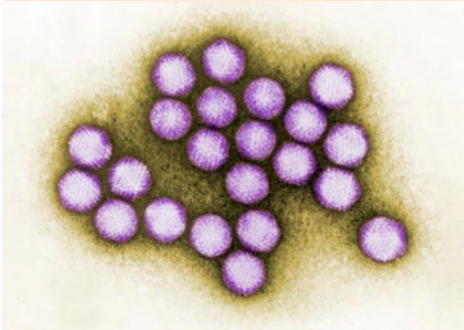
衞生防護中心
Centre for Health Protection
保障市民健康
Protecting Hong Kong's health
Department of Health
Hong Kong SAR

Feature:
Prevalence survey of infections in public hospitals 2010
Local situation of adenovirus activity

LENS ON CHP



Above: An electron micrograph of adenovirus. The virus can be spread from person to person via coughing and sneezing (Source: US CDC/Dr. G.William Gary, Jr.).

NEWS

CA-MRSA cases in July

In July 2011, the Centre for Health Protection (CHP) recorded 48 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 31 males and 17 females aged between 1 month and 87 years (median 35 years). Among them were 34 Chinese, 6 Filipinos, 3 Caucasians, 2 Nepalese, 1 Indonesian and two of unknown ethnicity. The isolates of all 48 cases exhibited Panton-Valentine Leucocidin (PVL) gene and were positive for SCC*mec* type IV (30) or V (18). All cases presented with skin or soft tissue infection and were in stable condition. One case was a nurse and another was a health care assistant in public hospitals. Investigations did not reveal any cases linked with them.

(continued on page 66)

Prevalence survey of infections in public hospitals 2010

Reported by Dr H Chen, Associate Consultant, Dr Carol Yau, Medical Officer, Ms Jane Leung, Advanced Practice Nurse, Mr Enoch Hsu, Research Officer, and Dr Andrew TY Wong, Head, Infection Control Branch, CHP on behalf of the Prevalence Survey Working Group

Infection is a common reason for hospital admission or prolonged hospital stay. Infection surveillance is an important part of hospital infection control. Point prevalence survey of infection measures the percentage of patients in a hospital found to have infection at a certain time point and provides a snapshot measure of the infectious disease burden in the hospital. Prevalence survey is relatively rapid when compared with incidence surveillance in estimating the magnitudes of infections.

Infections can be classified as community-associated infections (CAIs) and healthcare-associated infections (HCAIs). HCAIs are infections which are not present at the time of admission and are acquired after admission. Infections become evident 48 hours or more after admission are usually classified as HCAIs. There is evidence that HCAIs are avoidable and costly to the healthcare system.

Prevalence survey of infections in individual hospitals in Hong Kong dated back to the 80s. The first Hospital Authority (HA)-wide prevalence survey of infections with standard definitions in public hospitals in Hong Kong was conducted in 2007 and the results were reported in an earlier issue of CDW (Vol 5, number 12). Below we report the result of the second HA-wide prevalence survey which was conducted in all public hospitals with inpatient services from July to September 2010.

The Centers for Disease Control and Prevention (CDC)/ National Healthcare Safety Network (NHSN) surveillance definitions of HCAI (March 2010 version) were adopted with local modifications. HCAIs were further classified as hospital-acquired infections (HAIs) if the infection were acquired from the survey hospital and other hospital-acquired infections (OHAIs) if the infection were acquired from hospitals other than the survey hospital.

A total of 20,355 patients from the 37 hospitals were surveyed, of which 9,996 (49.1%) were female. The mean age was 59.1 years (range:

one day to 108 years; standard deviation: 25.1 years). Patients aged 65 years or above comprised of 49.3% of the surveyed population.

Table 1 - Prevalence of infections.

