd. Daarnaast is het aantal bedden in sommige verpleeghuizen die al langer meedoen met SNIV afgenomen.
- Verpleeghuizen met een hoger percentage eenpersoonskamers en eigen badkamers namen deel in 2013. Daarnaast is door nieuwbouw en verbouwing de capaciteit van eenpersoonskamers en eigen badkamers toegenomen in sommige deelnemende verpleeghuizen. In 90% (versus 76% in 2012) van de deelnemende verpleeghuizen had $\geq 50\%$ van de bewoners een eenpersoonskamer.
- De influenzavaccinatiegraad van personeel blijft laag (mediaan 17%), en lijkt zelfs te dalen de afgelopen jaren (2009: 16%, 2010: 20%, 2011:19%, 2012:17%, 2013:15%).

Gastro-enteritis

- In 2013 werden in totaal 233 episodes van gastro-enteritis geregistreerd.
- De incidentie van gastro-enteritis laat een duidelijk seizoenspatroon zien en piekt in de winter (maximum vierweeks gemiddelde begin 2013: 6,4 per 1000 bewonersweken) en in week 45-48 van 2013 nam de incidentie weer toe (3,7 per 1000 bewonersweken).
- Verpleeghuizen met regelmatige uitwisseling van personeel tussen afdelingen hadden een hogere incidentie van gastro-enteritis. Een hypothese zou kunnen zijn dat uitwisseling van personeel tussen afdelingen de overdracht van pathogenen die gastro-enteritis veroorzaken bevordert.

Influenza-achtig ziektebeeld

- In 2013 werden in totaal 100 episodes van influenza-achtige ziekte geregistreerd.
- 2013 was een erg mild seizoen, met een gemiddelde incidentie van 0,8 gevallen van influenza-achtig ziektebeeld per 1000 bewonersweken.
- Aan het einde van 2013 piekte de incidentie (1,7 per 1000 bewonersweken in de periode van week 41-44).

Vermoedelijke longontsteking

- In 2013 werden in totaal 452 episodes van vermoedelijke longontsteking geregistreerd, wat deze infectie de tweede meest gerapporteerde infectie binnen het SNIV netwerk maakt.
- In 2012 en 2013 lijkt er een licht seizoensgebonden effect te zijn, waarbij de incidentie van vermoedelijke longontsteking piekt in de winter (eerste en laatste kwartaal van het jaar).
- Verpleeghuizen met een hoger percentage eigen badkamers hadden een hogere incidentie van vermoedelijke longontsteking. Nader onderzoek naar pathogenen bij bewoners met vermoedelijk pneumonie kan hier verder inzicht in verschaffen.

Urineweginfecties

- In 2013 werden in totaal 1.150 episodes van urineweginfecties geregistreerd, dit maakt urineweginfecties de meest gerapporteerde infectie binnen het SNIV netwerk.
- Er werden geen duidelijke pieken in incidentie waargenomen.

Sterfte

- In 2012 werden in totaal 733 sterfgevallen geregistreerd.
- De meeste sterfgevallen worden geregistreerd onder bewoners van 85 jaar of ouder.

Ziekenhuisbewegingen

- Het aantal verpleeghuisbewoners dat wordt opgenomen in een ziekenhuis en het aantal patiënten dat wordt overgenomen uit een ziekenhuis wordt sinds 2012 geregistreerd.
- In 2013 werden 276 ziekenhuisopnames en 800 ziekenhuisovernames geregistreerd.

3 Uitleg kernbegrippen referentiecijfers

Resident weeks / bewonerweken

Jaarlijks wordt van elk deelnemend verpleeghuis de beddencapaciteit nagevraagd. Deze beddencapaciteit wordt gebruikt voor het berekenen van de incidentie. Wekelijks registreren de deelnemers per verpleeghuis het aantal infecties. We nemen aan dat het aantal bedden een goede maatstaf is voor het aantal bewoners. Met het begrip "resident weeks" bedoelen we het aantal bewoners (bedden) in de deelnemende verpleeghuizen in een bepaalde week. Als we een uitspraak doen over meerdere weken tellen we het aantal bedden bij elkaar op. Om de wekelijkse incidentie te berekenen wordt het aantal infecties in die week gedeeld door het aantal bewoners in de verpleeghuizen die registreerden in die week. Wanneer we een incidentie berekenen over een langere periode tellen we het aantal infecties voor die weken op en ook het aantal bewoners in de huizen die die weken registreerden. Dat laatste getal noemen we het aantal resident weeks.

Rekenvoorbeeld 1: van frequentie zieken in één week naar incidentie

In week 40 van 2013 werden 35 urineweginfecties geregistreerd. In totaal registreerden 17 verpleeghuizen die week deze 35 urineweginfecties. In deze 17 verpleeghuizen zijn in die week totaal 2.358 bedden geregistreerd. We gaan uit van een bedbezetting van (bijna) 100% en dus nemen we aan dat het aantal bewoners gelijk is aan het aantal bedden. We berekenden de incidentie van week 40 door 35 te delen door 2.358 en dan te vermenigvuldigen per 1000. De incidentie in week 40 is dan van 14,8 urineweginfecties per 1000 bewoners.

Rekenvoorbeeld 2: van frequentie zieken in een aantal weken naar incidentie

In de weken 41, 42, 43 en 44 van 2013 werden in totaal 105 urineweginfecties geregistreerd. Omdat hier 4 weken meegenomen worden tellen we van de verpleeghuizen die registreerden in die weken het totaal aantal bewoners per week bij elkaar op (de resident weeks): in totaal tellen we in deze periode 9.590 residentweeks. De incidentie is 105 gedeeld door 9.590 maal 1000 is 10,9 urineweginfecties per 1000 resident weeks.

Rekenvoorbeeld 3: van incidentie naar frequentie zieken

De jaarlijkse incidentie in een verpleeghuis 8,0 per 1000 resident weeks. In het deelnemende verpleeghuis zijn 100 bedden en dit verpleeghuis heeft elke week geregistreerd. Het totale aantal resident weeks voor dit verpleeghuis is 5200 (1000 maal 52). Er zullen ongeveer 8 maal 5200/1000 (is afgerond 42) infecties optreden in het verpleeghuis.

Quarter (Q1-Q4)

Kwartaal. Q1 is week 1-13, Q2 week 14-26, Q3 week 27-39 en Q4 week 40-52, of indien van toepassing, week 40-53.

Facility rooms

Aantal gemeenschappelijke ruimten.

Interchange of personnel between wards

Uitwisseling personeel tussen zorgeenheden (regelmatig versus incidenteel).

Private rooms versus multiple person rooms

Eenpersoonskamers versus meerpersoonskamers.

Private bathroom versus shared bath room

Eigen badkamer versus gedeelde badkamer.

Influenza vaccination coverage personnel / residents

Influenzavaccinatiegraad van personeel / van bewoners.

4 Introduction

After 2011, a proportional rise in the aging population is expected, as from 2011 the first post-war 'baby boomers' reach the age of 65(1). In the Netherlands, the top of this growth will be reached in 2050 with at that time an estimated 25% of the population over the age of 65 and 40% of them being 80 years or older(2). Immunosenescence, the state of dysregulated immune function with aging, is felt to be a significant contributor to the increased risk and severity of infections in the elderly(3). Especially frail elderly in long-term care facilities have unique risks for infectious diseases(4).

In the U.S.A., prolonged attention is drawn into the increased risk of infection of elderly people and infection control programs for long term care facilities have been developed. In the SHEA/APIC guideline published in 2008 the importance of infectious disease surveillance in the long term care facilities is stated as an essential part of infectious disease prevention and control(5).

In the last years also in Europe joint initiatives have been established to survey antimicrobial consumption (European Surveillance of Antimicrobial Consumption (ESAC))(6) and healthcare-associated infections in long term care facilities (Healthcare-Associated infections and related practices in European Long-Term care facilities (HALT))(7). In the Netherlands, the PREZIES project surveys the occurrence of infections in acute care hospitals since 1996, and in 2009 a prevalence module was developed for the long term care setting(8). Prevalence is a measure to study the total number of cases of disease in a population. Incidence rates give insight in the rate of new cases per time interval and make it possible to study seasonal fluctuations in infections and are usually more useful than prevalence in understanding the disease etiology. In Europe, several other prevalence studies have been performed with different results, but until now no results from ongoing sentinel incidence surveillance in nursing homes have been reported(9-11).

In 2007, the Dutch Centre for Infectious Disease Control (CIDC) took the initiative to set up a national sentinel surveillance network for infectious diseases in nursing homes (SNIV) (12). Since 1970 routine surveillance of influenza-like illness in the community is conducted by general practitioners(13). A similar network structure for nursing homes was preferred to provide weekly incidence rates for the infectious diseases under surveillance. The aim of the SNIV network is to provide systematic year-round surveillance data for local interventions and national policymaking and for the development of infection control guidelines for the nursing home setting.

5 Methodology of surveillance of infectious disease in nursing homes

Design and sample size calculation

The network was designed as a sentinel active surveillance network involving nurse practitioners and/or elderly care physicians who report infectious diseases in their nursing home per week. In addition, patient material is collected for virological and/or bacteriological surveillance. This design is similar to the design of the Dutch Continuous Morbidity Registration (CMR), a network of general practices initiated in 1970 by The Netherlands Institute of Health Service Research (NIVEL)(13, 14).

