Case study #1: Tuberculosis

Activity 1: "Using genomics for TB"

Room logistics
Easel with butchers' paper for note taking.

Slide deck will show a QR code, which links to a google drive containing the different scenarios.

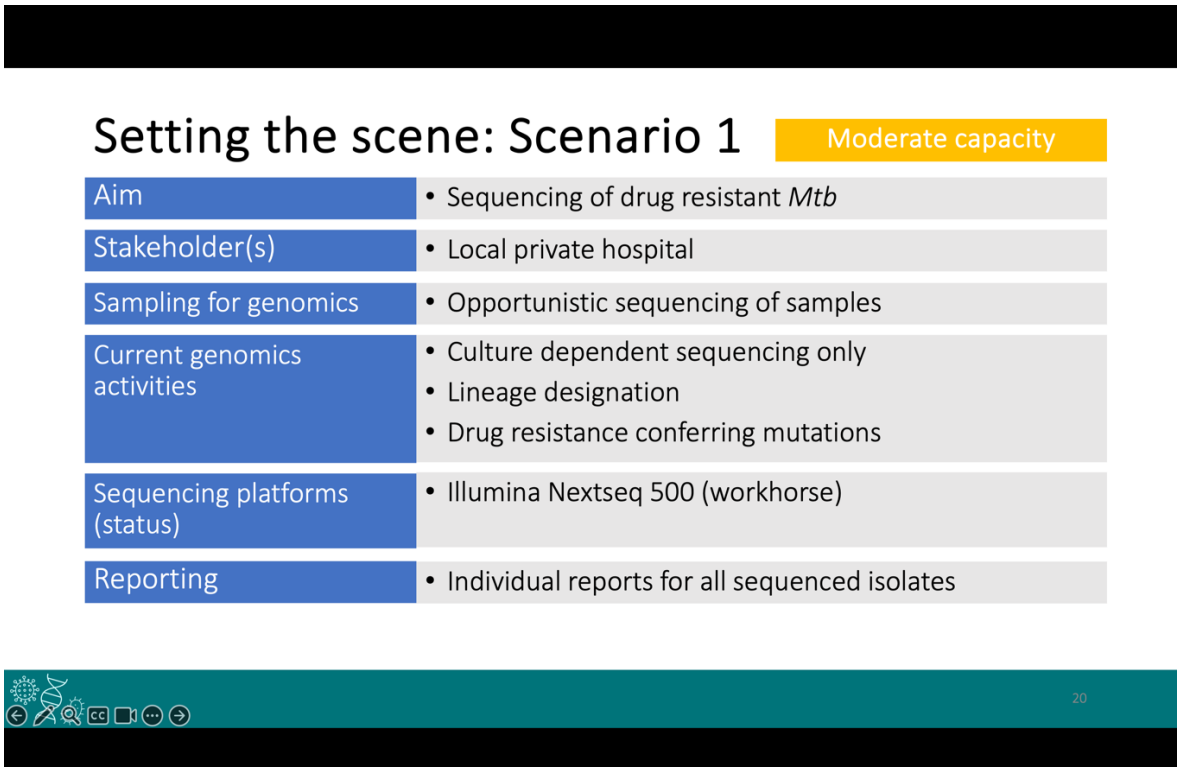
Activity brief
All scenarios will have the same core **five** questions.

- Does current sampling strategy support their goals?
- Do current sequencing activities support their goals?
- Is there a pathway to expand the current scope of TB genomics activities?
- If there is a pathway to expand, consider what will be required for it to be sustainable?
- Are current reporting pathways adequate? is there a need to enhance it?

In addition to these five questions- each case also come with "secret-expansion-styled" question(s).

These questions could come naturally to the group, but it can also be prompted by the facilitator.

