



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 - 2014

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1 Summary - Key points

General characteristics

- In 2014, 30 nursing homes participated in the weekly incidence surveillance, which is higher than previous years (2009 N=25; 2010 N=28; 2011 N=25; 2012 N=19; 2013 N=24). A total of 157,875 resident weeks were included in 2014. This is comparable to the starting period of SNIV (2009: 177,677, 2010: 158,628, 2011:136,746, 2012:109,452, 2013: 121,377).
- 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.
- In 2014, participating nursing homes had a percentage of private rooms and private bathrooms comparable to that in 2013, which was higher than throughout 2009-2012. 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 remained low (median 15%). All 30 nursing homes have an infection control committee

Gastro-enteritis

- In 2014, a total number of 474 episodes of gastro-enteritis were registered.
- The gastro-enteritis incidence showed a clear seasonal pattern with peaks in winter (maximum four week average at the end of 2014: 10.7 per 1000 resident weeks).
- Larger nursing homes had higher incidences of gastro-enteritis. Also nursing homes where less than 50% of the residents has its own bathroom, had a higher incidence. A hypothesis might be that sharing bathrooms and toilets facilitates the spread of pathogens that cause gastro-enteritis.
- Contrarily to previous years, nursing homes with regular (compared to incidental) interchange of personnel between wards no longer had higher incidences of gastro-enteritis

Influenza-like illness

- In total, 100 episodes of influenza-like illness were registered in 2014.
- The year 2014 was a mild influenza year, with a mean incidence of 0.6 influenza-like illness cases per 1000 resident weeks.
- The incidence peaked at the beginning of 2014 (weeks 5-8) with an incidence of 1.8 per 1000 resident weeks.
- Nursing homes with regular exchange of personnel between wards instead of houses with incidental exchange of personnel between wards, and nursing homes with lower vaccination grade among personnel, had higher incidences of influenza-like illness. An hypothesis might be that interchange of (unvaccinated) personnel facilitates the spread of viruses that cause influenza like illness.

Probable pneumonia

- In 2014, 721 episodes of probable pneumonia were registered, which makes probable pneumonia the second most reported infection within the SNIV network.
- In the past years, 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

- 1,776 episodes of urinary tract infections were registered in 2014, which makes urinary tract infections the most reported infection, since its registry, within the SNIV network
- Nursing homes where less than 50% of the residents have a private bathroom had higher incidence of urinary tract infections.

Mortality

- In 2014, a total number of 801 deaths were registered.
- Not surprisingly, mortality was highest amongst residents 85 years or older.

2 Samenvatting - Kernpunten

Verpleeghuis kenmerken

- In 2014 namen 30 verpleeghuizen deel aan de incidentiemeting van SNIV, wat hoger is dan voorgaande jaren (2009 N=25; 2010 N=28; 2011 N=25; 2012 N=19; 2013 N=24).
- In totaal werden er in 2014 157,875 bewonersweken geregistreerd. Dit is vergelijkbaar met de beginperiode van SNIV (2009: 177.677, 2010: 158.628, 2011: 136.746, 2012: 109.452, 2013: 121.377).
- 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 vergelijkbaar percentage eenpersoonskamers en eigen badkamers als in 2013 namen deel in 2014. Dit percentage ligt hoger dan in de jaren 2009-2012. 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 15%).

Gastro-enteritis

- In 2014 werden in totaal 474 episodes van gastro-enteritis geregistreerd.
- De incidentie van gastro-enteritis laat een duidelijk seizoenspatroon zien en piekt in de winter (maximum vierweeks gemiddelde eind 2014: 10,7 per 1000 bewonersweken).
- Grotere verpleeghuizen hadden een hogere incidentie van gastro-enteritis. Ook huizen waar minder dan 50% van de bewoners een eigen badkamer heeft, hadden een hogere incidentie van gastro-enteritis. Een hypothese zou kunnen zijn dat gezamenlijk gebruik van badkamers en toiletten de overdracht van pathogenen die gastro-enteritis veroorzaken bevordert.

Influenza-achtig ziektebeeld

- In 2014 werden in totaal 100 episodes van influenza-achtig ziektebeeld geregistreerd.
- 2014 was een erg mild jaar, met een gemiddelde incidentie van 0,6 gevallen van influenza-achtig ziektebeeld per 1000 bewonersweken.
- Begin 2014 piekte de incidentie (1,8 per 1000 bewonersweken in de periode van week 5-8).
- Verpleeghuizen met regelmatige uitwisseling van personeel tussen afdelingen, en verpleeghuizen met een lagere vaccinatiegraad van personeel, hadden een hogere incidentie van influenza-achtig ziektebeeld. Een hypothese kan zijn dat de uitwisseling van (ongevaccineerd) personeel tussen afdelingen de overdracht van pathogenen die influenza-achtig ziektebeeld kunnen veroorzaken bevordert.

Vermoedelijke longontsteking

- In 2014 werden in totaal 721 episodes van vermoedelijke longontsteking geregistreerd, wat deze infectie de tweede meest gerapporteerde infectie binnen het SNIV netwerk maakt.
- In de laatste jaren 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 2014 werden in totaal 1.776 episodes van urineweginfecties geregistreerd, dit maakt urineweginfecties al 3 jaar lang de meest gerapporteerde infectie binnen het SNIV netwerk.
- Verpleeghuizen waar minder dan 50% van de bewoners een eigen kamer of eigen badkamer hebben, hadden een hogere incidentie van urineweginfecties.

Sterfte

- In 2014 werden in totaal 801 sterfgevallen geregistreerd.
- De meeste sterfgevallen worden geregistreerd onder bewoners van 85 jaar of ouder.

3 Uitleg kernbegrippen referentiecijfers

Resident weeks / bewonerweken

Jaarlijks wordt van elk deelnemend verpleeghuis de bedden capaciteit nagevraagd. Deze bedden capaciteit 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 14 van 2014 werden 35 urineweginfecties geregistreerd. In totaal werden in die week voor 2.954 bedden infecties 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 14 door 35 te delen door 2.954 en dan te vermenigvuldigen per 1000. De incidentie in week 14 is dan van 11,8 urineweginfecties per 1000 bewoners.

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

In de weken 13, 14, 15 en 16 van 2014 werden in totaal 151 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 11.995 residentweeks. De incidentie is 151 gedeeld door 11.995 maal 1000 is 12,6 urineweginfecties per 1000 resident weeks.

Rekenvoorbeeld 3: van incidentie naar frequentie zieken

De jaarlijkse incidentie in een verpleeghuis is 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 (100 maal 52). Er zullen ongeveer $8 * 5200/1000$ (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 zorgenheden (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. In 2012 and 2013, hospital admissions and transfers from hospitals to a nursing home have been temporarily 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.

