Emerging resistance to novel anti-TB drugs: Indian Experiences

Dr. Sachin Atre

Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pune INDIA

Columbia University, New York

20th and 21st March 2024

Emerging resistance to novel anti-TB drugs

- HaystackAnalytics study based on Whole Genome Sequencing of samples from patients who had RR/MDR-TB (treatment non responders, contacts of RR-TB) in 600 samples (Accepted for publication in Microbiology spectrum)

Resistance observed

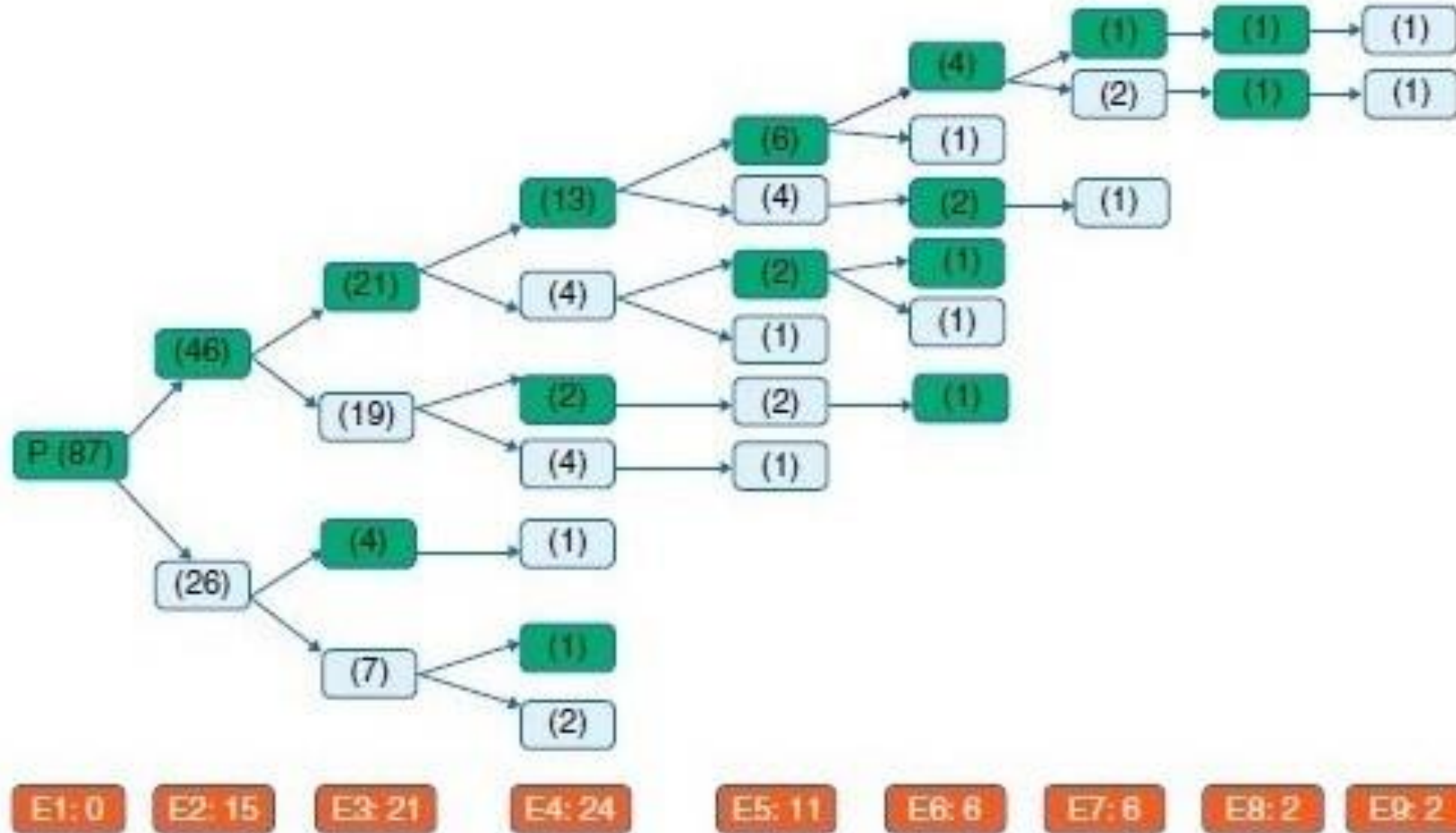- Bedaquiline: 1%

- Linezolid: 7.5%

- Delamanid: 0%

Proportion of patients with Pre-XDR-TB: 51%

Emerging drug resistance: areas to consider

- Private health care providers
- NTEP/public sector providers/program staff
- Patients
- Bacteria

Pathways to MDR-TB care (Source: Atre et al. 2022, AJRCCM)

**A**   First encounter in the private sector

Private Providers

- 60-70% patients approach to private sector as the first point of help-seeking and often results in delays in diagnosis

- Lack of awareness about Xpert assay (Of 100 private providers only 54% mentioned about Xpert to be used as point of care test to detect RR/MDR-TB)

- Lack of suspicion and training in managing drug resistant cases, medicopluralism (co-existence of different systems of medicine)

