**Model Compartments**

1. Susceptibles (S)
2. Exposed (E)
3. Infectious pre-symptomatic (IP)
4. Infectious Asymptomatic (IA)
5. Infectious Mild (IM)
6. Infectious Severe/Critical (IC)
7. Ascertained (A)
8. Recovered (R)

IP

IC

IM

S

R

A

E

Infectious

Infection

Severe infection

Recovery

Death

Asympt infection

Ascertainment

Ascertainment

Ascertainment

Ascertainment

Mild symptoms

Recovery

Recovery

IA

Death

Recovery

**Model assumptions**

* Only individuals with severe infection die due to infection (Ascertained or not)
* Different recovery rates based on infection status
* Different rates of infection for asymptomatic and pre-symptomatic
* Individuals are pre-symptomatic before developing mild symptoms and then can develop severe infection
* Ignoring natural birth and death rates
* Recovery with immunity:- no re-infections
* All ascertained individuals are in the same class (We may need to subdivide this class to account for differences in disease status). In the meantime, our priority is to reduce their contribution in the force of infection.

**Next steps**

Draw a flow diagram for the observation process (s).