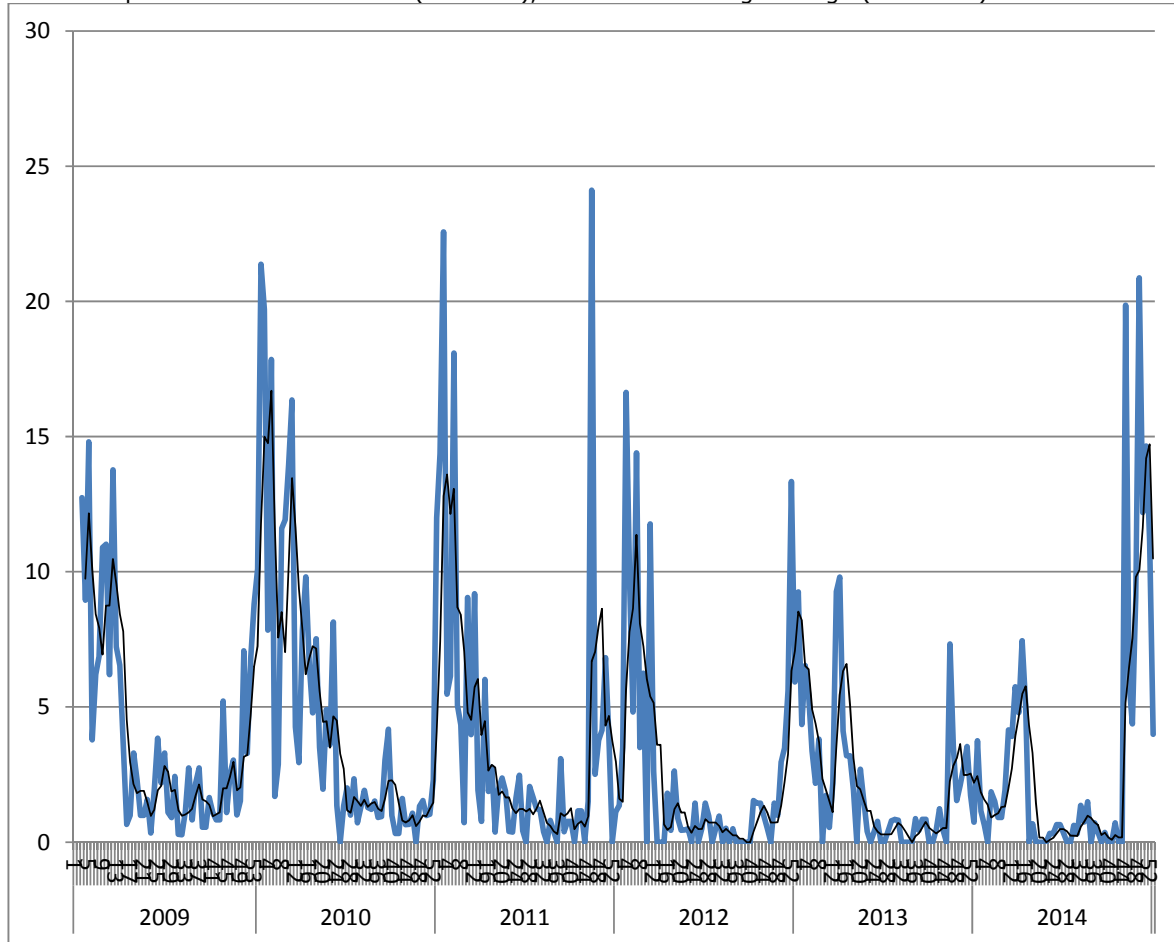
Institutional Characteristics	2009	2010	2011	2012	2013	2014
Nursing homes (N)	25	28	25	19	24	30
Resident weeks	177,677	158,628	136,746	109,452	121,377	157,875
Bed capacity (median, range)	158 (62-284)	130 (41-234)	128 (56-234)	124 (56-199)	113 (16-406)	99 (16-417)
Number of personnel (median, range)	270 (70-680)	292 (20-619)	199 (64-451)	189 (64-529)	122 (40-597)*	91 (19-200)*/**
Private rooms (≥50%)	14%	49%	59%	76%	90%	90%
Private bathrooms (≥50%)	0%	9%	24%	33%	30%	29%
Presence of infection control committee (%)	88%	71%	72%	95%	96%	100%
Interchange of personnel between wards (%)	51%	33%	16%	31%	49%	41%
Influenza vaccination coverage residents (median, range)	92% (70%-99%)	95% (70%-98%)	95% (70%-100%)	95% (70%-100%)	94% (67%-99%)	90 (67%-100%)
Influenza vaccination coverage personnel (median, range)	16% (4%-52%)	20% (5%-50%)	19% (4%-65%)	17% (5%-50%)	15% (5%-30%)	15 (7%-60%)
Facility rooms (median, range)	5 (1-13)	5 (1-18)	5 (1-20)	5 (1-20)	5 (1-20)	5 (1-20)

* The number of personnel is an optional variable in the 2013 and 2014 questionnaire. Seven nursing homes (29%) have provided data regarding personnel.

**In 2014, the number of personnel is provided per caring unit, and these numbers were summarized into a total. This number may not be comparable to previous years due to different methods used.

7 Gastro-enteritis

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	2014	numbers	weeks
week 1-4	11.7	16.8	12.1	7.8	6.4	1.4	19	13,388
week 5-8	6.9	7.2	7.1	7.2	2.3	1.3	17	13,082
week 9-12	9.6	9.3	6.0	3.7	3.4	3.9	49	12,467
week 13-16	2.9	7.3	2.9	0.6	5.0	4.3	52	11,995
week 17-20	1.9	4.5	1.6	1.1	1.5	0.2	2	12,375
week 21-24	2.0	3.3	1.2	0.5	0.4	0.3	4	12,648
week 25-28	1.9	1.7	1.0	0.7	0.3	0.3	3	11,874
week 29-32	1.0	1.3	0.7	0.5	0.4	0.7	9	12,079
week 33-36	2.1	1.2	1.1	0.1	0.3	0.6	7	11,110
week 37-40	1.0	2.1	0.5	0.4	0.4	0.1	1	11,240
week 41-44	2.0	0.8	1.0	1.1	0.5	5.4	61	11,401
week 45-48	2.0	1.0	8.6	1.3	3.7	10.0	123	12,338
week 49-52	7.2	4.1	3.0	7.1	2.2	10.7	127	11,878
Total	3.8	4.6	3.7	2.5	1.9	3.0	474	157,875

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 \geq 130 beds						Bed capacity < 130 beds					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	9.7	10.2	9.0	6.8	3.4	2.9	6.5	12.2	5.4	4.4	6.1	0.8
Q2	2.2	4.6	2.4	0.9	1.4	1.4	1.5	3.5	0.5	0.7	1.1	0.5
Q3	1.3	1.3	1.2	0.4	0.4	0.6	1.3	2.5	0.6	0	0.5	0.2
Q4	3.2	2.1	4.0	1.7	1.7	9.8	7.1	1.0	3.8	5.3	2.8	5.0
Y	3.7	4.5	4.4	2.5	1.5	3.6	4.2	5.0	2.5	2.6	2.8	1.7

Q	Facility rooms \geq 5 rooms						Facility rooms < 5 rooms					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	6.6	10.4	5.1	4.5	3.8	1.7	10.9	11.4	10.5	7.4	5.8	3.2
Q2	2.0	4.7	2.4	1.1	0.8	1.8	2.1	3.7	1.0	0.4	2.2	0.3
Q3	1.7	1.6	0.9	0.3	0.4	0.4	0.9	1.7	1.1	0.2	0.5	0.5
Q4	4.1	1.4	3.9	2.4	1.7	6.3	3.5	2.5	3.8	4.1	2.5	11.6
Y	3.4	4.5	3.1	2.1	1.6	2.6	4.2	4.7	4.4	3.2	2.5	3.5