A total number of 29 nursing homes was found to be necessary in order to obtain a sufficiently accurate estimate of the national incidence rate of an infectious disease in the Dutch population of nursing home residents. This number was calculated assuming random sampling without replacement from the total number of nursing homes in the country (330), using the average number of residents per nursing home (175) and an estimate of the standard deviation (based on pilot data) of the number of cases per nursing home, and by requiring the 95% confidence interval for the true incidence rate to have a width of about 0.02 (16, 17).

Recruitment

Initial recruitment of the nursing homes took place via the regional networks of nursing homes for education of elderly care physicians. Alongside an announcement of the set-up of the network was published in journals: Dutch Journal for Elderly Care Medicine (readers: Elderly care physicians), the Dutch Journal for Hygiene and Infection prevention (readers: infection control nurses) and the Dutch Infectious Disease bulletin (readers: Infection control physicians appointed at Municipal Health Services). Furthermore, a website with information on the SNIV network was launched (www.sniv.nl). We provided detailed documentation about the SNIV network to each nursing home that was interested to participate and an on-site presentation was planned to inform the manager, elderly care physicians and nurse practitioner. Afterwards, the manager signed a form in which they oblige themselves to participate in the network until further notice, but preferably for a year.

Only nursing homes with more than 50 residents could participate in the network. When a participating nursing home wished to participate with a second location with less than 50 beds this was allowed. In addition, an effort was made to recruit nursing homes from all parts of the Netherlands. Nursing homes with only a revalidation function were excluded from the network.

Protocols and procedures

The standardized form for weekly data collection and the methodology of the surveillance was previously tested in two pilot studies performed in a subset of eight nursing homes in 2008. In the first pilot, the feasibility of systematic data collection via a paper registration form was tested. Main recommendations were: to collect data via a web-based application to facilitate the registration process, to send reminders to enhance complete data collection and paper registration forms should stay available at each ward to facilitate internal data collection. In the second pilot, data registration via a web-based internet application was tested. The second pilot was used to further fine-tune the digital registration form and process. In each participating nursing home a contact person was appointed who was responsible for weekly data collection. One confidential login and password were e-mailed to each of the contact persons. Since January 2009, full data registration started and all weekly data are collected online for all nursing homes.

Privacy of residents and nursing homes and safe data collection was an important issue in the set-up of the network and was addressed in a data regulation form. Weekly count data is not traceable to individual residents. Only aggregated data will be published, no individual nursing home data.

An advisory committee meets up at least once a year to give the project team advice on which infectious diseases to survey. All Dutch parties involved in infection prevention and control were asked to designate a representative.

Feedback reports are sent once a year to the nursing homes that participate in SNIV. This report contains an overview of individual results versus the national results and provides an indication whether the infection incidence of a nursing home is above or below the national average. During the influenza season, weekly national incidence data from SNIV is published on the website of the Dutch Institute for Public Health and the Environment. Once a year a meeting is organized for participants with state-of-the-art

lectures on the infectious disease under surveillance. Four times a year, newsletters are sent to all nursing homes involved with an update of the national nursing home infection incidence and information about the infectious disease under surveillance and related projects. The newsletters are published on the website together with an overview of the data collected in each year.

Data collection and analysis

Each year, general facility characteristics are gathered; age distribution of residents, resident mix (e.g. somatic, psychogeriatric), size of the facility, size of the wards, availability of private bathroom and/or toilet facilities, interchange of personnel between wards, influenza vaccination coverage among residents and personnel, and availability of infection control protocols. As from 2010, these data are collected online for all nursing homes. Since 2013, information regarding infection prevention committees, regulations about the use of antibiotics and dental hygiene are included in the questionnaire.

To minimize the weekly workload for the participants, a maximum of five infections can be registered in the surveillance. In focus groups with elderly care experts and infectious disease experts we discussed which infectious diseases should be under surveillance in this sentinel network. Of major importance were influenza-like illness, gastro-enteritis and lower respiratory tract infection, for which count data are registered since January 2009. Urinary tract infections are under surveillance since 2011. All-cause mortality is registered since January 2009. Since 2012, hospital admissions and transfers from hospitals to a nursing home have been included in the registration protocol.

Infections were registered based on clinical definitions conform medical practice in the nursing home setting. The definitions of the infectious diseases are stated in figure 1. For gastro-enteritis the definition was chosen that was previously used in nursing home setting for research into outbreaks of gastro-enteritis(15). For lower respiratory tract infection the definition was based on previous research on pneumonia in the elderly(16, 17). For influenza-like illness the definition of the European Influenza Surveillance Network (EISN) was chosen. In addition, nursing homes were asked to send in nose/throat swabs of residents with influenza-like illness or acute respiratory tract infections for the weekly virological surveillance of influenza. In the second pilot we also evaluated the application of these definitions and the way the elderly care physicians diagnose infectious disease in their nursing home.

Weekly incidence rates were calculated by dividing the total number of cases in one week by the total number of residents in the participating nursing homes in that week (resident weeks). Confidence intervals of 95% were calculated for the annual incidence rates. To study trends in infections the running average technique was used and 5 weeks-running averages were calculated.

6 General characteristics of participating nursing homes

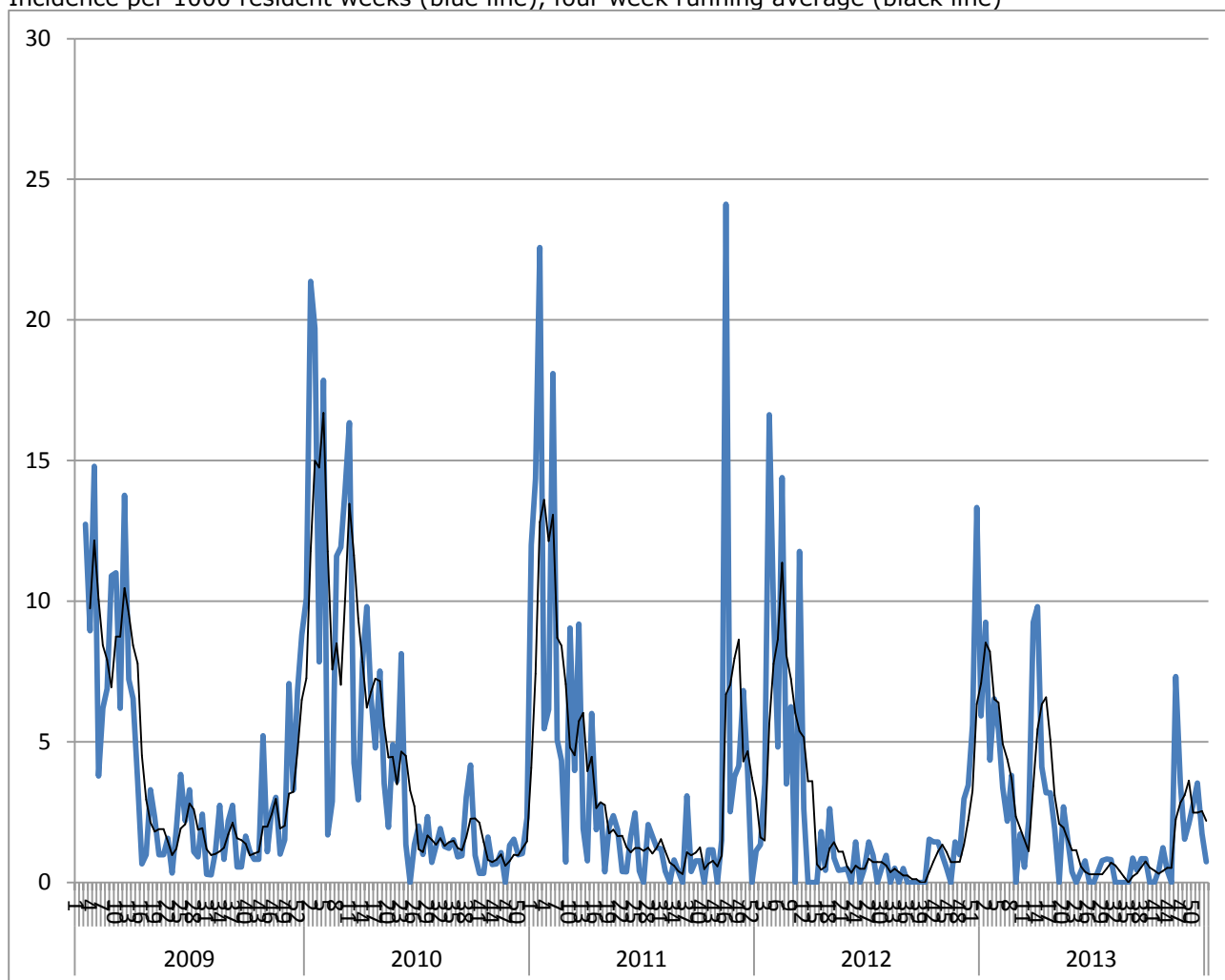
In the Netherlands, there are in total approximately 400 nursing homes, with in total 61,000 residents. The average Dutch nursing home bed capacity is approximately 130 beds. In the table below the general characteristics of the in SNIV participating nursing homes are listed.

