LENS ON CHP

Above: Field Epidemiology training course on “Logistic regression and time series analysis” organised by the Surveillance and Epidemiology Branch of CHP during March 21-25, 2011.

NEWS

Field Epidemiology Training Course on Logistic Regression and Time Series Analysis

The Hong Kong Field Epidemiology Training Programme of the Centre for Health Protection (CHP) organized a training course on “Logistic Regression and Time Series Analysis” during March 21-25, 2011. The course was delivered by EpiConcept, an organization based in Europe specializing in training and studies in epidemiology and development of information & communication technology tools for public health. The objective of this course was to strengthen participants’ knowledge and skills related to the use of logistic regression and time series analysis in the context of surveillance of communicable diseases, investigation of outbreaks and related studies. The training course included a series of short presentations by the (continued on page 28)

Treatment of latent tuberculosis infection - role in tuberculosis control strategy

Reported by Dr Eric CC Leung, Senior Medical Officer, Tuberculosis and Chest Service and Dr CM Tam, Head, Public Health Services Branch, Department of Health.

Tuberculosis (TB) has become a notifiable disease in Hong Kong since 1939. As a result of improvement in environmental and public health conditions and availability of effective chemotherapy, the TB notification rate declined significantly in the past 60 years, from a peak of 697 per 100,000 in 1952 to 73 per 100,000 in 2010 (provisional figure) (Figure 1). However, this incessant decline in TB notification appeared to become “stagnated” in the past decade or so in Hong Kong as well as in other Asian populations such as Japan, Singapore and Malaysia. Both epidemiological and molecular genetics studies in Hong Kong have shown that up to 80% of TB cases now arise from endogenous reactivation from remote latent infection, and only 20% are due to recent exogenous transmission.1,2 While effective case finding and chemotherapy can contain the transmission of TB in the community and prevent progressive primary infection or exogenous re-infection, its effect on endogenous reactivation is rather small. Thus, more emphasis on the diagnosis and treatment of latent TB infection (LTBI) appears to be the appropriate adjunctive strategy for tackling this aspect of the health problem.

Figure 1 - Trend of TB notification rate in Hong Kong (1952-2010).
LTBI is traditionally identified by the time honored tuberculin skin test (TST) that is still widely practiced in clinical medicine today. Longitudinal studies have shown that the size of TST reaction predicts the risk of developing active TB disease. Isoniazid (INAH) prophylactic treatment for subjects with positive TST has been shown to reduce the risk of developing active TB disease. Despite its widespread use, there are significant false negatives and false positives associated with TST, in particular the cross reactivity with other environmental mycobacteria and Bacillus Calmette-Guérin (BCG).

With advance in modern science, new antigens have been discovered in the Mycobacterium tuberculosis (MTB) bacilli which are absent in most environmental mycobacteria and all BCG strains. These antigens are located in the region of difference (RD-1) genome of MTB bacilli. The fact that these antigens are rather specific for MTB, and their ability to stimulate T cells, form the basis for novel assays for the diagnosis of LTBI, through the detection of interferon-gamma (IFN-γ) release when previously sensitised T cells are incubated with these antigens in vitro. These tests are collectively known as Interferon-Gamma Release Assay (IGRA). QuantiFERON-TB Gold/ In-tube and the T-SPOT.TB tests are the commercially available IGRA test kits. IGRA apparently have a number of advantages over TST, including higher specificity and sensitivity.3

Over the last few years, the IGRA have gained regulatory approval in some developed countries and guidelines have been updated recommending the use of IGRA alone or in conjunction with TST in diagnosing LTBI.5 Some recent systematic reviews and meta-analyses have shown that IGRA are more advantageous in diagnosing LTBI and predicting active disease as compared with TST.5,6 More accurate diagnosis and treatment of LTBI in targeted groups allows more effective prevention of progression to active TB disease in high risk populations like silicotics, HIV-infected, immune-compromised, and close contacts under age of 35.

