Updates on tuberculosis
Reported by Dr CM TAM, Head, Public Health Services Branch, and DR YH LEUNG, Medical Officer, Field Epidemiology Training Programme, Surveillance and Epidemiology Branch, CHP.

The third biennial international conference in the Asia Pacific Region of the International Union Against Tuberculosis and Lung Disease was hosted in Hong Kong during the period July 8-11, 2011. The theme of this year’s conference was “Current Challenges in Tuberculosis and Lung Health”. Although advances in medicine and effective public health measures have brought about improvement in the control of tuberculosis (TB) and in lung health in the past decades, we are still facing compelling challenges locally, regionally, and also globally in countries all over the world.

TB is still a major infectious disease worldwide. Although the estimated global incidence rate fell to 137 per 100,000 in 2009, after peaking in 2004 at 142 per 100,000, there were still 9.4 million new TB cases globally in 2009, with 1.7 million people dying from TB, according to World Health Organization (WHO). Effective anti-TB treatment has been available for half a century. However, as long course of treatment is required to cure the disease, non-adherence and emergence of drug resistance have been encountered since the earliest days of chemotherapy. Notwithstanding the increasing coverage of Directly Observed Treatment Short course (DOTS), anti-TB drug resistance remains a serious concern. The problem is most acute in areas with HIV co-epidemic or gross social inequities, but increasing movement of populations has rendered it a global crisis affecting all countries.

Globally, almost half a million cases of multidrug-resistant TB (MDR-TB) with bacillary resistance to at least isoniazid and rifampicin are estimated to emerge every year. Among them, around 40,000 are extensively drug-resistant TB (XDR-TB), defined as MDR-TB with additional resistance to fluoroquinolones and one or more of the three injectable drugs -- kanamycin, amikacin and capreomycin. XDR-TB carries a very poor prognosis with high treatment failure and mortality rates.

In Hong Kong, with the implementation of effective case-finding and treatment, the TB notification rate has shown an overall downward trend in the past 50-60 years. The rate decreased from a peak of 697 per 100,000 in 1952 to 72.6 per 100,000 in 2010 (corresponding to 5,132 cases, provisional figure).

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Vibrio vulnificus infection
On July 6, 2011, the Centre for Health Protection (CHP) recorded a case of Vibrio vulnificus infection affecting a 52-year-old woman. Her right fourth toe was stung by a shrimp jumping out from a water tank in a market on June 28. She attended the Accident and Emergency Department (AED) of a public hospital on June 29 for a swelling toe. The clinical diagnosis was toe abscess without features of necrotizing fasciitis. Incision and drainage was performed in the AED and hospitalisation was not required. Pus swab taken from the abscess for culture yielded heavy growth of Vibrio vulnificus on July 6. Her toe infection improved with a course of antibiotics and her condition was stable.

Two sporadic cases of listeriosis
CHP recorded two cases of listeriosis on July 13 and 20, 2011, respectively. The first case was reported on July 13, affecting an 81-year-old man with history of auto-immune disease on
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morbidities with age. The TB death rate in 2010 was 2.7 per 100,000 (corresponding to 187 deaths, provisional figure), as compared with the peak of 207.9 per 100,000 in 1951.

With the effective implementation of DOTS and DOTS-plus in Hong Kong, the overall TB situation and drug resistance problem have been brought under progressive control. Currently, the rates of MDR-TB and XDR-TB are not high, at around 1% and 0.1% among bacteriologically positive cases respectively. However, ageing of the TB epidemic and the global emergence of MDR- and XDR-TB are posing increasing challenges in TB control, especially in view of frequent population movement and high rates of drug-resistant TB in some of our neighbouring areas. With the introduction of the new Prevention and Control of Disease Ordinance (CAP. 599) in 2008 in Hong Kong, measures to prevent cross-boundary spread of XDR-TB, in compliance with the International Health Regulations (2005) promulgated by the World Health Organization, are also included in the Regulation.

Collaborative efforts have also been made in the development of new diagnostic tools, drugs, and treatment regimens to meet new challenges. New molecular diagnostic tools have also been developed to facilitate timely diagnosis of active TB disease as well as early detection of drug resistance. Shorter regimens than those currently available are required to facilitate the treatment of both latent TB infection and active TB disease. The Hong Kong Tuberculosis Service of Department of Health joined the Tuberculosis Trial Consortium in 2009 as one of the new study sites for the development and evaluation of new TB treatment regimens. Multicentered clinical trials are underway to explore some of these new treatment-shortening regimens in different parts of the world. It is hoped that some of these researches will translate into effective, safe, and affordable tools suitable for large-scale application to control, and ultimately eliminate, this major killer in the history of mankind.

Bacillus Calmette-Guérin (BCG) vaccination, another important TB preventive tool, has a long history of widespread use since its introduction in Hong Kong more than half a century ago. Currently, BCG is routinely given to newborn babies in the first few days of life in Hong Kong. The efficacy of BCG against severe forms of TB such as miliary and meningeal TB among children is well recognized. A recent meta-analysis showed that the protection against TB in infants, TB meningitis, overall TB risk and overall TB death were 55% (95%CI: 41%-66%), 64% (18%-70%), 51% (30%-66%) and 71% (47%-84%) respectively1.

