



UNIVERSITY OF
BIRMINGHAM



INSTITUTE OF
**IMMUNOLOGY AND
IMMUNOTHERAPY**

COVID and Immunodeficiency

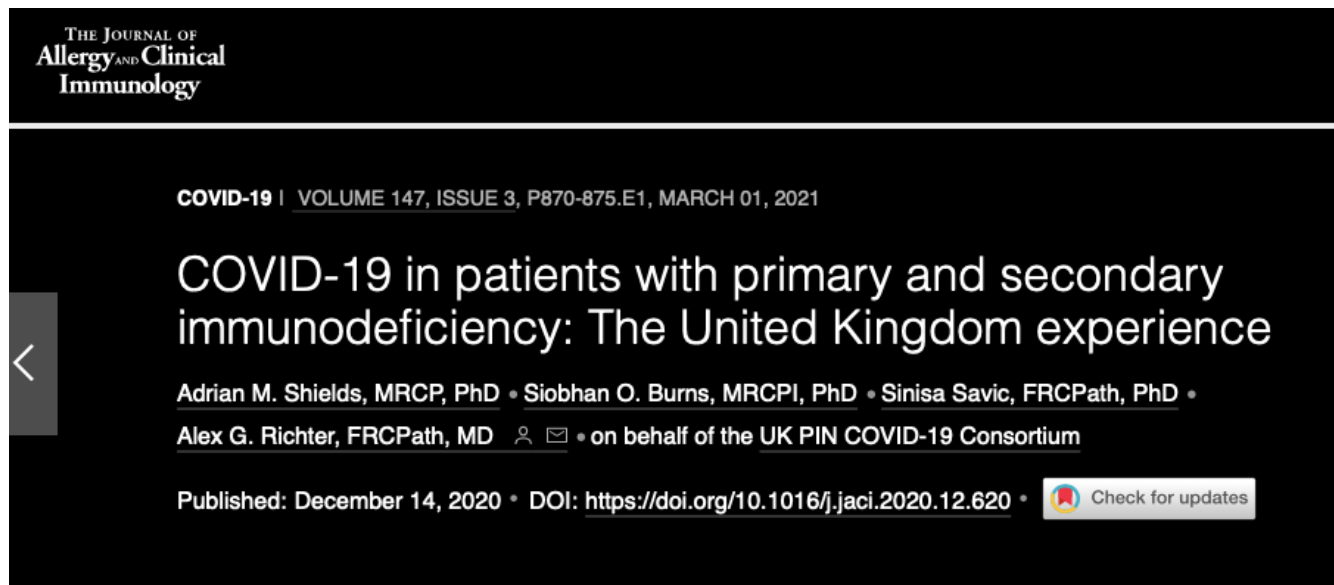
UHB patient webinar

Professor Alex Richter

University of Birmingham

Wednesday 8th June 2022

Immunodeficiency patients had a significantly increased vulnerability for hospitalisation and death in the first wave 😞



