



Guy's and St Thomas'
NHS Foundation Trust

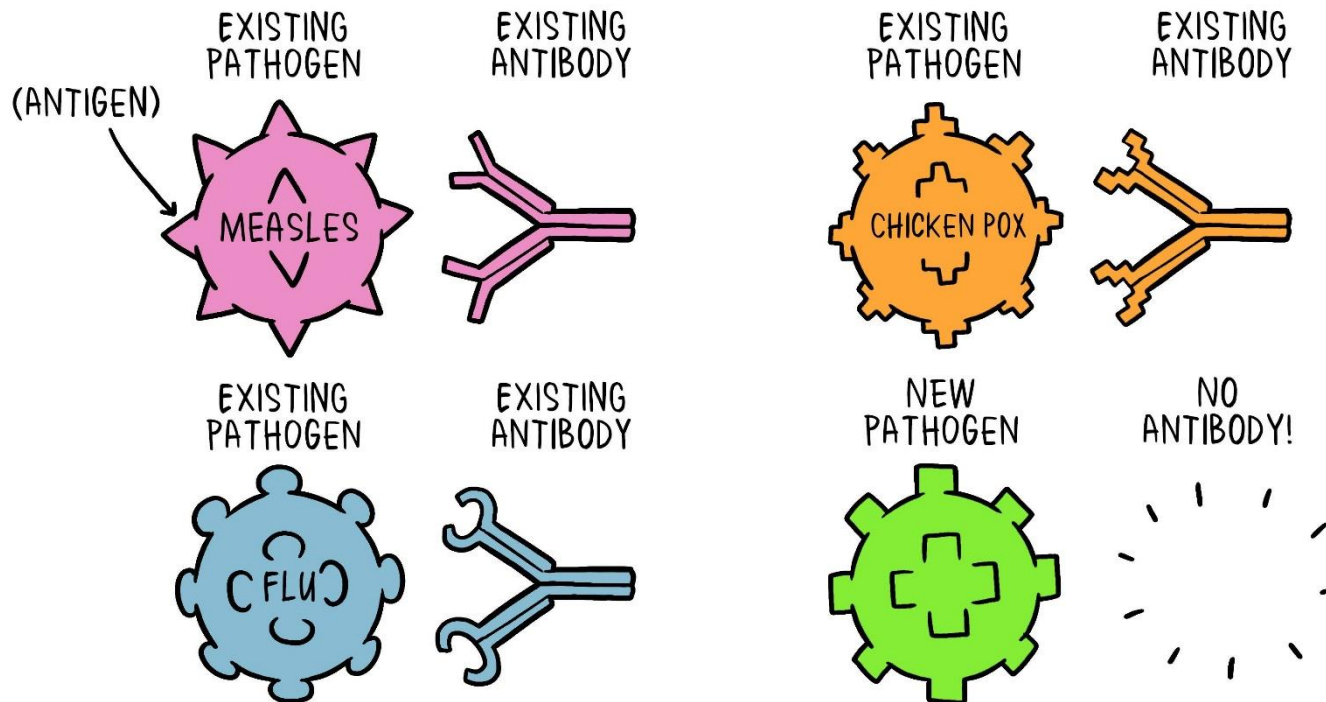
Benefit of vaccine to the individual, public and healthcare system

