

BACKGROUND

- In 2018, 1.5 million deaths were attributed to tuberculosis (TB), which was more than any other single infectious disease
- Drug-resistant TB has increased in prevalence over the years, and strains resistant to all forms of treatment have begun to emerge across the globe
- There is a lack of agreement of how to classify this form of TB
- The cost of creating a new antibiotic is estimated to be as high as \$2.5 billion US

METHODS

- Literature search conducted in PubMed and Scopus
- Terms included those in table 1, as well as those terms regarding risk factors
- Articles excluded if:
 - not in English
 - published before June 2010
 - does not use one of the terms listed in Table 1
 - has less than 10 patients with resistance to all forms of treatment/ less than 10 patients with a poor treatment outcome (failure, default, or death) despite having been on a treatment regimen

Table 1: Terms used in the literature for most resistant forms of TB

Term	Associated abbreviations
Extensively drug-resistant tuberculosis	XDR-TB, XDRTB, XDR TB
Extra extensively drug-resistant tuberculosis	XXDR-TB, XXDRTB, XXDR TB
Extremely drug-resistant tuberculosis	XDR-TB, XDRTB, XDR TB, XXDR-TB, XXDRTB, XXDR TB
Incurable drug-resistant tuberculosis	Incurable DRTB
Incurable tuberculosis	None
Pan drug-resistant tuberculosis	PDR-TB, PDRTB, PDR TB
Pan-resistant tuberculosis	None
Super extensively drug-resistant tuberculosis	SXDR-TB, SXDRTB, SXDR TB, Super XDR-TB, Super XDRTB, Super XDR TB
Total drug-resistant tuberculosis	TDR-TB, TDRTB, TDR TB
Totally drug-resistant tuberculosis	TDR-TB, TDRTB, TDR TB
Untreatable drug-resistant tuberculosis	None
Untreatable tuberculosis	None

OBJECTIVE

Considering the enormity of the threat of incurable drug-resistant tuberculosis, there is an urgent need to understand what places individuals at-risk for this disease.

My primary research question was: **What are the risk factors for incurable drug-resistant tuberculosis?**