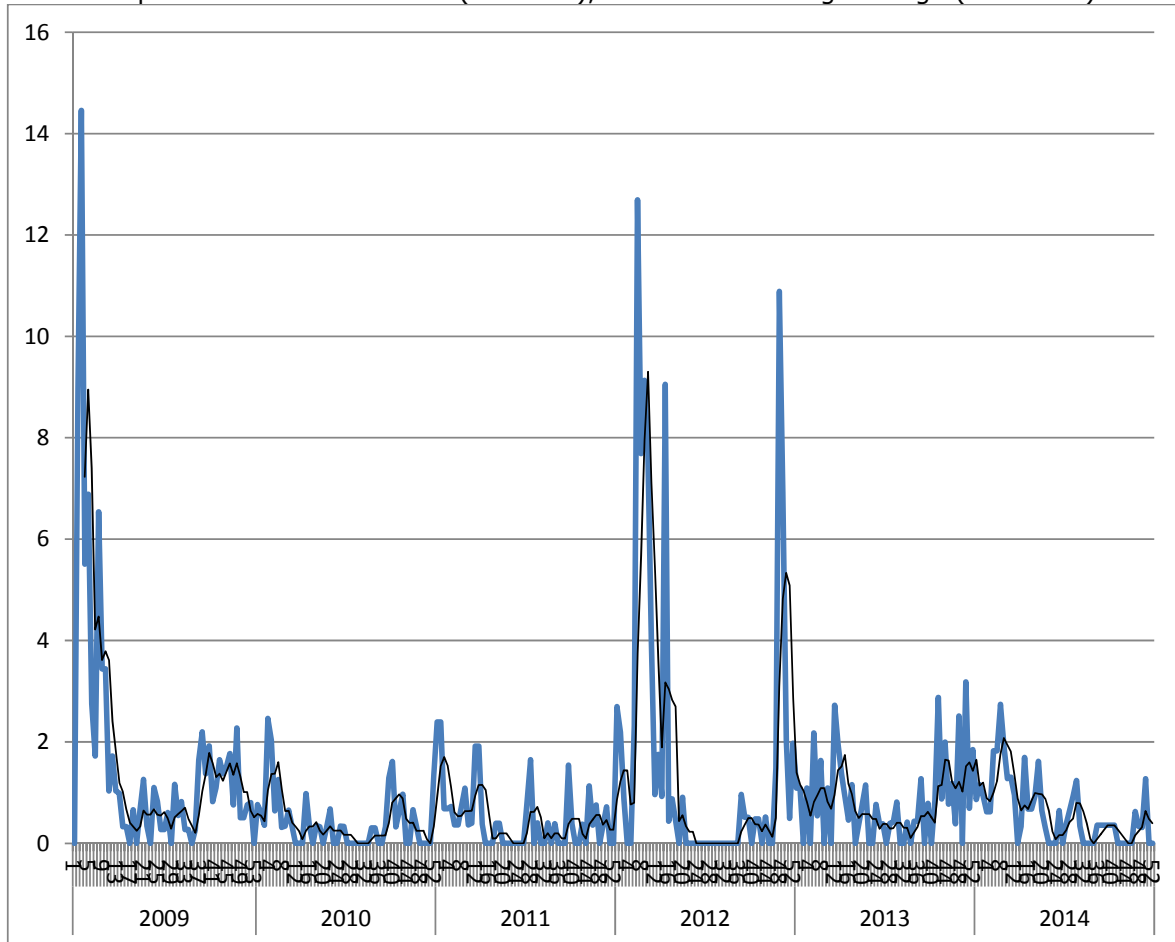
Q	Regular interchange of personnel between wards						Incidental interchange of personnel between wards					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	12.3	15.9	3.2	8.5	5.7	1.9	4.9	8.9	7.2	5.1	3.4	2.7
Q2	2.8	4.3	1.1	2.1	1.6	2.3	1.2	4.6	2.0	0.3	1.1	0.2
Q3	0.9	2.2	0.6	0.3	0.5	0.5	1.7	1.0	1.1	0.3	0.4	0.5
Q4	4.3	1.6	1.7	2.8	2.2	8.5	3.3	2.0	4.3	3.0	1.9	7.8
Y	4.9	5.9	1.6	3.4	2.3	3.2	2.7	4.1	3.6	2.2	1.6	2.9

Q	Residents with private rooms \geq 50%						Residents with private rooms < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.5	12.0	8.0	4.7	5.4	2.5	9.7	10.4	4.4	8.3	1.2	0.8
Q2	1.1	6.2	2.7	1.1	1.1	1.3	2.2	2.7	0.7	0.1	2.7	0
Q3	0.3	2.0	1.3	0.4	0.5	0.5	1.5	0.9	0.4	0	0	0
Q4	5.4	3.0	4.2	2.5	2.1	8.5	3.6	0.8	3.5	4.4	0.7	5.7
Y	2.8	5.8	4.0	2.2	2.0	3.1	4.0	3.7	2.3	3.4	1.5	1.6

Q	Residents with private bathroom \geq 50%						Residents with private bathroom < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	21.6	4.1	5.0	4.4	1.6	9.0	10.2	7.1	6.1	4.6	2.7
Q2	-	6.6	2.9	1.2	0.4	3.7	2.1	4.3	1.5	0.7	1.7	0.2
Q3	-	1.4	1.3	0.4	0.9	0.1	1.3	1.4	0.9	0.2	0.2	0.6
Q4	-	5.8	8.1	2.9	2.5	2.7	3.8	1.4	2.4	3.1	1.8	10.5
Y	-	8.6	4.3	2.4	1.8	2.0	3.8	4.3	3.0	2.6	2.0	3.4

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 2014	Resident weeks 2014
	2009	2010	2011	2012	2013	2014		
week 1-4	8.7	1.1	1.5	1.4	0.8	0.9	12	13,388
week 5-8	4.4	1.0	0.5	5.7	1.1	1.8	23	13,082
week 9-12	2.4	0.3	0.9	5.4	1.0	1.4	17	12,467
week 13-16	0.7	0.3	0.6	3.0	1.2	0.7	8	11,995
week 17-20	0.3	0.2	0.2	0.6	0.6	1	12	12,375
week 21-24	0.7	0.3	0.0	0.0	0.5	0.1	1	12,648
week 25-28	0.5	0.2	0.6	0.0	0.3	0.4	5	11,874
week 29-32	0.6	0.0	0.1	0.0	0.3	0.7	8	12,079
week 33-36	0.2	0.2	0.2	0.0	0.3	0.1	1	11,110
week 37-40	1.8	0.8	0.5	0.5	0.5	0.4	4	11,240
week 41-44	1.2	0.5	0.1	0.4	1.7	0.1	1	11,401
week 45-48	1.6	0.2	0.6	3.0	1.2	0.2	3	12,338
week 49-52	0.5	0.3	0.3	2.9	1.4	0.4	5	11,878
Total	1.6	0.4	0.5	1.8	0.8	0.6	100	157,875

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 \geq 130 beds						Bed capacity < 130 beds					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	5.0	0.7	0.9	2.7	1.0	1.5	3.4	0.9	1.6	5.8	1.1	0.5
Q2	0.4	0.2	0.1	1.4	0.8	0.6	0.9	0.5	0	0.4	0.1	0.5
Q3	0.7	0.2	0.4	0.2	0.5	0.5	0.9	0.1	0.4	0	0	0.3
Q4	1.1	0.6	0.2	1.3	1.7	0.2	1.3	0.1	0.4	3.1	0	0.3
Y	1.6	0.4	0.4	1.4	1.0	0.8	1.6	0.4	0.6	2.4	0.3	0.4