Dr Ali Hashtroudi

Clinical Director, Occupational Health &
SEL Prevention and Intervention Service

Natural immunity

- **Antigen = part entering the body vs. Antibody = body reaction**

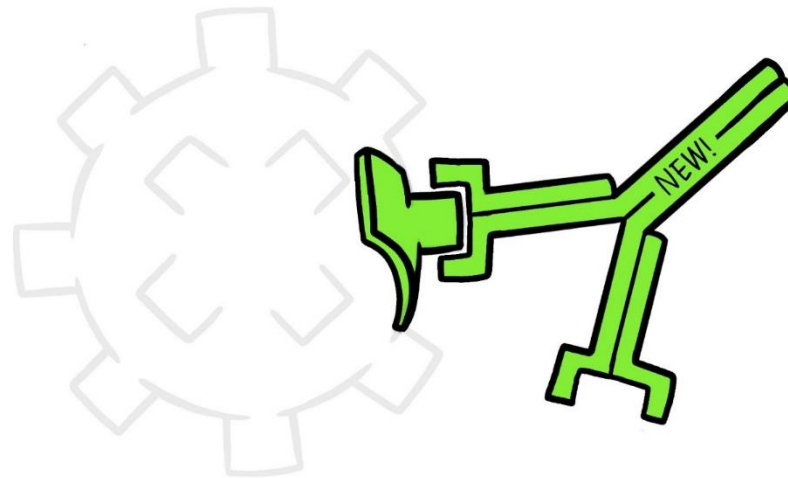


How vaccine helps

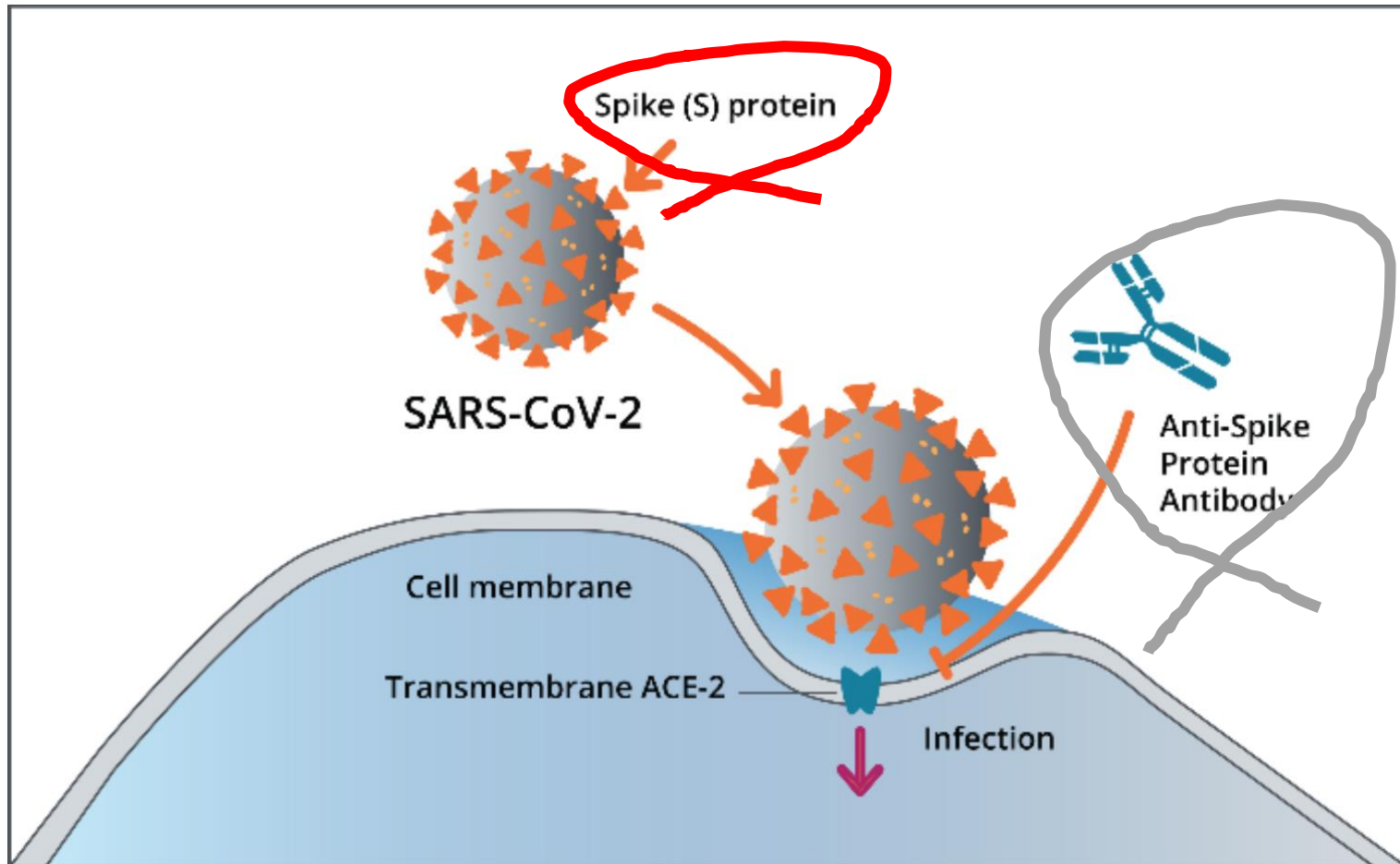
- Part of virus used as Antigen

VACCINE

NEW ANTIBODY



The basis of all current vaccines



Types of vaccine

- Targeting S protein of the original SARS-CoV-2 strain
- 2x mRNA platform (Pfizer BioNTech COVID-19 BNT162b2 vaccine (Comirnaty® and Moderna mRNA-1273 COVID-19 vaccine/Spikevax®) and bivalent for autumn 2022 booster)
- 2x adenovirus vector (AstraZeneca COVID-19 ChAdOx1-S vaccine/Vaxzevria® and COVID-19 vaccine Janssen Ad26.COV2-S [recombinant]).
- Nuvaxovid® (Novavax) recombinant S protein

Different vaccines: how the Ag is introduced

Type of COVID vaccine	Example
Live	only Phase 1 COVI-VAC (India)
Inactivated	Covaxin (India), CoronaVac (sinoVac, China) and SinoPharm (China)) Valneva (France)
Protein-based subunit	Novavax & EpiVacCorona (India) Medicago (Canada- quadrivalent VLP)
mRNA	Pfizer BioNTech BNT162b2 mRNA Moderna mRNA-1273
Viral vectors	ChAdOx1 nCoV-19 (AZD1222) Janssen (Ad26.cov2.s) Sputnik V (rAd26_ rAd5)

The COVID vaccine cannot cause infection.

The COVID vaccine does not change the genetic material.

Efficacy

- 1. Protection against death**
 - 2. Protection against very severe disease, critical care**
 - 3. Protection against severe disease, hospital admission**
 - 4. Protection against passing the disease**
 - 5. Protection against catching the disease**
- Laboratory based measurement**

Efficacy

- **Trials**
 - Pfizer: 95%
 - AZ: 70.4%
 - Moderna: 94.1%
 - Novavax: 90%
 - **Real world:**
 - 40% less likely to require hospital admission or to die
 - 80% against hospitalisation
 - 30% reduction in risk of transmission
 - **Impact of variants**
 - Alpha > delta > Omicron, importance of boosters
 - **No difference based on demography**
-

