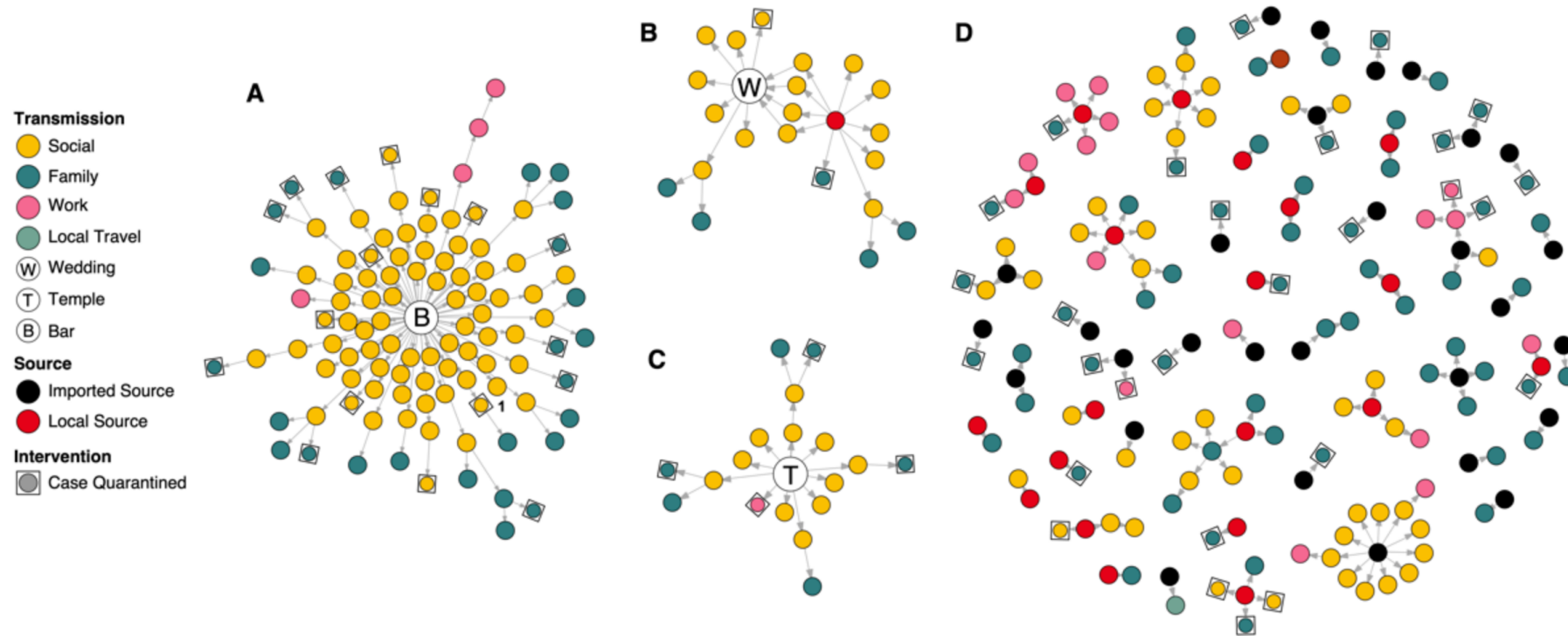


Backtracing in contact Tracing

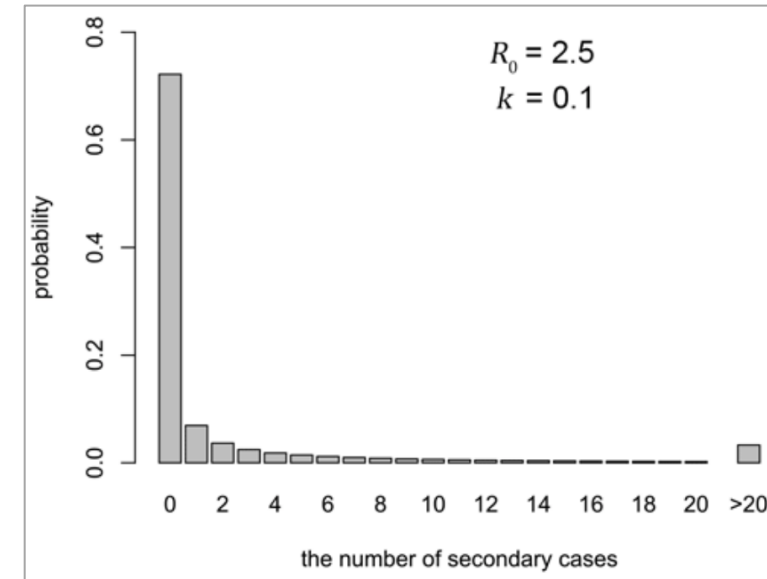
Ewan Birney, Deputy Director General, EMBL
birney@ebi.ac.uk