Institutional Characteristics	2009	2010	2011	2012	2013
Nursing homes (N)	25	28	25	19	24
Resident weeks	177,677	158,628	136,746	109,452	121,377
Bed capacity (median, range)	158 (62-284)	130 (41-234)	128 (56-234)	124 (56-199)	113 (16-406)
Number of residents (median, range)	158 (62-280)	130 (41-230)	128 (56-230)	124 (56-199)	113 (16-406)
Number of personnel (median, range)	270 (70-680)	292 (20-619)	199 (64-451)	189 (64-529)	122 (40-597)*
Private rooms (≥50%)	14%	49%	59%	76%	90%
Private bathrooms (≥50%)	0%	9%	24%	33%	30%
Presence of infection control committee (%)	88%	71%	72%	95%	96%
Interchange of personnel between wards (%)	51%	33%	16%	31%	49%
Influenza vaccination coverage residents (median, range)	92% (70%-99%)	95% (70%-98%)	95% (70%-100%)	95% (70%-100%)	90% (67%-99%)
Influenza vaccination coverage personnel (median, range)	16% (4%-52%)	20% (5%-50%)	19% (4%-65%)	17% (5%-50%)	15% (0%-30%)
Facility rooms (median, range)	5 (1-13)	5 (1-18)	5 (1-20)	5 (1-20)	5 (1-20)

* The number of personnel is an optional variable in the 2013 questionnaire. Seven nursing homes (29%) have provided data regarding personnel.

7 Gastro-enteritis

Incidence per 1000 resident weeks (blue line), four week running average (black line)



	Average incidence per 1000 resident weeks					Absolute numbers	Resident weeks
	2009	2010	2011	2012	2013	2013	2013
week 1-4	11.7	16.8	12.1	7.8	6.4	47	7,348
week 5-8	6.9	7.2	7.1	7.2	2.3	17	7,288
week 9-12	9.6	9.3	6.0	3.7	3.4	25	7,248
week 13-16	2.9	7.3	2.9	0.6	5.0	43	8,613
week 17-20	1.9	4.5	1.6	1.1	1.5	16	10,388
week 21-24	2.0	3.3	1.2	0.5	0.4	4	10,332
week 25-28	1.9	1.7	1.0	0.7	0.3	3	10,330
week 29-32	1.0	1.3	0.7	0.5	0.4	4	9,749
week 33-36	2.1	1.2	1.1	0.1	0.3	3	9,454
week 37-40	1.0	2.1	0.5	0.4	0.4	4	9,616
week 41-44	2.0	0.8	1.0	1.1	0.5	5	9,590
week 45-48	2.0	1.0	8.6	1.3	3.7	37	10,115
week 49-52	7.2	4.1	3.0	7.1	2.2	25	11,306
Total	3.8	4.6	3.7	2.5	1.9	233	121,377

Gastro-enteritis and nursing home characteristics

Nursing home characteristics can influence the incidence of infectious diseases. In the tables below, the mean incidences per quarter and per year are given for different nursing home characteristics.

Q	Bed capacity ≥ 130 beds					Bed capacity < 130 beds				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	9.7	10.2	9.0	6.8	3.4	6.5	12.2	5.4	4.4	6.1
Q2	2.2	4.6	2.4	0.9	1.4	1.5	3.5	0.5	0.7	1.1
Q3	1.3	1.3	1.2	0.4	0.4	1.3	2.5	0.6	0	0.5
Q4	3.2	2.1	4.0	1.7	1.7	7.1	1.0	3.8	5.3	2.8
Y	3.7	4.5	4.4	2.5	1.5	4.2	5.0	2.5	2.6	2.8

Q	Facility rooms ≥ 5 rooms					Facility rooms < 5 rooms				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	6.6	10.4	5.1	4.5	3.8	10.9	11.4	10.5	7.4	5.8
Q2	2.0	4.7	2.4	1.1	0.8	2.1	3.7	1.0	0.4	2.2
Q3	1.7	1.6	0.9	0.3	0.4	0.9	1.7	1.1	0.2	0.5
Q4	4.1	1.4	3.9	2.4	1.7	3.5	2.5	3.8	4.1	2.5
Y	3.4	4.5	3.1	2.1	1.6	4.2	4.7	4.4	3.2	2.5

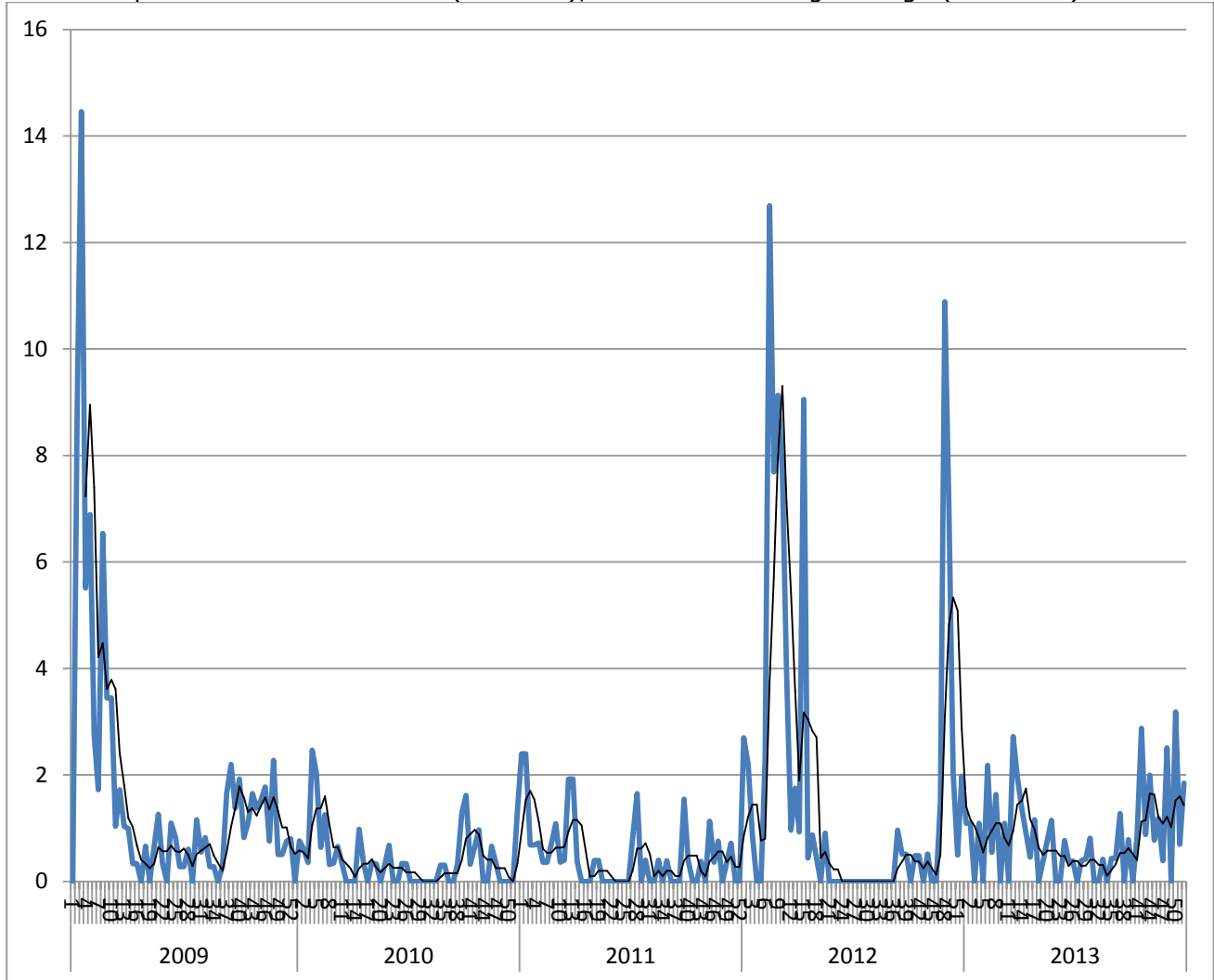
Q	Regular interchange of personnel between wards					Incidental interchange of personnel between wards				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	12.3	15.9	3.2	8.5	5.7	4.9	8.9	7.2	5.1	3.4
Q2	2.8	4.3	1.1	2.1	1.6	1.2	4.6	2.0	0.3	1.1
Q3	0.9	2.2	0.6	0.3	0.5	1.7	1.0	1.1	0.3	0.4
Q4	4.3	1.6	1.7	2.8	2.2	3.3	2.0	4.3	3.0	1.9
Y	4.9	5.9	1.6	3.4	2.3	2.7	4.1	3.6	2.2	1.6

Q	Residents with private rooms ≥ 50%					Residents with private rooms < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.5	12.0	8.0	4.7	5.4	9.7	10.4	4.4	8.3	1.2
Q2	1.1	6.2	2.7	1.1	1.1	2.2	2.7	0.7	0.1	2.7
Q3	0.3	2.0	1.3	0.4	0.5	1.5	0.9	0.4	0	0
Q4	5.4	3.0	4.2	2.5	2.1	3.6	0.8	3.5	4.4	0.7
Y	2.8	5.8	4.0	2.2	2.0	4.0	3.7	2.3	3.4	1.5

Q	Residents with private bathroom ≥ 50%					Residents with private bathroom < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	21.6	4.1	5.0	4.4	9.0	10.2	7.1	6.1	4.6
Q2	-	6.6	2.9	1.2	0.4	2.1	4.3	1.5	0.7	1.7
Q3	-	1.4	1.3	0.4	0.9	1.3	1.4	0.9	0.2	0.2
Q4	-	5.8	8.1	2.9	2.5	3.8	1.4	2.4	3.1	1.8
Y	-	8.6	4.3	2.4	1.8	3.8	4.3	3.0	2.6	2.0

8 Influenza-like illness

Incidence per 1000 resident weeks (blue line), four week running average (black line)



	Average incidence per 1000 resident weeks					Absolute numbers	Resident weeks
	2009	2010	2011	2012	2013		
week 1-4	8.7	1.1	1.5	1.4	0.8	6	7,348
week 5-8	4.4	1.0	0.5	5.7	1.1	8	7,288
week 9-12	2.4	0.3	0.9	5.4	1.0	7	7,248
week 13-16	0.7	0.3	0.6	3.0	1.2	10	8,613
week 17-20	0.3	0.2	0.2	0.6	0.6	6	10,388
week 21-24	0.7	0.3	0.0	0.0	0.5	5	10,332
week 25-28	0.5	0.2	0.6	0.0	0.3	3	10,330
week 29-32	0.6	0.0	0.1	0.0	0.3	3	9,749
week 33-36	0.2	0.2	0.2	0.0	0.3	3	9,454
week 37-40	1.8	0.8	0.5	0.5	0.5	5	9,616
week 41-44	1.2	0.5	0.1	0.4	1.7	16	9,590
week 45-48	1.6	0.2	0.6	3.0	1.2	12	10,115
week 49-52	0.5	0.3	0.3	2.9	1.4	16	11,306
Total	1.6	0.4	0.5	1.8	0.8	100	121,377

Influenza-like illness and nursing home characteristics

Nursing home characteristics can influence the incidence of infectious diseases. In the tables below, the mean incidences per quarter and per year are given for different nursing home characteristics.

