Vaccinazione anti SARS-CoV-2 nelle popolazioni fragili

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ARTICLES

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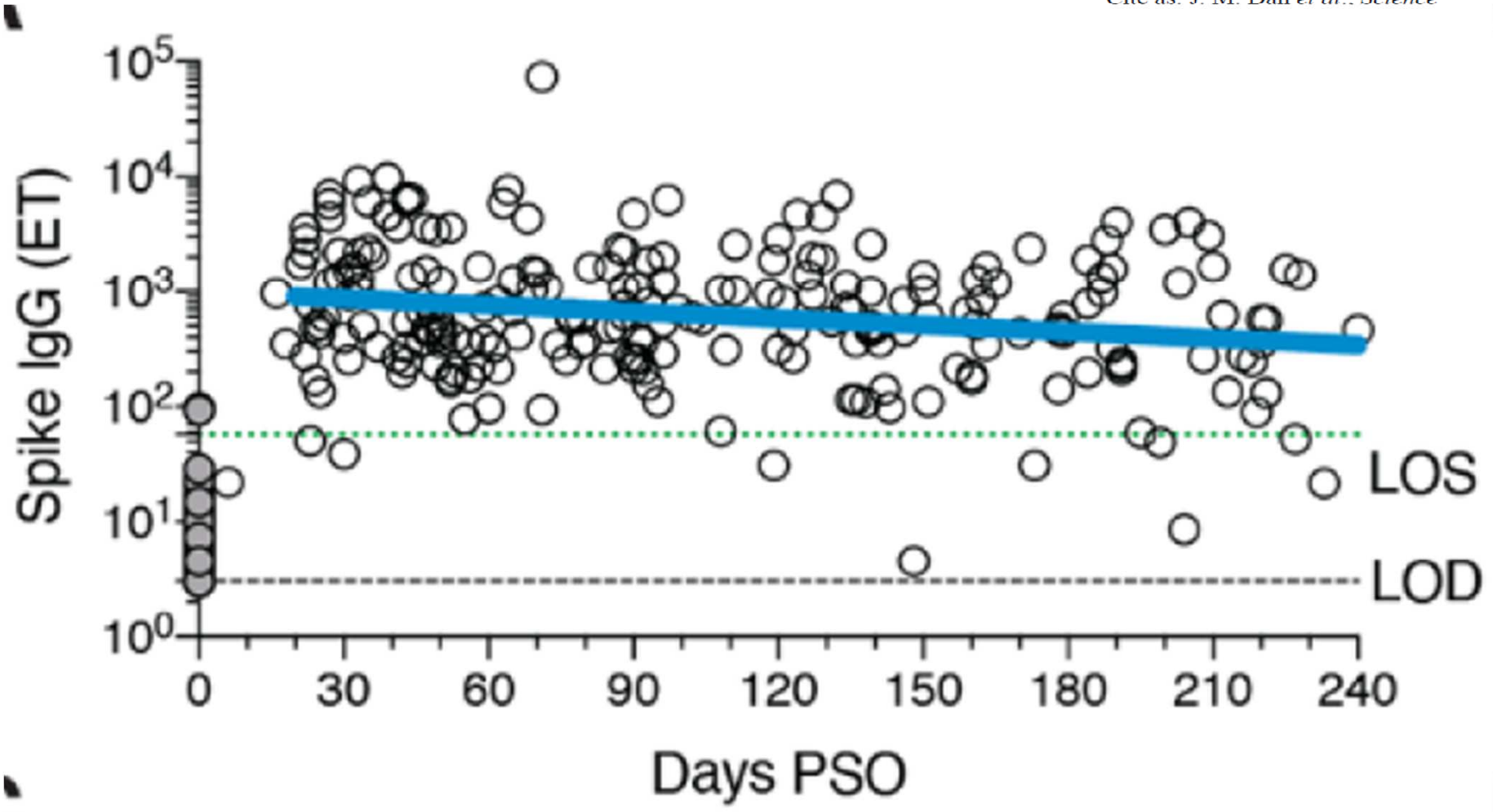
- We analyzed the relationship between in vitro neutralization levels and the observed protection from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection using data from seven current vaccines and from convalescent cohorts.
- We estimated the neutralization level for 50% protection against detectable SARS-CoV-2 infection to be 20.2% of the mean convalescent level (95% CI = 14.4–28.4%).
- The estimated neutralization level required for 50% protection from severe infection was significantly lower (3% of the mean convalescent level; 95% CI = 0.7–13%, $P = 0.0004$).
- Modeling of the decay of the neutralization titer over the first 250 d after immunization predicts that a significant loss in protection from SARS-CoV-2 infection will occur, although protection from severe disease should be largely retained.