COVID-19 transmission chains in Hong Kong



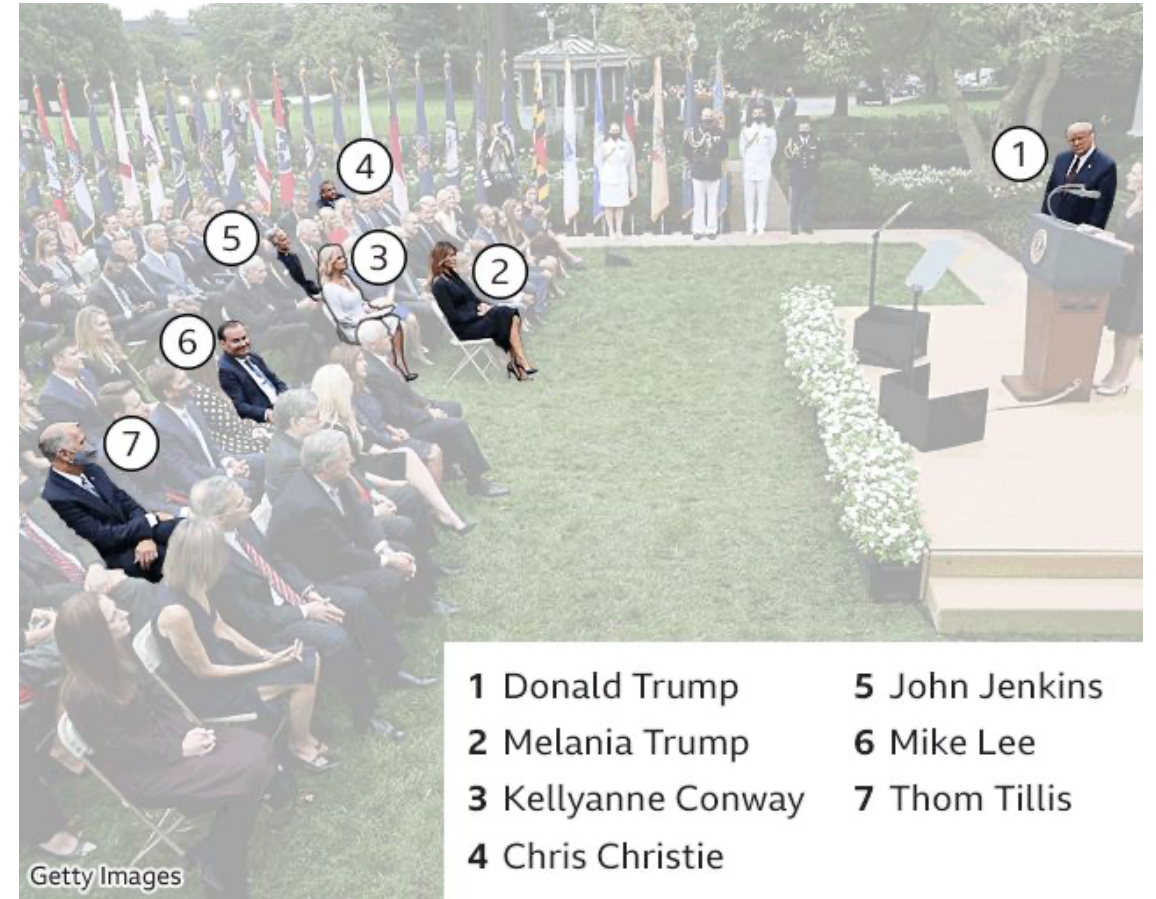
Over dispersed transmission

- Some individuals pass onto 5, 10, 20 people
- The average number of individuals each infected person passes onto is 3
- *Most* infected people don't pass on the virus *at all*
 - Mode R is 0
 - Mean R is 3
 - Very long right hand tail