Q	Bed capacity ≥ 130 beds					Bed capacity < 130 beds				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	5.0	0.7	0.9	2.7	1.0	3.4	0.9	1.6	5.8	1.1
Q2	0.4	0.2	0.1	1.4	0.8	0.9	0.5	0	0.4	0.1
Q3	0.7	0.2	0.4	0.2	0.5	0.9	0.1	0.4	0	0
Q4	1.1	0.6	0.2	1.3	1.7	1.3	0.1	0.4	3.1	0
Y	1.6	0.4	0.4	1.4	1.0	1.6	0.4	0.6	2.4	0.3

Q	Facility rooms ≥ 5 rooms					Facility rooms < 5 rooms				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.1	0.9	1.5	5.2	1.3	5.0	0.5	0.7	2.3	0.7
Q2	0.3	0.2	0.2	0.5	0.8	0.8	0.4	0	1.7	0.3
Q3	1.0	0.1	0.5	0	0.4	0.5	0.3	0.3	0.4	0.4
Q4	1.2	0.4	0.4	2.7	1.0	1.0	0.5	0.2	0.7	1.9
Y	1.4	0.4	0.6	2.1	0.8	1.7	0.4	0.3	1.3	0.8

Q	Regular interchange of personnel between wards					Incidental interchange of personnel between wards				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	6.3	0.9	1.1	4.0	1.5	2.6	0.7	1.1	3.6	0.6
Q2	0.6	0.1	0	0.5	0.5	0.4	0.3	0.1	1.3	0.7
Q3	0.5	0	0	0	0.6	0.9	0.2	0.5	0.2	0.2
Q4	1.4	0.2	0	0.6	1.8	0.8	0.5	0.4	2.6	1.0
Y	2.1	0.3	0.3	1.3	1.0	1.1	0.4	0.5	2.0	0.6

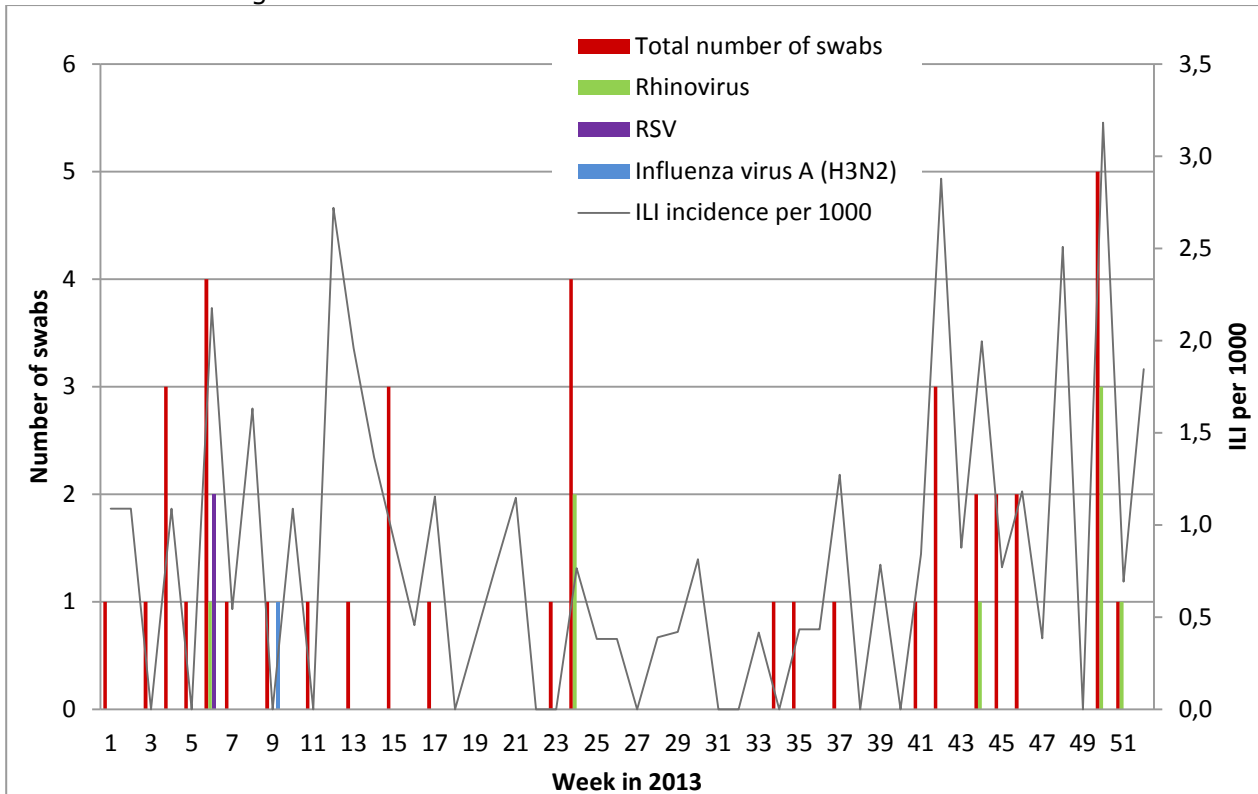
Q	Residents with private rooms ≥ 50%					Residents with private rooms < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	1.1	0.8	1.8	4.1	1.0	5.2	0.8	0.2	3.6	1.0
Q2	0.8	0.2	0.2	1.4	0.7	0.5	0.3	0	0	0
Q3	0.5	0.3	0.7	0.2	0.4	0.8	0	0	0	0
Q4	1.3	0.8	0.4	2.5	1.4	1.1	0.1	0.2	0.3	0
Y	0.9	0.5	0.7	2.1	0.9	1.7	0.3	0.1	1.1	0.4

Q	Residents with private bathroom ≥ 50%					Residents with private bathroom < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	2.1	1.4	8.2	1.1	4.7	0.7	1.0	2.1	1.0
Q2	-	0.3	0.4	0.8	1.4	0.5	0.2	0	1.1	0.3
Q3	-	0.6	1.1	0.4	0.4	0.7	0.1	0.2	0.1	0.4
Q4	-	3.3	0.5	4.7	1.8	1.1	0.1	0.2	0.6	1.1
Y	-	1.5	0.8	3.5	1.2	1.6	0.3	0.4	1.0	0.7

Q	Influenza vaccination coverage residents \geq 95%					Influenza vaccination coverage residents $<$ 95%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.1	0.8	0.9	2.7	1.4	5.1	0.6	1.4	5.9	0.7
Q2	0.4	0.2	0.1	1.2	0.7	0.6	0.4	0	0.7	0.5
Q3	0.9	0.2	0.5	0.2	0.3	0.6	0.1	0	0	0.5
Q4	1.1	0.3	0.3	1.3	1.0	1.1	0.7	0.3	3.1	1.6
Y	1.5	0.4	0.5	1.3	0.8	1.7	0.4	0.5	2.6	0.9