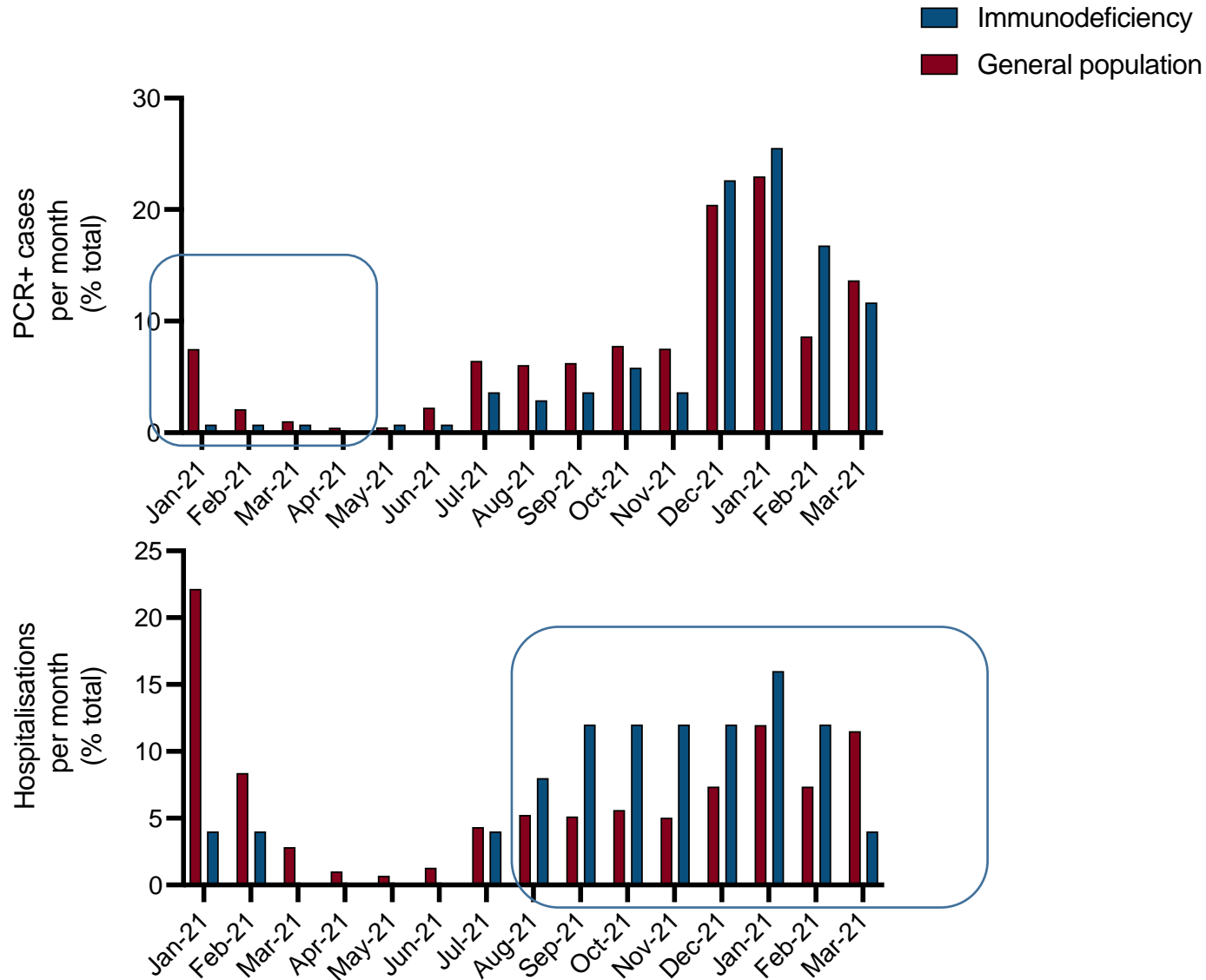
So what is going on now?

Outlook has improved +++

Less hospitalization and death in Omicron wave compared to 2020

	Updated cohort							JACI 2021 UK Cohort							Statistics	
	n	Age (yr, IQR)	Sex (n, % male)	Hospitalised (%)	Deaths	Inpatient mortality (%)	IFR (%)	n	Age (yr, IQR)	Sex (n, % male)	Hospitalised (n,%)	Deaths	Inpatient mortality (%)	IFR (%)	p-value (hospitalisation)	P-value (IFR)
Primary Immunodeficiency (all)	107	45 (33-58)	57.0	16.8	3.0	16.7	2.80	60	42.0 (28.0-58.2)	43.3	32 (53.3)	12	37.5	20.0	<0.00001	0.0001
CVID	43	47 (37-61)	55.8	18.6	1.0	12.5	2.33	23	54.0 (31.8-70.8)	39.1	13 (56.5)	8	61.5	34.8	0.001625	0.0002
PAD	8	48.5 (40-59.5)	25.0	12.5	0.0	0.0	0.00	12	43.5 (26.5-71.8)	16.7	6 (50.0)	1	16.7	8.3	0.84978	0.307
SPAD	6	58.0 (51.3-72.3)	16.7	0.0	0.0	0.0	0.00	3	56.0 (50.0-69.0)	33.3	2 (66.7)	1	50	33.3	0.01	0.08
XLA	13	33 (24.5-43)	100.0	38.5	0.0	0.0	0.00	4	30.5 (28.5-31.0)	100	3 (75.0)	0	0	0	0.200441	n/a
Secondary Immunodeficiency (all)	33	56 (47-61.5)	48.5	18.2	3.0	50.0	9.09	33	64.5 (56.0-79.8)	45.5	25 (75.8)	11	44	33.3	<0.00001	0.0160

