Models of disease transmission

- "Classical" assumption

$$P_{nm} = const.$$

P_{nm} Infection probability of susceptible n caused by infected m

- Simple dose-response model

$$P_n = 1 - \exp\left(-\sum_{m=1}^{I} q_m t_{nm} \right)$$

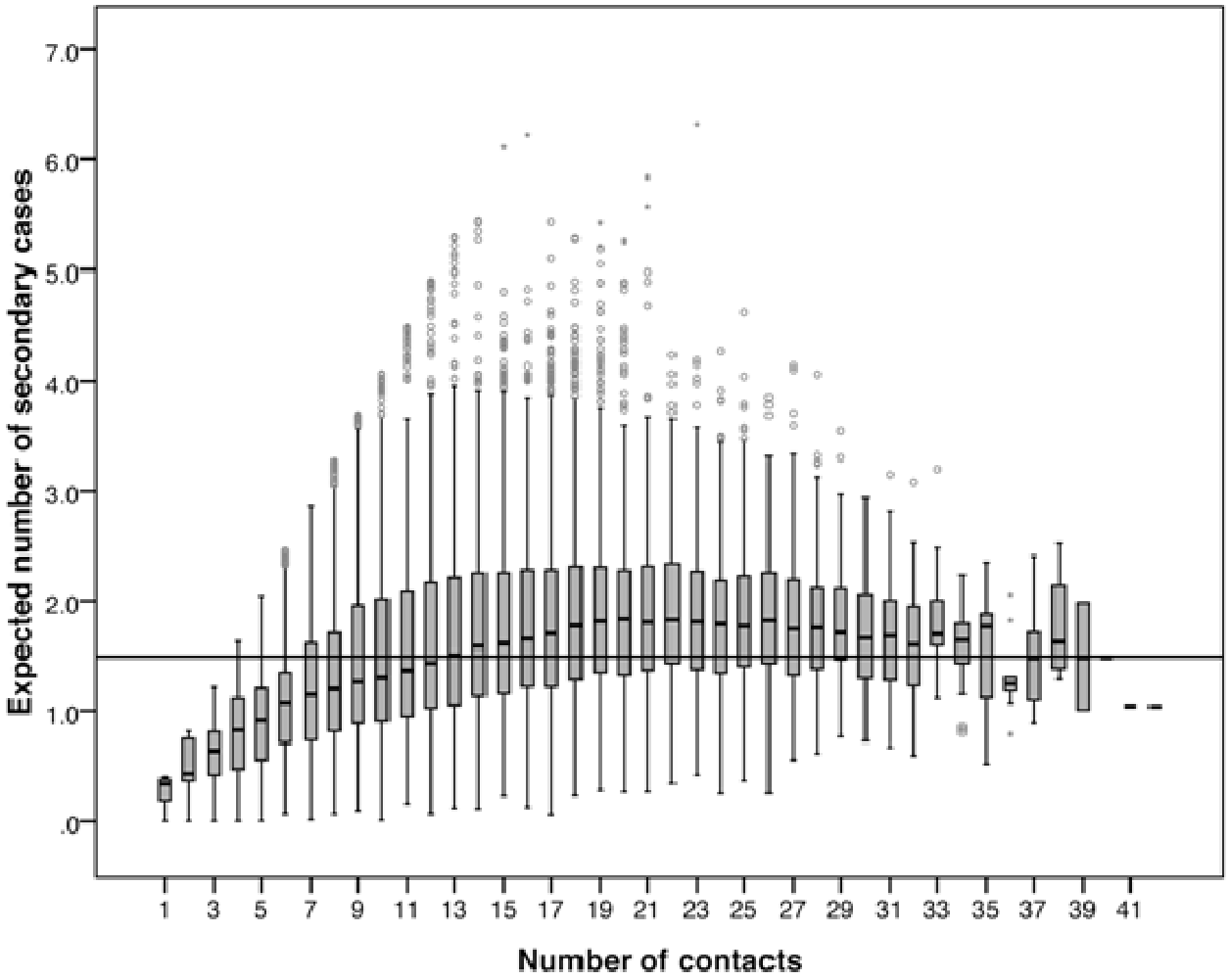
P_n Infection probability of susceptible n

q_m Shedding rate of infector m

t_{nm} Contact time of n and m

Exposure-dependent transmission model

Secondary cases vs. number of contacts



Conclusions

- Focus not only on the number of contacts, but also on the quality of contacts (e.g. duration).
- Importance of highly connected individuals (“super-spreaders”) might be overestimated in classical models.
- Further research needed:
  - Is contact time a good proxy for exposure?
  - Which other factors are important to be measured for the quality of a contact?