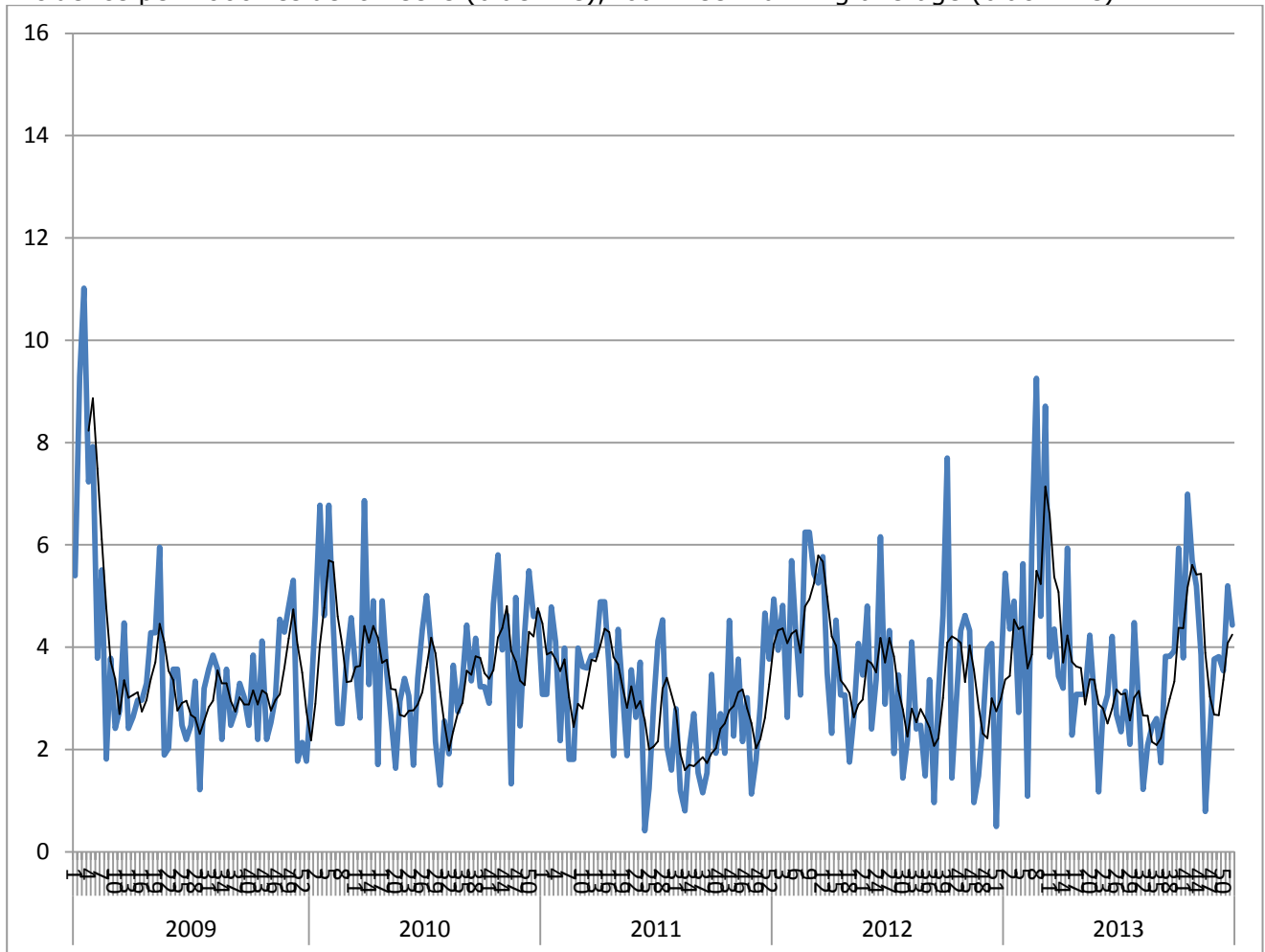
Q	Influenza vaccination coverage personnel \geq 17%					Influenza vaccination coverage personnel $<$ 17%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	1.5	0.6	1.8	1.0	0.6	6.5	1.1	0.6	6.6	1.5
Q2	0.5	0.1	0.2	1.5	0.8	0.5	0.6	0	0.5	0.4
Q3	0.6	0.2	0.7	0.1	0.2	0.8	0.1	0.2	0.2	0.5
Q4	1.1	0.6	0.6	1.5	1.6	1.2	0.3	0.1	2.4	1.2
Y	0.9	0.4	0.8	1.0	0.8	2.1	0.5	0.2	2.5	0.9

Influenza virus, respiratory syncytial virus (RSV), rhinovirus and enterovirus detections in swabs taken during 2013.



9 Probable pneumonia

Incidence per 1000 resident weeks (blue line), four week running average (black line)



	Average incidence per 1000 resident weeks					Absolute	Resident
	2009	2010	2011	2012	2013	numbers	weeks
week 1-4	8.8	4.8	3.8	4.1	4.4	32	7,348
week 5-8	4.8	4.0	2.4	4.8	5.5	40	7,288
week 9-12	3.4	3.6	3.8	5.7	5.4	39	7,248
week 13-16	2.7	4.2	4.3	3.4	3.7	32	8,613
week 17-20	4.5	3.2	2.8	2.9	3.4	35	10,388
week 21-24	2.8	2.8	2.6	3.5	2.5	26	10,332
week 25-28	2.6	4.2	3.2	3.8	3.1	32	10,330
week 29-32	3.0	2.0	1.9	2.8	2.7	26	9,749
week 33-36	3.0	3.5	1.8	2.4	2.2	21	9,454
week 37-40	2.9	3.5	2.0	4.0	4.4	42	9,616
week 41-44	3.1	4.4	2.9	3.3	5.4	52	9,590
week 45-48	3.6	3.3	2.5	2.3	2.7	27	10,115
week 49-52	3.2	4.8	3.3	3.0	4.2	48	11,306
Total	3.6	3.7	2.9	3.5	3.7	452	121,377

Probable pneumonia and nursing home characteristics

Nursing home characteristics can influence the incidence of infectious diseases. In the tables below, the mean incidences per quarter and per year are given for different nursing home characteristics.

Q	Bed capacity ≥ 130 beds					Bed capacity < 130 beds				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.5	4.2	3.2	5.2	4.6	7.9	4.8	3.8	4.1	5.3
Q2	3.3	2.8	2.2	3.3	3.9	2.7	4.0	4.6	3.5	1.8
Q3	3.1	3.8	1.7	2.3	2.8	2.4	1.8	3.2	3.5	2.9
Q4	3.3	4.1	2.3	3.2	3.9	2.7	3.8	3.6	3.2	5.2
Y	3.5	3.7	2.4	3.5	3.7	3.8	3.6	3.8	3.6	3.8

Q	Facility rooms ≥ 5 rooms					Facility rooms < 5 rooms				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.3	4.8	2.5	5.4	5.4	5.9	3.7	4.1	3.8	4.2
Q2	3.4	3.5	2.8	3.8	3.5	3.1	2.7	3.3	2.8	2.7
Q3	3.1	3.8	2.5	3.4	2.5	2.9	2.2	1.9	1.8	3.2
Q4	4.0	4.2	3.0	3.4	3.9	2.4	3.8	2.5	2.9	4.8
Y	3.7	4.1	2.7	4.0	3.7	3.5	3.1	3.0	2.8	3.7

Q	Regular interchange of personnel between wards					Incidental interchange of personnel between wards				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.6	2.2	0.8	5.9	6.5	6.0	5.5	3.1	3.9	3.3
Q2	3.3	2.0	0.8	4.0	4.0	3.2	3.7	3.7	2.9	2.4
Q3	3.5	2.4	0.6	4.1	3.7	2.5	3.8	2.6	2.2	1.9
Q4	3.0	3.0	0.9	4.1	4.5	3.5	4.3	3.1	2.9	4.0
Y	3.5	2.4	0.8	4.6	4.6	3.6	4.3	3.1	3.0	2.9

Q	Residents with private rooms ≥ 50%					Residents with private rooms < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	2.9	6.0	3.4	5.4	5.4	5.5	2.9	1.8	3.1	3.1
Q2	1.6	3.9	3.9	3.6	3.5	3.5	2.6	2.1	2.9	0.7
Q3	1.3	4.2	2.9	3.0	2.7	3.2	2.6	1.3	1.9	4.5
Q4	2.2	5.1	3.5	3.7	4.1	3.4	2.7	1.6	1.8	7.0
Y	2.0	4.8	3.5	4.0	3.8	3.8	2.7	1.7	2.5	3.0

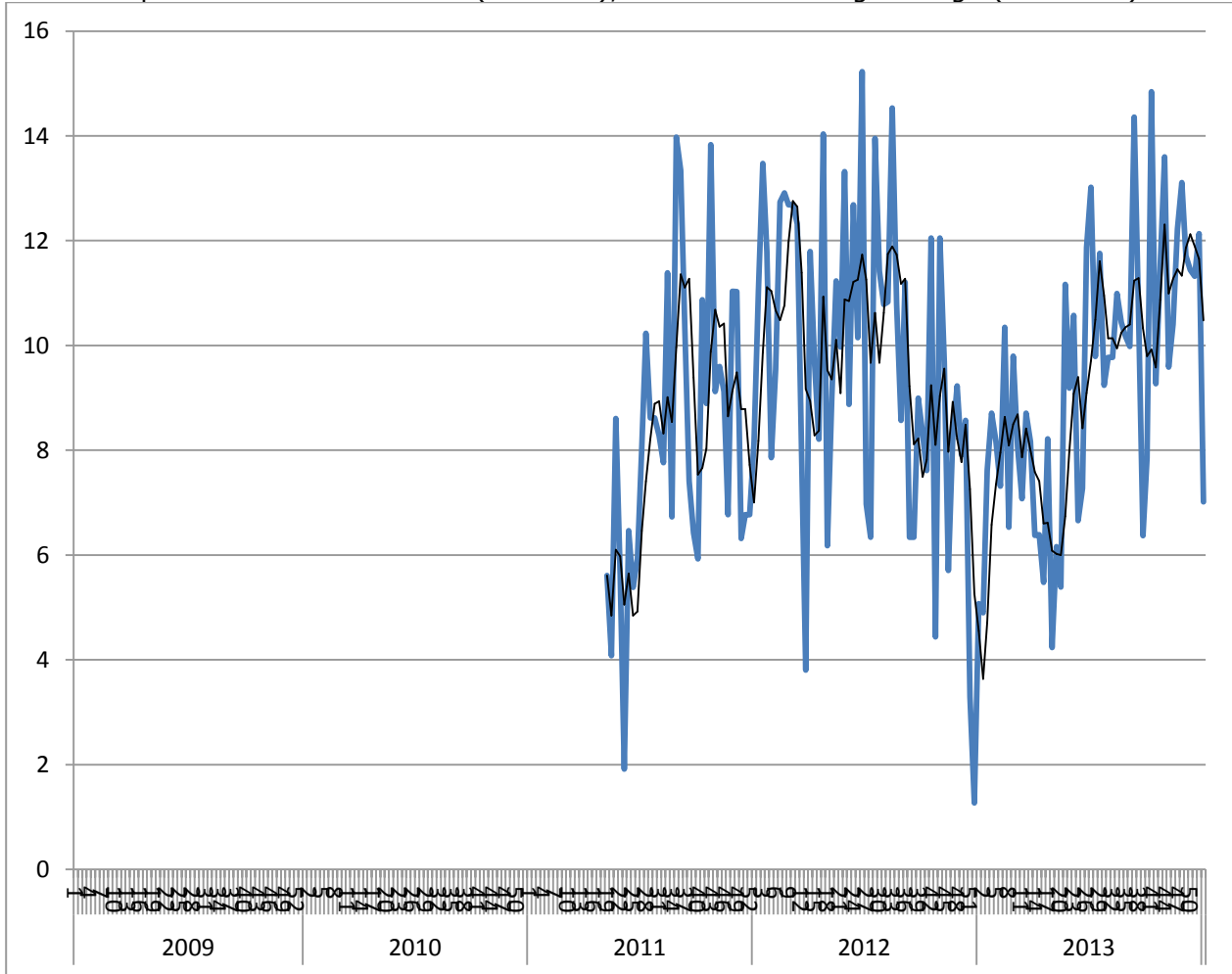
Q	Residents with private bathroom ≥ 50%					Residents with private bathroom < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	4.2	4.1	9.3	6.7	5.2	4.4	2.4	2.8	4.3
Q2	-	5.8	4.5	4.5	2.9	3.2	3.0	2.8	2.9	3.3
Q3	-	3.9	4.1	3.3	1.9	3.0	3.3	1.6	2.5	3.3
Q4	-	9.1	4.5	4.5	4.3	3.2	3.3	2.2	2.6	4.2
Y	-	5.8	4.3	5.4	3.7	3.6	3.5	2.2	2.7	3.7

