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Department of Health
Hong Kong SAR

Features:

Increasing antiviral resistance in seasonal influenza viruses globally

3D

COMMUNICABLE DISEASES

...WATCH

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LENS ON CHP



Above: CHP conducted an interdepartmental exercise code-named "Redwood" (紅樹演習) on Jan 10 to assess contingency plans relating to the activation and running of designated clinics.

NEWS

Exercise Redwood

A joint exercise code-named "Redwood" was conducted on January 10 to examine, evaluate and refine contingency plans related to the activation and running of a designated clinic (DC). Under the Framework of the HKSAR Government's Preparedness Plan for Influenza Pandemic, DC will be set up, when necessary, to triage patients with influenza-like illness at primary care level when Serious Response Level is activated arising from confirmed human case(s) of avian influenza in Hong Kong. Areas tested in this exercise included patient triage and management, as well as response actions of different public service units in the same building where the designated clinic was located.

More than 200 participants from 6 organisations (Food and Health Bureau, Department of Health (DH), the Hospital Authority, Hong Kong AIDS Foundation, Auxiliary Medical Service and Fire Services Department) took part in the exercise, whilst 13 experts from the Mainland and Macau attended as observers.

Increasing antiviral resistance in seasonal influenza viruses globally

Reported by **DR WC KONG**, Research Officer, Surveillance and Epidemiology Branch, CHP.

Antiviral drugs can be used in the prophylaxis and treatment of influenza to reduce mortality and morbidity. Two classes of antiviral drugs specific for influenza, namely M2 inhibitors (e.g. amantadine) and neuraminidase inhibitors (e.g. oseltamivir) are currently available. The neuraminidase inhibitors are effective for the treatment and prophylaxis of influenza A and B, while the M2 inhibitors are only active against influenza A viruses. In recent years, an increasing resistance of influenza strains to these available antiviral drugs has been reported globally.

Resistance to M2 inhibitors amantadine and rimantadine among influenza A (H3N2) viruses was emerged in early 1990s. In the United States, for example, the frequency of drug resistance among influenza A (H3N2) virus increased from 1.9% in 2004 to 14.5% during the first 6 months of the 2004–05 influenza season. The proportion increased to over 90% in the 2005–2006 influenza season. According to WHO, the proportion of influenza A (H3N2) viruses resistant to M2 inhibitors has remained consistently high globally while the proportion of resistant influenza A (H1N1) viruses to M2 inhibitors was variable from country to country.

Increased number of influenza A (H1N1) viruses with resistance to neuraminidase inhibitor, oseltamivir, was first reported by Norway to the World Health Organization (WHO) in January 2008. The viruses carried a specific neuraminidase (NA) mutation (H274Y) that conferred high-level resistance to oseltamivir.

EDITORIAL BOARD Editor-in-Chief Dr SK Chuang **Members** Dr Christine Wong / Dr Teresa Li / Amy Li / Vanessa Li / Dr Edmond Ma / Dr Shu Bo Yee / Simon Wong / Dr Wong Tin Yau **Production Assistant** Allan Chan / Lo Wai Tim. This publication is produced by the Centre for Health Protection (CHP) of the Department of Health, 147C, Argyle Street, Kowloon, Hong Kong **ISSN 1818-4111** **All rights reserved** Please send enquiries to cdsinfo@dh.gov.hk

Prior to this report, such resistance was rarely observed in community isolates of influenza A or B. During the northern hemisphere winter season (2006/2007), surveillance through the Global Influenza Surveillance Network (GISN) laboratories found no oseltamivir-resistant H1N1 viruses among isolates from Japan or Europe, and less than 1% prevalence among H1N1 isolates from the United States of America. Between late 2007 and early 2008, according to WHO, 1,077 (15%) out of 6,978 influenza A (H1N1) virus isolates collected worldwide were found to be resistant to oseltamivir. The proportion had further increased between fourth quarter 2008 and November 7, 2008 with 30 (91%) out of 33 influenza A (H1N1) virus isolates resistant to oseltamivir. The Centers for Disease Control and Prevention of United States, the Public Health Agency of Canada and the European Influenza Surveillance Scheme (EISS) also reported an increased proportion of oseltamivir resistance in influenza A (H1N1) viruses. Since the beginning of the 2008/09 influenza season, 98% (101/103), 100% (15/15) and 98% (51/52) influenza A (H1N1) viruses tested resistant to oseltamivir in the US, Canada and Europe, respectively (as of January 10, 2009). These resistant A (H1N1) viruses retained sensitivity to zanamivir. On the other hand, the influenza A (H3N2) and B viruses were still sensitive to oseltamivir.

