BRIEF COMMUNICATION
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Temporal dynamics in viral shedding and transmissibility of COVID-19

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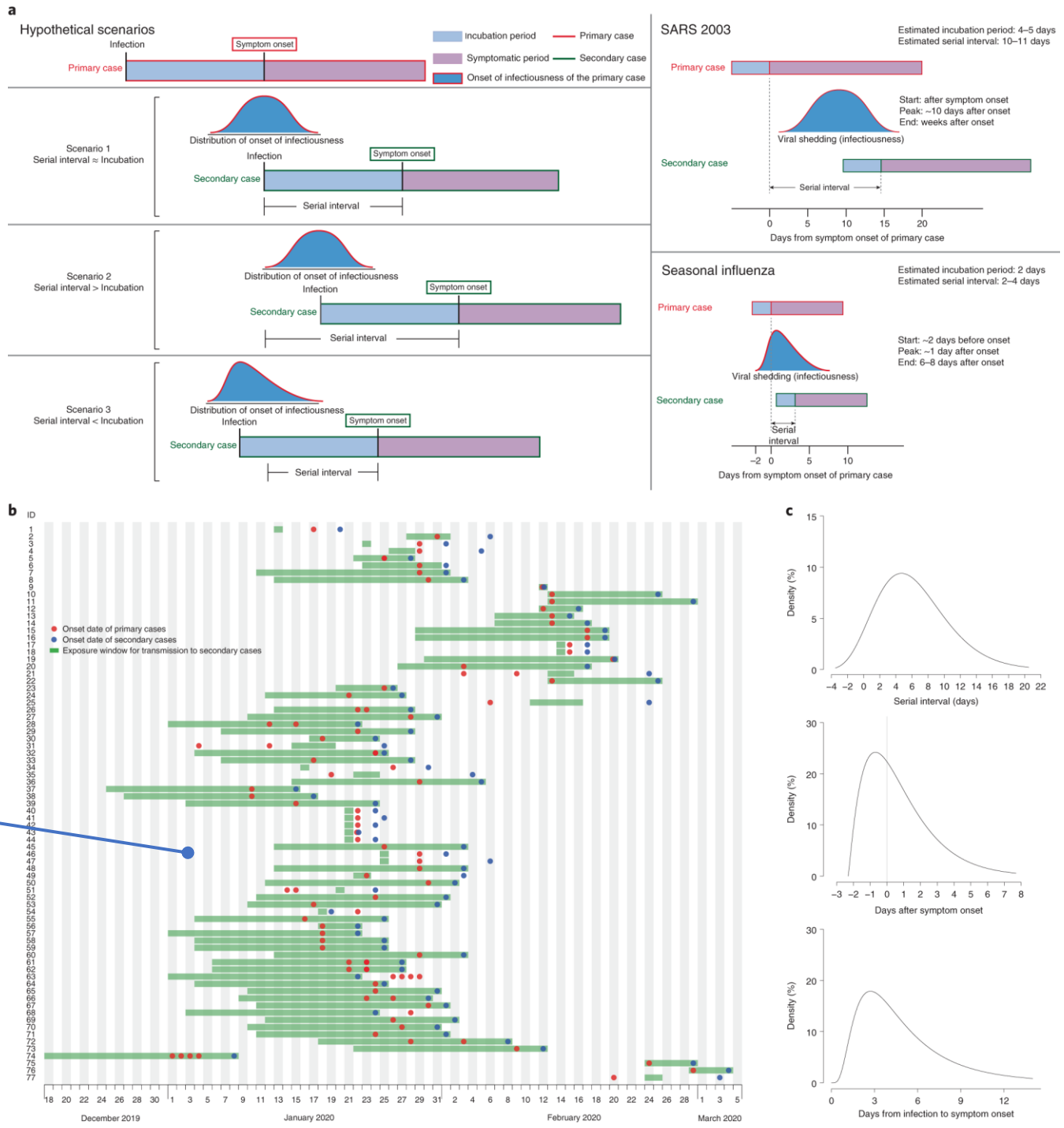
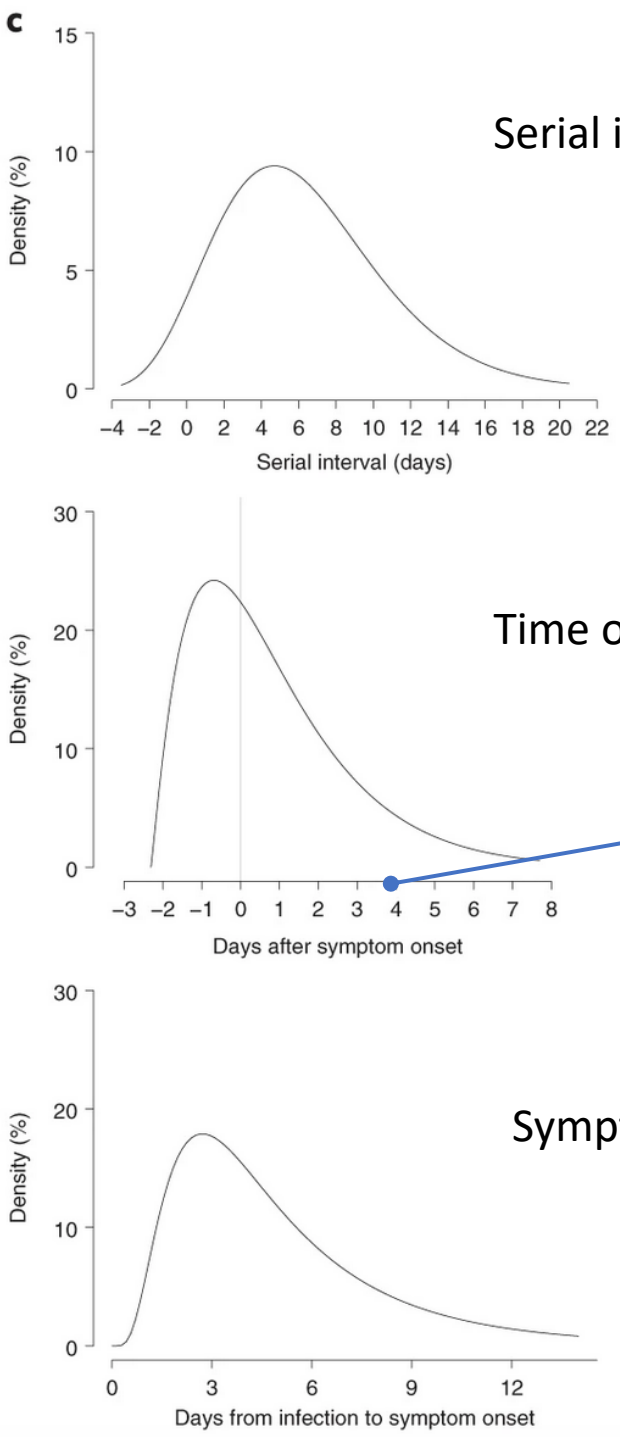
Analysis of time of transmission based on fully characterized transmission pairs