Q	Influenza vaccination coverage residents \geq 95%					Influenza vaccination coverage residents < 95%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	4.4	4.2	2.7	3.8	4.8	5.8	4.5	4.8	6.1	5.1
Q2	3.5	3.0	3.2	3.8	3.7	3.0	3.5	2.4	2.8	2.7
Q3	3.0	3.4	2.4	3.4	1.8	2.9	2.9	1.7	1.4	4.1
Q4	3.8	2.9	2.9	3.7	3.3	2.8	6.0	2.4	2.4	5.1
Y	3.7	3.4	2.8	3.7	3.3	3.5	4.2	3.1	3.3	4.2

Q	Influenza vaccination coverage personnel \geq 17%					Influenza vaccination coverage personnel <17%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	2.8	3.3	2.7	2.8	4.0	6.6	6.4	3.8	6.4	5.9
Q2	1.8	2.9	3.6	3.2	2.9	4.0	3.8	2.6	3.6	3.4
Q3	3.2	3.1	2.9	2.6	1.2	2.8	3.5	1.7	2.9	3.8
Q4	3.9	3.7	3.7	3.0	3.8	2.7	4.7	2.0	3.4	4.5
Y	3.1	3.2	3.2	2.9	2.9	3.9	4.6	2.6	4.2	4.3

10 Urinary tract infections

Incidence per 1000 resident weeks (blue line), four week running average (black line)



	Average incidence per 1000 resident weeks					Absolute numbers 2013	Resident weeks 2013
	2009	2010	2011	2012	2013		
week 1-4	-	-	-	11.0	7.3	54	7,348
week 5-8	-	-	-	11.9	8.5	62	7,288
week 9-12	-	-	-	9.2	8.0	58	7,248
week 13-16	-	-	-	11.0	6.6	57	8,613
week 17-20	-	-	4.6	9.1	6.7	70	10,388
week 21-24	-	-	4.8	11.3	8.4	87	10,332
week 25-28	-	-	8.2	10.5	11.6	120	10,330
week 29-32	-	-	9.0	11.9	9.9	97	9,749
week 33-36	-	-	11.1	9.2	11.2	106	9,454
week 37-40	-	-	7.7	7.8	9.9	95	9,616
week 41-44	-	-	10.3	9.6	10.9	105	9,590
week 45-48	-	-	9.4	7.8	11.9	120	10,115
week 49-52	-	-	7.0	4.5	10.5	119	11,306
Total			8.0	9.6	9.5	1,150	121,377

Urinary tract infections and nursing home characteristics

Nursing home characteristics can influence the incidence of infectious diseases. In the tables below, the mean incidences per quarter and per year are given for different nursing home characteristics.

Q	Bed capacity ≥ 130 beds					Bed capacity < 130 beds				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	-	-	11.1	7.8	-	-	-	10.5	7.8
Q2	-	-	4.0	10.7	8.3	-	-	7.1	9.9	8.0
Q3	-	-	7.8	9.7	11.4	-	-	11.1	10.1	6.2
Q4	-	-	6.8	7.6	11.8	-	-	12.0	6.8	10.1
Y	-	-	6.4	9.8	10.1	-	-	10.5	9.4	8.0

Q	Facility rooms ≥ 5 rooms					Facility rooms < 5 rooms				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	-	-	9.3	8.6	-	-	-	14.5	6.5
Q2	-	-	3.4	10.0	7.5	-	-	8.1	11.3	9.2
Q3	-	-	8.4	9.6	9.4	-	-	10.8	10.9	11.0
Q4	-	-	8.3	6.5	10.4	-	-	10.5	10.1	12.8
Y	-	-	7.0	8.9	9.0	-	-	9.9	11.9	10.2

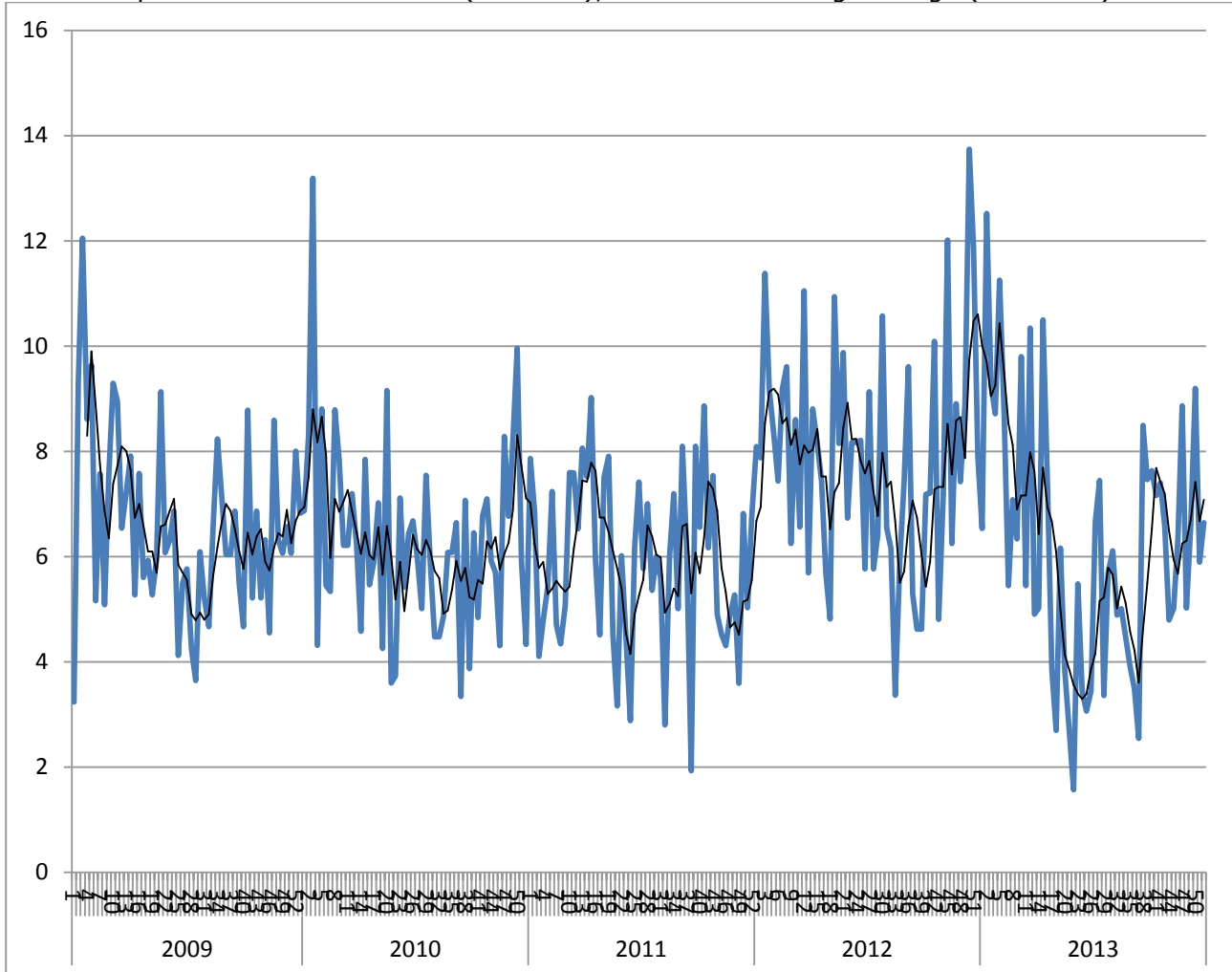
Q	Regular interchange of personnel between wards					Incidental interchange of personnel between wards				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	-	-	12.7	8.8	-	-	-	10.4	6.7
Q2	-	-	6.4	13.3	8.7	-	-	5.2	9.4	7.6
Q3	-	-	6.0	8.9	13.3	-	-	10	10.4	6.8
Q4	-	-	9.6	6.8	16.0	-	-	9.1	8.4	7.7
Y	-	-	7.4	10.4	11.8	-	-	8.4	9.7	7.3