BCG is considered to be one of the most time-tested and safest vaccines available. Side effects are uncommon apart from minor reactions or complications at the vaccination sites. Severe BCG complications like osteitis and disseminated BCGosis are rather rare, at rates of around 1-700 per million and 2 per million respectively. Suppurative lymphadenitis may occur after BCG vaccination in infants, with onset usually between 2 to 6 months in the ipsilateral axillary region. Internationally, the incidence of suppurative lymphadenitis is quoted by the WHO is in the range of 1 to 10 per 10,000 doses2. Provisional local data (as of June 2011) based on review of the discharge diagnosis from the Hospital Authority showed that the incidence of reported suppurative lymphadenitis during 2009-2010 was 2.13 cases per 10,000 doses, within the range

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immunosuppressants. He presented with fever, dysuria and lower abdominal pain since July 9 and was admitted to a public hospital on the next day. He was treated as urinary tract infection initially and discharged on July 12 after symptoms had resolved. Blood culture taken on July 10 subsequently yielded *Listeria monocytogenes*. He was called back for re-admission and a course of ampicillin was given. He was all along in stable condition. The patient had no history of travel. His household contacts were asymptomatic. Investigation is on-going.

The second case was recorded on July 20. The patient was a 48-year-old lady who was diagnosed to have breast cancer with metastases since August 2010. She was hospitalised for increasing lymphoedema of her left upper limb since early July this year. On July 11, she developed fever. Chest x-ray showed pleural effusion. Her condition gradually deteriorated and she finally succumbed on July 13. Blood taken on July 11 grew *Listeria monocytogenes*. According to the clinician-in-charge, the cause of death was advanced breast cancer. She lived alone. Her relatives were asymptomatic.

No epidemiological linkage has been identified for these two sporadic cases.

**Laboratory surveillance on multi-antimicrobial resistant bacteria (June 2011)**

The Microbiology Division of the Public Health Laboratory Services Branch (PHLSB) provides diagnostic microbiology laboratory services and receives referred isolates from various laboratories for confirmation and characterization testing. Laboratory surveillance on various multi-antimicrobial resistant bacteria has been undertaken to monitor the epidemiology and to inform on public health measures. The latest data had been uploaded to the CHP's website:

of figures cited by WHO. Previously in 2004-2008, the rate appeared even lower at 0.81 cases per 10,000 doses, although variations in coding and reporting practice over time cannot be excluded. Laboratory tests on batches of the BCG vaccine showed that it conformed to relevant quality standards.

BCG vaccine is generally contraindicated in HIV-infected individuals. BCG, being a live vaccine, may cause serious complications like disseminated BCG disease with high rates of mortality in HIV-infected subjects. It may also lead to the development of immune reconstitution inflammatory syndrome in an HIV-infected child within 3 months after the initiation of highly active antiretroviral therapy. In 2007, WHO updated its recommendation that, for infants who are already HIV infected, the benefits of potentially preventing severe TB are outweighed by the risks associated with the use of BCG vaccine. In 2009, the Scientific Committee on AIDS and STI (SCAS) of Centre for Health Protection in Hong Kong recommends against BCG vaccination in all HIV-infected patients. For HIV exposed infants, SCAS recommends a delayed approach, in which vaccination is delayed in those known to have been exposed to HIV in utero or during birth, until HIV infection is ruled out.

Currently, the Working Group on New TB Vaccines under the Stop TB Partnership is working with various partners to look for better TB vaccines which are more efficacious, cheaper, easier to administer, with less side effects, and of wider use in the prevention and therapy of infection and disease.

**Looking ahead**

The Stop TB Partnership's Global Plan to Stop TB 2006-2015 has set its target to halve TB prevalence and death rates by 2015 compared to 1990. The baseline TB notification and death rates in Hong Kong in 1990 were 114.1 and 6.7 per 100,000 respectively. Hong Kong has already achieved the millennium development goal regarding TB death rate since 2010, when the crude death rate dropped to 2.7 per 100,000. However, the crude notification rate in 2010 (72.6 per 100,000) was still significantly higher than the corresponding millennium development goal.

Lots of challenges are still ahead of us in the fight against TB. With ageing of the population, frequent population movement, and global resurgence of TB complicated by MDR-TB and XDR-TB, there is a continuing need to step up local TB control measures, promote community awareness and support, enhance multidisciplinary and international collaboration and invest in research and development. The July Conference held locally presented a golden opportunity for the academics and experts among different regions and across different sectors to collaborate in sharing experience and developing better strategies that help us stand against the new challenges.