Prevalence	Overall Infection % (95% C.I.)	CAI % (95% C.I.)	HAI % (95% C.I.)	OHAI % (95% C.I.)
2010	15.0 (14.5-15.5)	11.9 (11.5-12.4)	2.7 (2.5-2.9)	0.5 (0.4-0.6)
2007	15.2 (14.7-15.7)	11.4 (11.0-11.8)	3.2 (2.9-3.4)	0.8 (0.7-0.9)

Among the 20,355 patients surveyed, 3,048 patients had infections, of which 100 patients (3.3%) had more than one infection. The prevalence of infections was shown in Table 1. Comparing with 2007, the prevalence of HAI and OHAI were lower in 2010.

Hospitals were classified into five groups according to the HA classification: *Group 1* - general acute hospitals with 24 hours Accident & Emergency (A&E) service; *Group 2* -hospitals with mixture of acute/ non-acute beds; *Group 3* - hospitals with non-acute/infirmary beds; *Group 4* – psychiatric hospitals and *Group 5* – acute hospitals of special nature. The prevalence of infections of different hospital groups were shown in Table 2.

Table 2 - Prevalence of infections by different hospital group.

Hospital Group	No. of Hospitals	No. of patients	CAI % (95% C.I.)	HAI % (95% C.I.)	OHAI % (95% C.I.)	Overall % (95% C.I.)
1	15	13,080	15.7 (15.1-16.3)	3.4 (3.1-3.7)	0.3 (0.2-0.4)	19.3 (18.6-20.0)
2	8	3,911	7.1 (6.3-8.0)	1.8 (1.4-2.3)	0.9 (0.6-1.2)	9.8 (8.9-10.8)
3	5	812	3.1 (2.0-4.5)	1.7 (0.9-2.9)	0.6 (0.2-1.4)	5.3 (3.9-7.1)
4	3	2,012	0.3 (0.1-0.7)	0.2 (0.1-0.6)	0 (0-0.2)	0.5 (0.3-1.0)
5	6	540	11.7 (9.1-14.7)	2.8 (1.6-4.5)	1.9 (0.9-3.4)	16.1 (13.1-19.5)
All	**37**	**20,355**	**11.9 (11.5-12.4)**	**2.7 (2.5-2.9)**	**0.5 (0.4-0.6)**	**15.0 (14.5-15.5)**

The prevalence of infections of individual hospitals were shown in Figure 1. The differences observed may be due to differences in hospital size, natures of hospital and patient case-mix.

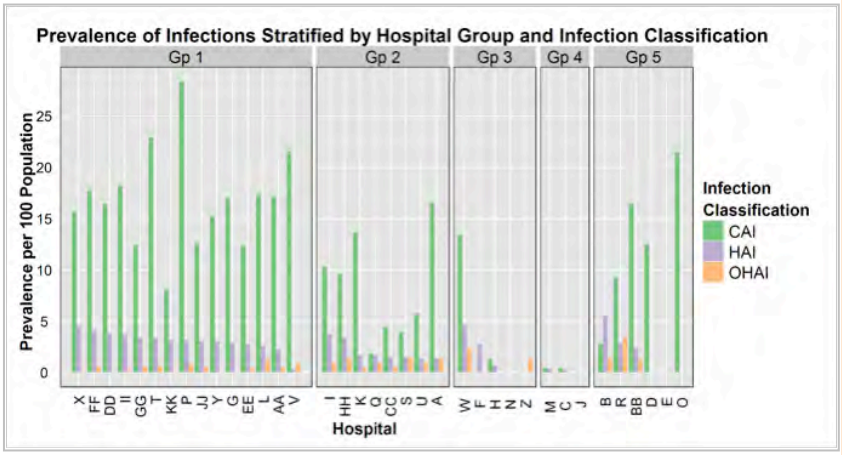


Figure 1 - Prevalence of infections by hospital.

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Among these 48 cases, two were siblings. Two others were mother and son of a family, while another son of this family was also confirmed to be a case in May 2011.