Infections and hospitalisation trends in Immunodeficiency patients



Jan 21 – Jun 21

- More infections and hospitalisations in the general population vs immune deficiency patients - **shielding making a difference**

August 21- present

- This is reversed after relaxation of these measures – **immunodeficiency patients are still vulnerable**

What has improved outcomes?

Vaccines?

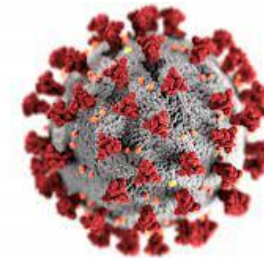


- What if you don't respond to vaccination?
- Is some response better than no response?

Acute treatments given early?



Milder virus?

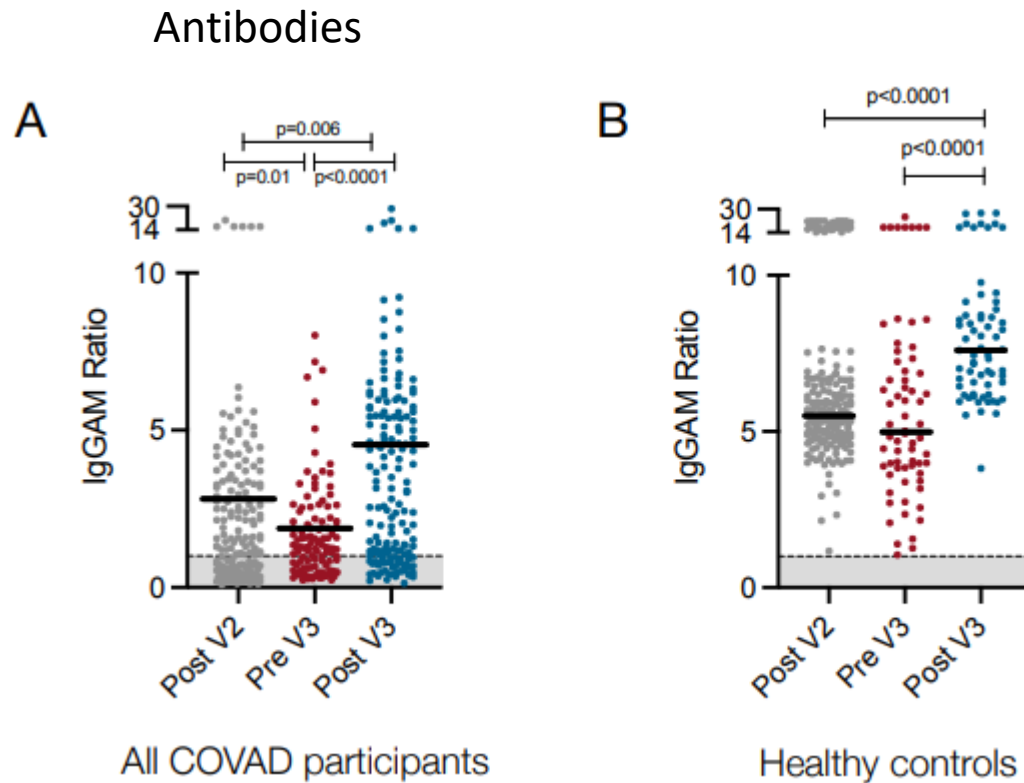


Hong Kong and China experience suggests not

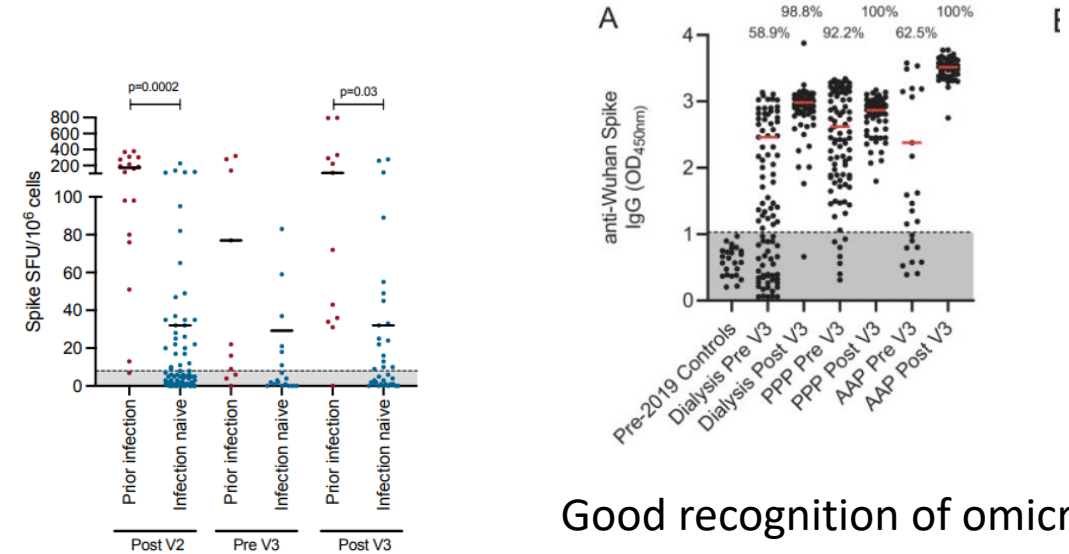
Vaccines

- 3 doses better than 2 for antibody and T cell responses

Fantastic responses in patients that don't respond to standard vaccines



T cells



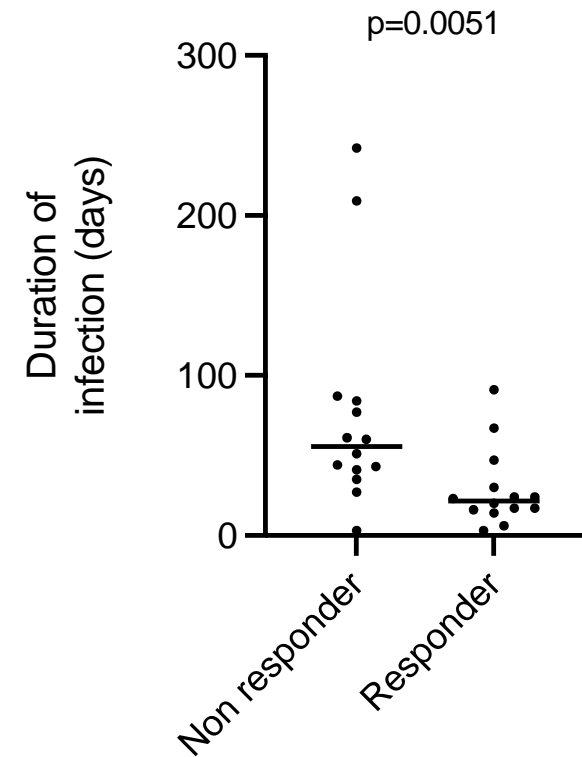
Good recognition of omicron but neutralisation not so good – antibodies work in different ways

- 61% responded post 2 doses v 76% after 3 😊
- But levels lower than health controls