In Hong Kong, the Public Health Laboratory Centre of the Centre for Health Protection (CHP) has a surveillance system to detect antiviral resistance of influenza viruses isolated. Similar to the global trend, the influenza A (H1N1) viruses with oseltamivir resistance increased from 0% in the fourth quarter 2007 to 17.2% in the third quarter of 2008. In October, November and December 2008, proportions of oseltamivir-resistant influenza A (H1N1) virus isolates were 68.4%, 93.8% and 97.8% respectively. All influenza A (H3N2) and influenza B viruses were still sensitive to oseltamivir. While all influenza A (H3N2) viruses isolated were resistant to amantadine, the amantadine resistance of influenza A (H1N1) viruses ranged from 0% to 31.6% during this period.

At present, there are no changes to our clinical recommendations on the use of oseltamivir in Hong Kong. Locally, the majority of influenza patients are treated symptomatically without the use of oseltamivir. CHP is monitoring the situation closely.

(...cont'd)

Two cases of listeriosis

The Centre for Health Protection (CHP) recorded two cases of listeriosis in January 2009 (as of January 16). The first case affected a baby girl who was born by normal spontaneous delivery at full term. She presented with fever and vomiting on day 21 and was admitted to hospital on the same day. She was treated as meningitis and her cerebrospinal fluid taken on January 1, 2009, grew *Listeria monocytogenes*. She has recovered and has been discharged from hospital. Her mother's antenatal course was uneventful except for an episode of low-grade fever with headache, sore throat and diarrhoea at around 34 – 35 weeks of gestation. Her family members were asymptomatic. The second case was a 78-year-old woman who lived alone. She had multiple chronic illnesses and was admitted to the hospital after being found collapsed at home on January 11. She developed sepsis with multi-organ failure which did not respond to treatment and finally succumbed on January 13. Blood taken on January 11 grew *Listeria monocytogenes*. Preliminary investigation revealed no epidemiological linkage among these two cases.

A case of tetanus

CHP recorded a case of tetanus affecting a 75-year-old woman who lived alone. She slipped and fell on December 15, 2008 while she was in Guangdong Province, resulting in head abrasion and bleeding. Treatment was given by a local herbalist. She then came back to Hong Kong on December 19, 2008. She developed difficulty in swallowing and toothache on December 27, 2008. She fell again on December 29, sustaining injuries to her jaw and was referred to the Queen Elizabeth Hospital on January 1, 2009. Her condition deteriorated on January 4 with development of respiratory failure requiring artificial ventilation. Clinical examination revealed that she had neck stiffness, trismus, generalized hypertonia and hyperextension of neck. Her clinical features were compatible with tetanus. Tetanus immunoglobulin and tetanus toxoid were given on the same day. As of January 14, she is still under intensive care in critical condition. Her past vaccination is unknown.



Journal publication highlights

from the Centre for Health Protection

Quinolone Resistance and Correlation to Other Antimicrobial Resistances in Faecal Isolates of *Escherichia coli* in Hong Kong

Chemotherapy 54:274–278. July 2008
 Chu YW, Cheung KM, Wong CH, Tsang KL, Lee KW, Lau SY, Kam KM. Microbiology Division, Public Health Laboratory Services Branch, CHP

To assess the level of quinolone resistance and its association with other antimicrobial resistance in faecal *E. coli* isolated from routine outpatient specimens in Hong Kong, ciprofloxacin-supplemented MacConkey agar was used to screen for resistant isolates. Antimicrobial susceptibility testing was done and the genetic determinants behind some of the resistance phenotypes were characterized. Quinolone resistance was found to be associated with resistances to penicillins and co-trimoxazole. Non-susceptibility to combinations of penicillins and clavulanic acid was above 20% and up to 50% for the aminoglycosides gentamicin and tobramycin. CTX-M-type extended-spectrum β -lactamases were found responsible for most cephalosporin resistances but the transferable quinolone resistance determinant *qnrA* was not detected. A high percentage of *E. coli* isolates as part of the alleged normal intestinal microflora in humans appeared to be resistant to quinolones. Co-resistance to various other frequently used antimicrobials was also observed.

Diabetic Control and Risk of Tuberculosis: A Cohort Study.