A case of human myiasis

On July 22, 2011, CHP recorded a case of human myiasis affecting an 82-year-old man with dementia, hypertension and stroke. He lived with his family and could walk independently. He was noticed by his family members to have a right toe ulcer and fever on July 18 and was admitted to a public hospital on the same day. Maggots were found in the toe ulcer and removed. Taxonomical identification of the specimens by the Microbiological Laboratory of the public hospital confirmed larvae of *Chrysomya bezziana*. The patient was in stable condition all along and discharged on July 29. His family members were not affected.

Imported case of leptospirosis

On July 29, 2011, CHP recorded a confirmed imported case of leptospirosis caused by *Leptospira grippotyphosa* affecting a 25-year-old man with good past health. He developed fever, malaise, sore throat, myalgia and vomiting on July 10 and was admitted to a public hospital on July 13. He was found to have hypotension and was managed in the intensive care unit as septic shock. He responded well to treatment and was discharged on July 21. Microscopic Agglutination Test (MAT) for paired *Leptospira grippotyphosa* titres on taken on July 13 and 20 (day 3 and 10 after onset of symptoms) were <100 and 6400 respectively. He travelled to Brunei Darussalam and Sabah from late June to early July and participated in hiking, rafting and water sports there. His travel collaterals were asymptomatic.

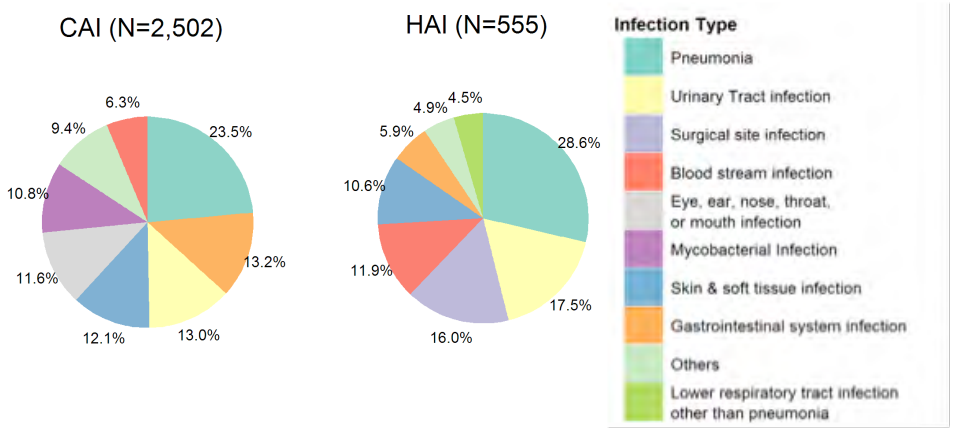


Figure 2 - Proportion of different types of infection by infection classification.

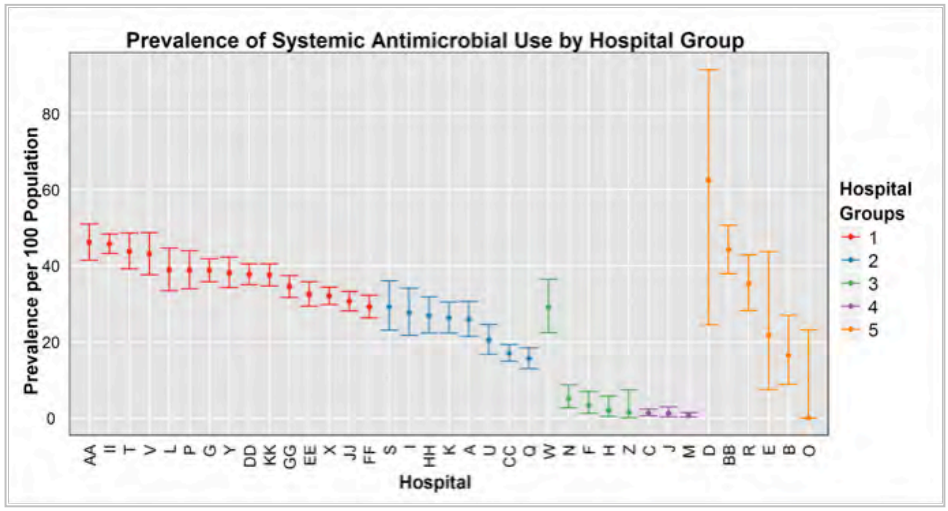


Figure 3 - Prevalence of systemic antimicrobial use by hospital group.

