PROJECT SNAPSHOT

3D: Lineage Analysis of Clinical Isolates of Mycobacterium tuberculosis in Alberta

Pillar: Surveillance

Theme: Policy, Economics & Sustainability

Keywords: Tuberculosis; Drug Resistance; Epidemiology

AMR One Health Consortium

PRINCIPAL INVESTIGATOR: Gregory J. Tyrrell, PhD, FCCM, D(ABMM)

CO-INVESTIGATOR(S): Linda Chui, PhD; Ryan Cooper, MD.

AIM

The project focuses on determining the global lineage of TB cases that have occurred in Alberta from 2013 to current. Emphasis will be placed on those TB isolates that display drug resistance.

WHY IS THIS IMPORTANT?

Alberta is experiencing increases in drug resistant TB. Greater than 90% of TB cases occur in the foreign born suggesting Alberta experiences a high rate of imported TB. We do not know what lineages of TB constitute our greatest numbers of cases or which lineages are contributing to the highest rates of drug resistant TB in Alberta.

OUTCOMES

It is expected that specific lineages will be identified that have a higher antimycobacterial drug resistance than others. The data generated will allow Alberta to actively be a part of the global TB community through providing a clear understanding of what TB lineages are affecting Albertans.

RESEARCH QUESTIONS

1. What TB lineages are present in Alberta?
2. What are the predominant TB drug resistant lineages?
3. Are there unrecognized TB clusters in Alberta and are they drug resistant?
4. Where else do the lineages seen in Alberta appear globally?

OUR APPROACH

TB isolates will be analyzed and the resulting data will be used to identify global lineages of TB. We will initially focus on understanding the lineages of drug resistant TB. Major and minor TB lineages will be identified using on line TB lineage analysis tools. In addition, all drug resistance data will be accessed through the APL-Public Health and drug resistant lineages identified. This data will be linked to clinical presentation of cases.

ALIGNMENT WITH THE AMR - ONE HEALTH CONSORTIUM

LEVERAGED SOURCES OF SUPPORT

Alberta Precision Laboratories • National Microbiology Laboratory

KNOWLEDGE & TECHNOLOGY EXCHANGE AND EXPLOITATION

- The knowledge learned from this work will be used by physicians in TB Services who care for TB patients as well as the National and Global TB communities with respect to understanding how TB in Alberta relates to the rest to the world.

TRAINING OF HIGHLY QUALIFIED PERSONNEL

- 0.5 Postdoctoral Fellow (will also be linked with the Provincial antibiogram program)

AFFILIATIONS: University of Alberta • Alberta Precision Laboratories – Leaders in Laboratory Medicine • Alberta Health Services

Alberta Government

CONTACT INFORMATION: Greg Tyrrell (gjt@ualberta.ca)