Making any antibody response either through infection or vaccination helps

Outcome with subsequent infection

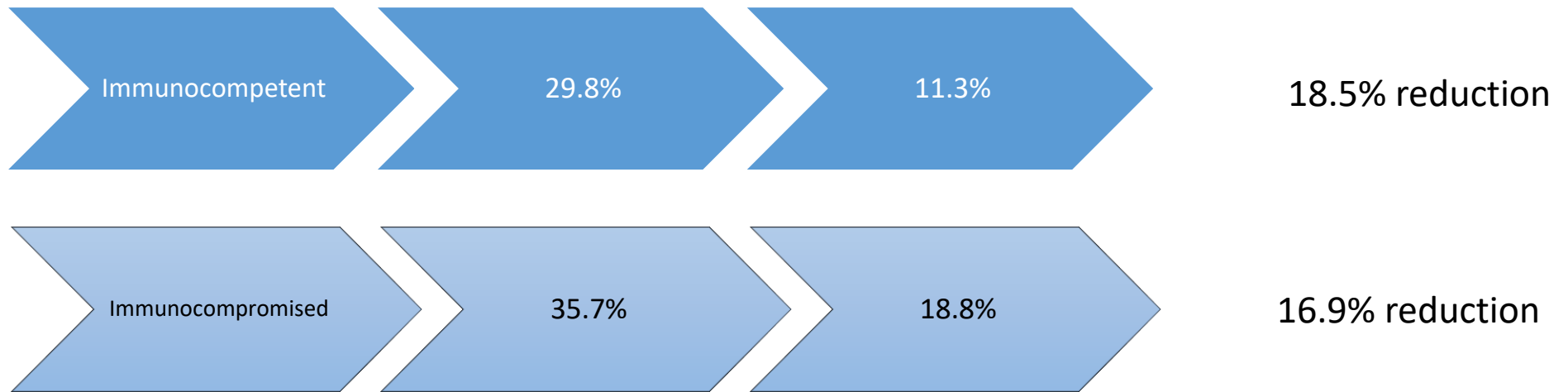
	No antibody response	Antibody response
Number	36	33
Age	51 (37.3-62.5)	51 (35.0-61.0)
On IVIG	88.9	87.9
On long term antibiotics	55.6	42.4
On Immunosuppression	22.2	18.2
Exposures		
Prior COVID	13.9	12.1
2 vaccine doses	94.4	100.0
3 vaccine doses	77.8	90.9
Omicron wave infection		
Symptomatic	88.9	84.8
Received tx	66.7	66.7
Hospitalised	33.3	9.1
Deaths	4.0	2



- Looking at patients with immune impairment according to any response to vaccination
- Omicron infection usually symptomatic
- Only 2/3rds received outpatient treatment
- Hospitalisation and death higher in those that had no pre-existing antibodies
- Ability to clear the virus

ISARIC – study of patients have been hospitalised with COVID-19

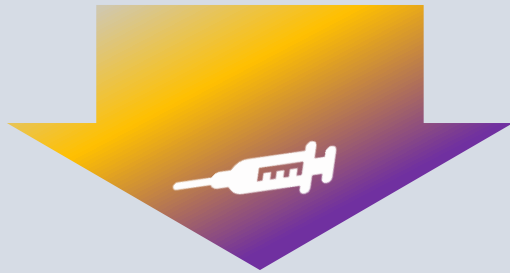
- Mortality for both immunocompetent and immunocompromised groups reduced over time.
- This reduction has been less for immunocompromised patients who remain disproportionately vulnerable