He, Nat Med 2020



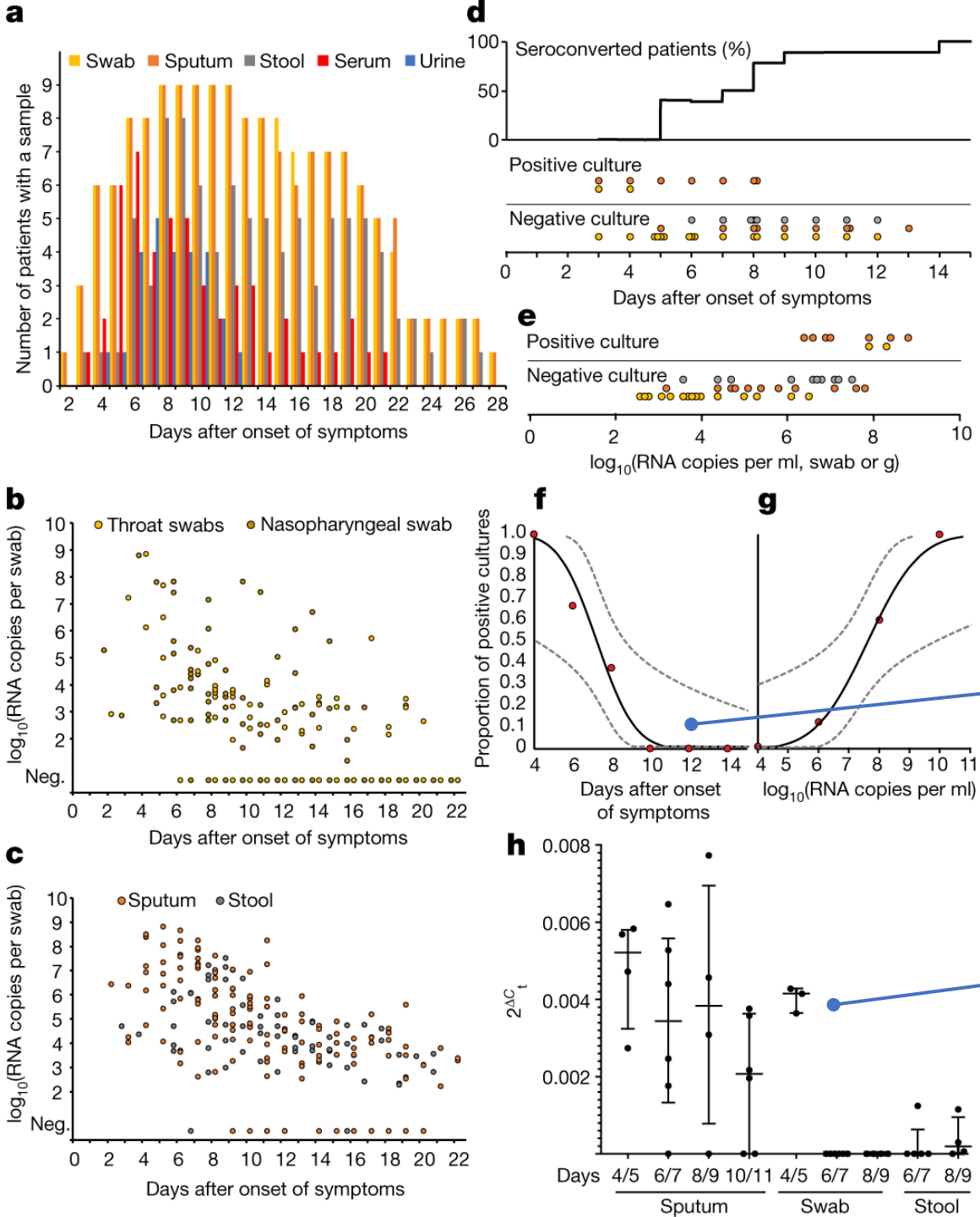
Serial interval

Time of transmission (=infectivity)

This is when patients are usually diagnosed

Symptoms-based incubation time

He, Nat Med 2020



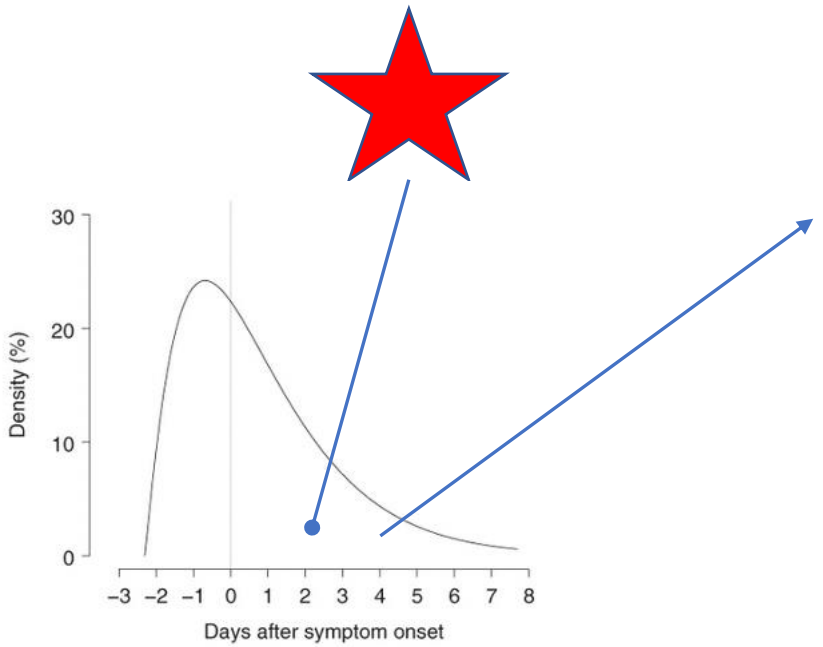
Same notion based on virus detection

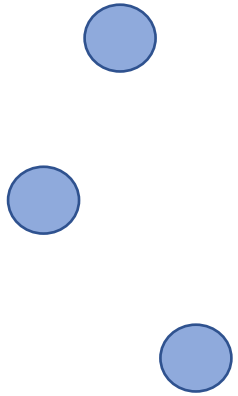
Virus isolation unlikely after day 10, 50% isolation success rate by end of first week

Active virus replication in upper respiratory tract up to day 5

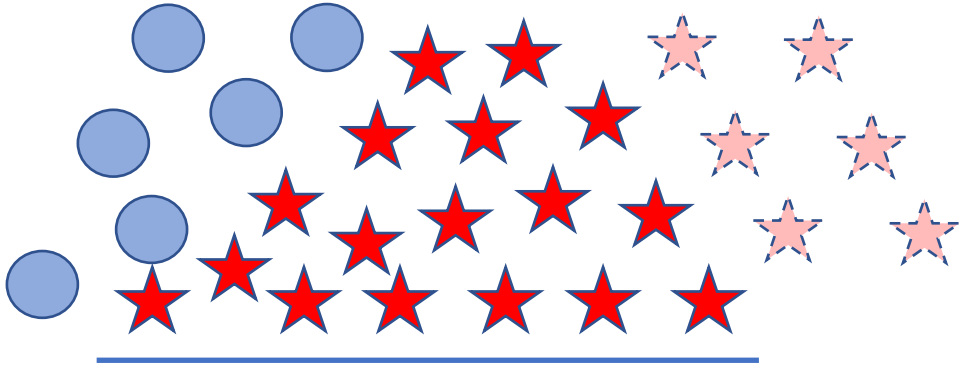
Wölfel / Corman, Nature 2020

Forward contact tracing will often come late





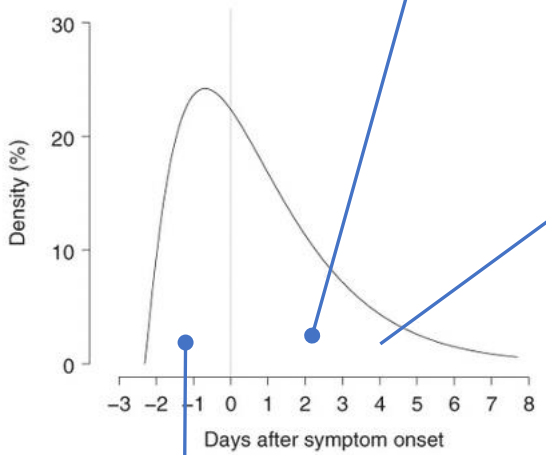
Focus on individual contacts may not be efficient



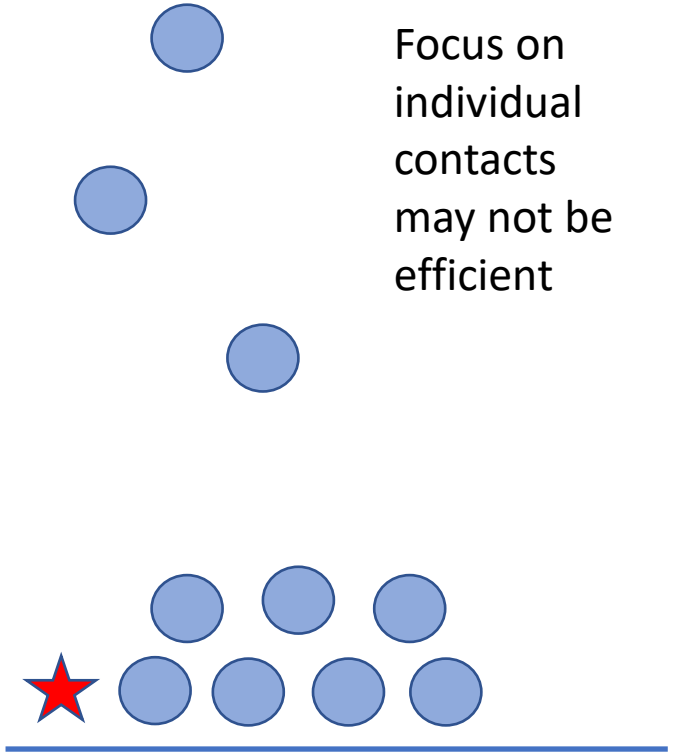
There is a source cluster cooking!

Backward cluster-specific tracing

Forward contact tracing will often come late

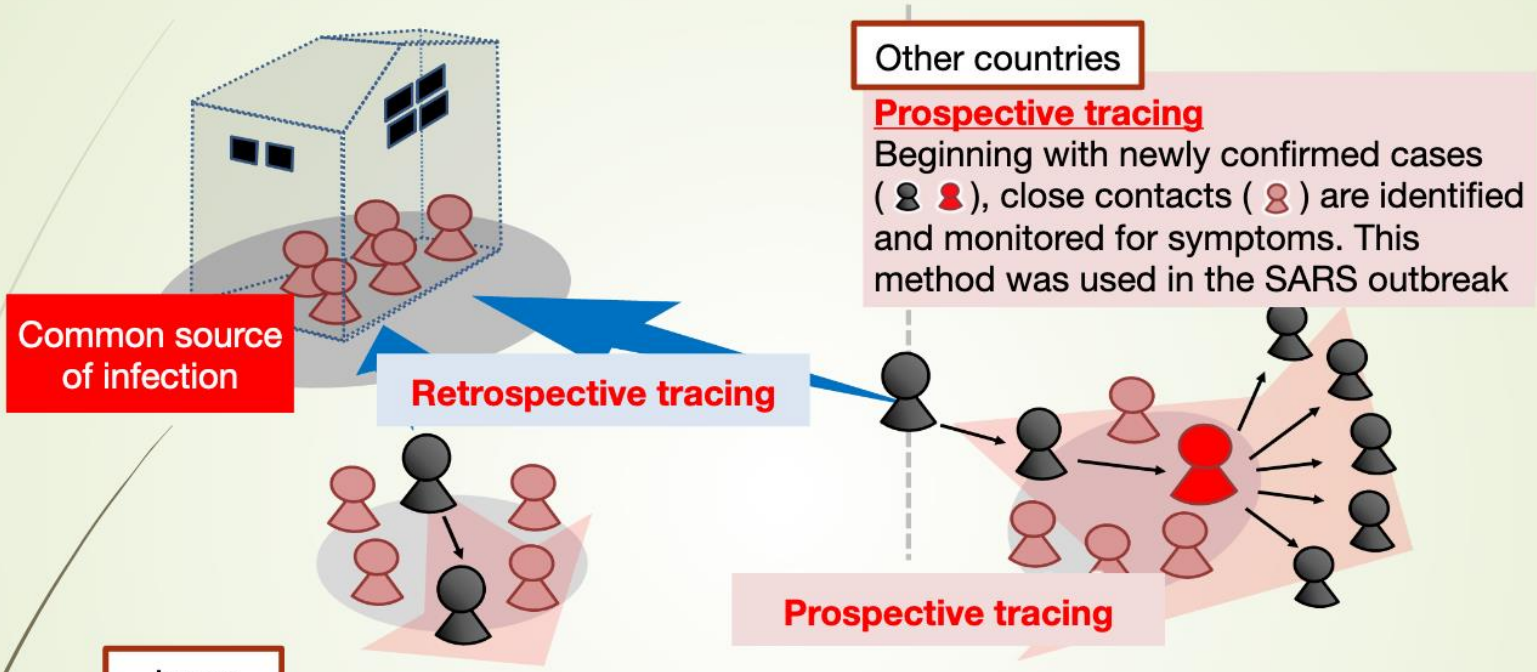


Focus on individual contacts may not be efficient



Forward cluster-specific tracing

6 Japan's cluster-based approach ②



Identifying cluster sources

The cluster-based approach uses thorough, retrospective contact tracing to identify common sources of infection, which helps suppress further spread

Retrospective tracing can identify infections more efficiently than a strictly prospective approach, enabling more effective control

https://www.mhlw.go.jp/content/10900000/000635891.pdf

Japanese Ministry of Health

Cluster tracing

- Once a case is detected by RT-PCR, the chance to stop onward transmission by isolation is almost gone
- Forward and backward cluster tracing focuses on past exposures: acquisition (backward) as well as classical contact investigation
- Clusters need to be isolated immediately, before diagnostic workup
- RT-PCR for clear-testing of cluster members (after 5 days?)
- Criterion: infectivity, rather than RNA detection (Ct 23? Antigen?)