Tuberculosis – Current issues and key requirements

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1 Basic facts of Tuberculosis (TB)

1.1 Definition: TB is an infectious bacterial disease caused by Mycobacterium tuberculosis, which most commonly affects the lungs. (WHO 2013)

1.2 Symptoms: The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. The symptoms may be mild for many months. (WHO 2013)

1.3 Infection route, development, and mortality

- TB is spread from person to person through the air. A person needs to inhale only a few of these germs to become infected.
- About one-third of the world's population has latent TB.
- TB is the second greatest killer worldwide due to a single infectious agent. In 2011, 8.7 M people fell ill with TB and 1.4 M died. Without treatment up to two thirds of people ill with TB will die.
- The TB death rate dropped 41% between 1990 and 2011. (WHO 2013)

2 The global status of infection, treatments, and preventions

2.1 The demography of patients

- Over 95% of cases and deaths are in developing countries. (the burden of TB is highest in Asia and Africa. India and China together account for almost 40%. The African Region has 24% of the world’s cases, and the highest rates of cases and deaths per capita).
- TB mostly affects young adults, but all age groups are at risk. About half a million children (0-14 years) fell ill with TB, and 64 000 children died in 2011. (WHO 2013)

2.2 Standard treatments and multidrug-resistant TB (MDR-TB) emersion

- The vast majority of TB cases can be cured when medicines are provided and taken properly with a standard six-month course of four antimicrobial drugs.
- Between 1995 and 2011, 51 million people were successfully treated for TB in countries that had adopted the WHO strategy, saving 20 million lives.
- However, MDR-TB, a form of TB caused by bacteria that do not respond to anti-TB drugs, emerged.MDR-TB is treatable and curable by using second-line drugs. However second-line treatment options are limited and recommended medicines are not always available.
- Worldwide, 3.7% of new cases and 20% of previously treated cases were estimated to have MDR-TB.India, China, the Russian Federation and South Africa have almost 60% of the world’s cases of MDR-TB.(WHO 2012, 2013)

2.3 Preventive options development

- The development of new drugs and new vaccines is progressing. (Eleven vaccines to prevent TB

are moving through development stages.)

- There are critical funding gaps for TB care and control. Between 2013 and 2015 up to US$ 8 billion per year is needed in low- and middle-income countries, with a funding gap of up to US$ 3 billion per year.
- There are also critical funding gaps for research and development. US$ 2 billion per year is needed; the funding gap was US$ 1.4 billion in 2010.
- There is no effective vaccine to prevent TB in adults. Progress in the past decade means that it is possible that at least one new vaccine could be licensed by 2020. (WHO 2012, 2013)

2.4 Co-morbidity with HIV

- People who are co-infected with HIV and TB are 21 to 34 times more likely to be sick with TB.
- At least one-third of the 34 million people living with HIV worldwide are infected with TB bacteria. TB is a leading killer of people living with HIV causing one quarter of all deaths.
- Almost 80% of TB cases among people living with HIV reside in Africa.
- 40% of TB patients had a documented HIV test result and 79% of those living with HIV were provided with co-trimoxazole preventive therapy in 2011. (WHO 2012, 2013)

3 Key requirements to improve the environment

WHO's "The Stop TB Strategy" includes key requirements as follows: (WHO 2006)

- Pursue high-quality DOTS expansion and enhancement
  - Secure political commitment, with adequate and sustained financing
  - Ensure early case detection, and diagnosis through quality-assured bacteriology
  - Provide standardized treatment with supervision, and patient support
  - Ensure effective drug supply and management
  - Monitor and evaluate performance and impact
- Address TB-HIV, MDR-TB, and the needs of poor and vulnerable populations
- Contribute to health system strengthening based on primary health care
- Engage all care providers
- Empower people with TB, and communities through partnership
- Enable and promote research

4 Summary

- TB is so infectious that one-third of the world's population is latent, but if they become ill, appropriate treatment will cure majority of TB cases. So the access to the appropriate treatment is essential.
- On the other hand, MDR-TB is emerging. To reduce MDR-TB, not only appropriate use of the drugs but also new drugs development should be required. However, R&D of new drugs is facing the shortage of US$ 1.4 B per year.
- HIV-TB co-infection is lethal. Early phase TB screening will provide appropriate care for HIV-TB infected people.
- To reduce TB infection, WHO's "The Stop TB Strategy" gives holistic approach. New business to fight against TB would be better fits the direction to leverage global initiatives.

Reference

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