Learning to “live with COVID” if you have antibody deficiency



Reduced vaccine effectiveness



Still more likely to have severe or life-threatening disease

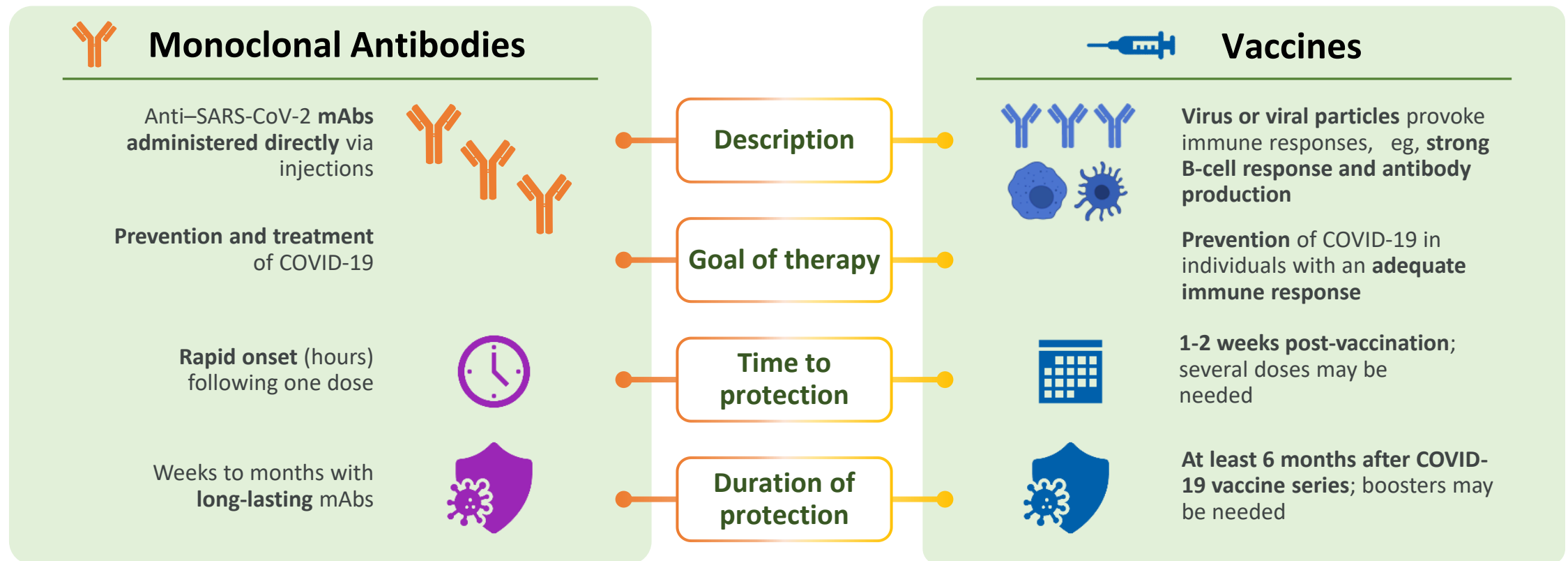


May suffer prolonged illness, potentially taking months to clear the virus

>90 days
of acute infection

A role for monoclonal antibodies as a pre-exposure treatment

mAbs give vulnerable patients antibodies engineered to target SARS-CoV-2 that they cannot generate through vaccination



Concerns about current mAbs

- “Do we even need another treatment as COVID is over and only a cold”
- How well do they work against omicron – data from laboratory work v real life How should they be used in immunodeficiency patients
- Who will benefit most from them
- Just not enough real life data and concern we are variant chasing
- Many countries are taking a pragmatic approach rather than waiting for data.....

Research studies coming soon

- RAPID PROTECTION – Oxford led AZ Evusheld study
- PROTECT V – Cambridge / Birmingham led GSK Sotrovimab
- United Kingdom COVID 19 Immune Suppressed Disease Consortium (UK- CISD)

The future

- Management and treatment of COVID likely to be given back to NHS
 - Hopefully allow personalised decision making of risk as we usually do
- Pre-exposure prophylaxis
- Check with your clinicians about what studies may be open to you
- Continue to manage the personal risk of COVID and all other infections

Managing the risk of COVID (or any) infection

Prevention of infection



Limit time in crowded spaces especially inside
If have to – wear a mask



Early recognition and treatment



Speak to your workplace about your risk and reasonable adjustment

Try and avoid individuals you know are unwell



Get all vaccinations
Encourage family members to get vaccinated

Test if any symptoms for early diagnosis
Ask family to test if visiting



NHS

**Covid Medicine
Delivery Unit (CMDU)**

