Practical 2: Compartmental Models to Equations

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# Learning Objectives

1. How to translate a simple model flow diagram into equations
2. Understand how changing parameter values can change model dynamics
3. Using a simple model scaffold to develop a more complex model

# Timeline for Session

1. Set up (5 minutes)
2. Explore the dynamics of a simple SEIR model (10 minutes)
3. Add high and low risk latency to a SEIR model (10 minutes)
4. Explore model dynamics (10 minutes)
5. Extension: Translate your Model Flow Diagram to Equations (20 minutes)
6. Extension: Explore the parameter space of multiple models (20 minutes)(If having trouble with the previous excercises then skip to this point for an R free exercise)
7. Session wrap up (10 minutes)

# Excercises

## A Simple SEIR Model of TB

### Populations and Initialisation

### Parameters

### Equations

### Simulate and Summarise

### Explore

* What impact does varying parameters have?

## Add High and Low Risk Compartments

* outline simple model function with text indicating where solution should go
* code to plot model etc

## Extension: Translate your Model Flow Diagram to Equations

* basic model outline
* suggestions for order in which to add complexity

## Extension: Explore the Parameter Space of Multiple Models

* link to shiny app
* help with shiny app
* question ideas

# References