EMPYEMA

Prof RF Chauke
• “When empyemata are opened by cautery or by knife, and the pus flows pure and white, the patient survives, but if it is mixed with blood, muddy and foul smelling, he will die” – Hippocrates 560-377 B.C.
Time scale for different stages of thoracic empyema and treatment

• Time scale for different stages of thoracic empyema and treatment

Exudative Phase
Fibrinopurulent Phase
Organizing Phase

Stage I
Stage II
Stage III

Weeks
SAASET

SOUTH AFRICAN ASSOCIATION FOR
THE STUDY OF EMPYEMA THORACIS
Causative organisms

- “Continued surveillance in the epidemiology of empyema is needed” (Burgos et. Al, 2013)
- Infx
  - TB
  - Strep (pneumococcal serotypes 1, 3 & 19A)
  - Staph
  - Gemela - haemolysans
    - marbillorum (Aibar-Arregui et. al; 2012)
  - Anaerobes
  - Entaemoeba histolytica
The Centers for Disease Control and Prevention (CDC) started work in South Africa in 1989, assisting non-governmental and community-based organizations working with HIV. In 1994 at the onset of democracy in South Africa, CDC began to collaborate with the South African National Department of Health to conduct public health epidemiology training; develop national health goals and objectives; develop national HIV clinical, ethical, and research guidelines; and support HIV and Tuberculosis (TB) programs. CDC plays an essential role in implementing the President’s Emergency Plan for AIDS Relief (PEPFAR).

**Impact in South Africa**

- 4,200 PMTCT sites offer provider initiated HIV counseling and testing and antiretroviral therapy to HIV-infected patients
- Trained more than 2,000 nurses and clinicians to provide integrated HIV and TB screening and treatment in primary health facilities
- Supported the South African National AIDS Council in assuming leadership for Global Fund activities and monitoring the objectives of the National Strategic Plan

**Top 10 Causes of Deaths in South Africa**

1. HIV/AIDS 52%
2. Cerebrovascular disease 5%
3. Ischaemic heart disease 4%
4. Lower respiratory infections 4%
5. Violence 3%
6. Tuberculosis 3%
7. Diarrheal disease 2%
8. Road traffic accidents 2%
9. Diabetes mellitus 2%
10. Chronic obstructive pulmonary disease 1%


**HIV/AIDS**

In December 2010, US Secretary of State Hillary Clinton and the South African Minister of International Relations and Cooperation Maite Nkoana-Mashabane signed a Partnership Framework to codify PEPFAR’s continued support. Under the Framework and working with more than 55 partners, CDC focuses on the following areas in South Africa:

- **Strengthening Health Systems**
  CDC aims to maximize the health impact and host country system efficiencies on the ground. Public health experts from CDC help to identify problems and support the implementation and documentation of solutions that save lives and money. The South African National Health Laboratory Service is supported in delivering effective service to all South Africans. CDC also supports partners to design and implement surveillance systems and surveys and to develop systems to monitor and evaluate HIV and TB prevention, care, and treatment programs. Health management information systems staff work with the host government to develop, implement, and maintain unified health information systems. The African Centre for Integrated Lab Training develops and presents hands-on training courses for front-line laboratory staff from several countries in sub-Saharan Africa, Asia, and the Caribbean.

- **Prevention**
  CDC supports HIV prevention with a comprehensive approach including biomedical and behavior change strategies. Pillars of the program are rapid expansion of medical male circumcision, preventing mother-to-child transmission of HIV (PMTCT), and integrating HIV and sexually transmitted infections programs. Evidence-based strategies ensure favorable health outcomes with sustainable effects on policy and health systems. The counseling and testing program supports a national campaign that aims to test 15 million people.
Tuberculosis (TB) remains one of the world’s deadliest communicable diseases. In 2013, an estimated 9.0 million people developed TB and 1.5 million died from the disease, 360 000 of whom were HIV-positive. TB is slowly declining each year and it is estimated that 37 million lives were saved between 2000 and 2013 through effective diagnosis and treatment. However, given that most deaths from TB are preventable, the death toll from the disease is still unacceptably high and efforts to combat it must be accelerated if 2015 global targets, set within the context of the Millennium Development Goals (MDGs), are to be met.

TB is present in all regions of the world and the Global Tuberculosis Report 2014 includes data compiled from 202 countries and territories. This year's report shows higher global totals for new TB cases and deaths in 2013 than previously, reflecting use of increased and improved national data.