Vaccination in the UK

- The first country in the world
- Started on 8th December 2020
- So far

People vaccinated

First dose total

45,250,569

Second dose total

42,669,359

Booster or third dose total

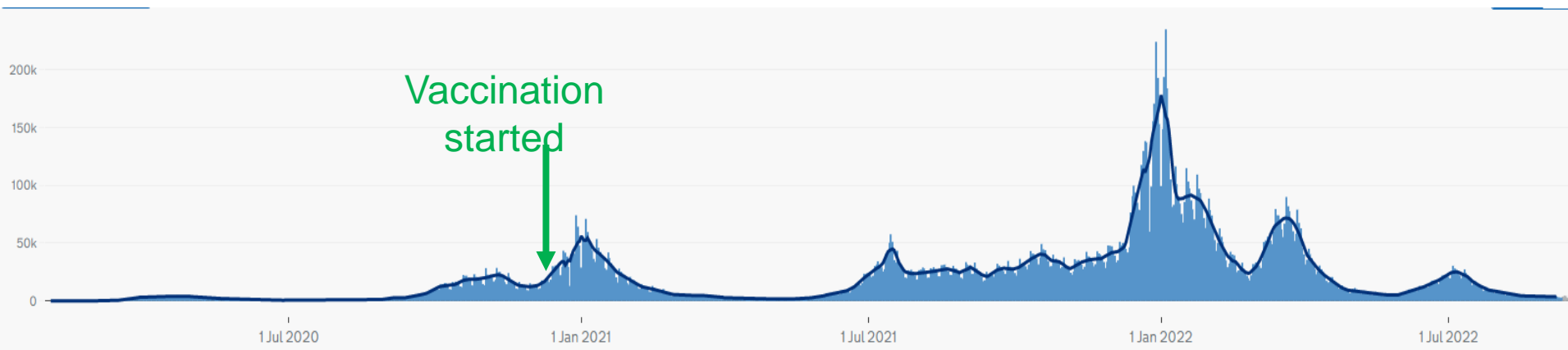
33,552,749

Vaccinations given

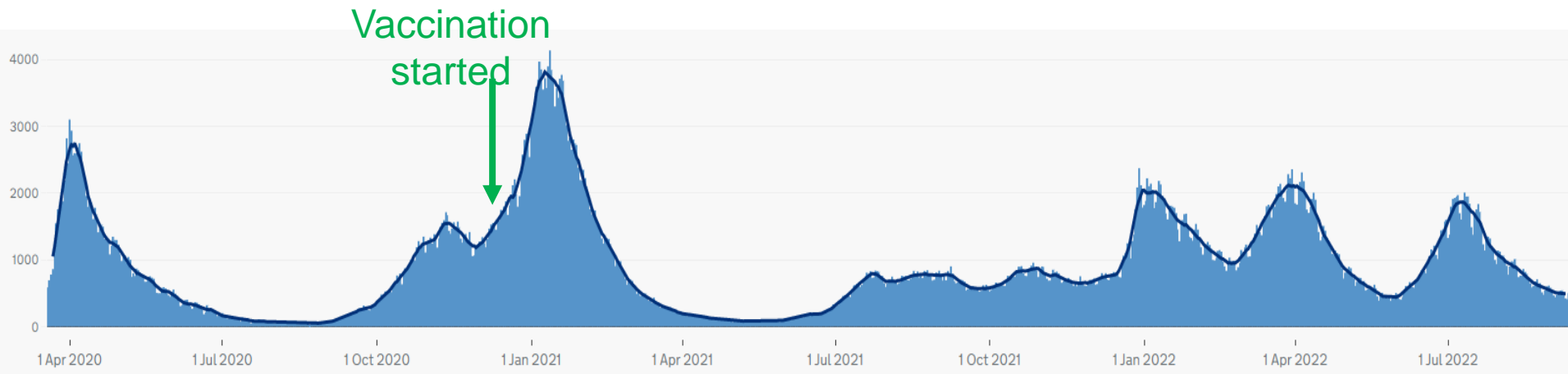
Total

127,447,699

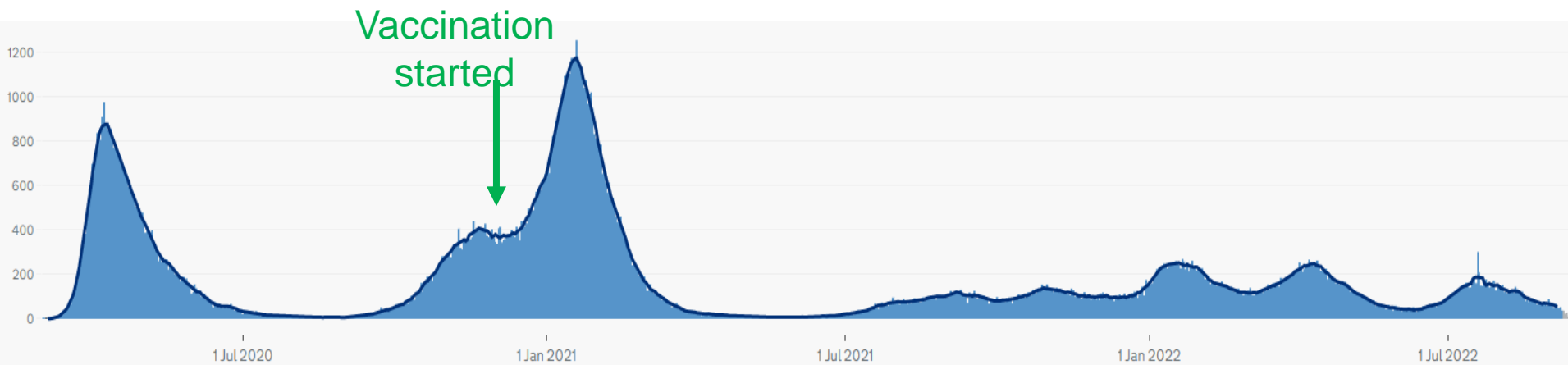
Cases



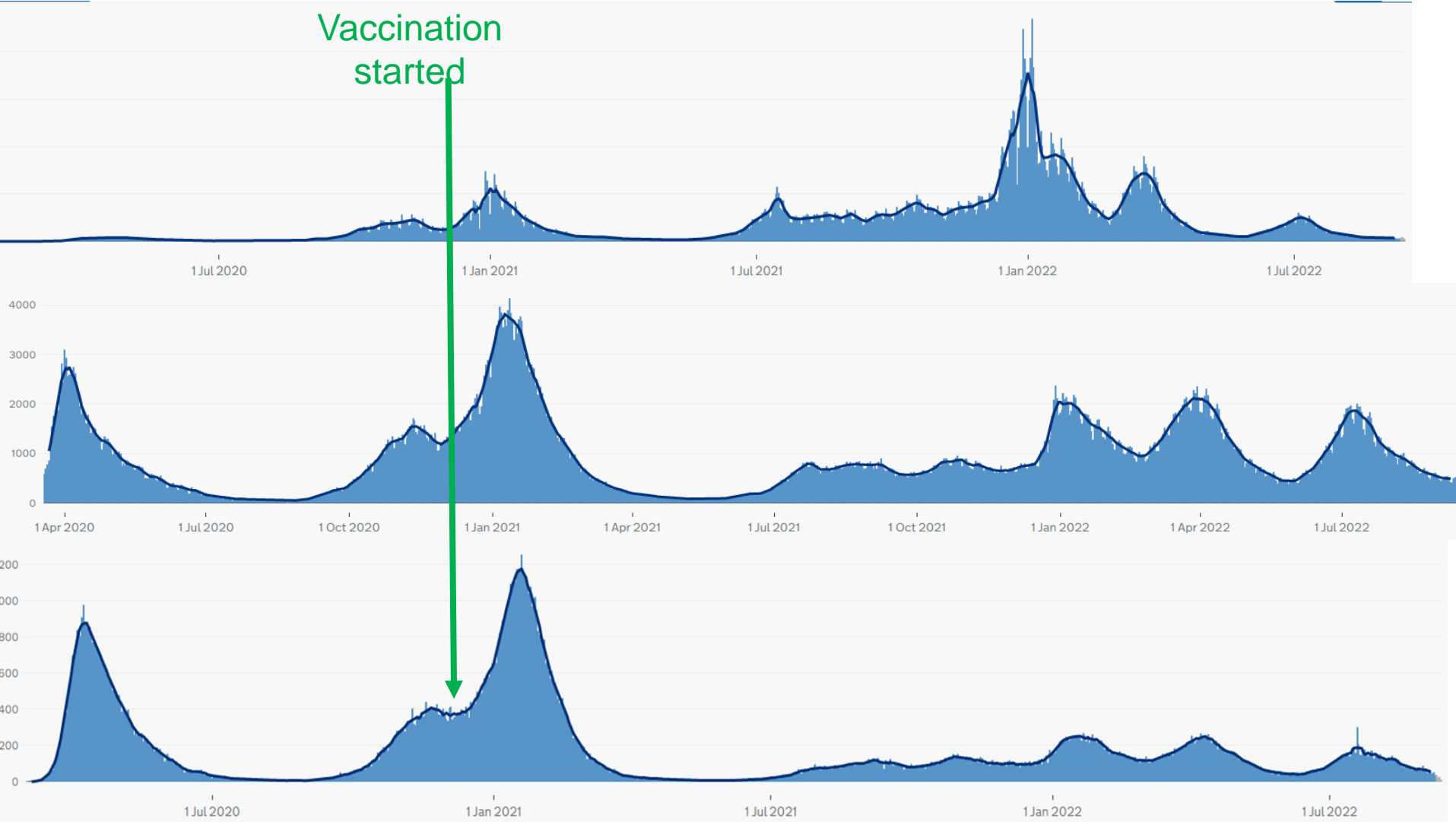
Patients admitted to hospital



Weekly deaths with COVID-19 on the death certificate by date registered

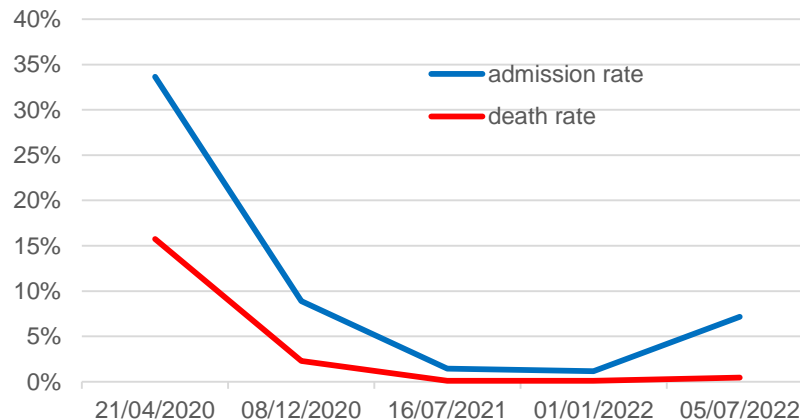