The top five common CAIs were pneumonia (23.5%), gastrointestinal infections (13.2%), urinary tract infections (13.0%), skin & soft-tissue infections (12.2%) and eye/ear/nose/throat/mouth infections (11.6%). The top five common HAIs were pneumonia (28.6%), urinary tract infection (17.5%), surgical site infections (16.0%), blood stream infections (11.9%) and skin & soft-tissue infections (10.6%). (Figure 2)

Among the 20,355 patients surveyed, antimicrobials were given to 6,159 patients (30.3%, 95% C.I.: 29.6%-30.9%). Systemic antimicrobials were given to 5,927 patients, of which 1,802 patients were given more than one antimicrobial. The prevalence of systemic antimicrobial use was 29.1% (95% C.I.: 28.5%- 29.7%). The prevalence was different across different hospital groups. (Figure 3)

Among the surveyed population, the most common systemic antimicrobials used were augmentin (11.8%), followed by cefuroxime (2.7%) and levofloxacin (2.4%). The pattern was similar to 2007. The overall prevalence of systemic antimicrobial use was higher in 2010 compared to 2007 (26.6%; 95% C.I.: 26.0%-27.2%).

Our results on the prevalence of infections were at the low side compared with that reported in other countries. (Table 3) Different survey methodology, health care system and case-mix of patients could be some of the reasons behind the differences observed. The heightened awareness on infection control measures by all healthcare workers after experiences gained from SARS outbreak and pandemic influenza might have contributed to the lowish infection rate. The results are useful in highlighting specific areas for infection control in individual hospitals. By comparing the secular trends, the effectiveness of infection control program can be evaluated.

Table 3 - Comparison with published studies.

Country	Prevalence of HAIs	Modification of CDC definition
Netherlands[i]	6.2%	None
Italy[ii]	8.9%	None
Finland[iii]	8.5%	Clinical sepsis
Canada[iv]	8.0%	Central venous catheter-associated BSI
England[v]	8.2%	None

References:
[i] RIVM, CBO. Prevalence of nosocomial infections in the Netherlands 2007-2008: results of the first four national studies. J Hosp Infect 2010, (75): 168-172
[ii] Durando P, Icardi G, Ansaldi F et al. Surveillance of hospital-acquired infections in Liguria, Italy: results from a regional prevalence study in adult and paediatric acute-care hospitals. J Hosp Infect 2009; 71: 81-89
[iii] Lyytikainen O, Kanerva M, Agthe N, Mottonen T, Ruutu P. Healthcare-associated infections in Finnish acute care hospitals: a national prevalence survey 2005. J Hosp Infect 2008; 69: 288-94
[iv] Gravel D, Matlow A, Ofner-Agostini M, et al. A point prevalence survey of health care-associated infections in pediatric populations in major Canadian acute care hospitals. Am J Infect Control 2007; 35:157–62.
[v] Hospital infection society and infection control nurses association. The third prevalence survey of healthcare-associated infections in acute hospitals in England 2006. Report for Department of Health (England)

Acknowledgement: The collaboration and contribution of infection control officers, infection control nurses and ward staff of HA hospitals are gratefully acknowledged. Without their support, this survey could not have been completed.

Local situation of adenovirus activity

Reported by DR FOREST TS LAM, Medical Officer, Field Epidemiology Training Programme, Surveillance and Epidemiology Branch, CHP.

Human adenoviruses belong to a virus family consisting of several groups with at least 50 serotypes. Symptoms caused by adenoviruses vary with the serotypes. The prevailing serotypes identified were types 1, 2 and 3, which mainly cause acute respiratory tract infections. Other subtypes of adenoviruses may also cause various illnesses, such as gastroenteritis and conjunctivitis.