Cite as: J. M. Dan *et al.*, *Science*



Article

SARS-CoV-2 infection induces long-lived bone marrow plasma cells in humans

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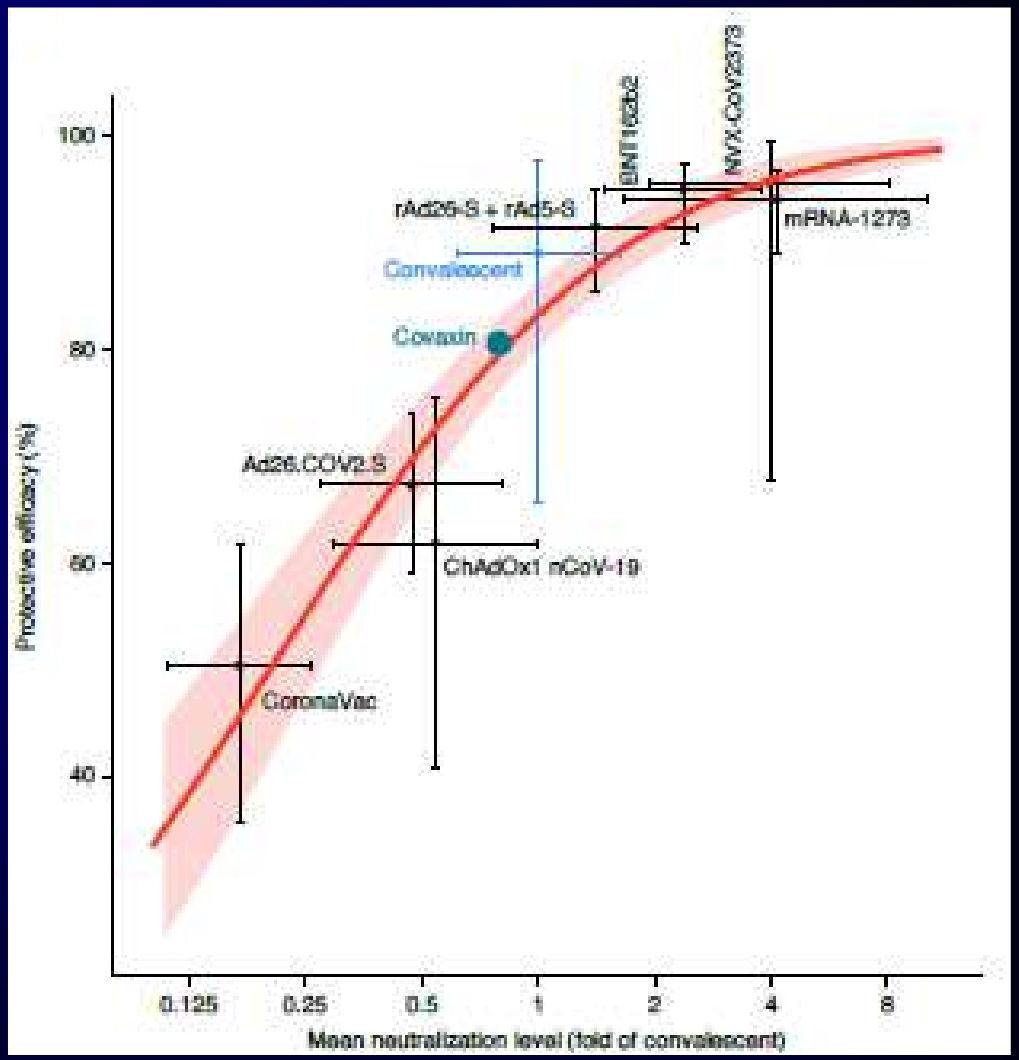
Jackson S. Turner[1], Wooseob Kim[1], Elizaveta Kalaidina[2], Charles W. Goss[3], Adriana M. Rauseo[4], Aaron J. Schmitz[1], Lena Hansen[1,5], Alem Haile[6], Michael K. Klebert[6], Iskra Pusic[7], Jane A. O'Halloran[4], Rachel M. Presti[4,9] & Ali H. Ellebedy[1,8,9]✉

- Here we demonstrate that in patients who experienced mild infections (n=77), serum anti-SARS-CoV-2 spike (S) antibodies decline rapidly in the first 4 months after infection and then more gradually over the following 7 months, remaining detectable at least 11 months after infection.
- Anti-S antibody titers correlated with the frequency of S-specific BMPCs obtained from bone marrow aspirates of 18 SARS-CoV-2 convalescent patients 7 to 8 months after infection.

Relationship between neutralization level and protection from SARS-CoV-2 infection.

- The reported mean neutralization level from phase 1 and 2 trials and the protective efficacy from phase 3 trials for seven vaccines, as well as the protection observed in a seropositive convalescent cohort, are shown
- The 95% CIs are indicated as vertical and as horizontal whiskers.



- The red solid line indicates the best fit of the logistic model and the red shading indicates the 95% predictive interval of the model.
- The mean neutralization level and protective efficacy of the Covaxin vaccine are indicated as a green circle.