References:


### Hong Kong achieves goal of hepatitis B control verified by the World Health Organization Western Pacific Region

**Reported by Dr YH Tam, Medical Officer, Vaccine Preventable Disease Office, Surveillance and Epidemiology Branch, CHP.**

Hepatitis B infection is caused by hepatitis B virus (HBV). Approximately 5-10% of adults and 95% of perinatally infected infants are unable to clear the virus, thus becoming chronic carriers. They may subsequently develop chronic hepatitis, permanent liver damage or liver cancer. Hepatitis B is an important public health problem in the Western Pacific Region with an estimated 158 million chronic carriers and about 300,000 deaths annually mainly due to chronic hepatitis, cirrhosis and hepatocellular carcinoma. Similar to other parts of Asia, the overall prevalence of chronic hepatitis B infection in Hong Kong was high. The significant burden of chronic liver disease in local population is reflected by the large number of persons with chronic liver diseases and liver cancer. Liver cancer ranked the fourth commonest cancer and the third commonest cause of cancer death in Hong Kong population in 2008.

Universal childhood immunisation — three doses of hepatitis B vaccine, with the first dose given within 24 hours of birth — is considered to be the most effective method for hepatitis B control. In September 2005,
the Western Pacific Regional Office (WPRO) became the first World Health Organization Region to set a
time-bound goal of reducing chronic HBV infection rates (defined as hepatitis B surface antigen (HBsAg)
prevalence) to less than 2% among 5-year-old children or older who were born after the implementation of
universal hepatitis B immunisation by 2012, and ultimately a regional goal of less than 1% HBsAg prevalence
among children aged 5 years or older. To meet WPRO's verification requirements, Member States are
required to provide sufficient documentary evidence, including data on HBsAg seroprevalence, hepatitis B
vaccine coverage and surveillance on HBV infection.

In Hong Kong, universal hepatitis B immunisation programmes for newborns was started in 1988 to interrupt
the vertical transmission of HBV infection and horizontal transmission during early childhood. Various catch-
up programmes had also been held for pre-primary school children and primary school children to cover
children born in or after 1986. Starting from 1998/99 school year, annual supplementary hepatitis B
immunisation campaigns have been conducted for Primary 6 students who have not received or not yet
completed hepatitis B immunisation. Besides, hepatitis B immunoglobulin is provided within 24 hours of birth
together with the birth dose of hepatitis B vaccine for babies who are born to HBV carrier mothers. The
current Childhood Immunisation Programme contains three-dose schedule of hepatitis B vaccination given at
birth, one and six months of age. Hepatitis B immunisation coverage has been very high over the years. The
immunisation coverage survey conducted in 2009 showed that at least 99.5% of children aged 2 to 5 years
have completed three doses of hepatitis B vaccines, which was consistent with the 99.1 to 100% coverage
found in previous surveys in 2001, 2003 and 2006.

To comply with WPRO requirements, the Department of Health (DH) conducted a special HBsAg
seroprevalence study among more than 1900 children aged 12 to 15 years (born after the implementation
of universal hepatitis B vaccination program) in 2009. The study showed an HBsAg seroprevalence of
0.78%, thereby fulfilling the WPRO's goal on hepatitis B control of less than 1%.

Apart from hepatitis B vaccination programme, ongoing surveillance is employed to monitor the trend of
hepatitis B infection in Hong Kong. Notification of acute hepatitis B received by the DH has been declining
since the universal hepatitis B vaccination for all local newborns in 1988. In 2010, 73
cases of acute hepatitis B were reported to DH, as compared with 250 cases in 1988
(Figure 1).

Outbreak control, education and publicity on the prevention of HBV infection are in
place in Hong Kong. Laboratory diagnosis for HBV infection through testing HBV
sero-markers are also widely available in
public and private sectors.

DH submitted a report together with the required documents to WPRO in February 2011. After a full
assessment by the three-member Verification Panel comprising WPRO appointed experts from the
United States, Australia and Japan, Hong Kong was verified to have achieved the final goal of hepatitis B
control in July 2011.

This year bears a special meaning to hepatitis B control in the world. Professor Baruch Blumberg, the Nobel Prize winner who discovered
the HBV in 1965, passed away in April 2011. The WHO resolved in
the World Health Assembly that, in partnership with the World
Hepatitis Alliance which launched the first World Hepatitis Day in
2008, the Day will be designated annually on July 28
in recognition of his birthday. The WHO Western Pacific Region's
slogan is “Knock down hepatitis B by 2012” and “Hepatitis
affects everyone, everywhere. Know it. Confront it.” is adopted
as the campaign message this year in order to:

- Raise awareness and understanding of hepatitis among the general public
- Secure continual support for World Hepatitis Day
- Generate a sense of urgency amongst all stakeholders to prioritise action

Communicable Diseases Watch
SUMMARY OF SELECTED NOTIFIABLE DISEASES AND OUTBREAK NOTIFICATIONS
(WEEK 29 - WEEK 30)

Hand, Foot & Mouth Disease Outbreaks

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Influenza-like Illness (ILI) Outbreaks

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Gastroenteritis Outbreaks

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Measles

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Tuberculosis

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Chickenpox

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Hepatitis A and Hepatitis E

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Data contained within this bulletin is based on information recorded by the Central Notification Office (CENO) and Public Health Information System (PHIS) up until July 23, 2011. This information may be updated over time and should therefore be regarded as provisional only.