Latest discussion:

* 1.) If we assume that both vaccination and previous infection gives the same protection you can just keep one parameter. If not, we need two
* 2.) Since they have a shorter duration of the disease, they are less likely to infect other individuals later in their infectious period. The next step is to include two other parameters: one that accounts for the vaccine effectiveness agains susceptibility to infection and one for the vaccine effectiveness against infectiousness. After doing that, we can run some simulations and see how the spreading dynamics change (varying also the contact reduction for the vaccinated and unvaccinated groups).
* There are contradictory study about whether vaccinated and unvaccinated have the same viral peak. What I suggest to do is just to represent the infectiousness measures with VL data, and add a parameter to represent possible different infectiousnesses

Tasks to do:

* 1.) Add a variable “Vaccinated” to status.matrix - if equal 1 the individual is vaccinated/immune 0 not
* 2.) when computing acc.rate, distinguish if the infector is vaccinated or not, and select the respective infectious measure
* 3.) Update the incubation period such that it returns the day at which the infectious measure peaks (distinguish also here between vaccinated and unvaccinated)

Some notes

* We are now assuming that the length of the infectious period depends only on the vaccination status (i.e., all the vaccinated have the same IP, and all the unvaccinated the same. But the IP of vaccinated is different from the one of unvaccinated). Therefore, we do not need to use that function anymore
* Yes, what you can do is to always use infectious.period.length but to make this function depend on the vaccination status. So, for example you add status.matrix as an input argument, and within the function to write an if cycle in which you check whether and individual is vaccinated (if (status.matrix$Vaccinated==1) {….})

Discussion 22/10/28

Discussion content:

* assign 10.7 days for vaccinated and 12.7 days for unvaccinated. Individuals can spread the infection when the infeMeasure is bigger or equal than zero (if zero each contact will not lead to transmission). So you can pick as the end of the infectious period, the biggest time since infection for which the infectiousness measures is positive
* In fact, when establishing the probability that a contact is effective, you check whether the potential infector is vaccinated or not. Therefore, you are incorporating an effect of vaccination against infectiousness
* If you want to, you might also add a value representing **the vaccine effectiveness against susceptibility to infection**. In this case, you should **check whether infectee is vaccinated when computing the probability that a contact is effective**
* The incubation period: In the case we are looking into, each vaccinated (or unvaccinated) has the same length of the infectious period, and so the same incubation period. You can also just **return 5.2 days**, because all the viral progression are the same, so the incubation period is always the same
* Try to run some other simulations and to **make an online document** summarizing what you have been doing to keep track of the progress and decide next steps [**be really schematic (do not write a lot**)]
* For the acc.rate you are just considering the effect of vaccination on infectiousness. The issue with this is that you simulate a contact between a potential infector that is unvaccinated and a potential infectee (that is vaccinated) you do not account for the effect of vaccine (because you just look at vaccination status of infector).
  + If you want to keep just one value, I would propose that you check whether either the infector or the infectee is vaccinated, and if so add the (1-vacc.eff).
  + To do so what you can potentially do is to add this at line 185 (inside the else):
* if (status.matrix$Vaccinated[infecee]==1){
  + acc.rate<-nCov.InfMeasure.unvacc(t=current.time-status.matrix$time.of.infection[infector])\*inf.ctc\*(1-vacc.eff)
  + }

To do list:

* Account for the vaccine effectiveness against susceptibility to infection when computing acc.rate
* Infectious duration: assign 10.7 days for vaccinated and 12.7 days for unvaccinated
* The incubation period: both are 5.2 days