Bovine Tuberculosis

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M. tuberculosis vs. M. bovis

- *Mycobacterium bovis*
  - Causes TB in cattle
- *Mycobacterium tuberculosis*
  - Causes TB in humans

Compare
  - Transmission
  - Virulence
bTB Transmission to Humans

- Young people – drinking/handling contaminated milk
- Agricultural workers – inhaling cough spray from infected cattle → typical pulmonary TB
- Old people – reactivation of dormant lesions
Human Cases due to *M. bovis*

- 3.1% of all forms of TB
- 2.1% of pulmonary forms
- 9.4% of extrapulmonary forms
Risk Factors: Animal Population

• Animal reservoirs
  – Farm/wild + domestic animals

• Milk production & animal husbandry

• Control measures and programs
  – Known, but not applied:
    financial constraints, scarcity of trained professionals,
    lack of political will, underestimation of bTB
    importance
  – Economic costs
Risk Factors: Human Population

- Close physical contact
- Food hygiene practices
  - Milk
- HIV/AIDS
  - *M. bovis*'s intrinsic drug resistance
  - 3 concerns from Paris
Control Measures/Programs

• Test-and-slaughter programs
  – Eliminate bTB if no other reservoir host
  – Less practical in developing countries
  – Appropriate: low bovine TB & effective control of animal movement

• Prevent transmission of infection
  – Primary objective
Vaccination

• Vaccination of animals against TB
  – Domesticated in developing
  – Wildlife or feral in developed where T&S failed

• To reach realistic option of control....
  – Vaccine
  – Delivery
  – Diagnostic tests
  – Evaluation
bTB in Developing Countries

- 25/55 countries report low occurrence of bTB
- 7 apply disease control measures & consider bTB notifiable disease
- 48 inadequate or absent control
- 85% cattle & 82% human population in Africa are in areas where bTB is either partly/not controlled
bTB as Public Health Threat

• Industrialized vs. developing countries

• Factors
  – Control measures
  – Milk pasteurization
  – HIV+TB dual infection
Need More Info On

• Prevalence of human TB of bovine origin – largely undocumented

• Occurrence & distribution of TB in cattle & other animals

• Occurrence, extent & mode of interspecies transmission of disease in pastoralist communities with high HIV rates
More Practical Control Measures

• Better understand epidemiology of *M. bovis* infection & disease in developing countries → area-specific public health measures

• Eradication of cattle TB *or* protection of cattle from TB (e.g. by vaccination) in developing countries