

Episode 205: Not so joyful Omicron update

Ep 205-1: Danish experience on first 785 omicron patients:

TABLE 2

Characteristics of SARS-CoV-2 Delta and Omicron variant cases, Denmark, 22 November–7 December 2021

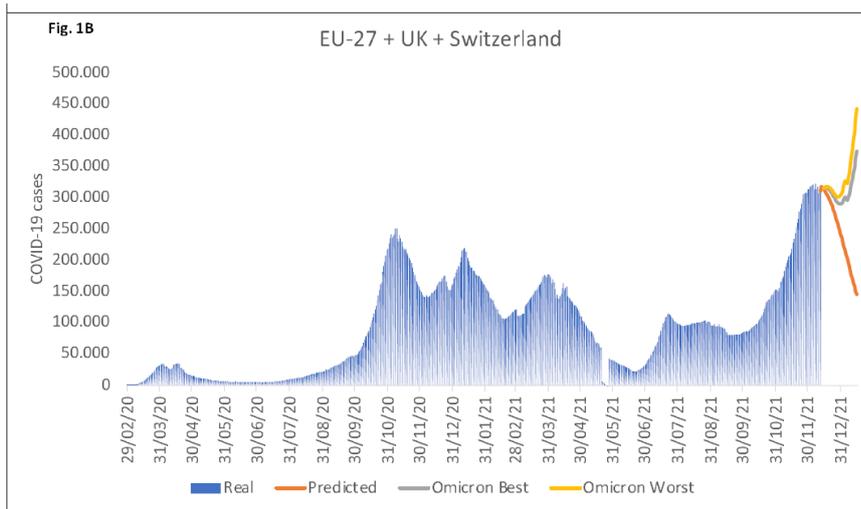
	Number of Delta ^a cases (n=19,137)	% of all Delta ^a cases	Number of Omicron cases (n=785)	% of all Omicron cases
Age (years)				
0–9	3,081	16	30	3.8
10–14	2,434	13	23	2.9
15–19	962	5.0	102	13
20–29	2,317	12	214	27
30–39	2,548	13	110	14
40–49	2,973	16	111	14
50–64	2,952	15	144	18
≥ 65	1,870	10	51	6.5
Sex				
Female	9,637	50	352	45
Male	9,500	50	433	55
Travel history				
Yes ^b	NA		56	7.1
No	NA		601	77
Unknown	NA		128	16
Vaccination status^c				
Not vaccinated	8,199	44	111	14
Started ^d	484	2.6	19	2.4
Vaccinated ^e	9,269	50	599	76
Booster vaccination ^f	597	3.2	56	7.1
Previous SARS-CoV-2 infection confirmed by RT-PCR in Denmark^{g,h}				
Yes	160	0.9	34	4.3
No	18,389	99	751	96
Self-reported symptoms				
Yes	NA		509	65
No	NA		157	20
Unknown	NA		119	15
Hospitalisation				
Yes	290	1.5	9	1.2
Intensive care treatment				
Yes	22	0.11	1	0.13
Death				
Yes	14	0.07	0	0

As can be seen in the Table, as compared to delta:

- Relatively more omicron patients were fully vaccinated or even had received a third dose.
- No difference in severity (hospitalization, intensive care)...

Remarkably also, just like in Norway, **superspreading** has been observed: attack rate of 47 % at a seasonal gathering of 150 persons.

Ep 205-2: Gerli in medRxiv 16 Dec predicts a rapid reversal of the present decreasing trend in the 4th wave and an new increase of omicron “over the top” that we just passed.



Ep 205-3: Hogan from Public Health England 16 Dec on the longer-term value of a booster
 The new element in this paper is a projection of booster efficacy on mild, severe disease and death over 3 months:

Vaccine	Variant	90d pd2	180d pd2	30d pb	60d pb	90d pb
<i>Efficacy against mild disease</i>						
AZ-PF	Delta	39 (37.9-40.6)	18.9 (17.3-22.2)	86.4 (85.4-87.4)	81.2 (79.7-82.7)	74.7 (72.4-76.8)
AZ-PF	Omicron	8.6 (7.1-10.6)	3.3 (2.7-4.4)	48.4 (43.1-53.5)	38.9 (33.9-44)	30.2 (25.8-35)
PF-PF	Delta	61.6 (60.2-62.9)	36.9 (34.3-41.3)	86.4 (85.4-87.4)	81.2 (79.7-82.7)	74.7 (72.4-76.8)
PF-PF	Omicron	19.1 (15.9-22.7)	7.9 (6.4-10.2)	48.4 (43.1-53.5)	38.9 (33.9-44)	30.2 (25.8-35)
<i>Efficacy against severe disease</i>						
AZ-PF	Delta	80.2 (79.4-81.3)	59.6 (57.1-64.3)	97.6 (97.4-97.8)	96.5 (96.1-96.8)	94.9 (94.3-95.5)
AZ-PF	Omicron	37.3 (32.3-42.9)	17.8 (14.8-22.4)	85.5 (82.6-87.9)	80.1 (76.3-83.2)	73.2 (68.6-77.3)
PF-PF	Delta	91 (90.5-91.5)	78.7 (76.7-81.7)	97.6 (97.4-97.8)	96.5 (96.1-96.8)	94.9 (94.3-95.5)
PF-PF	Omicron	59.8 (54.3-65.1)	35.2 (30-41.7)	85.5 (82.6-87.9)	80.1 (76.3-83.2)	73.2 (68.6-77.3)
<i>Efficacy against death</i>						
AZ-PF	Delta	88.3 (87.7-89.1)	73.4 (71.2-77.1)	98.7 (98.6-98.8)	98.1 (97.9-98.3)	97.2 (96.9-97.5)
AZ-PF	Omicron	52.6 (47.1-58.4)	28.9 (24.5-35.1)	91.7 (89.9-93.2)	88.3 (85.8-90.3)	83.7 (80.4-86.5)
PF-PF	Delta	95 (94.6-95.3)	87.4 (86-89.3)	98.7 (98.6-98.8)	98.1 (97.9-98.3)	97.2 (96.9-97.5)
PF-PF	Omicron	73.6 (68.9-77.7)	50.4 (44.6-57.4)	91.7 (89.9-93.2)	88.3 (85.8-90.3)	83.7 (80.4-86.5)

As can be seen, the efficacy against death is still very good, but the protection against hospitalization decreases irrespective whether Pfizer (PF) or Astra-Zeneca (AZ) was used for the first two doses (always followed by Pfizer).

Since the protective effect against mild disease and transmission is rather weak, it implies that many cases will end up in hospital and intensive care. See next paper....

Ep 205-4: Barnard medRxiv 16 Dec: in view of the very high transmission rate, even in boosted individuals and in view of a potentially waning efficacy of booster against severe disease and deaths, the prediction for UK Jan-April 2022 is:

- New infections: 18 to 37 million;
- Additional hospitalizations 140,000 – 540,000;
- Additional deaths: 20,000 -80,000

Very significant, as the present official total number of cases is at 11 million and deaths at 147,000 !

By taking more stringent NPI control measures, the hospital admissions could ideally be reduced to 70,000 and deaths to 10,000.

An important remark is also the following sentence:

*We have shown that **small changes in the number of Omicron introductions per day early can shift the projected epidemic burden later**, allowing more time for control measures to be taken. However, measures to reduce Omicron introductions become comparatively less important once the variant has spread substantially within the country.*

Ep 205-5: Fisman in medRxiv 16 Dec models the effect of population mixing between vaccinated and unvaccinated individuals. The somewhat surprising finding is that **non-vaccinated subjects contribute disproportionately to infection in the vaccinated subjects** and that this pattern was consistent across a range of values for vaccine efficacy and reproduction numbers.

Ep 205-6: Simons in medRxiv 17 Dec shows the other side of the medal by **comparing hospitalization risk between alpha and delta**:

- In unvaccinated subjects: Delta was 4 times more likely to result in hospitalization than alpha.
- As expected, vaccination reduced the hospitalization risk by 2.5 times.

Ep 205-7: Heidi Ledford Nature Briefing 17 Dec discusses the uncertainty on clinical severity of omicron in adults and children: while data from South-Africa seemed to suggest lower severity, the first data from England and Denmark see **no difference between severity by omicron vs delta**.

Ep 205-8: A nice overview of COVID vaccines by Smriti Mallapati et al in Nature Briefing 16 Dec.

(Very) PROVISIONAL CONCLUSIONS

These early data and modeling (all to be confirmed) are worrying:

- The virus remains highly transmissible, even in subjects who have been fully vaccinated and even boosted.
- The booster may protect relatively well against severe disease, but yet, after a few months, more fully boosted subjects will be admitted to hospital than we were used to see with delta.

This wicked combination bears the risk to rapidly overload our health system again, while all HCW are exhausted. The only way to prevent this “recipe for disaster” is the immediate and sustained society-wide adherence to very strict NPI restrictions, in addition to universal vaccination, of course.

However, after two years of pandemic, many turns in the story line and the way politicians have handled the issues, public trust and willingness is clearly eroded. As scientists, we have the duty to warn the general public and push the politicians to take unpopular measures again. But will our message be heard and accepted?

As a potential didactic help, I received two useful links from Patrick Smits

- Summary by WHO in 5 minutes: <https://www.youtube.com/watch?v=-P2XxgTelko>
- More extensive Q&A: <https://www.youtube.com/watch?v=7aZIsD8nWhA>

I was also asked to write a small text for a general (still interested) audience in Dutch and English (see attachment). Comments are most welcome.

Best wishes,

Guido