RESULTS

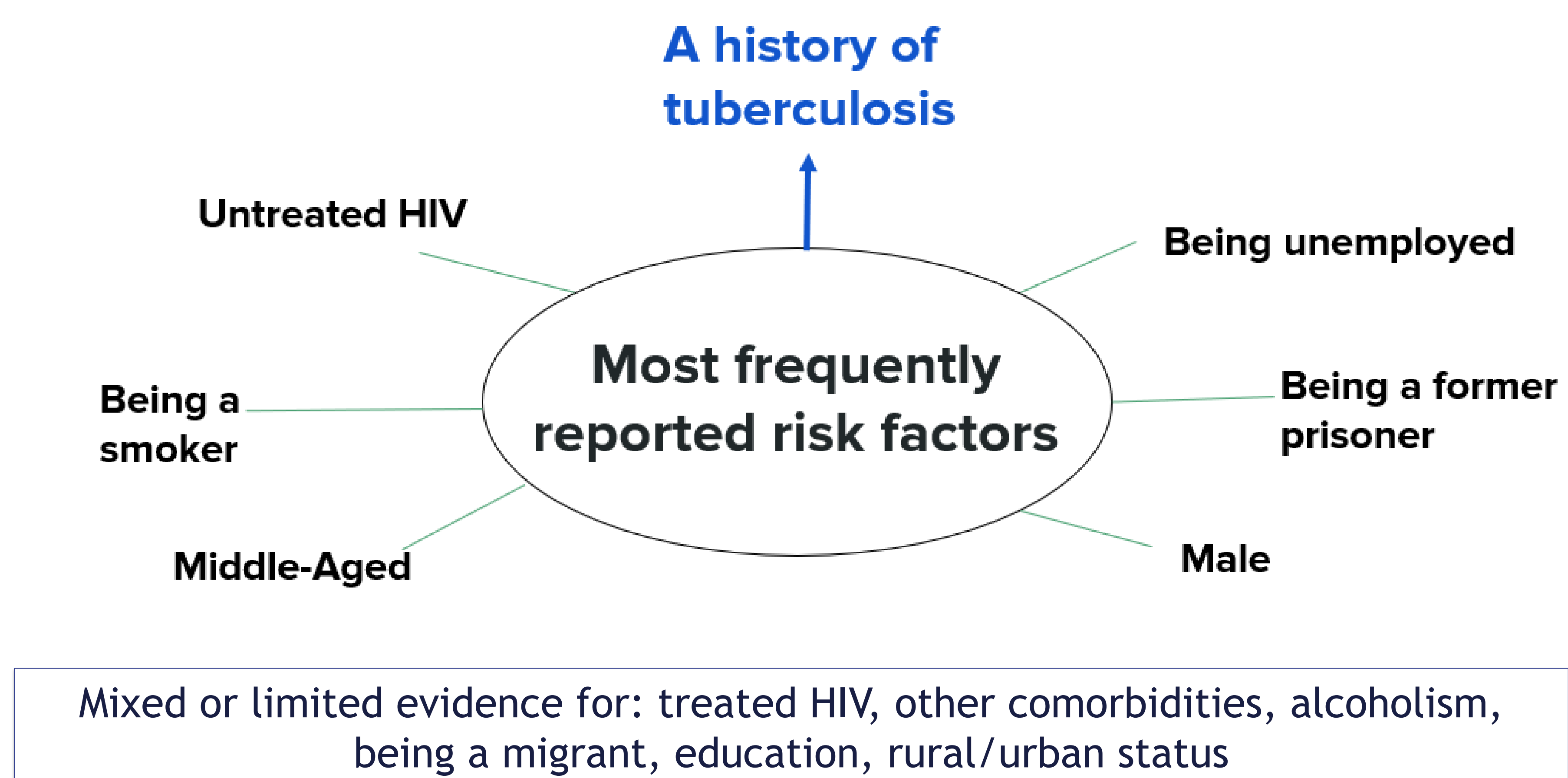
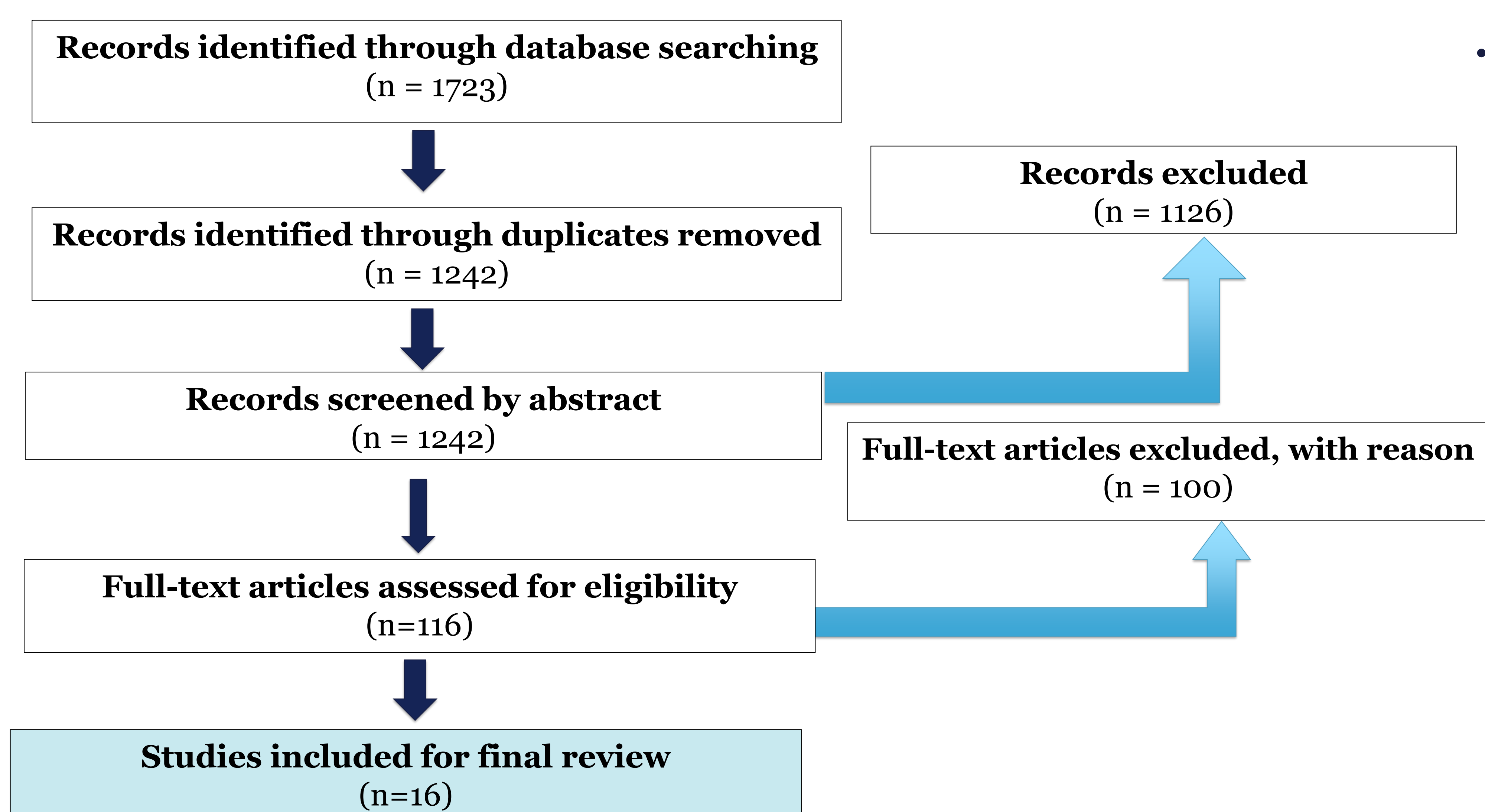


Figure 1: Workflow diagram



16 Studies from 11 countries:
5 from South Africa, 4 from China, 2 from Latvia, 1 from: India, Pakistan, Russia, Brazil, Lithuania, Estonia, Romania and Georgia

DISCUSSION

- The fact that all 16 studies had individuals with incurable drug-resistant TB who previously underwent treatment for TB indicates that **there is a dire need to increase patient adherence to TB treatment.**

This will require:

- Scaling up of currently existing TB treatment-programs
- Linking mental health care with TB treatment programs
- Removing financial and logistical barriers for patients
- Stigma-reduction campaigns
- Prevention of incurable drug-resistant TB will also require:
 - Linking HIV care with TB care for co-infected patients
 - Increasing access to TB treatment in prisons, and ensuring that prisoners remain on treatment after being released.
 - Raising awareness about the link between smoking and tuberculosis mortality

- Additional recommendations:

- More studies to determine if comorbidities (other than HIV) increase risk
- More studies on incurable drug-resistant TB to be conducted in Russia & India: 2 countries with some of the highest rates of DR-TB
- More standardization in the literature through consistent usage of the following 2 terms & abbreviations to describe the highest levels of drug-resistance:
 - Extra-extensively drug-resistant tuberculosis (XXDR-TB)**
 - Incurable drug-resistant tuberculosis (IDR-TB)**

Limitations: There was only a single reviewer, with only 2 databases searched. Furthermore, inconsistencies of reporting of results in studies led to issues in making comparisons between studies. Lastly, there were difficulties in determining temporality for many modifiable risk factors.