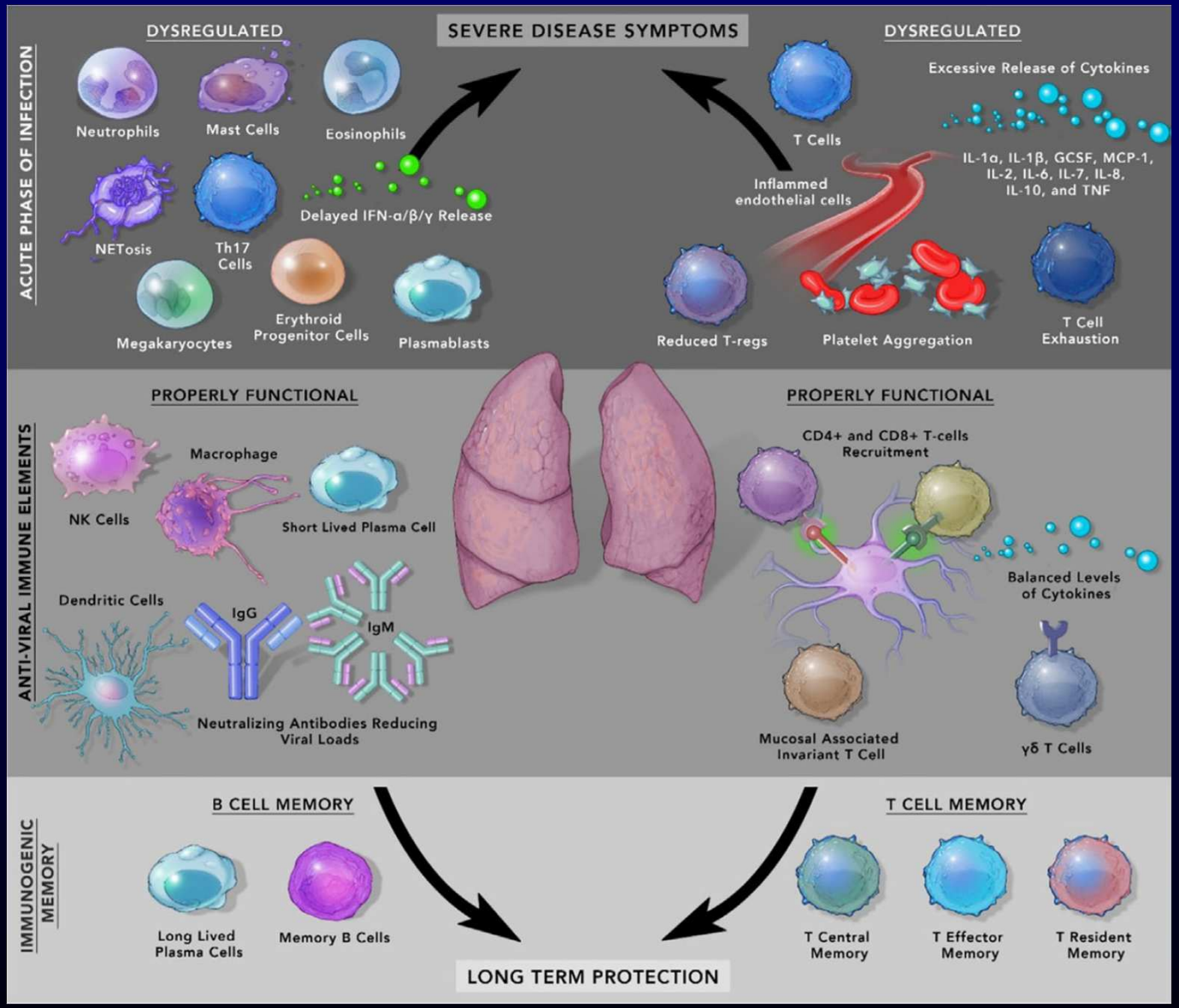
Effectiveness of the BNT162b2 Covid-19 Vaccine against the B.1.1.7 and B.1.351 Variants

- Estimated effectiveness of the BNT162b2 vaccine ≥ 14 days after the second dose:
  - -against B.1.1.7 variant infections was 89.5% (95% CI 85.9 to 92.3).
  - -against B.1.351 variant infections was 75.0% (95% CI, 70.5 to 78.9).
  - -against severe, critical, or fatal disease due to infection with any SARS-CoV-2 (with the B.1.1.7 and B.1.351 variants being predominant within Qatar) was 97.4% (95% CI, 92.2 to 99.5).

- The effectiveness on incidence of infection among vaccinated persons in the Qatar national cohort of persons who were antibody-negative was estimated to be 87.0% (95% CI, 81.8 to 90.7) against the B.1.1.7 variant and 72.1% (95% CI, 66.4 to 76.8) against the B.1.351.

Abu-Raddad et al NEJM May 5, 2021

Mediators of Immunopathology in SARS-CoV-2 infection and resolution.



Ahluwalia et al. Frontiers in Immunology 2021;12: 660019

Clinical Gastroenterology and Hepatology 2020;■:■–■

Predictors of Outcomes of COVID-19 in Patients with Chronic Liver Disease: US Multi-center Study

- Of the 978 patients in our cohort, 867 patients (mean age 56.9-14.5 years, 55% male) met inclusion criteria. The overall all-cause mortality was 14.0% (n=121), and 61.7% (n=535) had severe COVID-19.
- Patients presenting with diarrhea or nausea/vomiting were more likely to have severe COVID-19.
- The liver-specific factors associated with independent risk of higher overall mortality were alcohol-related liver disease (HR 2.42, 95% CI 1.29-4.55), decompensated cirrhosis (HR 2.91 [1.70-5.00]) and hepatocellular carcinoma (HR 3.31 [1.53-7.16]).
- Other factors were increasing age, diabetes,hypertension, chronic obstructive pulmonary disease and current smoker. Hispanic ethnicity (OR 2.33 [1.47-3.70]) and decompensated cirrhosis (OR 2.50 [1.20-5.21]) were independently associated with risk for severe COVID-19.

COVID-19 in Cancer Patients, Risk Factors for Disease and Adverse Outcome, a Population-Based Study From Norway

Tom Børge Johannesen[1], Sigbjørn Smeland[2,3], Stein Aaserud[1], Eirik Alnes Buanes[4,5], Anna Skog[1], Giske Ursin[1,6,7] and Åslaug Helland[2,3,8]*

- The fatality rate of COVID-19 among cancer patients was 0.10. This was similar to noncancer patients, when adjusting for age and sex with OR (95% CI) for death= 0.99 (0.68–1.42).
- Patients with distant metastases had significantly increased OR of death due to COVID-19 disease of 9.31 (95% CI 2.60–33.34).
- For the combined outcome death and/or admittance to hospital due to COVID-19, we found significant two-fold increased risk estimates for patients diagnosed with cancer less than one 1 year ago (OR 2.08, 95% CI 1.14–3.80), for those treated with anti-cancer drugs during the past 3 months (OR 1.80, 95% CI 1.07–3.01) and for patients undergoing major surgery during the past 3 months (OR 2.19, 95% CI 1.40–3.44).

Frontiers in Oncology 2021;11: 652535

Journal of Autoimmunity 116 (2021) 102545

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Baseline characteristics and prognosis of the 47 patients with SARS-CoV-2 infection.