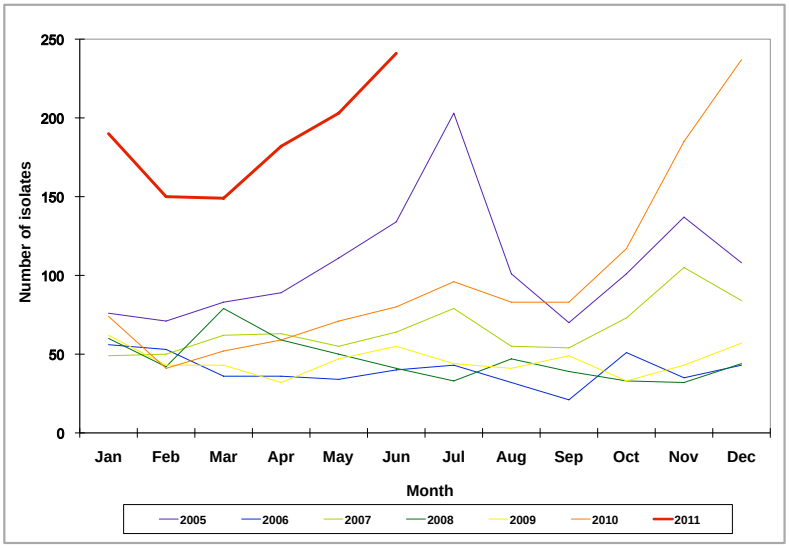


Figure 1. Monthly numbers of adenovirus detections by Public Health Laboratory Centre (PHLC), 2005 to June 2011.

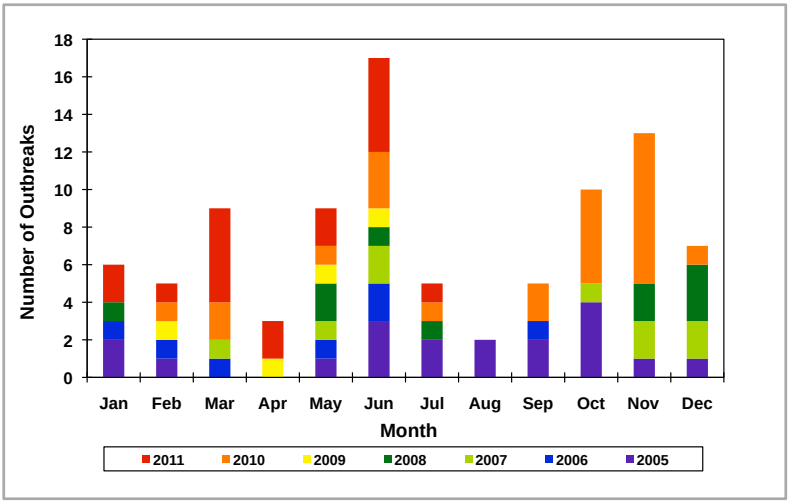


Figure 2. Monthly number of institutional Upper Respiratory Infection (URI) outbreaks caused by adenoviruses from 2005 to July 2011.

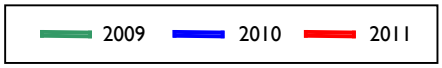
Increased adenovirus activity was noted since October 2010 and the situation was summarized in a CDW article dated October 14, 2010. The trend slightly decreased in February and March 2011 but increased again since April and this article reported the latest statistics. In the first six months of 2011, a total of 1115 detection of adenovirus was reported by the Public Health Laboratory Centre (PHLC) as compared with 282 and 377 detections in the corresponding periods of 2009 and 2010 respectively. The monthly number of adenovirus detection has increased from 149 in March to 241 in June 2011 (Figure 1).