Am J Epidemiol. 167(12):1486-94. April 2008
 Leung CC, Lam TH, Chan WM, Yew WW, Ho KS, Leung GM, Law WS, Tam CM, Chan CK, Chang KC. Tuberculosis and Chest Service, CHP

The effects of diabetes mellitus and diabetic control on tuberculosis risk were assessed with adjustment for sociodemographic and other background variables. A cohort of 42,116 clients aged 65 years or more, enrolled at 18 Elderly Health Service centers in Hong Kong in 2000, were followed up prospectively through the territory-wide tuberculosis registry for development of tuberculosis from 3 months after enrollment to December 31, 2005. Diabetes mellitus was associated with a modest increase in the risk of active, culture-confirmed, and pulmonary but not extrapulmonary tuberculosis. Diabetic subjects with hemoglobin A1c <7% at enrollment were not at increased risk. Among diabetic subjects, higher risks (\approx 3-fold) of active, culture-confirmed, and pulmonary but not extrapulmonary tuberculosis were observed with baseline hemoglobin A1c \geq 7% (vs. <7%).

Streptococcus suis in retail markets: How prevalent is it in raw pork?

International Journal of Food Microbiology 127: 316-320. 2008

Cheung PY, Lo KL, Cheung TT, Yeung WH, Leung PH, Kam KM. Food and Water Laboratory, Public Health Laboratory Services Branch, CHP

This study combined the conventional Most Probable Number (MPN) technique of estimating bacterial growth with a specifically designed PCR assay to enumerate *S. suis* in raw pork meat samples from retail markets. A total of 78 samples from two supermarkets and a wet market were tested. Results indicated that *S. suis* could be detected from the enriched MPN tubes of all, except one, sample homogenates and revealed that raw pork meats available in local supermarkets or wet markets could contain *S. suis* at concentrations usually difficult to detect with traditional culture method. Field application of the novel MPN-PCR method may contribute to a measurable evaluation, and thus the effective control, of human *S. suis* infection due to raw pork or pig carcass handling.

Risk factors associated with human immunodeficiency virus (HIV) infection among attendees of public sexually transmitted infection clinics in Hong Kong: implications for HIV prevention.