CHARACTERISTICS	COVID-19 positive patients (n = 47)	
Comorbidities	Total number	%
• Lung diseases (includes ILD, COPD, Asthma, other lung diseases)	10	21.27
• Diabetes	4	8.52
• Hypertension	14	29.78
• Cardiovascular disease	9	19.15
• Others	4	8.52
• None	6	12.76
Prognosis		
• Hospitalization	14	29.78
• Quarantine-discharge	26	55.32
• Death	7	14.90

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Digestive and Liver Disease

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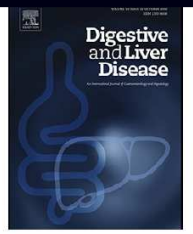

Alimentary Tract

Risk of COVID 19 in patients with inflammatory bowel diseases compared to a control population

- 1810 patients (64%) responded to the questionnaire (941 IBD patients and 869 controls).
- IBD patients were significantly younger and of male sex than controls.
- Highly probable COVID-19 on the basis of symptoms and signs was less frequent in the IBD group (3.8% vs 6.3%; OR:0.45, 95%CI:0.28–0.75).
- IBD patients had a lower rate of nasopharyngeal swab-PCR confirmed diagnosis (0.2% vs 1.2%; OR:0.14, 95%CI:0.03–0.67).
- There was no difference in hospitalization between the groups (0.1% vs 0.6%; OR:0.14, 95%CI:0.02–1.17).
- Conclusion: IBD patients do not have an increased risk of COVID-19 specific symptoms or more severe disease compared with a control group of gastroenterology patients.

HIV infection and COVID-19 death: a population-based cohort analysis of UK primary care data and linked national death registrations within the OpenSAFELY platform

Krishnan Bhaskaran, Christopher T Rentsch, Brian MacKenna, Anna Schultze, Amir Mehrkar, Chris J Bates, Rosalind M Eggo, Caroline E Morton, Sebastian C J Bacon, Peter Inglesby, Ian J Douglas, Alex J Walker, Helen I McDonald, Jonathan Cockburn, Elizabeth J Williamson, David Evans, Harriet J Forbes, Helen J Curtis, William J Hulme, John Parry, Frank Hester, Sam Harper, Stephen J W Evans, Liam Smeeth, Ben Goldacre**

- **People living with HIV had higher risk of COVID-19 death than those without HIV after adjusting for age and sex: HR 2,90 (95% CI 1,96–4,30; p<0·0001).**
- **The association was attenuated, but risk remained high, after adjustment for deprivation, ethnicity, smoking and obesity: aHR 2,59 (95% CI 1,74–3,84; p<0·0001).**
- **There was some evidence that the association was larger among people of Black ethnicity: HR 4,31 (95% CI 2,42–7,65) vs 1,84 (1,03–3,26) in non-Black individuals (p-interaction=0·044).**

Lancet HIV 2020

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See Online/Comment
https://doi.org/10.1016/S2352-3018(20)30332-5

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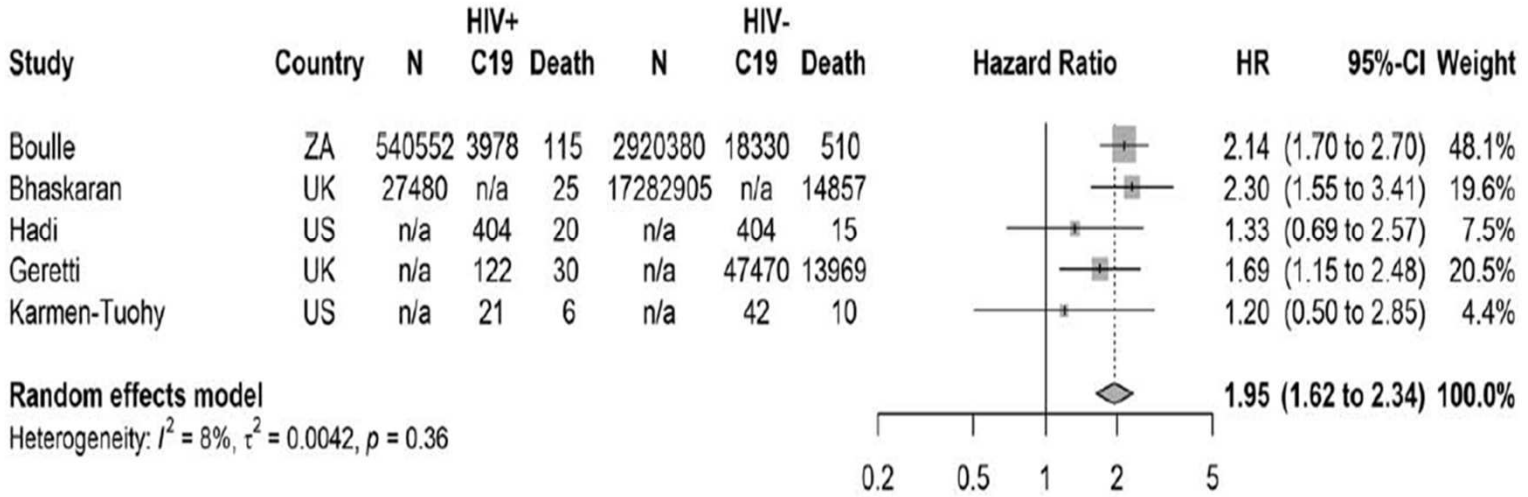
FAST TRACK

Risk of adverse coronavirus disease 2019 outcomes for people living with HIV

Maya M. Mellor[a], Anne C. Bast[a], Nicholas R. Jones[b], Nia W. Roberts[c], José M. Ordóñez-Mena[b,f], Alastair J.M. Reith[a], Christopher C. Butler[b], Philippa C. Matthews[d,e] and Jienchi Dorward[b,g]

- In a meta-analysis of five studies, PLWH had a higher risk of COVID-19 mortality (HR 1.95, 95% CI: 1.62–2.34) compared with people without HIV.



