1 Priors for parameters

The best priors for the age independent rates we could find for SEAI8R are (in units of [1/day])

$\gamma_E = 1/2.72$ from exposed to activated 95% CI: 1/2.55 1/2.89

$\gamma_A = 1/3.12$ from activated to infected 95% CI: 1/(2.08) 1/(4.16)

$\gamma_{Ia} = 1./7$ recovery rate of asymptomatic infectives (Can't really find a source for this beyond conventional wisdom)

$\gamma_{Is} = 1./4.82$ from symptomatic to hospitalised 95% CI: 1/3.487 1/6.157

$\gamma_{Is} + \gamma_{Isp} = 17.76$ from symptomatic to recovered, this value is very suspect and should be updated 95% CI: 12.64 22.87

$\gamma_{Ih} + \gamma_{Ihp} = \ln(2)/10$ from hospital to recovered/leaving hospital (IQR $\ln(2)/7.0$ $\ln(2)/14.0$)

$\gamma_{Ih} = 1/5.66$ from hospitalised to ICU 95% CI: 1/4.18 1/7.14

$\gamma_{Ic} = 1/4$ from ICU to recovered/leaving ICU IQR (1/3, 1/5)

$\gamma_{Ic} + \gamma_{Icp} = 1/5.45$ from ICU to death 95% CI: 1/(2.20) 1/(7.65)

1.1 Sources

These are the sources of some of the priors we use.

Transmission interval estimates suggest pre-symptomatic spread of COVID-19 -source of why we think presymptomatic spreading exists and γ_E

Epidemiological Characteristics of COVID-19; a Systemic Review and Meta-Analysis source of γ_A, γ_{Ia}, γ_{Is},γ_{Ih}, γ_{Ic} and $\gamma_{Is}(1-hh)+\gamma_{Isp}$. This γ_{Is} probably isn't the one we should be using but it is the best we found for now.

Epidemiological characteristics of COVID-19 cases in Italy and estimates of the reproductive numbers one month into the epidemic This paper is one of our sources for the data in the accompanying ipython notebooks for hh,cc,mm and alpha.

ICNARC report on COVID-19 in critical care for $\gamma I_c + gI_{cp}$

Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coro-

navirusInfected Pneumonia in Wuhan, China for $\gamma_{Ih} + \gamma_{Ihp}$

Immunity paper This seems to indicate roughly a third of mild cases develop a very weak immunity

SusceptibilityThis indicates younger people are less susceptible. Roughly by two thirds less susceptible and it more or less goes to a constant by age 30.