Endo et al, Wellcome Open Research, 2020

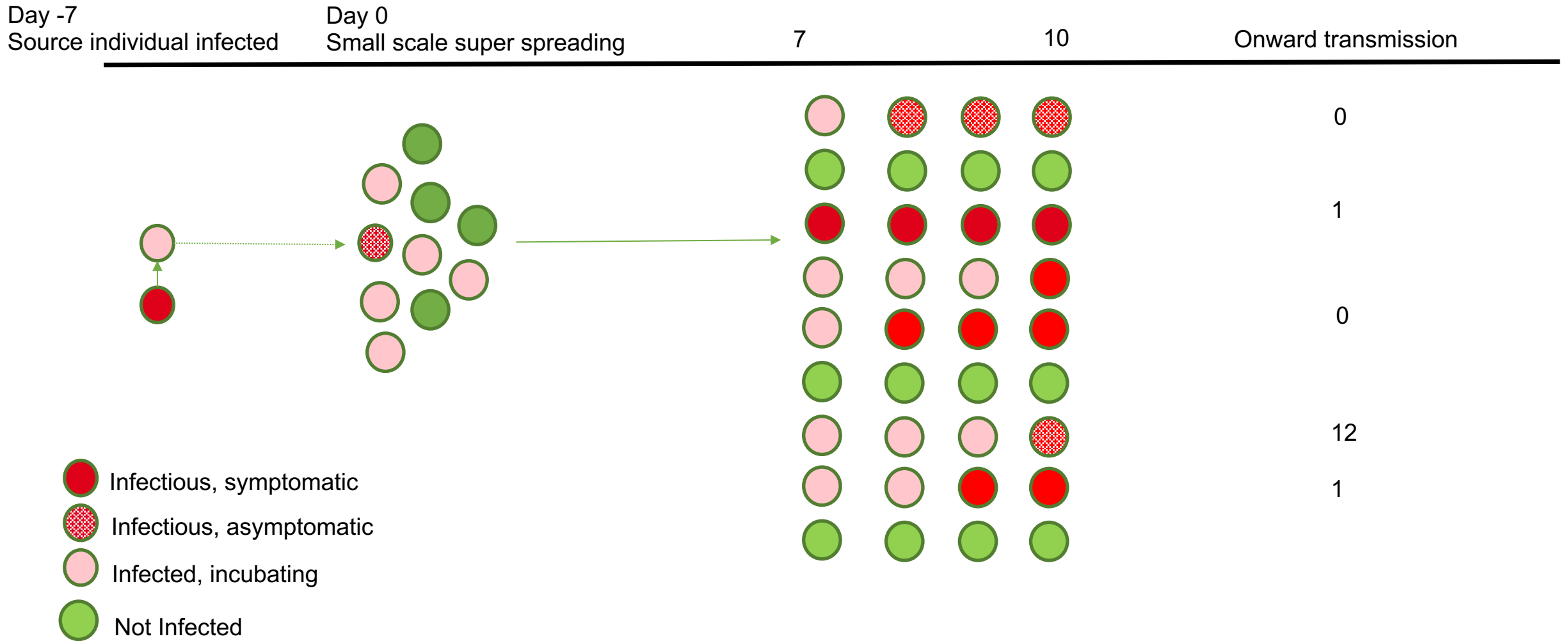
Example - the White House!