Factors associated with hospital admission for COVID-19 in HIV patients

Antonio Di Biagio[a], Elena Ricci[b], Leonardo Calza[c], Nicola Squillace[d], Barbara Menzaghi[e], Stefano Rusconi[f], Giancarlo Orofino[g], Olivia Bargiacchi[h], Chiara Molteni[i], Laura Valsecchi[j], Giovanni Cenderello[k], Sergio Ferrara[l], Annalisa Saracino[m], Paolo Maggi[n], Katia Falasca[o], Lucia Taramasso[a], Paolo Bonfanti[d], for the CISAI Study group

This study reports on hospital admission and outcomes of 69 HIV-infected individuals who were diagnosed with SARS-CoV-2 infection between February and May 2020, in a network of Italian centres. Patients' characteristics and median days between symptoms and diagnosis were similar by hospital admission, whereas admitted patients had lower nadir $CD4^+$ cells and current lymphocytes count. These values were also correlated to worse COVID-19 outcome. Antiretroviral drugs did not seem to be associated with disease severity.

AIDS 2020, 34:1983–1985

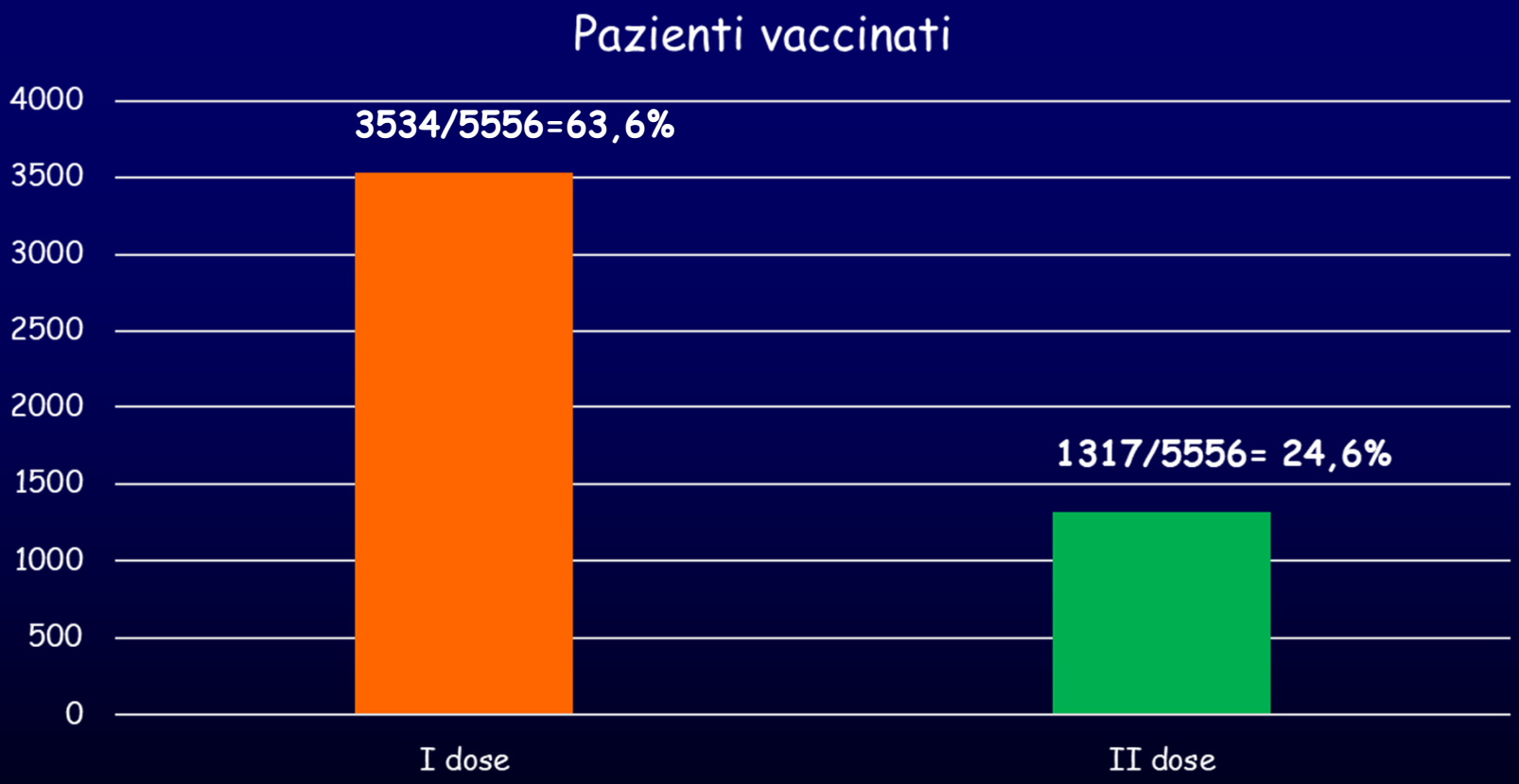
Clinical features of HIV patients with Covid-19

Clinical features	Overall	Females	Males
Hospitalised patients, n	13 (28%)	2 (18%)	11 (31%)
Chest CT-confirmed pneumonia, n	12 (25%)	2 (18%)	10 (28%)
Oxygen demand, n	4	1	3
Mechanical ventilation, n	2	0	2
Deaths, n	2	0	2
Comorbidities per patient, n	2.0 ± 1.0	1.9 ± 0.8	2.0 ± 1.0
Co-morbidities, n			
- dyslipidemia	15	7	8
- hypertension	14	5	9
- hepatitis C or B co-infection	5	1	4
- renal disease	4	0	4
- diabetes mellitus	3	1	2
- epilepsy	2	0	2
- cardiovascular disease	2	1	1
- neoplasms	3	0	3
- gastritis	2	0	2
- organ transplantation	1	0	1
- chronic obstructive pulmonary disease	2	0	1