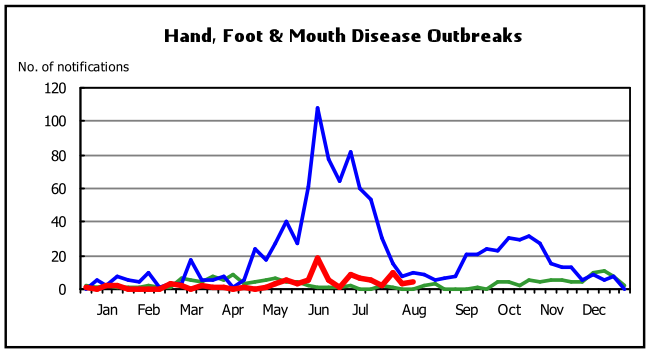
Laboratory surveillance data showed that adenoviruses were detected all year around with relative more detection during summer and early winter and this observation was particularly obvious in 2005, 2007 and 2010 (Figure 1).

A total of 18 institutional outbreaks of upper respiratory infection (URI) caused by adenoviruses was reported from January to July (as of August 6) in 2011, as compared with 4 and 8 outbreaks in the corresponding periods in 2009 and 2010 (Figure 2). Among the 18 outbreaks reported in 2011, 14 occurred in kindergartens / child care centres, 3 in primary schools and 1 in a special school. The number of persons affected in each outbreak ranged from 3 to 24. The affected persons aged between 4 months and 12 years. Although some adenoviruses could cause acute conjunctivitis (ACJ), no reports of ACJ outbreaks were recorded from April to July.

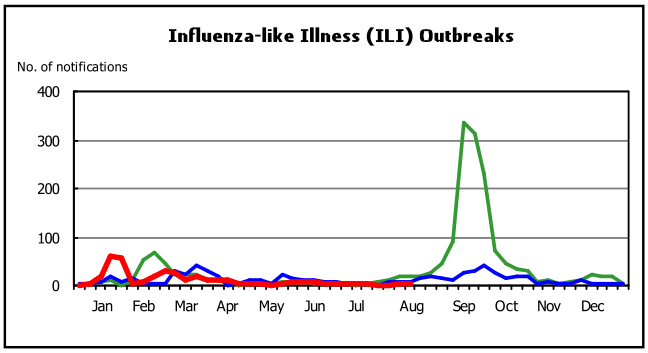
Human adenoviruses infection mainly spreads through air droplets, direct contact of the oro-nasal secretions of patients, or ingestion of contaminated food or water. To prevent adenovirus infection, the public are advised to maintain good personal, food and environmental hygiene. Children developing symptoms of infection should refrain from school and seek medical advice.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 31 - WEEK 32)

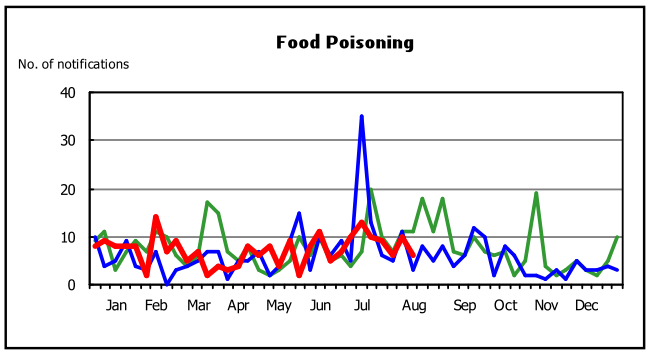




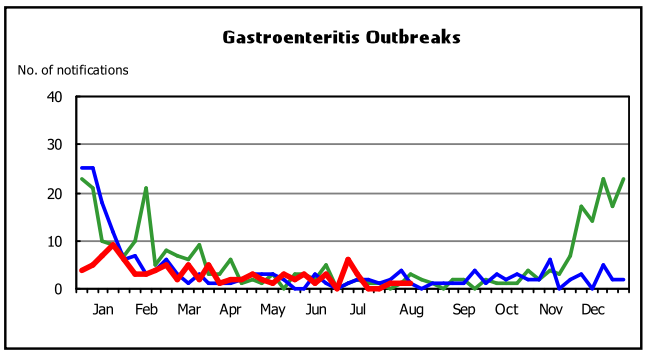
Week 29:	2	Week 31:	3
Week 30:	10	Week 32:	4