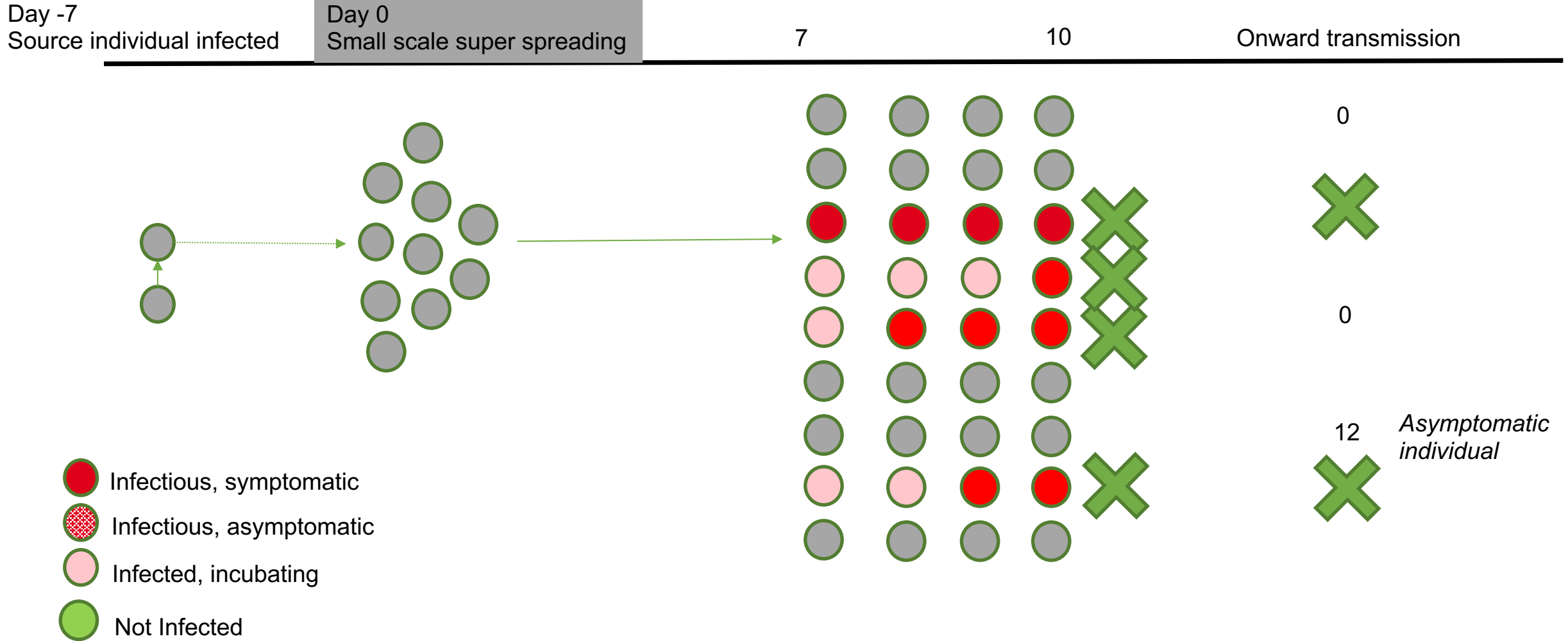
- | | |
|--------------------|----------------|
| 1 Donald Trump | 5 John Jenkins |
| 2 Melania Trump | 6 Mike Lee |
| 3 Kellyanne Conway | 7 Thom Tillis |
| 4 Chris Christie | |