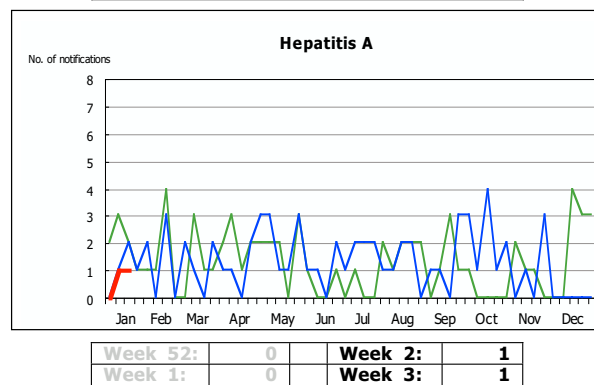
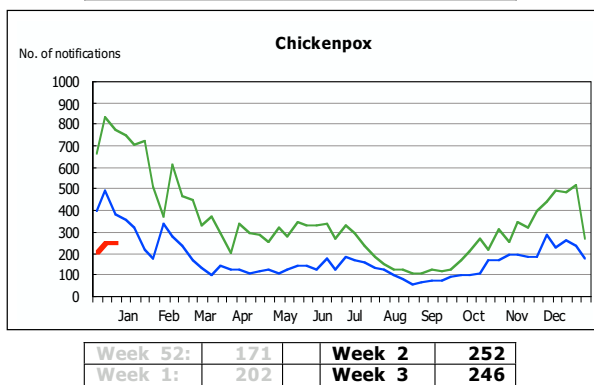
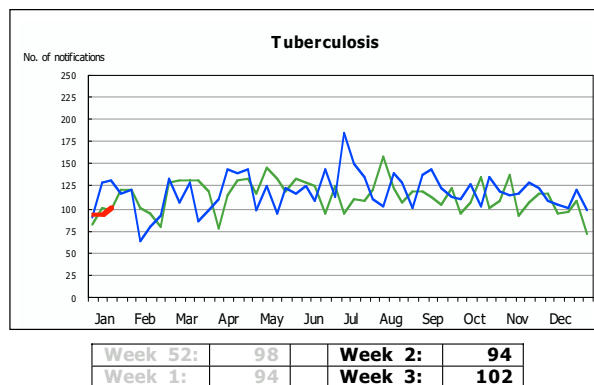
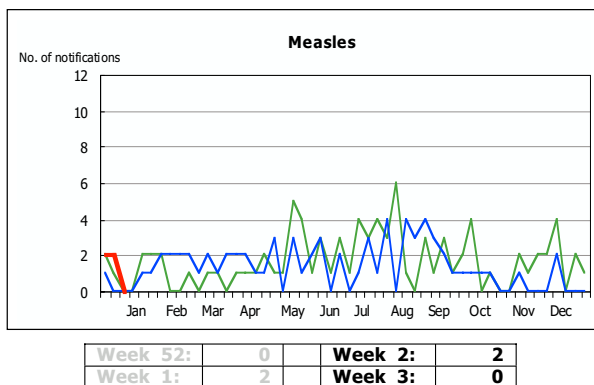
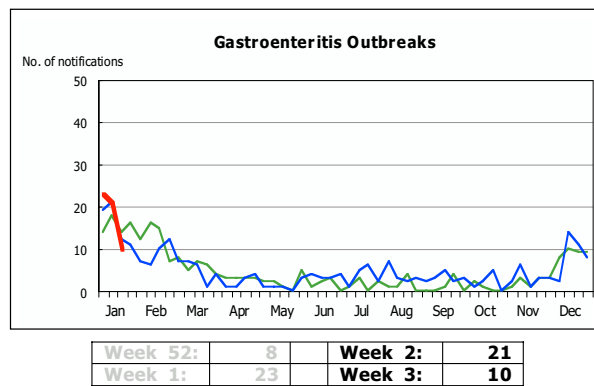
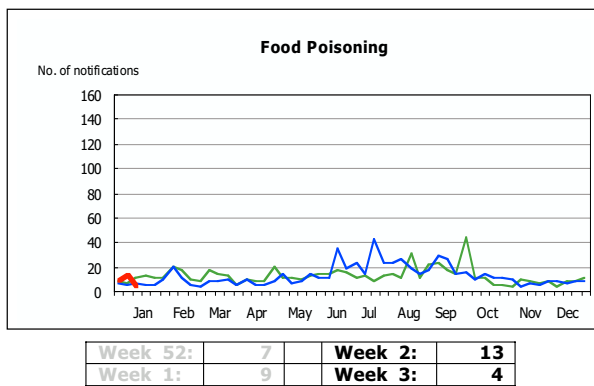
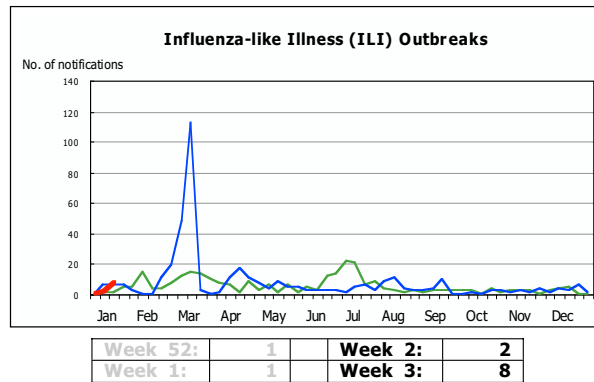
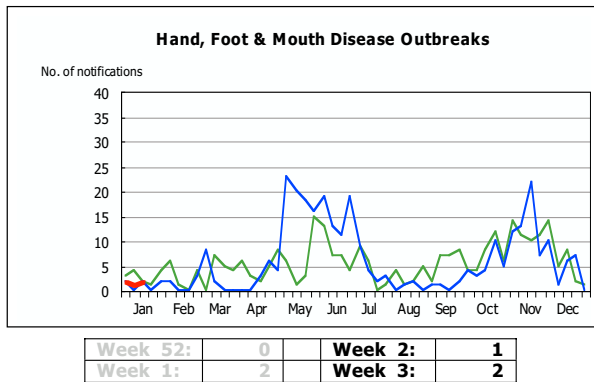
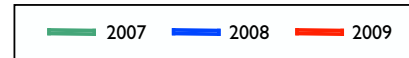
Hong Kong Med J. 14(4): 259-266. August 2008

Lee PM, Ho KM. Centre for Health Protection

To examine the risk factors for human immunodeficiency virus (HIV) transmission among attendees of public sexually transmitted infection clinics in Hong Kong, a retrospective matched case-control study was conducted. Analysis revealed that HIV infection was associated with the following factors: non-Chinese ethnic groups (mainly South-East Asian), coexisting syphilis, current non-gonococcal urethritis, current genital warts, history of prior sexually transmitted infection, having casual sex with friends, and casual sex in Mainland China. Sexual orientation was also considered to be a potential risk factor, as only those who tested positive reported to be homosexual or bisexual. Targeted interventions should therefore be offered to these high-risk individuals to prevent and control HIV transmission.

Journal publication highlights provides synopses of research publications by the Centre for Health Protection (CHP) related to communicable diseases. Each issue of highlights will feature a selection of four peer-reviewed journal articles, published from 2005 to the present, from various communicable disease areas.

SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEKS 2 - 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 January 17, 2009. This information may be updated over time and should therefore be regarded as provisional only.