Vaccination
started

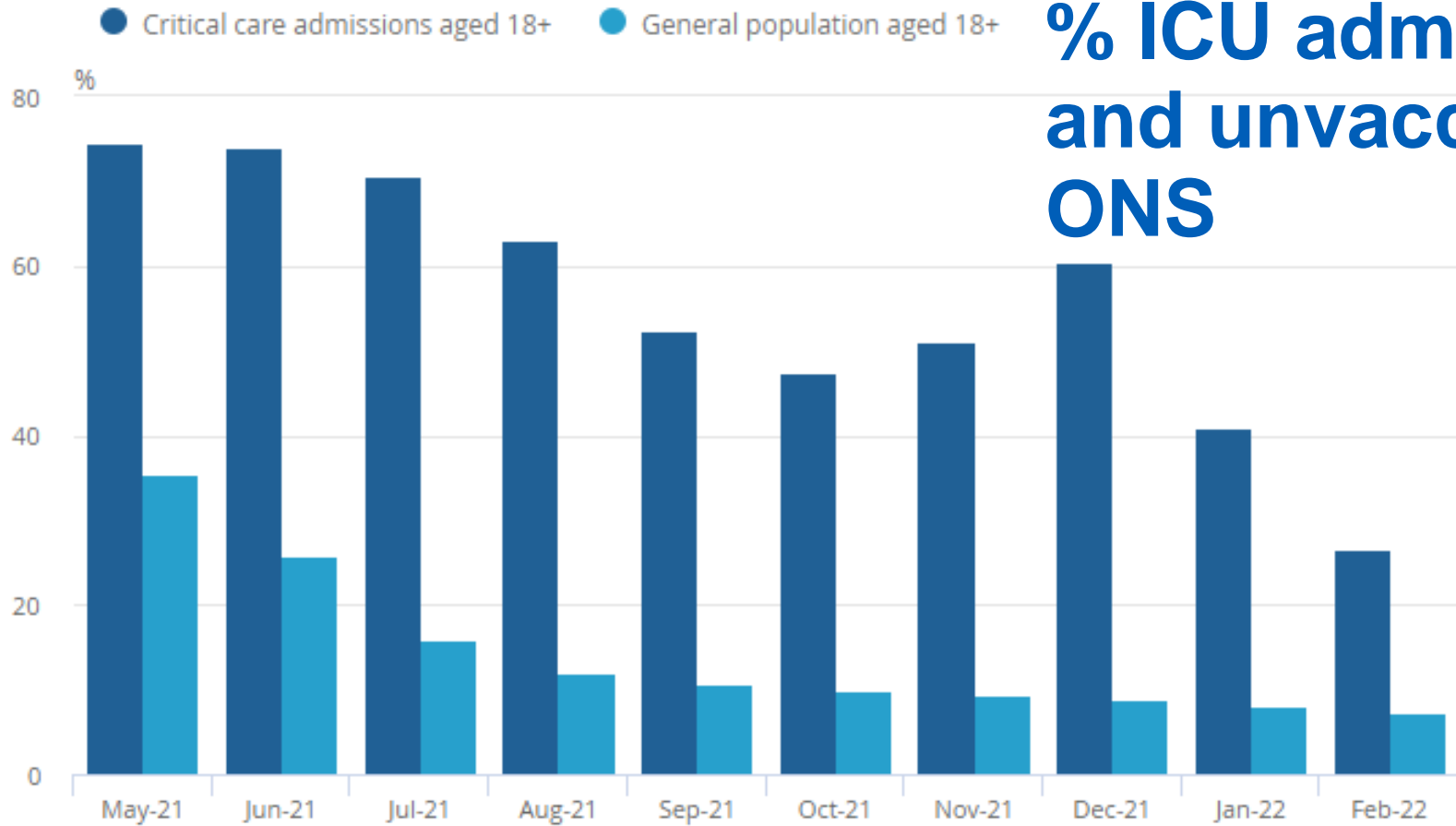


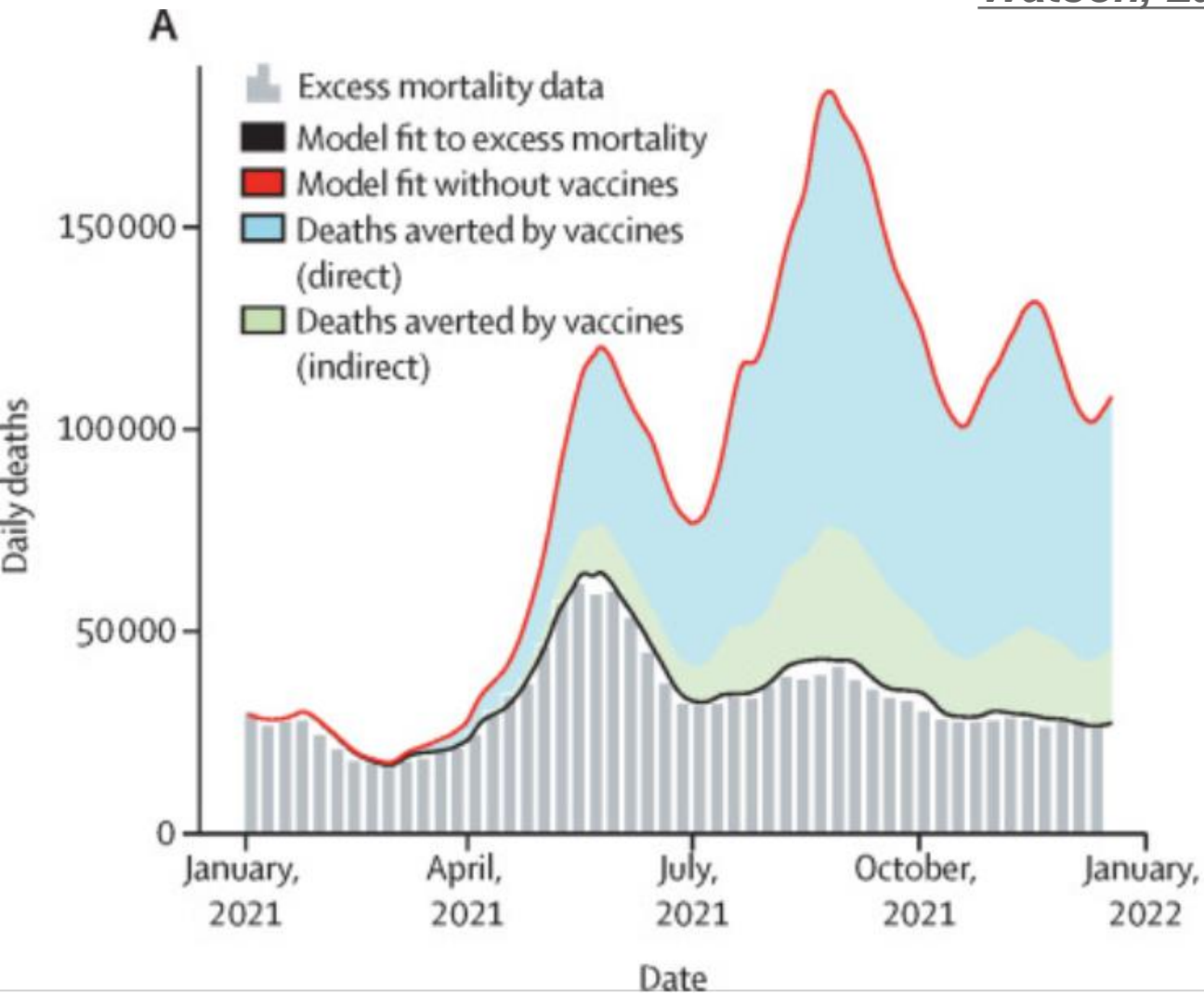
Admission and death rate

	Cases	Admission	Admission rate	Death	Death rate
21/04/2020	4152	1397	34%	653	15.73%
08/12/2020	16101	1431	9%	371	2.30%
16/07/2021	44875	654	1%	47	0.10%
01/01/2022	178016	2040	1%	156	0.09%
05/07/2022	25171	1802	7%	116	0.46%



% ICU admission and unvaccinated, ONS





**Estimated
~20 million
death
reduction
globally**

Life

- **Without vaccine**
 - Stop transmission
 - Hygiene & Mask → personal contact → large gathering → lockdown
 - Travel
- **With vaccine**