A special supplement to the 2014 report highlights the progress that has been made in surveillance of drug-resistant TB over the last two decades, and the response at global and national levels in recent years. Worldwide, the proportion of new cases with multidrug-resistant TB (MDR-TB) was 3.5% in 2013 and has not changed compared with recent years. However, much higher levels of resistance and poor treatment outcomes are of major concern in some parts of the world. The supplement, Drug Resistant TB: Surveillance and Response, defines priority actions needed, from prevention to cure.

Burden of disease and progress towards 2015 global targets

Improved data give a clearer global picture of TB burden; an acceleration in current rates of decline is needed to meet all targets.

- The data available to estimate TB disease burden continue to improve. In 2013, direct measurements of TB mortality were available from 126 countries and since 2009 there has been an unprecedented increase in the number of direct measurements of TB prevalence from nationwide population-based surveys. Survey results were finalized for five new countries in 2013: Gambia, Lao PDR, Nigeria, Pakistan and Rwanda. When new data become available they can affect global TB estimates for the current year and retrospectively.1

- Of the estimated 9 million people who developed TB in 2013, more than half (56%) were in the South-East Asia and Western Pacific Regions. A further one quarter were in the African Region, which also had the highest rates of cases and deaths relative to population. India and China alone accounted for 24% and 11% of total cases, respectively.

- About 60% of TB cases and deaths occur among men, but the burden of disease among women is also high. In 2013, an estimated 510 000 women died as a result of TB, more than one third of whom were HIV-positive. There were 80 000 deaths from TB among HIV-negative children in the same year.

- An estimated 1.1 million (13%) of the 9 million people who developed TB in 2013 were HIV-positive. The number of people dying from HIV-associated TB has been falling for almost a decade. The African Region accounts for about four out of every five HIV-positive TB cases and TB deaths among people who were HIV-positive.

- The 2015 Millennium Development Goal (MDG) of halting and reversing TB incidence has been achieved globally, in all six WHO regions and in most of the 22 high TB burden countries (HBCs). Worldwide, TB incidence fell at an average rate of about 1.5% per year between 2000 and 2013.

- Globally, the TB mortality rate fell by an estimated 45% between 1990 and 2013 and the TB prevalence rate fell by 41% during the same period. Progress needs to accelerate to reach the Stop TB Partnership targets of a 50% reduction by 2015.

- Two out of six WHO regions have achieved all three 2015 targets for reductions in TB disease burden (incidence, prevalence, mortality): the Region of the Americas and the Western Pacific Region. The South-East Asia Region appears on track to meet all three targets. Incidence, prevalence and mortality rates are all falling in the African, Eastern Mediterranean and European Regions but not fast enough to meet targets.

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1 Currently WHO produces estimates back to 1990 since this is the baseline year for 2015 global targets for TB mortality and prevalence.
“He said that what South Africans should worry about is TB rather than Ebola. People phoned in and attacked the professor and accused him of misleading them or taking them for fools. I am not here to defend Prof Madhi… facts and figures speak for themselves. Since he uttered those words, nobody in SA died of Ebola. But 40 542 people died of TB,” he said
Presentation

• Multiple pleural masses (Patel & Choudhury, 2013)
• Black pleural effusion (Saraya et al, 2013)
Calcified traumatic empyema thoracis
Calcified traumatic left empyema thoracis
Empyema thoracis
Empyema thoracis
Unusual complication of Mycoplasma pneumonia in a five-year-old child.

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Abstract

Mycoplasma pneumoniae is common agent causing community acquired pneumonia in children. However, the course of illness is usually benign and is rarely associated with pulmonary complications. We report a five-year-old child with massive pleural effusion and empyema secondary to Mycoplasma pneumonia infection. This potential yet rare source of infection should be considered in young patients where resolution of symptoms from pneumonia is delayed.

PMCID: PMC3593522 Free PMC Article
Chest X-ray of five-year-old boy showing massive pleural effusion on the right side as a result of infection arising from *Mycoplasma pneumoniae*
Investigations

• Light 2010, Respirology
  – 3-25 % of TB pts will have tuberculous pleuritis
  – fluid cultures +ve for TB in < 40 % of cases
  – ADA > 40 u/L

• Elevated fluid levels of gamma interferon for lymphocytic pleural effusion

• Pleural fluid IL-18 higher in patient with empyema - (Rivonia et al, 2013 -Cytokine)