Q	Residents with private rooms ≥ 50%					Residents with private rooms < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	-	-	11.5	8.4	-	-	-	8.3	5.6
Q2	-	-	6.5	11.1	8.2	-	-	3.9	7.6	7.9
Q3	-	-	9.9	9.1	10.3	-	-	8.0	13.7	5.7
Q4	-	-	10.1	7.6	11.2	-	-	7.5	5.7	14.0
Y	-	-	9.1	9.9	9.7	-	-	6.7	8.6	7.4

Q	Residents with private bathroom ≥ 50%					Residents with private bathroom < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	-	-	10.5	10.2	-	-	-	11.0	6.9
Q2	-	-	2.8	13.9	9.8	-	-	6.0	9.1	7.5
Q3	-	-	8.4	11.6	8.0	-	-	9.3	9.1	11.1
Q4	-	-	14.9	11.8	8.9	-	-	7.6	5.4	12.4
Y	-	-	10.0	11.9	9.1	-	-	7.8	8.7	9.6

11 Mortality

Incidence per 1000 resident weeks (blue line), four week running average (black line)



	Average incidence per 1000 resident weeks					Absolute numbers	Resident weeks
	2009	2010	2011	2012	2013	2013	2013
week 1-4	9.3	8.1	5.9	9.1	9.3	68	7,348
week 5-8	6.9	7.1	5.4	8.6	8.1	59	7,288
week 9-12	8.1	6.9	6.7	8.1	8.0	58	7,248
week 13-16	7.0	6.0	7.6	7.5	7.0	60	8,613
week 17-20	5.7	6.6	6.1	7.4	4.1	43	10,388
week 21-24	7.1	5.0	4.2	8.2	3.3	34	10,332
week 25-28	4.9	6.0	6.6	7.2	5.1	53	10,330
week 29-32	4.9	5.5	4.9	7.5	5.0	49	9,749
week 33-36	7.0	5.9	6.6	6.6	4.2	40	9,454
week 37-40	5.8	5.2	5.7	5.4	6.6	63	9,616
week 41-44	6.5	6.2	6.9	7.3	6.5	62	9,590
week 45-48	6.4	6.3	4.7	8.7	6.3	64	10,115
week 49-52	6.7	7.1	5.5	10.6	7.1	80	11,306
Total	6.6	6.3	5.9	7.9	6.0	733	121,377

Mortality and nursing home characteristics

Nursing home characteristics can influence the incidence of infectious diseases. In the tables below, the mean incidences per quarter and per year are given for different nursing home characteristics.

Q	Bed capacity ≥ 130 beds					Bed capacity < 130 beds				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	7.7	7.2	5.9	8.9	9.3	9.1	7.4	6.8	7.6	6.7
Q2	6.1	6.0	6.0	7.6	4.6	6.9	5.8	5.8	8.0	4.1
Q3	6.3	6.3	5.7	7.1	5.3	3.4	3.3	5.8	5.7	5.6
Q4	6.4	6.7	6.6	9.1	6.4	6.5	5.9	4.6	8.0	7.6
Y	6.6	6.6	6.0	8.2	6.1	6.4	5.6	5.7	7.4	5.9

Q	Facility rooms ≥ 5 rooms					Facility rooms < 5 rooms				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	7.5	6.4	5.8	7.8	8.3	8.4	8.6	6.5	9.2	7.9
Q2	5.6	5.2	5.0	6.5	4.4	6.8	7.1	6.9	9.5	4.5
Q3	5.5	5.7	4.6	5.5	4.8	6.2	5.0	7.2	8.3	6.2
Q4	6.2	5.8	5.5	8.5	6.6	6.6	7.7	6.0	9.0	6.9
Y	6.1	5.8	5.2	7.1	5.9	7.0	7.0	6.6	9.0	6.3

Q	Regular interchange of personnel between wards					Incidental interchange of personnel between wards				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	6.7	4.9	4.9	6.9	7.4	9.6	8.6	6.7	9.0	9.0
Q2	6.0	4.8	3.6	5.4	5.1	6.6	7.0	6.3	9.0	3.8
Q3	5.6	4.8	4.0	6.7	4.2	6.2	6.3	6.1	10.0	6.6
Q4	5.5	5.9	3.0	7.2	6.5	7.4	6.9	6.3	7.2	6.9
Y	5.9	5.1	3.9	6.5	5.7	7.3	7.2	6.4	8.7	6.4

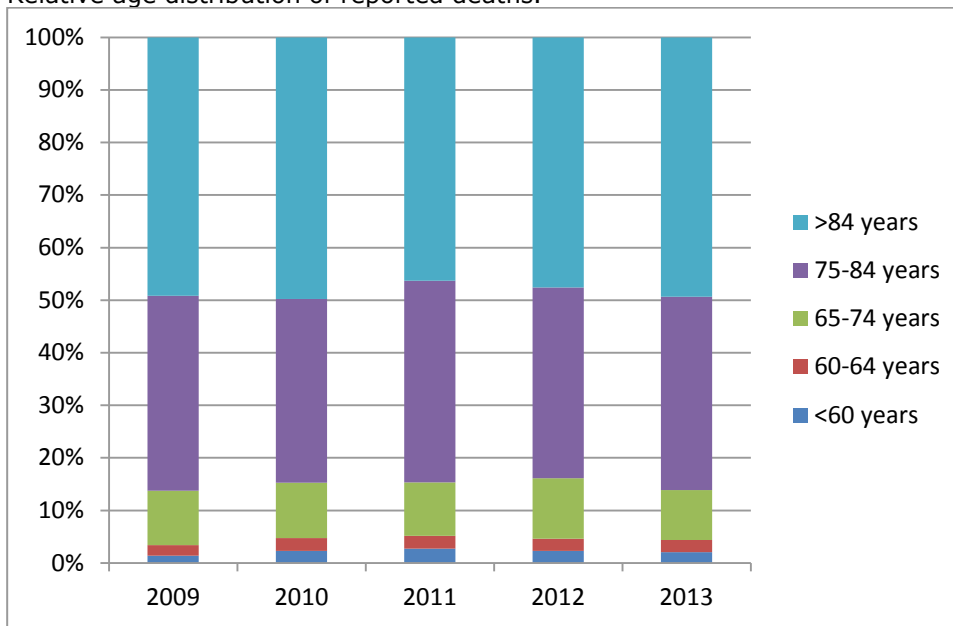
Q	Residents with private rooms ≥ 50%					Residents with private rooms < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	7.9	8.7	6.7	8.3	7.7	8.0	6.1	5.9	8.5	10.1
Q2	7.2	6.8	5.8	7.2	4.2	6.1	5.8	5.9	9.0	6.2
Q3	6.2	6.9	6.6	6.0	5.1	5.8	4.8	4.6	8.3	10.2
Q4	8.7	7.6	6.3	8.2	6.5	6.1	5.6	5.0	10.0	10.5
Y	7.5	7.5	6.4	7.5	5.7	6.4	5.6	5.4	8.9	8.9

Q	Residents with private bathroom ≥ 50%					Residents with private bathroom < 50%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	-	7.5	7.2	7.9	7.1	8.0	7.4	6.2	8.6	8.5
Q2	-	6.9	4.8	5.1	4.7	6.2	6.3	6.2	8.9	4.3
Q3	-	8.5	6.6	5.0	4.6	5.9	5.5	5.5	7.3	5.8
Q4	-	7.7	6.4	8.1	7.8	6.4	6.4	5.6	9.0	6.3
Y	-	7.7	6.2	6.5	6.0	6.6	6.4	5.9	8.5	6.1

Q	Influenza vaccination coverage residents ≥ 95%					Influenza vaccination coverage residents < 95%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	8.7	7.5	6.8	7.7	8.2	7.4	6.8	4.8	9.4	8.1
Q2	5.7	5.8	6.2	8.7	3.8	6.7	6.2	5.2	6.1	5.1
Q3	6.0	5.8	5.7	7.0	5.6	5.8	4.9	6.2	5.9	5.1
Q4	6.9	6.4	6.1	9.7	6.5	6.1	6.7	4.8	6.8	6.9
Y	6.7	6.3	6.2	8.3	5.8	6.4	6.2	5.2	7.2	6.2