 - Live with COVID

Healthcare system

- **Initial phase**
 - Stop elective
 - Move to remote
 - Non-attendance
- **Backlog**

The other side of the coin - Side effects

- Like all vaccines, can cause side effects
- Not everybody
- Most side effects are mild or moderate and go away within a few days
- Exceptionally rare to have lasting / concerning side effect

The other side of the coin - Side effects

- **Yellow card (anyone can report anything): 461479, 2 to 5 per 1,000 doses**
 - 172,901 for Pfizer
 - 246,183 AstraZeneca
 - 40,576 Moderna
 - 1,819 no specified
- **Of interest**
 - Blood clot: (AZ) ~16 per million
 - Myo(Peri)carditis : Pfizer 9(6), Moderna 17(10) per million

The other side of the coin - Death

- **Yellow card: 2240**
 - 820 for Pfizer
 - 1301 AstraZeneca
 - 70 Moderna
 - 49 Not specified

A report with a fatal outcome to the Yellow Card scheme does not necessarily mean that it was caused by the vaccine

- **ONS**
 - 15 death
 - None under 35

Special groups

- **Pregnant women**
- **Children**
- **Immunosuppressed**

What about long COVID?

Notarte, Lancet, 2022

- Overall, reduced the risk of long-COVID
- For existing long COVID, some showed improvement and some worsening after vaccination.

The best and quickest way out of the pandemic is by getting the vaccine

Thank you

Conclusion

- **Vaccination has had a major role in returning to normality and enable living with COVID.**
- **We encourage every one to get vaccinated including primary course and then the booster.**
- **You can contact us if you have any question to help you make decision about the vaccine**
- **covidvaccinebookings@gstt.nhs.uk**
- **<https://www.guysandstthomas.nhs.uk/covid-vaccination>**

Thank you very much for listening