A conversation on TB and scientific knowledge

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• What is TB and how is it treated?
• What is TB risk?
• Can we hold people liable for transmission?
• What role does isolation play in treatment?
What is TB?
Where is TB?
What types of TB are there?

Latent  Active
How is TB transmitted?
How is transmission prevented?

- Administrative
- Environmental
- Personal Protective equipment
- Treatment
  - Curative
  - Preventive
  - Comorbid conditions eg HIV & diabetes
How do we test for TB?
How is TB treated?
How is TB treated?
What is the TB drug pipeline?

Discovery
- Presumed novel targets
  - DprE inhibitors
  - InhA inhibitors
  - LeuRS inhibitors
  - Mycobacterial gyrase inhibitors
  - Translocase 1 inhibitors

Preclinical development
- Early-stage development
  - TBI-166*
  - CPZEN-45†
  - SQ609†
  - 159g‡
  - SEQ-9‡
- Toxicity assessment
  - BTZ-043†
  - PBTZ169§
  - TBA-7371‡
  - GSK-070‡
- Phase I
  - Q203‖
  - Sutezolid‖
  - Linezolid‖
  - High-dose rifampicin‡
    for drug-sensitive TB
  - Bedaquiline**
    for pretomanid‡
    for pyrazinamide§§ regimen
  - Moxifloxacin¶¶ regimen
  - Levofloxacin¶¶ with OBR for MDR-TB

Clinical development
- Phase II
  - Rifapentine‡–moxifloxacin¶¶ for drug-sensitive TB
  - Delamanid†† with OBR for MDR-TB
  - Pretomanid‡‡–moxifloxacin¶¶–pyrazinamide§§ regimen
    (STAND trial)
  - Bedaquiline**–pretomanid‡‡–linezolid‖ regimen (Nix-TB trial)
  - Bedaquiline**–STREAM regimen
    with OBR with oral drugs
    (9 months) or with OBR with injectable drugs
    (6 months)
  - Bedaquiline**–linezolid‖ with OBR for MDR-TB (NExT trial)

Pai, M. et al. (2016) Tuberculosis

* Nature Reviews | Disease Primers

** Nat. Rev. Dis. Primers doi:10.1038/nrdp.2016.76
Treating drug sensitive TB

• Rifampicin
• Isoniazid
• Pyrazinamide
• Ethambutol
Treating drug resistant TB

- Rifampicin
- Isoniazid
- Pyrazinamide
- Ethambutol
- Kanamycin
- Moxifloxacin
- HD isoniazid
- Prothionamide
- Clofazimine

MULTI-DRUG RESISTANT (MDR-TB)
DR-TB Drug Side Effects

- Vomiting
- Diarrhea
- Ear pain
- Thyroid gland

Images of these side effects are shown along with icons representing each symptom.
Treating drug resistant TB

- Rifampicin
- Isoniazid
- Pyrazinamide
- Ethambutol
- Kanamycin
- Moxifloxacin
- HD isoniazid
- Prothionamide
- Clofazimine

MULTI-DRUG RESISTANT (MDR-TB)

EXTENSIVELY DRUG RESISTANT (XDR-TB)
Treating XDR-TB

- Rifampicin
- Isoniazid
- Pyrazinamide
- Ethambutol
- Kanamycin
- Moxifloxacin
- HD isoniazid
- Prothionamide
- Clofazimine

EXTENSIVELY DRUG RESISTANT (XDR-TB)
Treating XDR-TB

- HD isoniazid
- Prothionamide
- Clofazimine
- Linezolid
- Bedaquiline
- Delamanid
- Pretomanid
273 cases
172 went home
104 had a bad outcomes
90 were investigated thoroughly
  - 17 household contacts developed XDR disease
  - 10 died
81% of people with DR-TB don't get effective treatment. Of the 19% that do, only half are cured. We need better treatment now.
QUESTIONS?