Variables in both settings (3 x 4 x 4 = 48)

R0 = (1.5, 2.5, 4)

IFR = (0.1, 0.5, 1.0, 2.0)

Income group = (HIC, UMIC, LMIC, LIC) – modifies demographics, mixing pattern and hospital/ICU availability

Fixed Parameters

Pan sarbecovirus vaccine:

* Efficacy against hospitalisation/death = 80%
* Efficacy against infection = 35%

SARS-3 vaccine:

* Efficacy against hospitalisation/death = 90%
* Efficacy against infection = 55%

Vaccine uptake = 80%

Vaccination prioritised to 60+ age-group and then rolled out to 15-59 age-group.

2% of population vaccinated weekly

Short (1 day) from vaccination to protection (to avoid issues with dynamics).

Vaccine duration = 5 years (to avoid second waves)

Duration of immunity = 5 years (to avoid second waves)

IFR distribution weighted towards elderly (similar to SARS-1 and SARS-CoV-2)

Emergence Assumptions (Country A)

day 1 = introduction of initial case (spillover)

timing1 = introduction of NPIs at either 30, 60 or 90 days (=detection time)

NPIs reduce Rt to 1.1

Lift NPIs when elderly population is vaccinated (with either vaccine) or in non-vaccine scenario after 30 days.

vaccine\_1\_start (pan sarbecovirus) at detection (i.e. 30, 60 or 90 days)

vaccine\_2\_start (SARS-3) 100 days following detection (i.e. at 130, 160 or 190 days)

Secondary Assumptions (Country B)

*Code: initial case on day 1, Rt1 = 1.0 until introduction then reverts to R0 until detection*

timing1a = day of importation at either 20, 50 or 80 days

timing 1b = day of detection – assumed to be 30 days after 1st importation (50, 80 and 110 days respectively), introduce NPIs

NPIs reduce Rt to 1.1

Lift NPIs when elderly population is vaccinated (with either vaccine) or in non-vaccine scenario after 30 days.

vaccine\_1\_start (pan sarbecovirus) at 30 days