- Lack of communication with patients

- Inappropriate prescriptions, Inappropriate splitting doses

- Provider reluctance for referral to the NTEP (loss

NTEP

B First encounter in the public sector (NTEP)
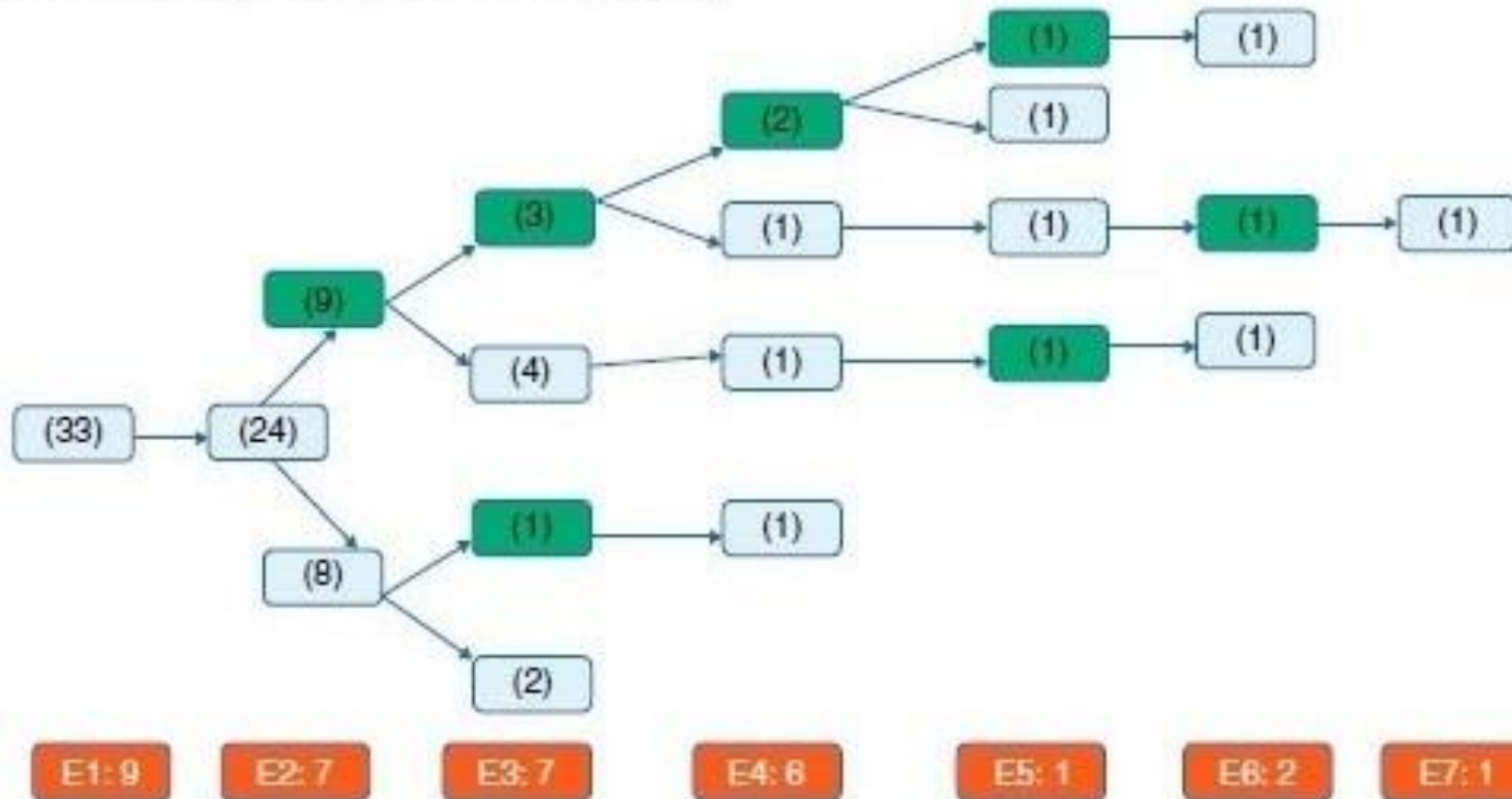
NTEP/public health system

- Stigmatizing behavior toward patients, prompting them to discontinue treatment or shop around at different providers

- Standardized treatment despite low cure rates (55-58% among MDR/XDR-TB cases)

- Lack of support to handle side-effects of medicines, mental health issues etc.

- Lack of pharmaceutical regulations

- Unwillingness to adapt new technologies like WGS

- Accurate records of medicine dispensing are lacking, patients receive inadequate or sometimes excess amount of medicines

Patients

- Social stigma: Delayed help seeking, hiding condition from others

- Lack of knowledge about medicine consumption

- Premature discontinuation of treatment (Early symptomatic relief, no symptomatic relief, lack of food or finances, shopping around for treatment

- Poverty, lack of food

-Patients reported that they experience gastritis. Many patients do not get sufficient food, so they think why to increase the appetite when there is no food available.

- Direct Benefit transfer (DBT) scheme

As per the NTEP guidelines, each patient is offered a help of INR 500 ($6) per month (for grocery), but nearly 30% patients are alcoholics and generally spend money on liquor purchase. They do not buy food from that money.

Bacteria

- Transmission of resistant strains
- Virulence (e.g. Beijing is associated with high level of MDR/Pre-XDR-TB)
- Mutations

Other factors causing emergence anti-TB drug resistance

- Milk containing products has Calcium, which decreases the absorption of Fluroquinolones

-Lack of awareness about the guideline among clinicians

-Lack of communication with patients

-Traditional practices of consuming medicines with milk prevail in the community.