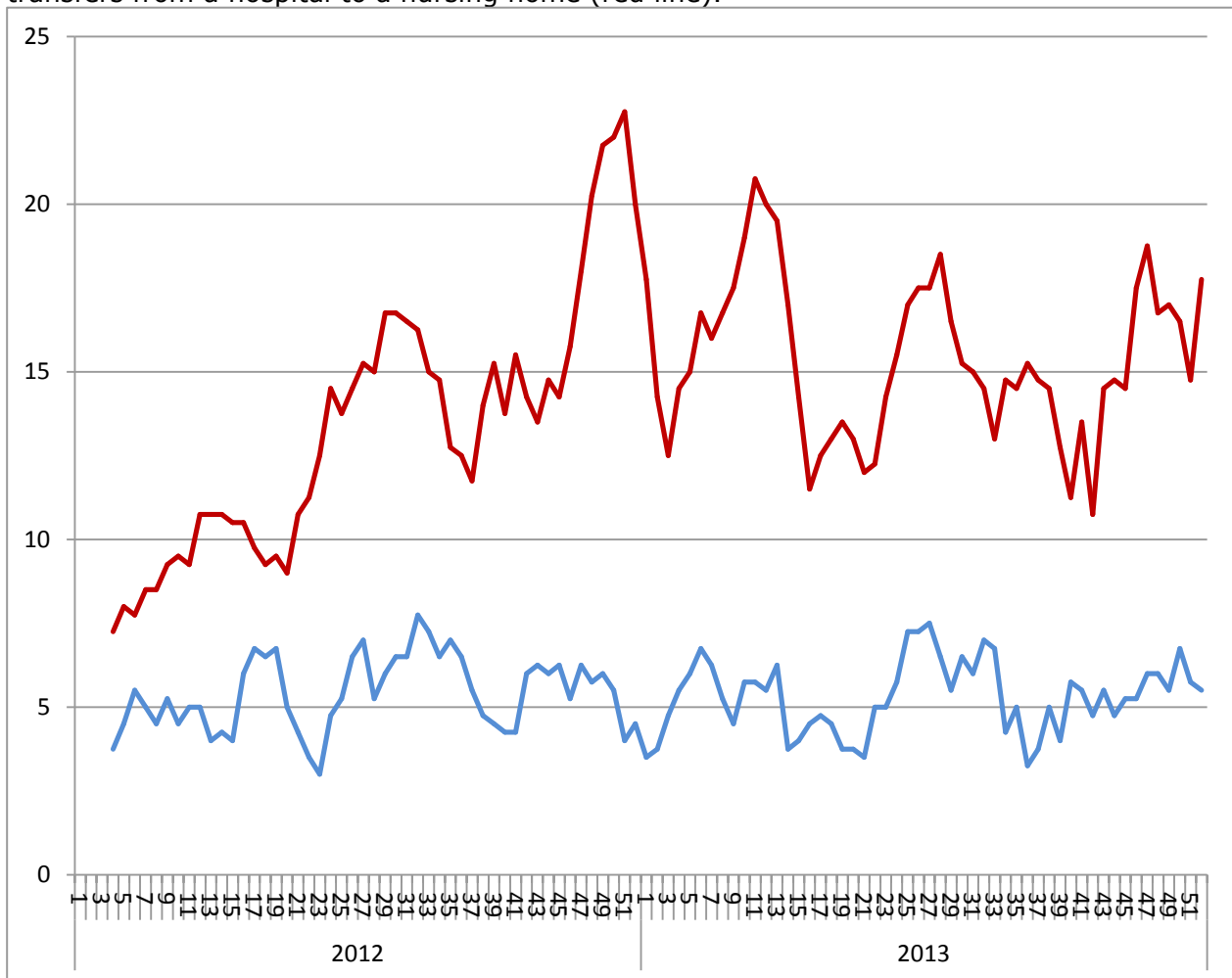
Q	Influenza vaccination coverage personnel ≥ 17%					Influenza vaccination coverage personnel < 17%				
	2009	2010	2011	2012	2013	2009	2010	2011	2012	2013
Q1	8.5	8.0	6.4	7.9	7.3	7.7	5.8	6.0	8.8	9.0
Q2	6.4	6.5	5.5	9.2	4.2	6.2	4.7	6.2	6.4	4.6
Q3	6.2	5.8	5.3	6.4	5.5	5.6	4.8	6.2	6.8	5.3
Q4	6.9	7.6	6.1	8.8	5.7	6.1	4.6	5.5	8.7	7.2
Y	6.9	7.0	5.8	8.1	5.6	6.3	5.0	6.0	7.7	6.3

Relative age distribution of reported deaths.



12 Transitions to and from a hospital

Four week running averages of the total number of hospital admissions (blue line) and transfers from a hospital to a nursing home (red line).



	Absolute number of residents admitted to hospital		Absolute number of patients transferred from a hospital to a nursing home	
	2012	2013	2012	2013
week 1-4	15	22	29	58
week 5-8	18	21	34	67
week 9-12	20	22	43	80
week 13-16	24	18	42	46
week 17-20	20	15	36	52
week 21-24	19	23	58	62
week 25-28	21	26	60	74
week 29-32	31	28	65	58
week 33-36	26	13	50	61
week 37-40	17	23	55	45
week 41-44	24	19	59	59
week 45-48	23	24	81	67
week 49-52	18	22	80	71
Total	276	276	692	800

13 Clinical definitions of health care-associated infections

Gastro-enteritis

The resident must meet one of the following four conditions:

- a) diarrhea; 3 or more episodes in 24 hours, deviating from normal for this person
- b) diarrhea; and 2 of the following symptoms: fever, vomiting, nausea, stomach ache, abdominal cramps, blood or mucus in stool
- c) vomiting and 2 of the following symptoms: fever, nausea, stomach ache, abdominal cramps, blood or mucus in stool
- d) vomiting; 3 or more episodes in 24 hours (without other symptoms and vomiting is not related to the use of medication)

Influenza-like illness

The resident must meet the following conditions:
an acute start of symptoms

and at least one of the following systemic symptoms: fever or febrile feeling, malaise, headache, myalgia

and at least one of the following respiratory symptoms: cough, sore throat, shortness of breath

(Probable) pneumonia

Residents with confirmed or probable pneumonia are included.

Residents with at least one of the following symptoms are suspected of having a lower respiratory infection, probably pneumonia, when this symptom incurs a change compared to the former situation, where other likely diagnoses are excluded:

tachypnea, malaise, confusion, shortness of breath, cough (productive or inproductive), fever $>38^{\circ}\text{C}$ or fever in the last 48 hours, pain in the chest (respiratory)

and with new focal (unilateral) abnormalities on auscultation of the lungs

Urinary tract infections

The resident must have (the following is based on the guideline by the Dutch Association of Elderly Care Physicians):

general or urinary-related symptoms (painful, frequent urination, abdominal symptoms, anorexia, increased confusion, drowsiness, fatigue, increased incontinence of urine and reduced mobility, in the absence of a source of infection elsewhere).

and signs of inflammation (detected by microscopic examination or by leukocyte esterase testing or urine sediment testing)

and a bacteriuria (determined with nitrite test or urine culture (not applicable for residents with catheter use)).

14 Nursing homes participating in SNIV in 2009-2013

Location – Name of nursing home	2009*	2010*	2011*	2012*	2013*
ALMERE - Zorggroep Almere	34	52	46	.	.
AMSTERDAM ZUIDOOST - Gaasperdam	52	52	52	.	.
ASSEN - Anholt	31	51	52	52	50
ASSEN - Nieuw Graswijk	31	51	52	52	34
BARNEVELD - Norschoten loc. Klaverweide	52	52	52	16	.
BARNEVELD - Norschoten loc. Kweekweg	52	52	52	14	.
BILTHOVEN - d'Amandelboom	.	.	.	.	12 ⁺
BOSCH EN DUIN - de Kuip	.	.	.	.	8 ⁺
BOSCH EN DUIN - de Wijngaard	.	.	.	.	14 ⁺
BOSKOOP - Zorgcentrum Boskoop	.	.	6	44	52
BREDA - Elisabeth, afd. Verpleging	.	.	39	46	39
BRIELLE - de Plantage	.	.	.	.	4 ⁺
CAPELLE AAN DEN IJSSEL - Rijckehove	50	42	.	.	.
DEN HELDER - Buitenveld	.	.	11	52	51
DEN HELDER - De Zeester	.	.	23	52	52
DEN HELDER - den Koogh	53	51	52	52	52
DEVENTER - St. Jozef Verpleeghuis	52	52	52	.	.
DIEREN - Gelders Hof	32	51	11	.	.
ECHT - de Egthe	53	9	.	.	.
EMMEN - Verpleeghuis De Horst	.	.	.	.	36 ⁺
ENSCHEDÉ - Bruggerbosch	.	.	.	.	40 ⁺
ETTEN-LEUR - het Anbarg, afd. Verpleging	53	52	52	52	52
FIJNAART - Fendertshof	.	.	.	.	42
GOUDA - Bloemendaal	52	26	22	.	.
GOUDA - de Riethoek	49	2	.	.	.
HEESWIJK DINTHER - Cunera	9	52	52	52	29 [§]
HELLEVOETSLUIS - Grootenhoek	.	.	.	.	5
KRIMPEN AAN DEN IJSSEL - Zorgcentrum Crir	52	22	.	.	.
LEKKERKERK - de Breeje Hendrick	52	27	51	44	26
MAARSSSEN - Zuwe Snavelenburg	52	52	52	52	.
MAASTRICHT - Grubbeveld	.	.	18	52	52
MAASTRICHT - La Valence	40	47	50	52	48
NAARDEN - Naarderheem	53	50	52	52	52
NIEUWERKERK AAN DEN IJSSEL - zorggroep 2	.	26	.	.	.
ROOSENDAAL - Heerma State	.	9	52	52	49
'S-GRAVENHAGE - Lozerhof	52	.	.	.	.
'S-GRAVENHAGE - Preva Verpleeghuis	52	.	.	.	.
SLIEDRECHT - Waerthove	52	52	52	52	52
TERHEIJDEN - Antonius Abt	.	.	.	.	51
VEENENDAAL - de Meent	49	48	4	.	.
VELP GLD - H.A. Lorentzhuis	.	30	.	.	.
VELP GLD - Oosterwolde	.	30	.	.	.
VELP GLD - t Jagthuis, Verpleeghuis	.	30	.	.	.
ZEVENAAR - Verpleeghuis Zevenaar	9	52	52	52	.

* Number of weeks in which data was registered per year.

⁺ Nursing home started participation in the surveillance program later than 1-1-2013.

[§] Nursing home quit participation in the surveillance program before the end of 2013.

In red nursing homes that participated in 2013, in black nursing homes that participated in previous years but not in 2013.



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