Q	Facility rooms \geq 5 rooms						Facility rooms < 5 rooms					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.1	0.9	1.5	5.2	1.3	0.7	5.0	0.5	0.7	2.3	0.7	1.8
Q2	0.3	0.2	0.2	0.5	0.8	0.4	0.8	0.4	0	1.7	0.3	0.7
Q3	1.0	0.1	0.5	0	0.4	0.1	0.5	0.3	0.3	0.4	0.4	0.9
Q4	1.2	0.4	0.4	2.7	1.0	0.3	1.0	0.5	0.2	0.7	1.9	0.1
Y	1.4	0.4	0.6	2.1	0.8	0.4	1.7	0.4	0.3	1.3	0.8	1.0

Q	Regular interchange of personnel between wards						Incidental interchange of personnel between wards					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	6.3	0.9	1.1	4.0	1.5	1.9	2.6	0.7	1.1	3.6	0.6	0.7
Q2	0.6	0.1	0	0.5	0.5	1.0	0.4	0.3	0.1	1.3	0.7	0.2
Q3	0.5	0	0	0	0.6	0.7	0.9	0.2	0.5	0.2	0.2	0.2
Q4	1.4	0.2	0	0.6	1.8	0.3	0.8	0.5	0.4	2.6	1.0	0.2
Y	2.1	0.3	0.3	1.3	1.0	1.0	1.1	0.4	0.5	2.0	0.6	0.3

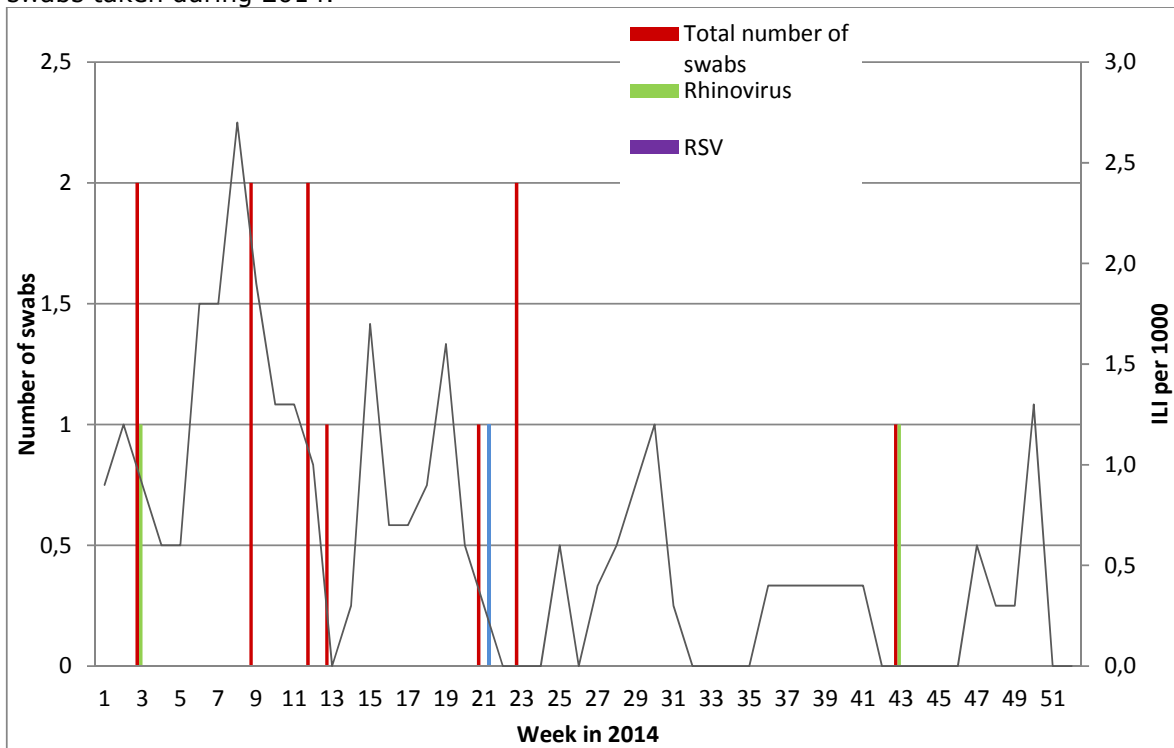
Q	Residents with private rooms \geq 50%						Residents with private rooms < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	1.1	0.8	1.8	4.1	1.0	1.3	5.2	0.8	0.2	3.6	1.0	0.5
Q2	0.8	0.2	0.2	1.4	0.7	0.5	0.5	0.3	0	0	0	1.2
Q3	0.5	0.3	0.7	0.2	0.4	0.4	0.8	0	0	0	0	0
Q4	1.3	0.8	0.4	2.5	1.4	0.2	1.1	0.1	0.2	0.3	0	0.5
Y	0.9	0.5	0.7	2.1	0.9	0.6	1.7	0.3	0.1	1.1	0.4	0.6

Q	Residents with private bathroom \geq 50%						Residents with private bathroom < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	2.1	1.4	8.2	1.1	0.9	4.7	0.7	1.0	2.1	1.0	1.4
Q2	-	0.3	0.4	0.8	1.4	0.6	0.5	0.2	0	1.1	0.3	0.6
Q3	-	0.6	1.1	0.4	0.4	0.5	0.7	0.1	0.2	0.1	0.4	0.4
Q4	-	3.3	0.5	4.7	1.8	0.6	1.1	0.1	0.2	0.6	1.1	0.1
Y	-	1.5	0.8	3.5	1.2	0.7	1.6	0.3	0.4	1.0	0.7	0.6

Q	Influenza vaccination coverage residents \geq 95%						Influenza vaccination coverage residents $<$ 95%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.1	0.8	0.9	2.7	1.4	0.5	5.1	0.6	1.4	5.9	0.7	1.8
Q2	0.4	0.2	0.1	1.2	0.7	0.1	0.6	0.4	0	0.7	0.5	0.9
Q3	0.9	0.2	0.5	0.2	0.3	0.2	0.6	0.1	0	0	0.5	0.6
Q4	1.1	0.3	0.3	1.3	1.0	0.4	1.1	0.7	0.3	3.1	1.6	0.1
Y	1.5	0.4	0.5	1.3	0.8	0.3	1.7	0.4	0.5	2.6	0.9	0.9