BBC

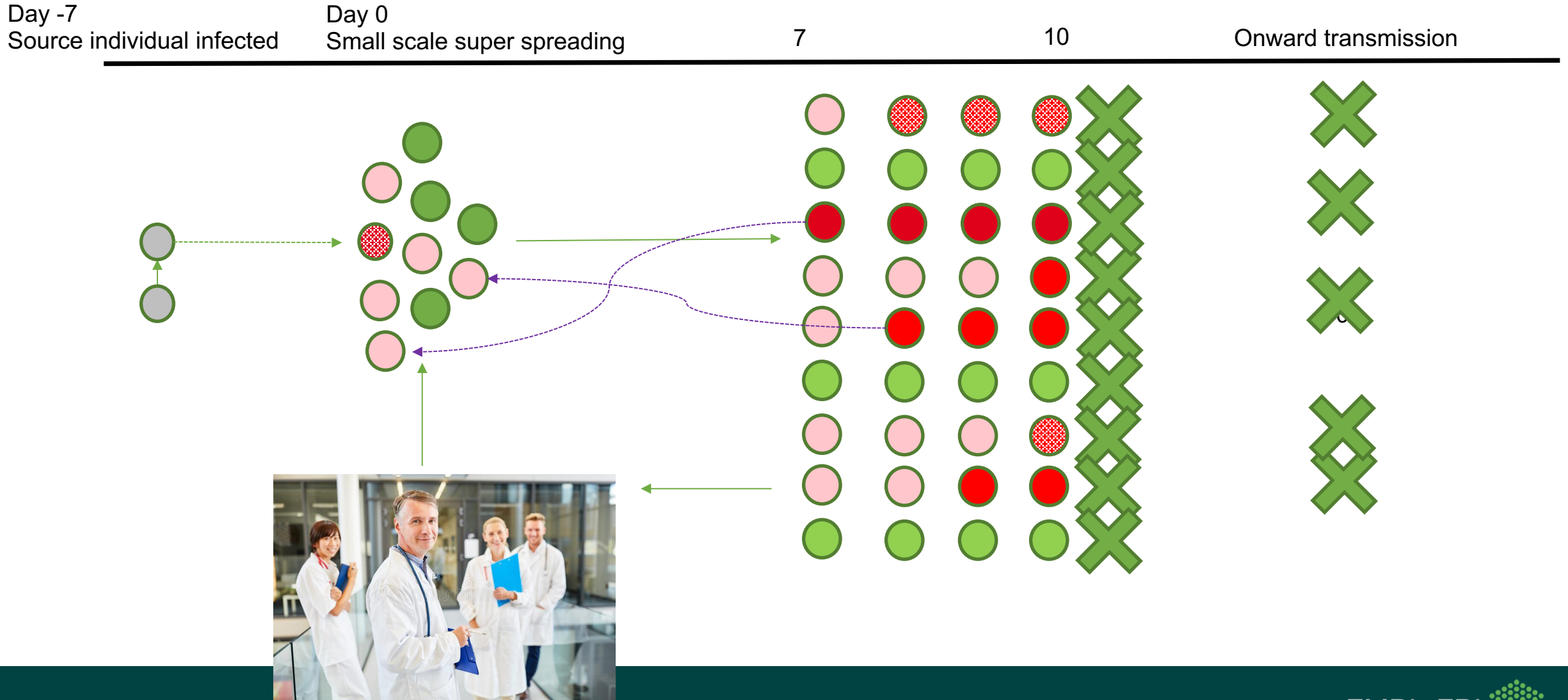
Time Line of Superspreading



Forward tracing



Forward Tracing, Enhanced tracing with action



