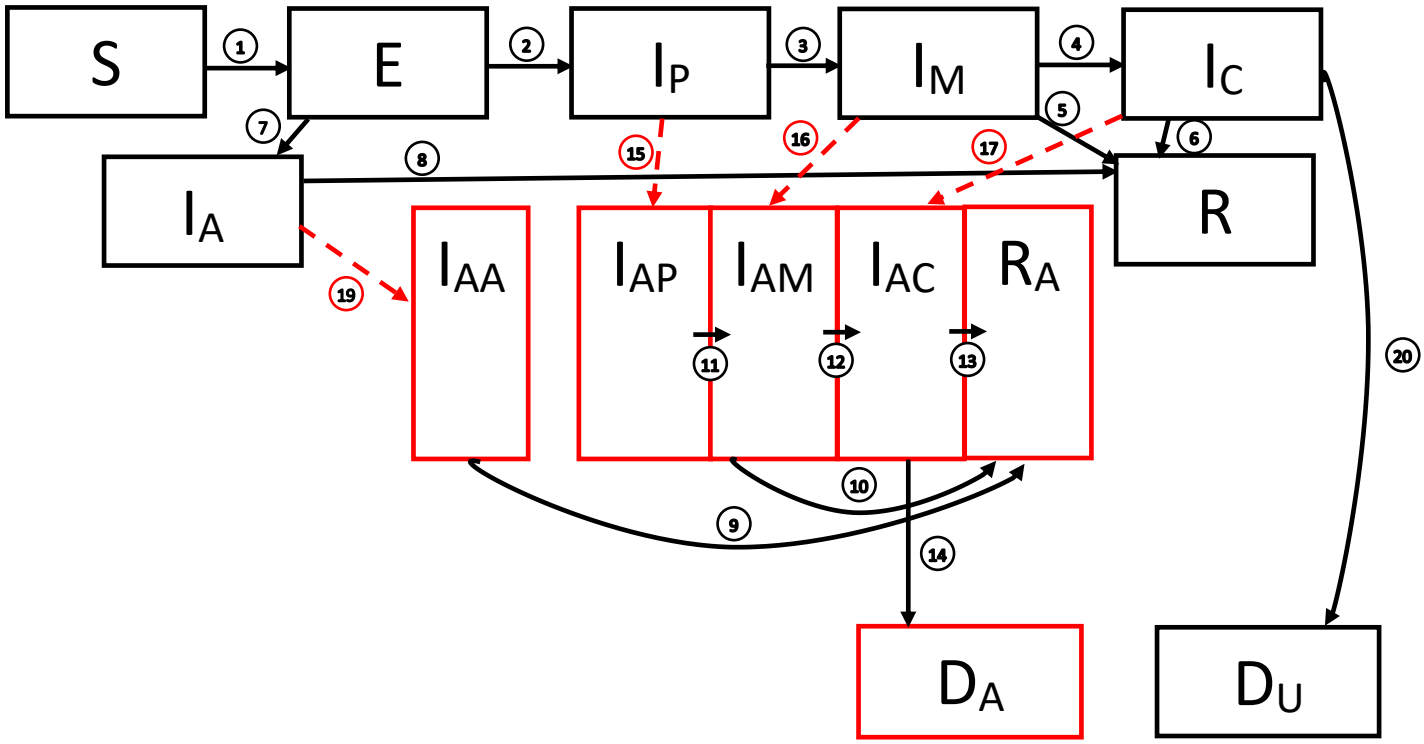
Model Compartments

S - Susceptible
E -Exposed
I_P - Infectious Pre-symptomatic
I_A - Infectious Asymptomatic
I_M - Infectious Mild
I_C - Infectious severe/Critical
I_{AP} - Ascertained Infectious Pre-symptomatic
I_{AA} - Ascertained Infectious Asymptomatic
I_{AM} - Ascertained Infectious Mild
I_{AC} - Ascertained Infectious Severe/Critical
R_A - Ascertained Recovered
R_U - Un-ascertained Recovered



"Equations"

Disease process is the usual, plus some reduction in force of infection from Ascertained people

15-19 (with corrections): fixed proportion of entire non-recovered population (including S and E)

Sdot =

1: S * lambda

2: (1 – F_s) sigma E

7: F_s sigma E

F_s = fraction asymptomatic

Model assumptions

- Some infections are completely asymptomatic.
- "Symptomatic" infections begin without symptoms (I_P), then progress to mild symptoms (I_M). Some infections progress to severe symptoms, while others recover*.
- Only severe/critical infections die from Covid.
- Recovery with full and lasting immunity.

Rough sketch of alternative formulation: