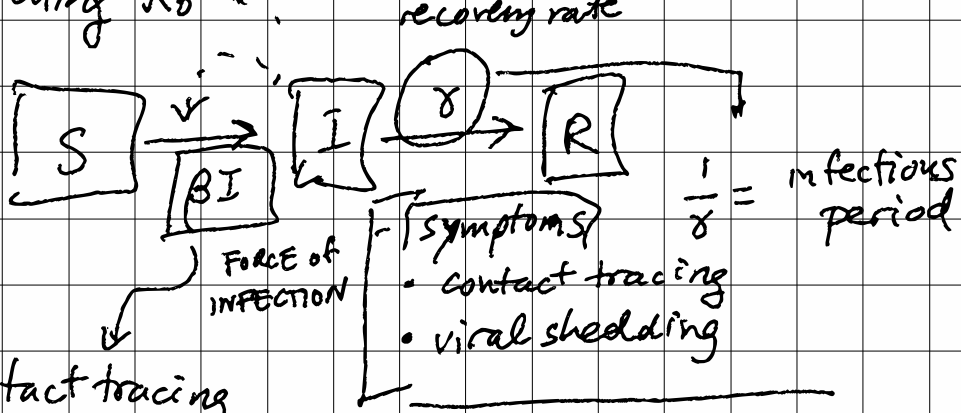
28 Jan 2022

"so what?"
"how do we know?"

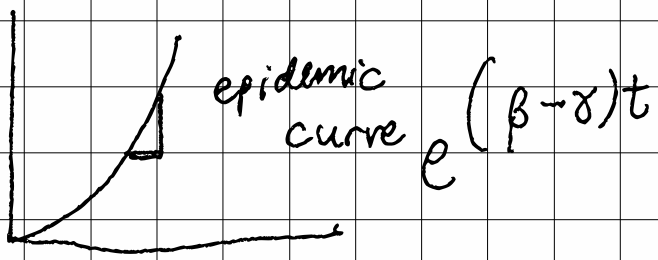
→ how many people are going to get infected?
What do I have to control the epidemic?

Estimating R_0 ~



contact tracing

$\beta, \gamma \rightarrow \frac{\beta}{\gamma}$ ← contact rate, transmission rate

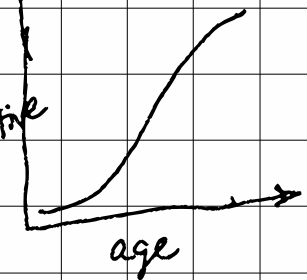


ENDEMIC disease

$$R_0 = \left(N/S^*\right)$$

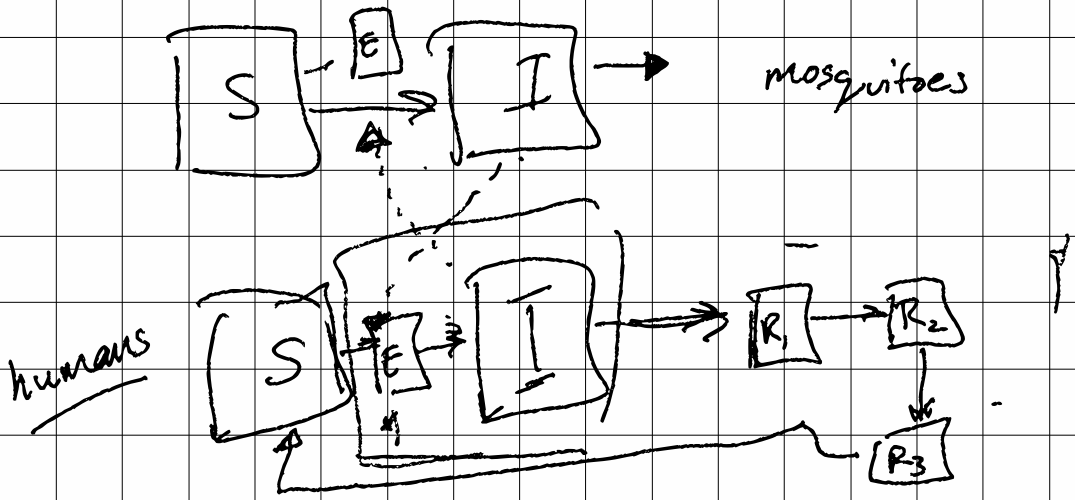
$$\left(R_0 = 1/(\text{susc fraction})\right)$$

SEROSURVEY.
seropositivity
survey.



VECTOR-BORNE DISEASE

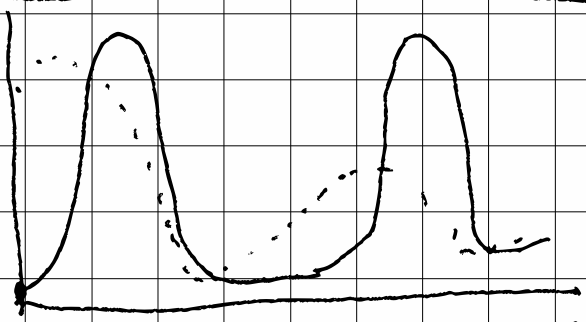
malaria ·
- mosq. vito bites infected person
- mosq becomes infected
- infected becomes a S human
- human becomes infected
  - ↳ recovery?



flows of individuals

---> influence

"all models are wrong but some are useful"
(George Box)



Vital dynamics
(birth + death)

childhood diseases - measles chickenpox
mumps "
rubella

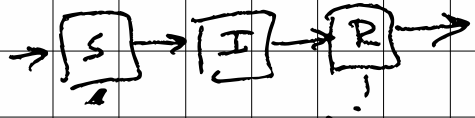
highly infectious
induce permanent immunity
NOT much strain variation -

MATERNAL IMMUNITY
VERTICAL TRANSMISSION

CYCLES

host population IS CONSTANT (humans; decades)

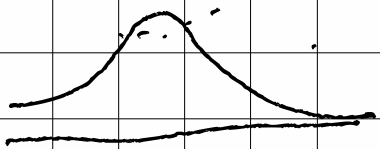
disease-induced mortality rate is low



how do parasites interact with the host population?

EXCESS MORTALITY

- typical seasonal mortality



HIV/AIDS ; historical epidemics