Forward Tracing, Enhanced tracing, Act, Test

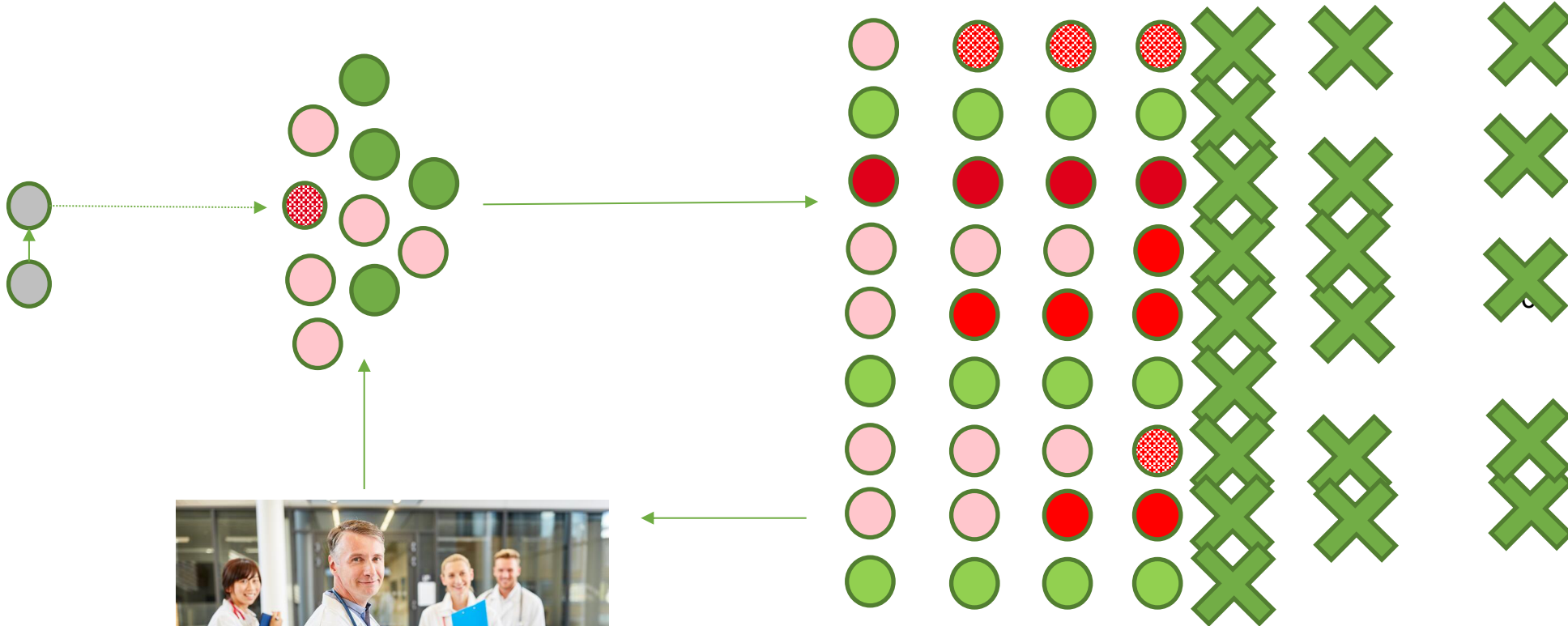
Day -7
Source individual infected

