Meeting: Clusters of COVID-19 cases among singing groups (20 January 2021)

To discuss:

- Conclusions (5 minutes)
- Recommendation (20 mins)
- AOB (5 mins)

Conclusions

- These outbreaks with high attack rates demonstrate the potential for spread of SARS-CoV-2 linked to singing events.

- Our findings suggest that although direct or indirect transmission may have occurred and could be the cause of some of the cases, it is unlikely to explain the high attack rates seen across all singing events.

- Airborne transmission likely contributed to the high attack rates under the singing event conditions (duration of singing, size of venue, and ventilation capacity), possibly influenced by air flow generated by airing or ventilation, along with the co-existence of a superspreader or multiple index cases.

Recommendations

- In order to reduce the risk of transmission from the potential presence of a superspreader, we recommend that singing events include the following precautionary measures: a shorter duration of singing (30 minutes), in a large ventilated room (X m^3), with a minimum of 6 air exchanges per hour, in addition to basic hygiene and distance rules.
  (Scenario 13 – next slide for reference)

- Further research is needed into ventilation systems, air flow, and the transmission dynamics of SARS-CoV-2 in singing groups in order to guide recommendations to prevent future outbreaks.

- Additionally, increased phylogenetic analysis should be performed to identify potential source cases to better assess clusters. Serology could also be performed to identify susceptible cases.

Dose and illness risks from simulations with AirCoV2 version 1.4.

	Scenario				Cumulative dose (virus RNA copies) /person				Illness risk/person/event			
	m3	Q	T	C	Mean	5%	50%	95%	Mean	5%	50%	95%
1	80	0	30	10	75	18	59	180	5.1%	1.3%	4%	12%
2	80	1	30	10	65	16	52	160	4.4%	1.1%	3.6%	10%
3	80	6	30	10	35	8	28	87	2.4%	0.56%	1.9%	5.9%
4	80	0	60	10	270	70	220	660	17%	4.8%	14%	37%
5	80	1	60	10	210	53	160	510	13%	3.6%	11%	30%
6	80	6	60	10	85	21	68	210	5.7%	1.5%	4.6%	13%
7	80	0	120	10	930	240	740	2200	43%	16%	40%	79%
8	80	1	120	10	580	150	460	1400	31%	10%	28%	62%
9	80	6	120	10	180	48	150	450	12%	3.3%	9.8%	27%
10	80	0	120	7	0.93	0	1	3	0.065%	0%	0.07%	0.21%
11	800	0	30	10	7.6	1	6	19	0.53%	0.07%	0.42%	1.3%
12	800	1	30	10	6.5	1	5	17	0.45%	0.07%	0.35%	1.2%
13	800	6	30	10	3.5	0	3	9	0.24%	0%	0.21%	0.63%
14	800	0	60	10	28	6	23	68	1.9%	0.42%	1.6%	4.6%
15	800	1	60	10	21	4	17	53	1.5%	0.28%	1.2%	3.6%
16	800	6	60	10	8.5	1	7	22	0.59%	0.07%	0.49%	1.5%
17	800	0	120	10	97	24	77	240	6.5%	1.7%	5.2%	15%
18	800	1	120	10	60	14	48	150	4.1%	0.98%	3.3%	9.7%
19	800	6	120	10	19	4	15	46	1.3%	0.28%	1%	3.2%
20	800	0	120	7	0.097	0	0	1	0.0068%	0%	0%	0.07%

Recommendation based on Scenario 13

m^3: room size, small room 8x5x2=80m^3, large room 20x10x4=800 m^3;
Q: air exchanges/hour; T: exposure time (minutes); C: virus RNA copies/mL, $10=10^{10}$ and $7=10^7$.

Schijven, J.F., et al., *Quantitative risk assessment for airborne transmission of SARS-CoV-2 via breathing, speaking, singing, coughing and sneezing Environmental Health Perspectives, submitted.* medRxiv, 2020: p. 2020.07.02.20144832.