Background – Scenario 1

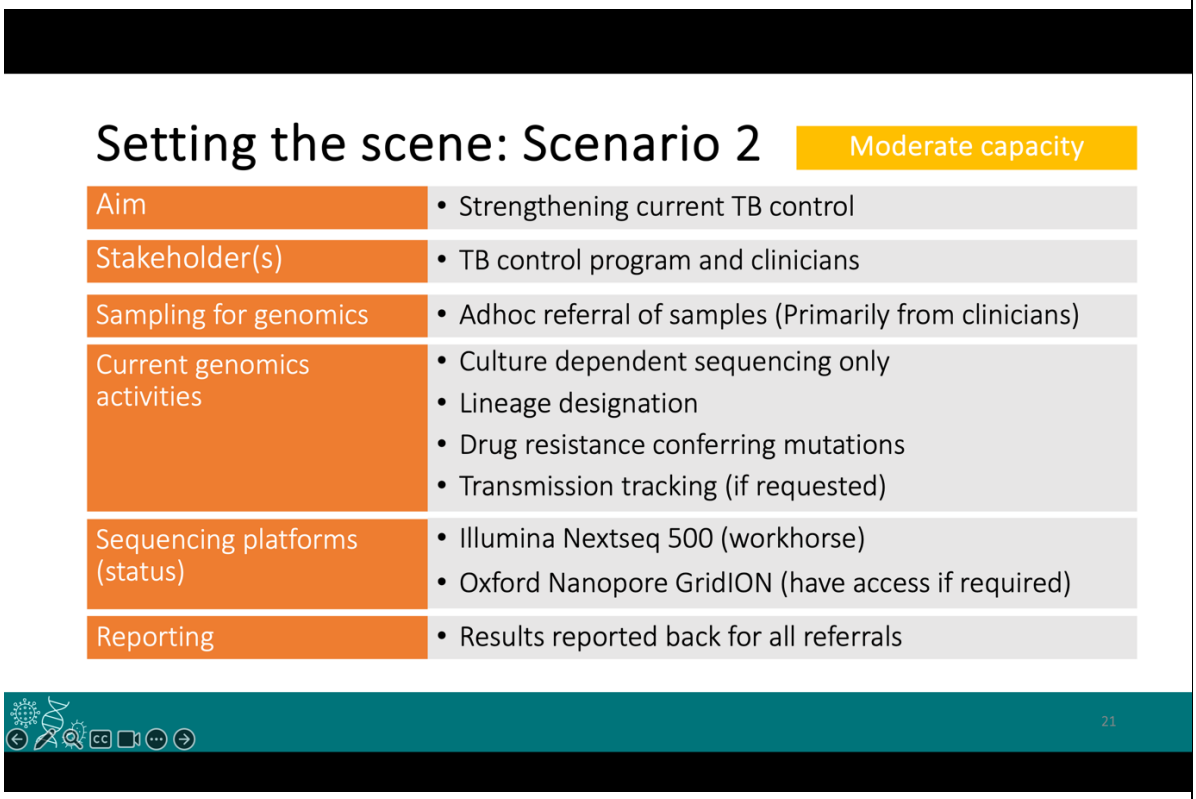


"Secret-expansion-styled" question

- Stakeholder is limited in this context- should TB program be included as a stakeholder.

- If expanded- what additional considerations should also be considered to make it sustainable?

Background – Scenario 2



"Secret-expansion-styled" question

- As access to both illumina and ONT is available- and due to the samples coming primarily from clinicians, should tNGS be pursued?

- If tNGS are to be pursed- what considerations are required to make it sustainable?

Background – Scenario 3

Setting the scene: Scenario 3

High capacity

Aim	• Elimination of local transmission
Stakeholder(s)	• TB control program and pathology services
Sampling for genomics	• All culture confirmed, per episode, sequenced
Current genomics activities	• Culture dependent sequencing only • Lineage designation • Drug resistance conferring mutations • Transmission tracking and genomic surveillance
Sequencing platforms (status)	• Illumina Nextseq 500 (workhorse) • Oxford Nanopore GridION (have access if required)
Reporting	• Weekly reports to TB control program and pathology network

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"Secret-expansion-styled" question

- As access to both illumina and ONT is available, should tNGS for DR-Mtb diagnostic purposes be pursued?

- If tNGS is to be pursed- (1) what considerations are required to make it sustainable? (2) Is current reporting adequate if tNGS is to be used for DR-Mtb testing

Background – Scenario 4

Setting the scene: Scenario 4

High capacity

Aim	• Local TB elimination
Stakeholer(s)	• TB control program and pathology services
Sampling for genomics	• All confirmed cases, regardless of clinical episodes
Current genomics activities	• Culture dependent sequencing & tNGS • Lineage designation • Drug resistance conferring mutations • Transmission tracking and genomic surveillance
Sequencing platforms	• Illumina Nextseq 500 and Oxford Nanopore platforms
Reporting	• Weekly reports to TB control program for culture dependent sequencing. • tNGS reports within 24 hrs of end of sequencing run.

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"Secret-expansion-styled" question

- Is the sampling strategy cost efficient?
- What would sequencing everything add value to Tb elimination?

Activity2: “Closer to home”

Room logistics

Slide deck will show a QR code, which links to a google drive containing the different scenarios.

No need for easel with this one.

Activity brief

- Fill up the pathogen priority toolkit for *Mycobacterium tuberculosis*.

- Reflect on your current country’s current capacity.

- Consider the possible implementation steps for the integration of genomic sequencing into your country’s TB control program.

Prompts for activity

Before start

- Ensure at least one person per country download the WHO TB app

During activity:

- For R0 to be filled, refer to the slide with the multiple R0 values.
- Let participants consider their local TB epi scenario and choose the most appropriate to what they think is true for their case.
- Prompts for capacity (infrastructure) are as follows:
    - Industry partners
    - Sequencing capacity: in-house or outsourced?
    - Supply chains
    - Computational power
    - People power