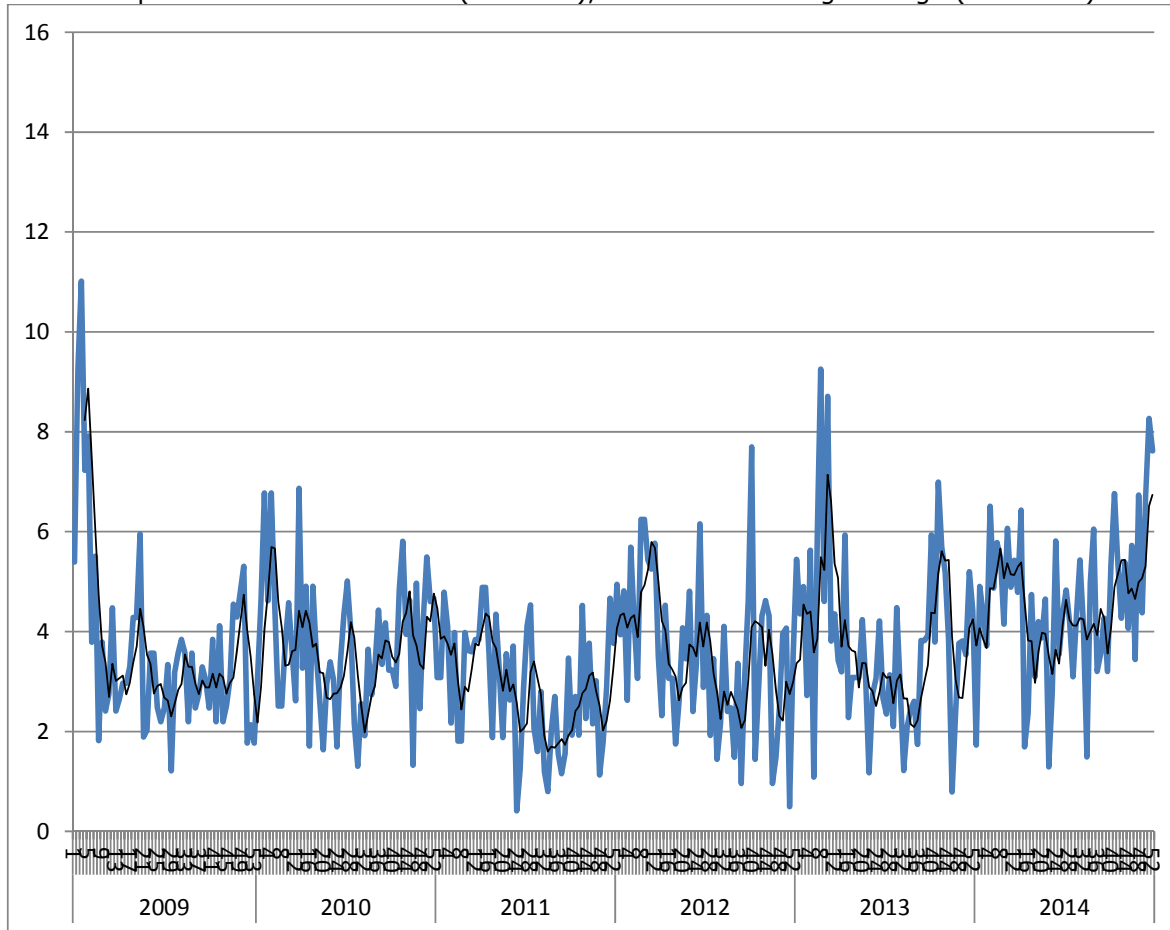
Q	Influenza vaccination coverage personnel \geq 16%						Influenza vaccination coverage personnel $<$ 16%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	1.5	0.6	1.8	1.0	0.6	0.6	6.5	1.1	0.6	6.6	1.5	1.7
Q2	0.5	0.1	0.2	1.5	0.8	0	0.5	0.6	0	0.5	0.4	1.0
Q3	0.6	0.2	0.7	0.1	0.2	0.2	0.8	0.1	0.2	0.2	0.5	0.6
Q4	1.1	0.6	0.6	1.5	1.6	0.2	1.2	0.3	0.1	2.4	1.2	0.3
Y	0.9	0.4	0.8	1.0	0.8	0.3	2.1	0.5	0.2	2.5	0.9	0.9

Influenza virus, respiratory syncytial virus (RSV), rhinovirus and enterovirus detections in swabs taken during 2014.



9 Probable pneumonia

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	2014	2014	2014
week 1-4	8.8	4.8	3.8	4.1	4.4	3.7	49	13,388
week 5-8	4.8	4.0	2.4	4.8	5.5	5.7	74	13,082
week 9-12	3.4	3.6	3.8	5.7	5.4	5.1	64	12,467
week 13-16	2.7	4.2	4.3	3.4	3.7	3.8	46	11,995
week 17-20	4.5	3.2	2.8	2.9	3.4	4.0	49	12,375
week 21-24	2.8	2.8	2.6	3.5	2.5	3.6	46	12,648
week 25-28	2.6	4.2	3.2	3.8	3.1	4.2	50	11,874
week 29-32	3.0	2.0	1.9	2.8	2.7	4.2	51	12,079
week 33-36	3.0	3.5	1.8	2.4	2.2	4.0	44	11,110
week 37-40	2.9	3.5	2.0	4.0	4.4	4.1	46	11,240
week 41-44	3.1	4.4	2.9	3.3	5.4	5.4	62	11,401
week 45-48	3.6	3.3	2.5	2.3	2.7	4.9	61	12,338
week 49-52	3.2	4.8	3.3	3.0	4.2	6.7	79	11,878
Total	3.6	3.7	2.9	3.5	3.7	4.6	721	157,875

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 \geq 130 beds						Bed capacity < 130 beds					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.5	4.2	3.2	5.2	4.6	5.4	7.9	4.8	3.8	4.1	7.9	3.0
Q2	3.3	2.8	2.2	3.3	3.9	4.5	2.7	4.0	4.6	3.5	2.7	2.2
Q3	3.1	3.8	1.7	2.3	2.8	5.1	2.4	1.8	3.2	3.5	2.4	2.2
Q4	3.3	4.1	2.3	3.2	3.9	6.2	2.7	3.8	3.6	3.2	2.7	4.6
Y	3.5	3.7	2.4	3.5	3.7	5.3	3.8	3.6	3.8	3.6	3.8	3.0

Q	Facility rooms \geq 5 rooms						Facility rooms < 5 rooms					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.3	4.8	2.5	5.4	5.4	4.4	5.9	3.7	4.1	3.8	4.2	5.3
Q2	3.4	3.5	2.8	3.8	3.5	3.5	3.1	2.7	3.3	2.8	2.7	4.0
Q3	3.1	3.8	2.5	3.4	2.5	4.3	2.9	2.2	1.9	1.8	3.2	3.7
Q4	4.0	4.2	3.0	3.4	3.9	5.0	2.4	3.8	2.5	2.9	4.8	6.9
Y	3.7	4.1	2.7	4.0	3.7	4.3	3.5	3.1	3.0	2.8	3.7	4.9

Q	Regular interchange of personnel between wards						Incidental interchange of personnel between wards					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.6	2.2	0.8	5.9	6.5	5.0	6.0	5.5	3.1	3.9	3.3	4.7
Q2	3.3	2.0	0.8	4.0	4.0	3.8	3.2	3.7	3.7	2.9	2.4	3.7
Q3	3.5	2.4	0.6	4.1	3.7	3.5	2.5	3.8	2.6	2.2	1.9	4.5
Q4	3.0	3.0	0.9	4.1	4.5	3.6	3.5	4.3	3.1	2.9	4.0	6.9
Y	3.5	2.4	0.8	4.6	4.6	4.0	3.6	4.3	3.1	3.0	2.9	5.0

Q	Residents with private rooms \geq 50%						Residents with private rooms < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	2.9	6.0	3.4	5.4	5.4	4.9	5.5	2.9	1.8	3.1	3.1	4.3
Q2	1.6	3.9	3.9	3.6	3.5	3.8	3.5	2.6	2.1	2.9	0.7	3.5
Q3	1.3	4.2	2.9	3.0	2.7	4.3	3.2	2.6	1.3	1.9	4.5	2.5
Q4	2.2	5.1	3.5	3.7	4.1	5.2	3.4	2.7	1.6	1.8	7.0	9.9
Y	2.0	4.8	3.5	4.0	3.8	4.5	3.8	2.7	1.7	2.5	3.0	5.0