Gervasoni et al. CID 2021

Published online 2020 May 14. doi: 10.1093/cid/ciaa579

H.Sacco: PLWHA vaccinati al 13.5.2021



Pazienti che hanno contattato gli ambulatori nel 2020: 5556

Immunogenicity of a Single Dose of SARS-CoV-2 Messenger RNA Vaccine in Solid Organ Transplant Recipients

- Transplant recipients receiving anti–metabolite maintenance immunosuppression therapy were less likely to develop an antibody response than those not receiving such immunosuppression therapy (37% vs 63%, respectively; (aIRR,0.22, 95%CI,0.15-0.34;P < .001).
- Older transplant recipients were less likely to develop an antibody response (aIRR, 0.83, 95% CI, 0.73-0.93, per 10 years; P = .002).
- Those who received mRNA-1273 were more likely to develop an antibody response than those receiving BNT162b2 (69%vs 31%, respectively (aIRR, 2.15, 95%CI, 1.29-3.57; P = .003).
- This association was similar in a sensitivity analysis limited to those tested 14 to 21 days after vaccination (n = 245; aIRR, 2.29. 95%CI, 1.32-3.94; P = .003).

Boyarsky et al. JAMA May 4, 2021; 325

Antibody Response to the Janssen COVID-19 Vaccine in Solid Organ Transplant Recipients

- At a median (IQRs) 33 days (31-44) after vaccination, anti-RBD antibody was detectable in only 2/12 participants who received the Janssen vaccine compared to 430/725 who completed the mRNA vaccine series (17% versus 59%, p=0.005).
- Those who received the Janssen vaccine had lower odds (aOR 0.11 95% CI 0.02-0.53, p=0.006) of developing anti-RBD antibodies than those who completed the mRNA series.
- This association was similar in sensitivity analyses weighting by age and years since transplant (aOR 0.13 95% CI 0.03-0.61, p=0.01) and immunosuppression and years since transplant (aOR 0.17 95%CI 0.04-0.76, p=0.02).
- Median anti-RBD Ig titers in the Janssen group were significantly lower than the mRNA group (2.39 versus 106.9 U/mL) (p=0.047).

Boyarsky et al. Transplantation 2021

Impaired Humoral Immunity to SARS-CoV-2 Vaccination in NHL and CLL Patients

Patient Group	Number	Spike IgG	Spike IgM	Spike IgA	RBD IgG	RBD IgM	RBD IgA
Healthy vaccinated controls	3	100%	100%	100%	100%	67%	100%
Convalescent controls	2	100%	100%	100%	100%	100%	100%
CD20-based therapy	24	38%	25%	46%	25%	4%	17%
Chemotherapy	4	100%	75%	100%	100%	50%	100%
Monitoring	15	60%	40%	53%	73%	40%	25%
Targeted therapy	10	70%	50%	70%	40%	3%	30%

Diefenbach et al. medRxiv preprint doi: https://doi.org/10.1101/2021.06.02.21257804

Mean Immunoglobulin Levels for NHL/CLL Patients with Positive Spike IgG and/or RBD IgG Tested Against Vaccinated Controls Compared to Healthy Vaccinated Controls

Patient Group	Number	RBD IgG	
		Mean	Unadjusted p-value*
Healthy vaccinated controls	3	1.03×10^5	N/A
Convalescent vaccinated controls	2	5.29×10^4	0.4658
CD20-based therapy	10	5.32×10^3	< 0.0001
Chemotherapy	4	4.90×10^4	0.0920
Monitoring	11	2.49×10^4	0.0003
Targeted therapy	7	1.67×10^4	< 0.0001

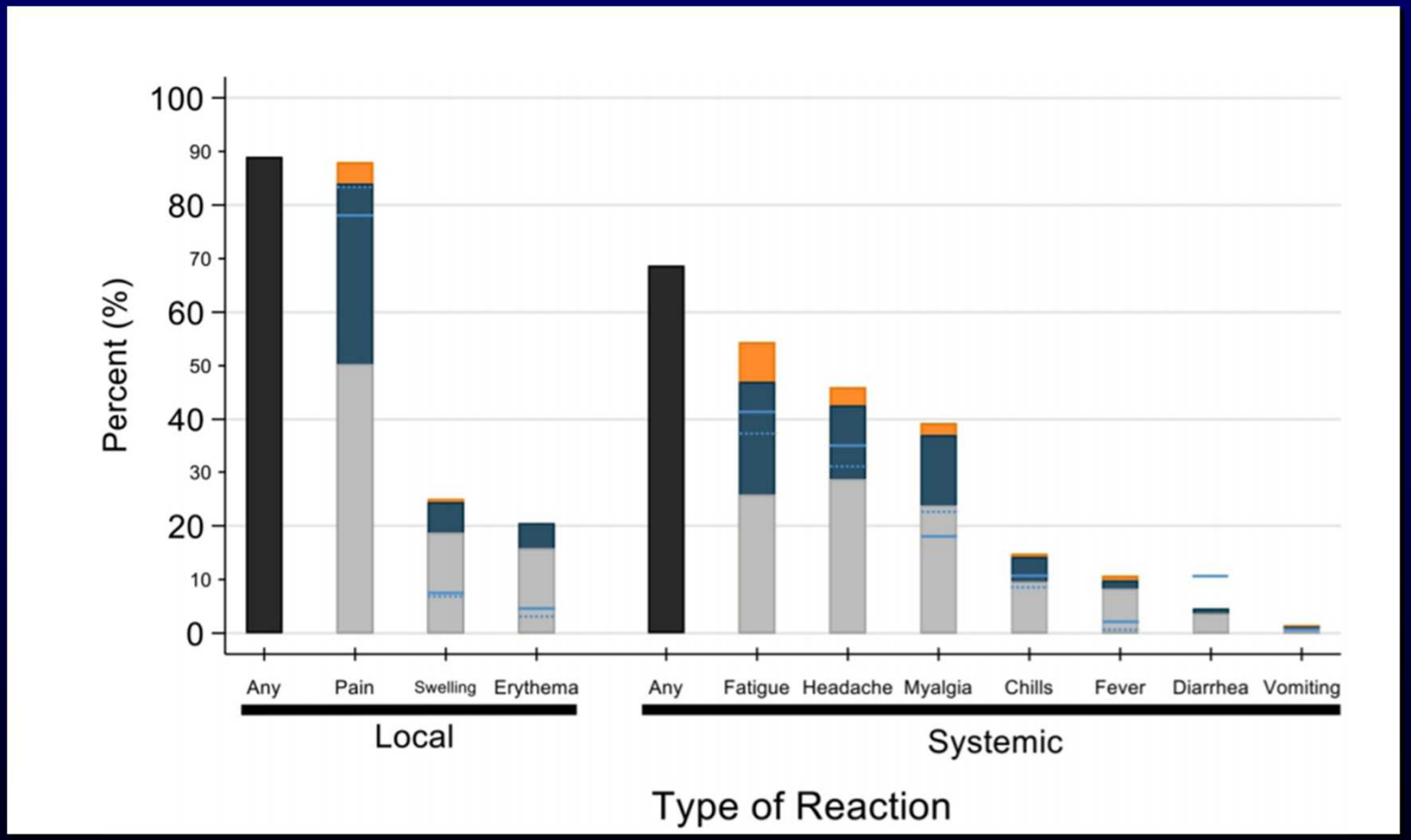
Diefenbach et al. medRxiv preprint doi: https://doi.org/10.1101/2021.06.02.21257804