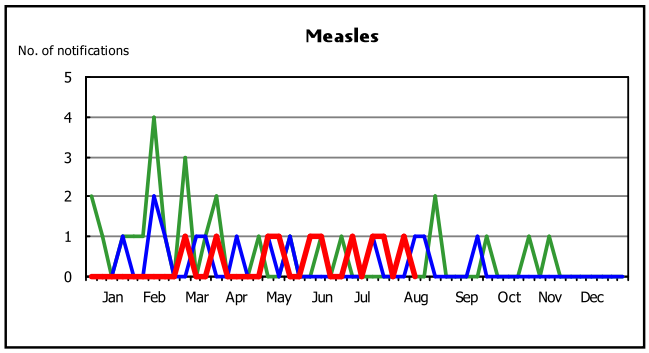
Week 29:	0	Week 31:	2
Week 30:	1	Week 32:	2



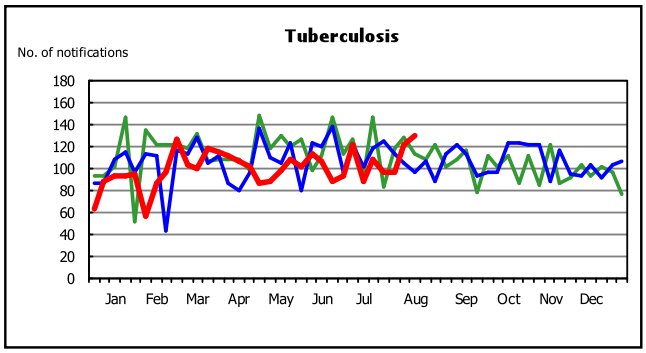
Week 29:	9	Week 31:	10
Week 30:	6	Week 32:	6



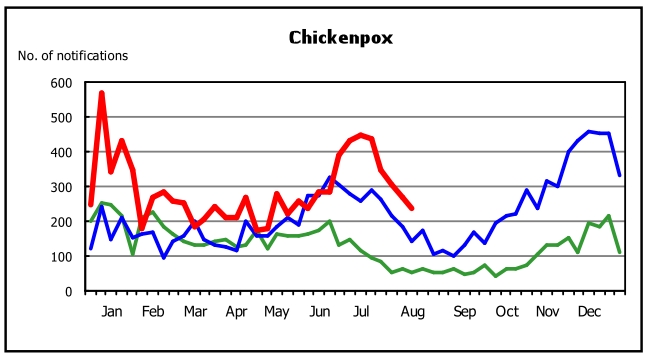
Week 29:	0	Week 31:	1
Week 30:	1	Week 32:	1



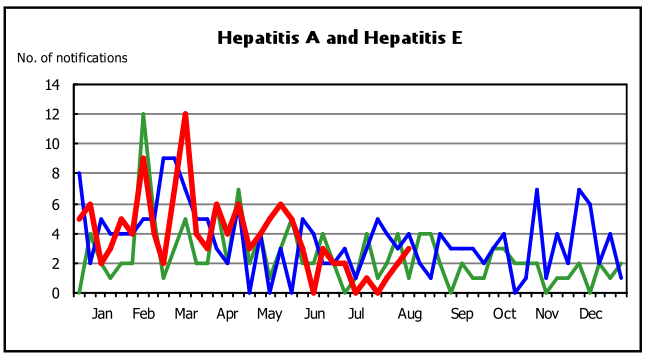
Week 29:	1	Week 31:	1
Week 30:	0	Week 32:	0



Week 29:	97	Week 31:	121
Week 30:	96	Week 32:	130



Week 29:	346	Week 31:	269
Week 30:	304	Week 32:	237



Week 29:	0	Week 31:	2
Week 30:	1	Week 32:	3

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until August 6, 2011. This information may be updated over time and should therefore be regarded as provisional only.