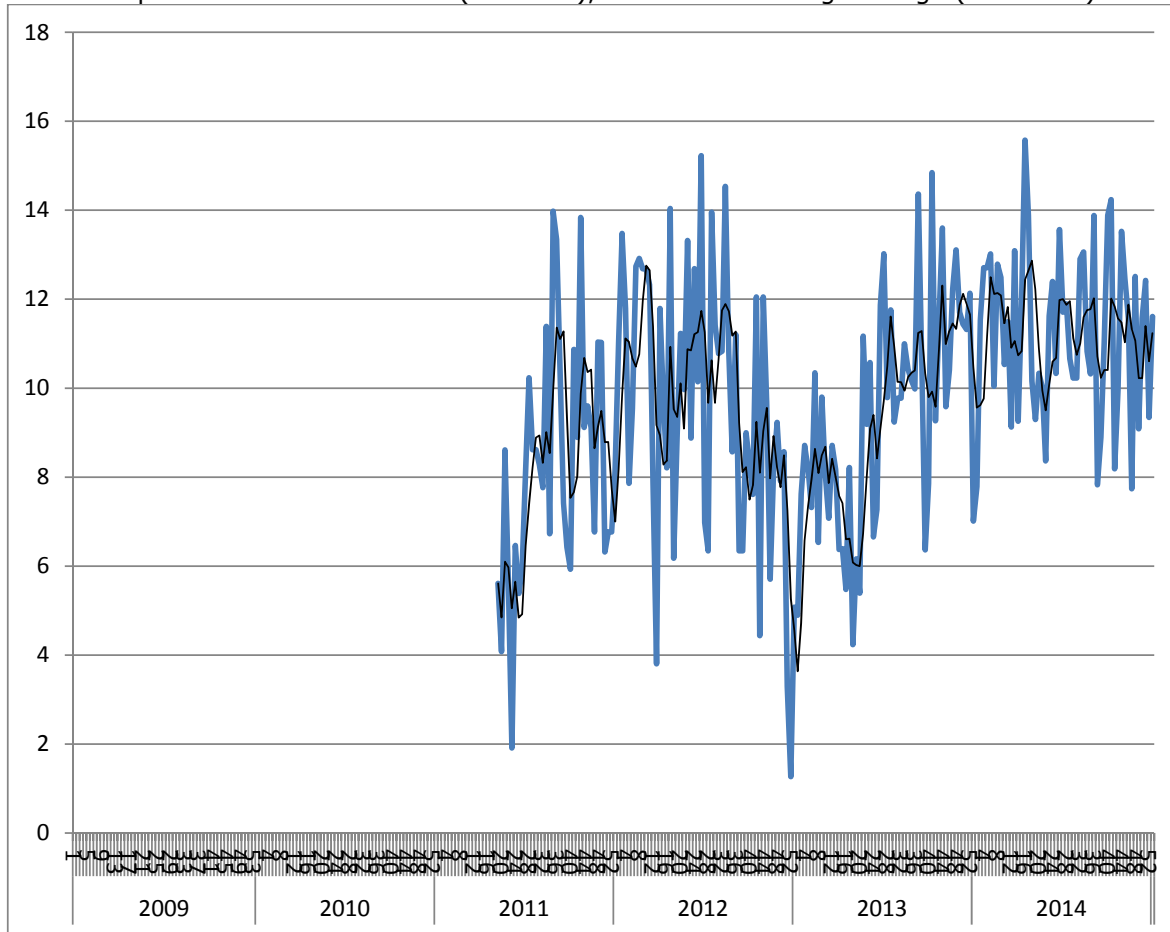
Q	Residents with private bathroom \geq 50%						Residents with private bathroom < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	4.2	4.1	9.3	6.7	4.0	5.2	4.4	2.4	2.8	4.3	5.2
Q2	-	5.8	4.5	4.5	2.9	3.9	3.2	3.0	2.8	2.9	3.3	3.7
Q3	-	3.9	4.1	3.3	1.9	6.9	3.0	3.3	1.6	2.5	3.3	2.9
Q4	-	9.1	4.5	4.5	4.3	7.9	3.2	3.3	2.2	2.6	4.2	4.7
Y	-	5.8	4.3	5.4	3.7	5.6	3.6	3.5	2.2	2.7	3.7	4.1

Q	Influenza vaccination coverage residents \geq 95%						Influenza vaccination coverage residents < 95%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	4.4	4.2	2.7	3.8	4.8	4.8	5.8	4.5	4.8	6.1	5.1	4.8
Q2	3.5	3.0	3.2	3.8	3.7	4.6	3.0	3.5	2.4	2.8	2.7	3.1
Q3	3.0	3.4	2.4	3.4	1.8	5.9	2.9	2.9	1.7	1.4	4.1	2.6
Q4	3.8	2.9	2.9	3.7	3.3	7.2	2.8	6.0	2.4	2.4	5.1	4.2
Y	3.7	3.4	2.8	3.7	3.3	5.6	3.5	4.2	3.1	3.3	4.2	3.7

Q	Influenza vaccination coverage personnel \geq 16%						Influenza vaccination coverage personnel < 16%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	2.8	3.3	2.7	2.8	4.0	4.6	6.6	6.4	3.8	6.4	5.9	5.0
Q2	1.8	2.9	3.6	3.2	2.9	4.0	4.0	3.8	2.6	3.6	3.4	3.6
Q3	3.2	3.1	2.9	2.6	1.2	5.3	2.8	3.5	1.7	2.9	3.8	3.1
Q4	3.9	3.7	3.7	3.0	3.8	8.1	2.7	4.7	2.0	3.4	4.5	3.9
Y	3.1	3.2	3.2	2.9	2.9	5.5	3.9	4.6	2.6	4.2	4.3	3.9

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	Resident weeks
	2009	2010	2011	2012	2013	2014	2014	2014
week 1-4	-	-	-	11.0	7.3	11.1	149	13,388
week 5-8	-	-	-	11.9	8.5	12.1	158	13,082
week 9-12	-	-	-	9.2	8.0	11.1	138	12,467
week 13-16	-	-	-	11.0	6.6	12.6	151	11,995
week 17-20	-	-	4.6	9.1	6.7	9.9	123	12,375
week 21-24	-	-	4.8	11.3	8.4	10.7	135	12,648
week 25-28	-	-	8.2	10.5	11.6	12	142	11,874
week 29-32	-	-	9.0	11.9	9.9	11.5	139	12,079
week 33-36	-	-	11.1	9.2	11.2	10.7	119	11,110
week 37-40	-	-	7.7	7.8	9.9	12	135	11,240
week 41-44	-	-	10.3	9.6	10.9	11.1	126	11,401
week 45-48	-	-	9.4	7.8	11.9	10.3	127	12,338
week 49-52	-	-	7.0	4.5	10.5	11.3	134	11,878
Total			8.0	9.6	9.5	11.2	1,776	157,875