Day 0
Small scale super spreading

7

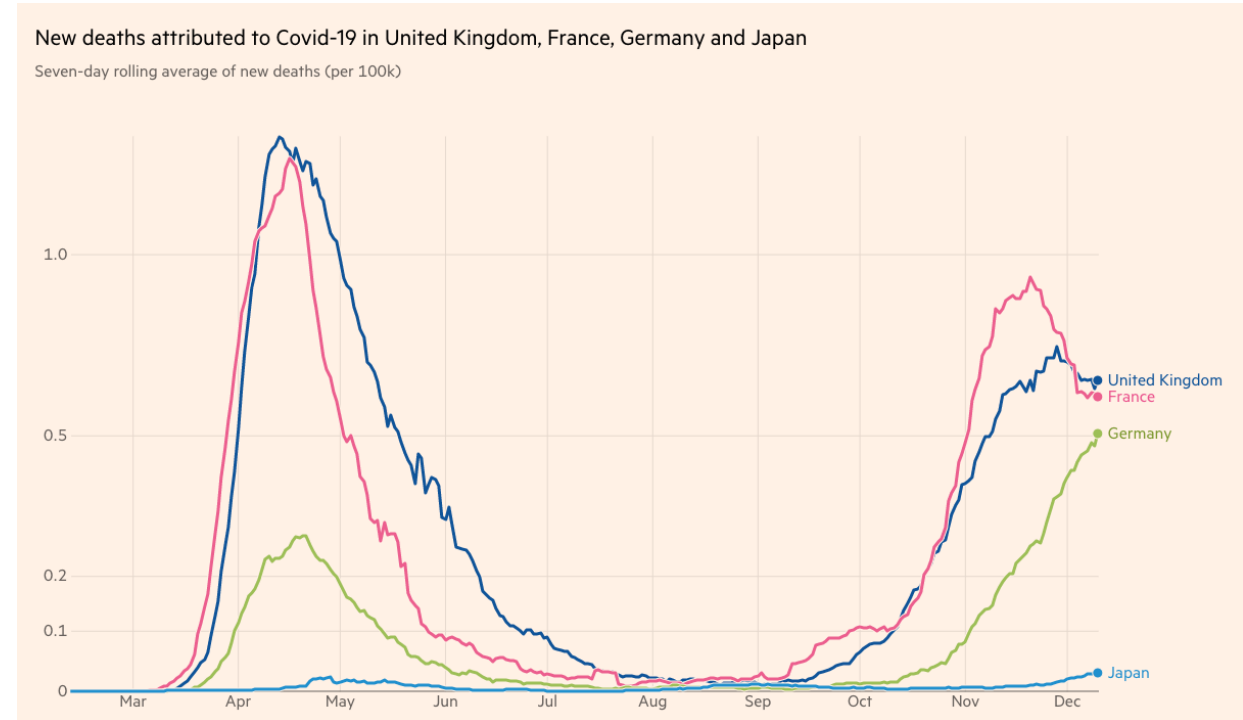
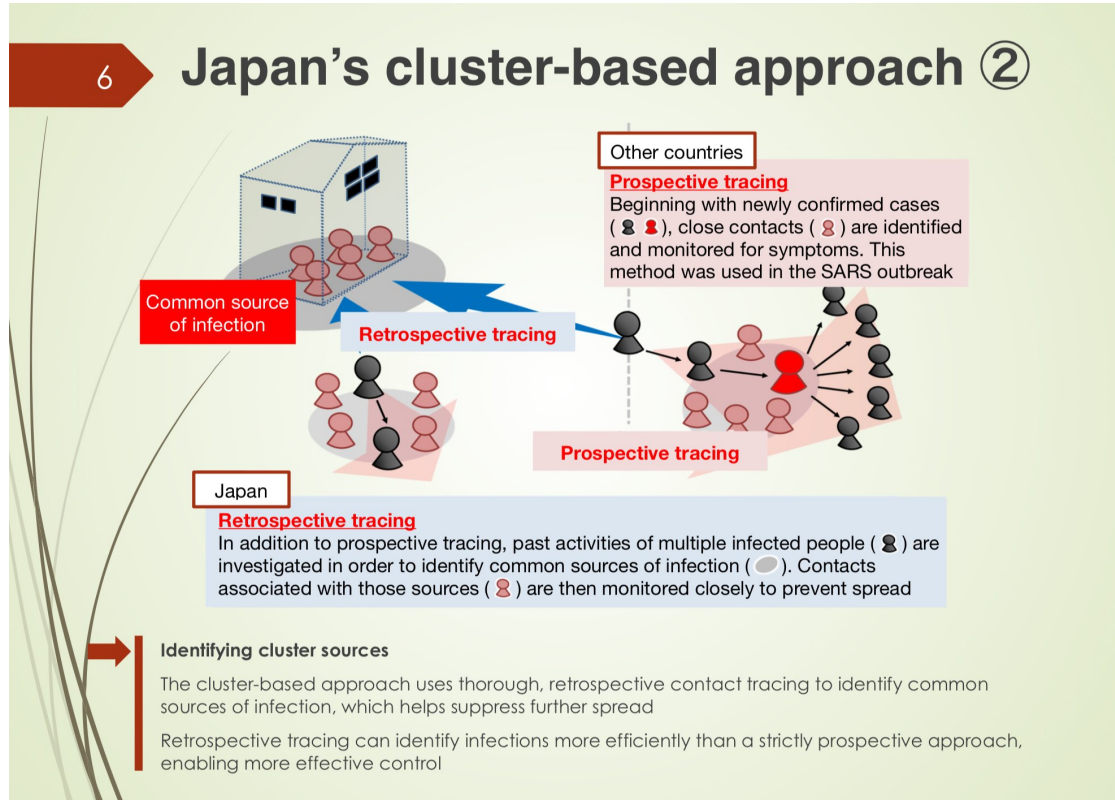
10