Suboptimal response to COVID-19 mRNA vaccines in hematologic malignancies patients

	SARS-CoV-2 antibody result		P-value
	Positive (N=36)	Negative (N=31)*	
Age (media, IQR)	70 (62.5 – 73.5)	74 (68 – 79)	0.009
Sex (N, %)			
Male	19 (54.3%)	16 (45.7%)	0.92
Female	17 (53.1%)	15 (46.9%)	
Vaccine type (N, %)			
BNT162b2	15 (44.1%)	19 (55.9%)	0.31
mRNA-1273	16 (57.1%)	12 (42.9%)	
Days between 2nd dose of vaccine and antibody level (median, IQR)	23 (14-33)	25 (16-31)	0.93
IgG level (mg/dL) (median, IQR)†	723.5 (510-1045)	549 (472-939)	0.22
Therapy (N, %)			
Active treatment	15 (50%)	15 (50%)	0.58
Observation	21 (56.8%)	16 (43.2%)	
Cancer type (N, %)			0.01§
CLL	3 (23.1%)	10 (76.9%)	
Non-CLL	33 (61.1%)	21 (38.9%)	
Lymphomas	11 (52.4%)	10 (47.6%)	
Multiple myeloma	19 (65.5%)	10 (34.5%)	
Other‡	3 (75.0%)	1 (25.0%)	

Agha et al. medRxiv preprint doi: https://doi.org/10.1101/2021.04.06.21254949

Safety of the first dose of mRNA SARSCoV-2 vaccines in patients with rheumatic and musculoskeletal diseases



Connolly et al. Ann Rheum Dis 2021

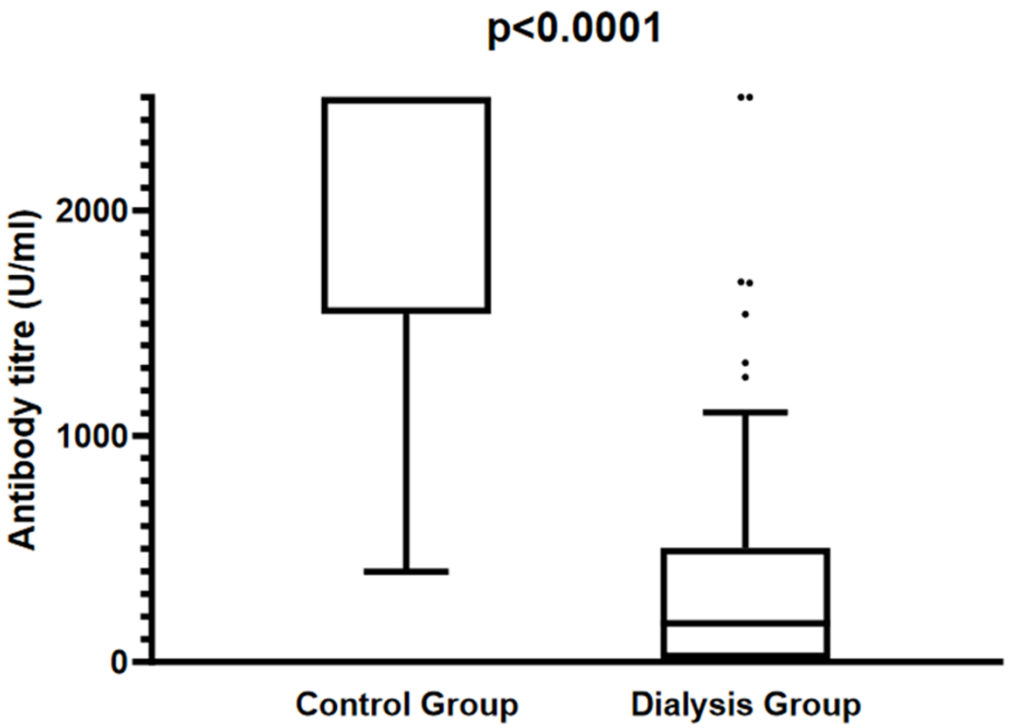
Univariable associations with anti-SARS-CoV-2 spike antibodies in IBD, stratified by vaccine type