With the availability of this new test, the TB & Chest Service of Department of Health conducted a few studies on use of IGRA in TB in recent few years. In a study published in 2008, T-Spot.TB performed better than TST in the screening of LTBI among silicotic patients.7 Another longitudinal study evaluating performance of IGRA in predicting the risk of developing active TB disease was published in 2010.8 Among 308 recruited silicotic subjects, a positive T-Spot.TB test independently predicted the subsequent development of active TB, whereas TST did not. Other studies are now ongoing to monitor the performance of IGRA in predicting progression to active TB disease among high risk groups like close TB contacts and HIV-infected subjects.

It must be emphasised that although IGRA has apparently more advantages than TST, there are still false positives and false negatives and its exact role has yet to be defined. In Hong Kong, treatment of LTBI is currently practiced on a small scale. Apart from the test itself, acceptance by clients who are otherwise healthy, may be one of the other main limitations. More scientific research and evaluation studies are necessary.
Meningococcal infection is caused by the bacteria Neisseria meningitidis. Severe illness may result when invasive infection occurs. Meningococcaemia (when the bacterium invades the bloodstream) is characterised by sudden onset of fever, intense headache, purpura or shock. Meningococcal meningitis is characterised by high fever, severe headache, nausea, stiff neck followed by drowsiness and photophobia. Even with appropriate antibiotic therapy, the fatality of serious meningococcal infection could be high and some of the survivors of meningococcal meningitis may suffer from permanent neurological damage and hearing loss.

As of April 6, 2011, a total of four sporadic invasive meningococcal infections were recorded in 2011. All of them were female and their ages were 1 month, 15 years, 65 years and 69 years respectively. All presented with septicaemia and two also presented with meningitis.

Neisseria meningitidis was detected in blood and/or cerebrospinal fluid. Serotyping yielded serogroups B and W135 respectively in two cases while serotyping could not be performed in the other two cases. The conditions of all cases were stable after antibiotic treatment. Chemoprophylaxis was offered to close contacts and no secondary cases were reported so far.

Figure 1 shows the number of notifications received from 1995 to 2011. The number of meningococcal infection has decreased from 14 cases in 2000 to two cases in 2010. More cases occurred during the winter months. Although the number of invasive meningococcal infections showed an apparent increase in the first few months of this year, epidemiological investigations revealed that all were sporadic cases and there was no epidemiological linkage between them. Three of them acquired the infection locally while the other one (1-month-old girl) came to Hong Kong for treatment after diagnosed in Mainland China.

At present, at least 13 serogroups of meningococcus have been identified and vaccines can only cover part of them. Vaccine against serogroup A, C, W135 and Y are available while vaccines against serogroup B, the most common serogroup seen locally, has not been registered in Hong Kong. As meningococcal infection can be transmitted by direct contact, or by droplets from the nose and throat of infected people, members of the public are advised to observe good personal and environmental hygiene practices to avoid the infection. Travellers to areas endemic of meningococcal infections may seek professional advice on meningococcal vaccination from doctors.
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS (WEEK 13 - WEEK 14)

- **Hand, Foot & Mouth Disease Outbreaks**
  - Week 11: 0
  - Week 12: 2
  - Week 13: 1
  - Week 14: 1

- **Influenza-like Illness (ILI) Outbreaks**
  - Week 11: 11
  - Week 12: 17
  - Week 13: 13
  - Week 14: 13

- **Food Poisoning**
  - Week 11: 7
  - Week 12: 2
  - Week 13: 4
  - Week 14: 2

- **Gastroenteritis Outbreaks**
  - Week 11: 5
  - Week 12: 2
  - Week 13: 5
  - Week 14: 2

- **Measles**
  - Week 11: 1
  - Week 12: 0
  - Week 13: 1
  - Week 14: 0

- **Tuberculosis**
  - Week 11: 100
  - Week 12: 119
  - Week 13: 115
  - Week 14: 111

- **Chickenpox**
  - Week 11: 185
  - Week 12: 203
  - Week 13: 241
  - Week 14: 206

- **Hepatitis A and Hepatitis E**
  - Week 11: 10
  - Week 12: 2
  - Week 13: 3
  - Week 14: 4

Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until Apr 2, 2011. This information may be updated over time and should therefore be regarded as provisional only.