Onward transmission



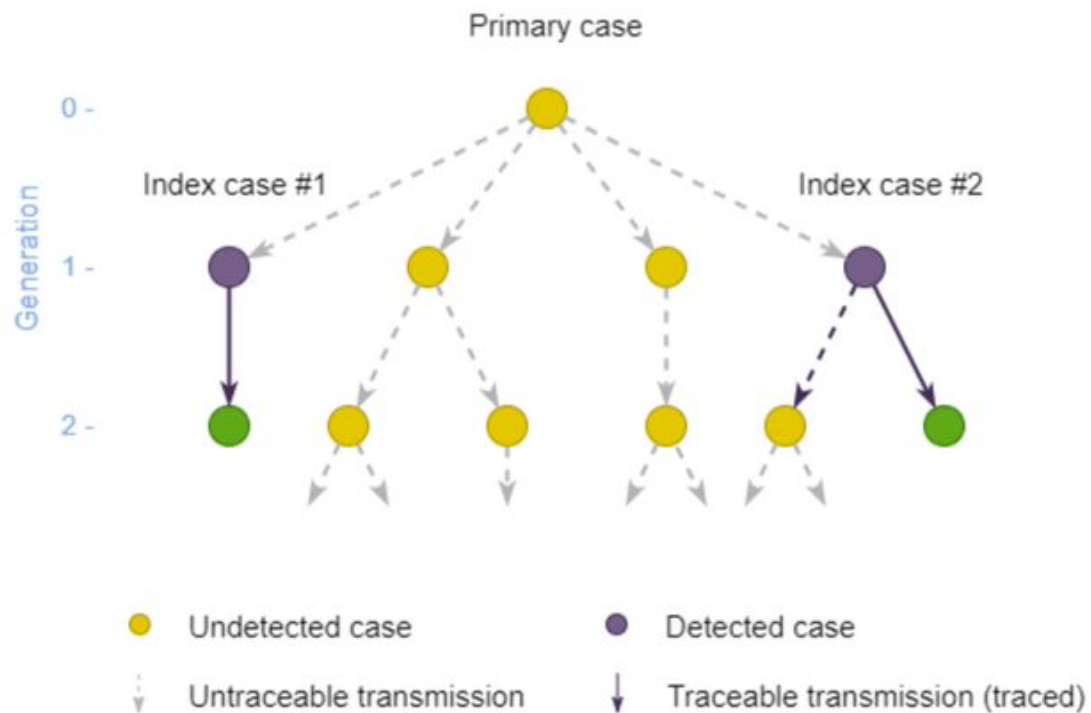
Test, if negative,
Release isolation

One of three core features to Japan's success

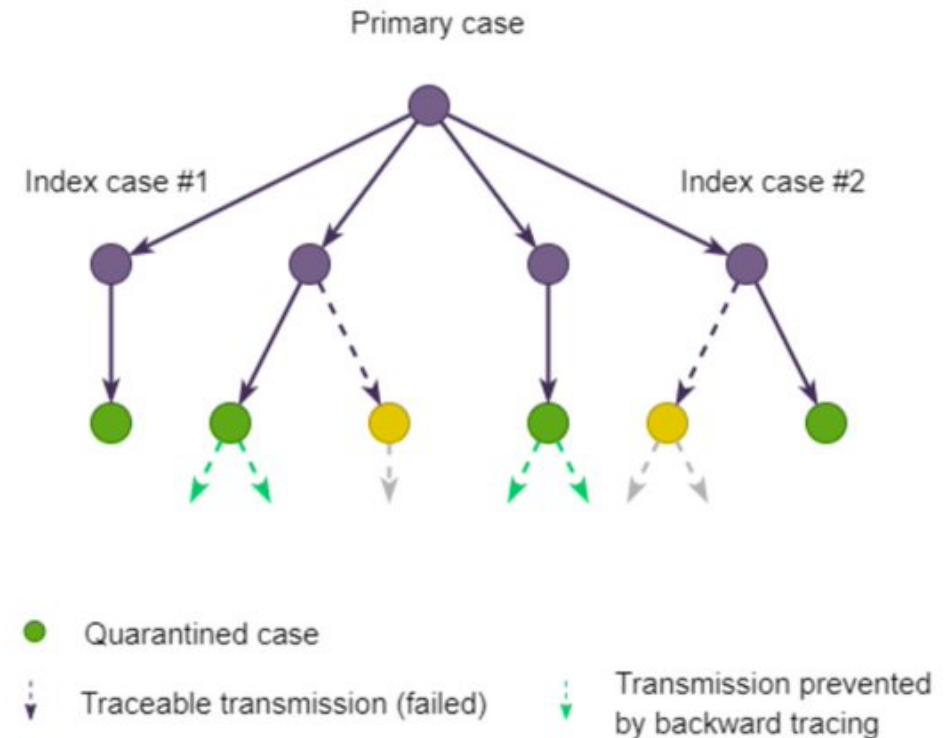


Theoretically justified when over dispersed

(A) Forward contact tracing only



(B) Forward + backward contact tracing



Endo et al, *Wellcome Open Res*, 2020

Thanks



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Tropical Medicine

- Summary
- Over dispersion of onward transmission is present in SARS CoV 2
- If you can rapidly find It can be exploited for finding at risk individuals for current infection
- This exploitation works in Japan
- Happy to help as much as possible

Questions!