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 \geq 130 beds						Bed capacity < 130 beds					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	-	-	11.1	7.8	11.7	-	-	-	10.5	7.8	10.1
Q2	-	-	4.0	10.7	8.3	12.3	-	-	7.1	9.9	8.0	9.6
Q3	-	-	7.8	9.7	11.4	12.7	-	-	11.1	10.1	6.2	8.6
Q4	-	-	6.8	7.6	11.8	11.6	-	-	12.0	6.8	10.1	10.2
Y	-	-	6.4	9.8	10.1	12.0	-	-	10.5	9.4	8.0	9.6

Q	Facility rooms \geq 5 rooms						Facility rooms < 5 rooms					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	-	-	9.3	8.6	10.9	-	-	-	14.5	6.5	11.7
Q2	-	-	3.4	10.0	7.5	10.0	-	-	8.1	11.3	9.2	13.3
Q3	-	-	8.4	9.6	9.4	10.1	-	-	10.8	10.9	11.0	13.1
Q4	-	-	8.3	6.5	10.4	10.4	-	-	10.5	10.1	12.8	12.5
Y	-	-	7.0	8.9	9.0	10.3	-	-	9.9	11.9	10.2	12.6

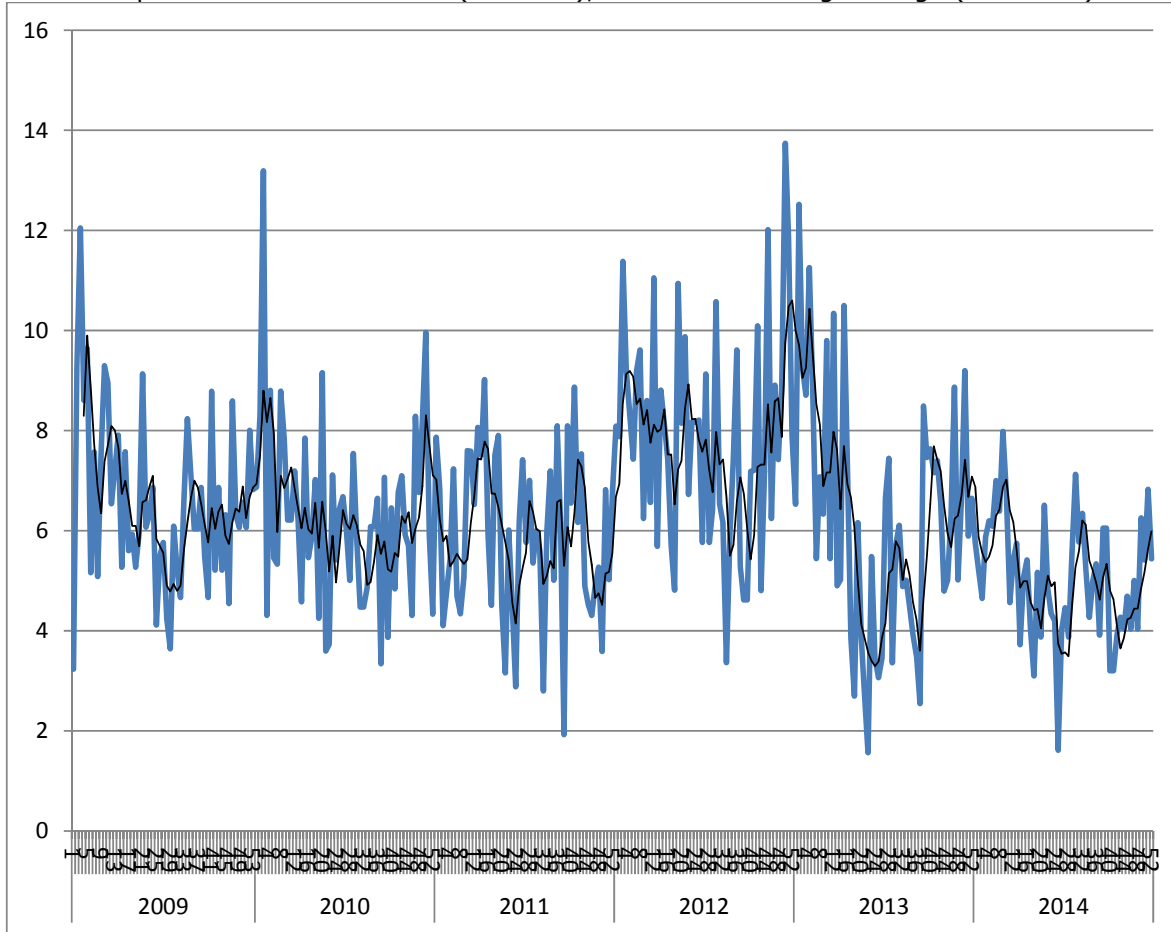
Q	Regular interchange of personnel between wards						Incidental interchange of personnel between wards					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	-	-	12.7	8.8	13.9	-	-	-	10.4	6.7	9.3
Q2	-	-	6.4	13.3	8.7	12.2	-	-	5.2	9.4	7.6	10.8
Q3	-	-	6.0	8.9	13.3	13.6	-	-	10	10.4	6.8	9.5
Q4	-	-	9.6	6.8	16.0	11.0	-	-	9.1	8.4	7.7	11.2
Y	-	-	7.4	10.4	11.8	12.7	-	-	8.4	9.7	7.3	10.2

Q	Residents with private rooms \geq 50%						Residents with private rooms < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	-	-	11.5	8.4	10.8	-	-	-	8.3	5.6	15.3
Q2	-	-	6.5	11.1	8.2	11.2	-	-	3.9	7.6	7.9	13.8
Q3	-	-	9.9	9.1	10.3	11.0	-	-	8.0	13.7	5.7	12.6
Q4	-	-	10.1	7.6	11.2	10.7	-	-	7.5	5.7	14.0	16.3
Y	-	-	9.1	9.9	9.7	10.9	-	-	6.7	8.6	7.4	14.5

Q	Residents with private bathroom \geq 50%						Residents with private bathroom < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	-	-	10.5	10.2	7.8	-	-	-	11.0	6.9	12.9
Q2	-	-	2.8	13.9	9.8	9.0	-	-	6.0	9.1	7.5	12.3
Q3	-	-	8.4	11.6	8.0	9.5	-	-	9.3	9.1	11.1	11.9
Q4	-	-	14.9	11.8	8.9	10.5	-	-	7.6	5.4	12.4	11.7
Y	-	-	10.0	11.9	9.1	9.1	-	-	7.8	8.7	9.6	12.2

11 Mortality

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	2014	numbers	weeks
week 1-4	9.3	8.1	5.9	9.1	9.3	5.4	72	13,388
week 5-8	6.9	7.1	5.4	8.6	8.1	6.4	84	13,082
week 9-12	8.1	6.9	6.7	8.1	8.0	6.2	77	12,467
week 13-16	7.0	6.0	7.6	7.5	7.0	5.0	60	11,995
week 17-20	5.7	6.6	6.1	7.4	4.1	4.0	50	12,375
week 21-24	7.1	5.0	4.2	8.2	3.3	5.0	63	12,648
week 25-28	4.9	6.0	6.6	7.2	5.1	3.5	41	11,874
week 29-32	4.9	5.5	4.9	7.5	5.0	6.2	75	12,079
week 33-36	7.0	5.9	6.6	6.6	4.2	5.0	55	11,110
week 37-40	5.8	5.2	5.7	5.4	6.6	4.8	54	11,240
week 41-44	6.5	6.2	6.9	7.3	6.5	3.9	44	11,401
week 45-48	6.4	6.3	4.7	8.7	6.3	4.5	55	12,338
week 49-52	6.7	7.1	5.5	10.6	7.1	6.0	71	11,878
Total	6.6	6.3	5.9	7.9	6.0	5.1	801	157,875

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 \geq 130 beds						Bed capacity < 130 beds					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	7.7	7.2	5.9	8.9	9.3	6.5	9.1	7.4	6.8	7.6	6.7	4.4
Q2	6.1	6.0	6.0	7.6	4.6	4.6	6.9	5.8	5.8	8.0	4.1	3.7
Q3	6.3	6.3	5.7	7.1	5.3	5.5	3.4	3.3	5.8	5.7	5.6	5.0
Q4	6.4	6.7	6.6	9.1	6.4	5.4	6.5	5.9	4.6	8.0	7.6	3.3
Y	6.6	6.6	6.0	8.2	6.1	5.5	6.4	5.6	5.7	7.4	5.9	4.1

Q	Facility rooms \geq 5 rooms						Facility rooms < 5 rooms					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	7.5	6.4	5.8	7.8	8.3	4.9	8.4	8.6	6.5	9.2	7.9	7.2
Q2	5.6	5.2	5.0	6.5	4.4	2.8	6.8	7.1	6.9	9.5	4.5	6.3
Q3	5.5	5.7	4.6	5.5	4.8	4.5	6.2	5.0	7.2	8.3	6.2	6.8
Q4	6.2	5.8	5.5	8.5	6.6	4.4	6.6	7.7	6.0	9.0	6.9	5.1
Y	6.1	5.8	5.2	7.1	5.9	4.1	7.0	7.0	6.6	9.0	6.3	6.4

Q	Regular interchange of personnel between wards						Incidental interchange of personnel between wards					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	6.7	4.9	4.9	6.9	7.4	5.9	9.6	8.6	6.7	9.0	9.0	6.0
Q2	6.0	4.8	3.6	5.4	5.1	4.7	6.6	7.0	6.3	9.0	3.8	3.9
Q3	5.6	4.8	4.0	6.7	4.2	5.2	6.2	6.3	6.1	10.0	6.6	5.4
Q4	5.5	5.9	3.0	7.2	6.5	4.8	7.4	6.9	6.3	7.2	6.9	4.6
Y	5.9	5.1	3.9	6.5	5.7	5.2	7.3	7.2	6.4	8.7	6.4	5.0

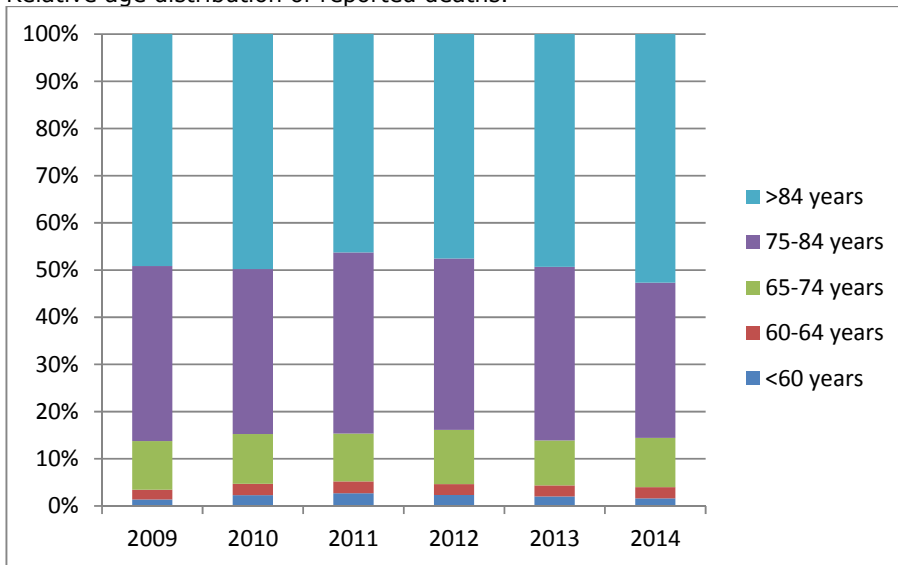
Q	Residents with private rooms \geq 50%						Residents with private rooms < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	7.9	8.7	6.7	8.3	7.7	6.1	8.0	6.1	5.9	8.5	10.1	5.0
Q2	7.2	6.8	5.8	7.2	4.2	4.5	6.1	5.8	5.9	9.0	6.2	2.7
Q3	6.2	6.9	6.6	6.0	5.1	5.5	5.8	4.8	4.6	8.3	10.2	4.2
Q4	8.7	7.6	6.3	8.2	6.5	4.8	6.1	5.6	5.0	10.0	10.5	3.2
Y	7.5	7.5	6.4	7.5	5.7	5.2	6.4	5.6	5.4	8.9	8.9	3.8

Q	Residents with private bathroom \geq 50%						Residents with private bathroom < 50%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	-	7.5	7.2	7.9	7.1	4.4	8.0	7.4	6.2	8.6	8.5	6.7
Q2	-	6.9	4.8	5.1	4.7	3.1	6.2	6.3	6.2	8.9	4.3	4.7
Q3	-	8.5	6.6	5.0	4.6	4.9	5.9	5.5	5.5	7.3	5.8	5.5
Q4	-	7.7	6.4	8.1	7.8	3.8	6.4	6.4	5.6	9.0	6.3	5.0
Y	-	7.7	6.2	6.5	6.0	4.1	6.6	6.4	5.9	8.5	6.1	5.5

Q	Influenza vaccination coverage residents ≥ 95%						Influenza vaccination coverage residents < 95%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	8.7	7.5	6.8	7.7	8.2	6.2	7.4	6.8	4.8	9.4	8.1	5.8
Q2	5.7	5.8	6.2	8.7	3.8	3.3	6.7	6.2	5.2	6.1	5.1	5.1
Q3	6.0	5.8	5.7	7.0	5.6	5.5	5.8	4.9	6.2	5.9	5.1	5.2
Q4	6.9	6.4	6.1	9.7	6.5	4.7	6.1	6.7	4.8	6.8	6.9	4.6
Y	6.7	6.3	6.2	8.3	5.8	4.9	6.4	6.2	5.2	7.2	6.2	5.2

Q	Influenza vaccination coverage personnel ≥ 16%						Influenza vaccination coverage personnel < 16%					
	2009	2010	2011	2012	2013	2014	2009	2010	2011	2012	2013	2014
Q1	8.5	8.0	6.4	7.9	7.3	5.2	7.7	5.8	6.0	8.8	9.0	6.5
Q2	6.4	6.5	5.5	9.2	4.2	2.9	6.2	4.7	6.2	6.4	4.6	5.3
Q3	6.2	5.8	5.3	6.4	5.5	5.2	5.6	4.8	6.2	6.8	5.3	5.4
Q4	6.9	7.6	6.1	8.8	5.7	4.2	6.1	4.6	5.5	8.7	7.2	5.0
Y	6.9	7.0	5.8	8.1	5.6	4.4	6.3	5.0	6.0	7.7	6.3	5.6

Relative age distribution of reported deaths.



12 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 unproductive), fever >38°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)).

13 Nursing homes participating in SNIV in 2009-2014

In red nursing homes that participated in 2014, in black nursing homes that participated in previous years but not in 2014.



14 Literature references

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