Variable		BNT162b2		ChAdOx1 nCoV-19	
		Value	p	Value	p
Biologic treatment	Infliximab	6·0 (5·9)	<0·0001	4·7 (4·9)	<0·0001
	Vedolizumab	28·8 (5·4)		13·8 (5·9)	
Immunomodulator in infliximab-treated participants	No	9·7 (4·7)	<0·0001	5·7 (5·1)	0·045
	Yes	4·4 (6·3)		4·2 (4·7)	
Immunomodulator in vedolizumab-treated participants	No	32·4 (5·2)	0·052	15·6 (6·0)	0·082
	Yes	16·7 (6·3)		10·0 (5·5)	
Age (years)		rho = -0·22	<0·0001	rho = -0·15	<0·0001
Sex	Female	9·4 (7·0)	0·092	6·6 (5·5)	0·83
	Male	10·9 (6·3)		6·8 (5·7)	
Ethnicity	White	9·4 (6·6)	0·037	6·2 (5·6)	0·0051
	Asian	20·9 (7·3)		16·1 (5·2)	
	Mixed	25·7 (6·7)		13·7 (5·3)	
	Black	12·5 (1·6)		19·4 (2·2)	
	Other	22·9 (3·7)		5·7 (3·1)	
Diagnosis	Crohn's disease	7·3 (6·4)	<0·0001	5·6 (5·6)	0·0014
	Ulcerative colitis or IBD-unclassified	15·6 (6·5)		8·5 (5·5)	

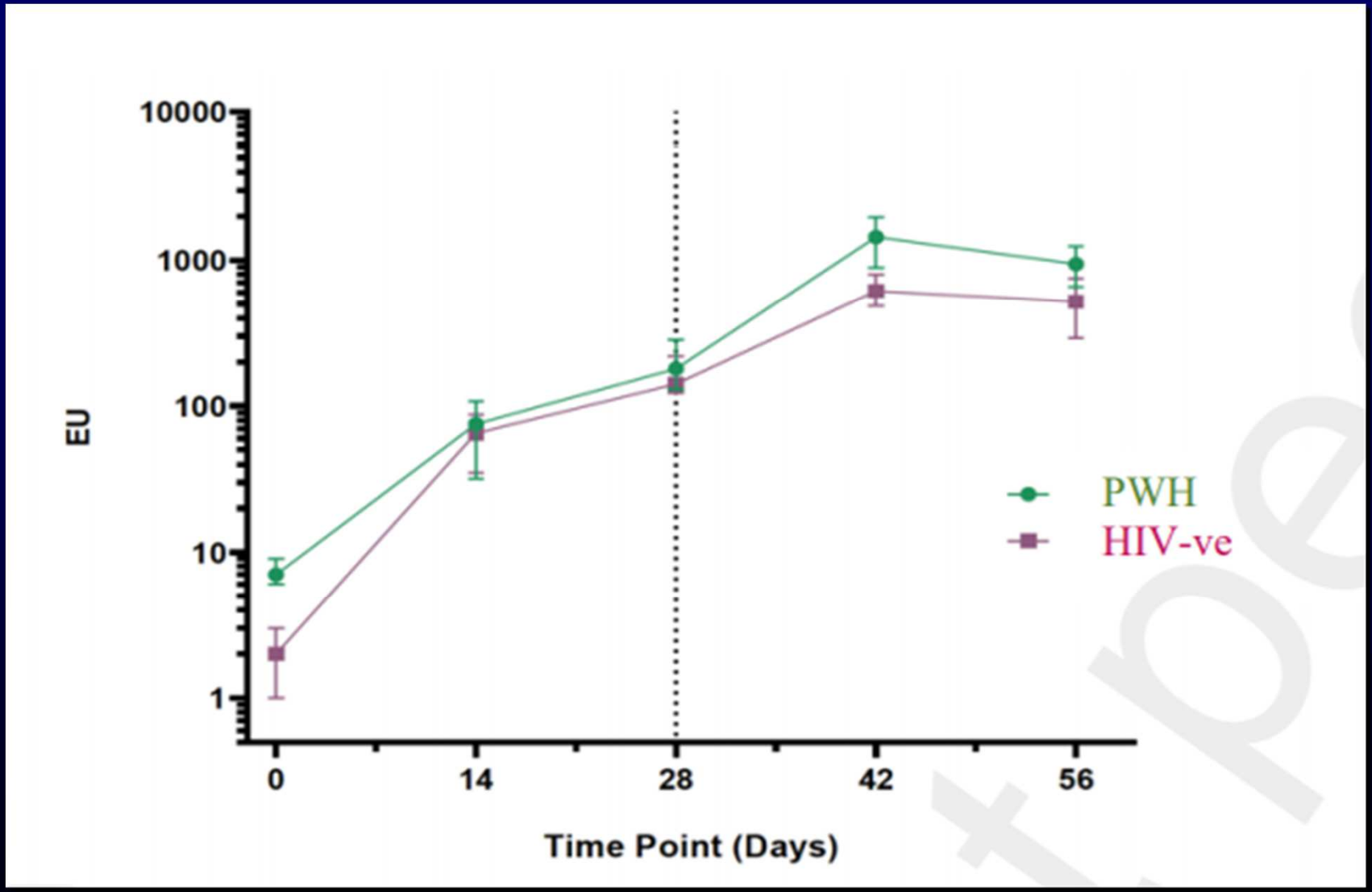
Antibody responses and seroconversion rates in infliximab-treated patients (n=865) were compared to a cohort treated with vedolizumab (n=428), a gut-selective anti-integrin α4β7 monoclonal antibody.

Kennedy et al. medRxiv preprint doi: https://doi.org/10.1101/2021.03.25.21254335

Hemodialysis Patients Show a Highly Diminished Antibody Response after COVID-19 mRNA Vaccination Compared to Healthy Controls



Safety and immunogenicity of the ChAdOx1 nCoV-19 (AZD1222) vaccine against SARS-CoV-2 in HIV infection



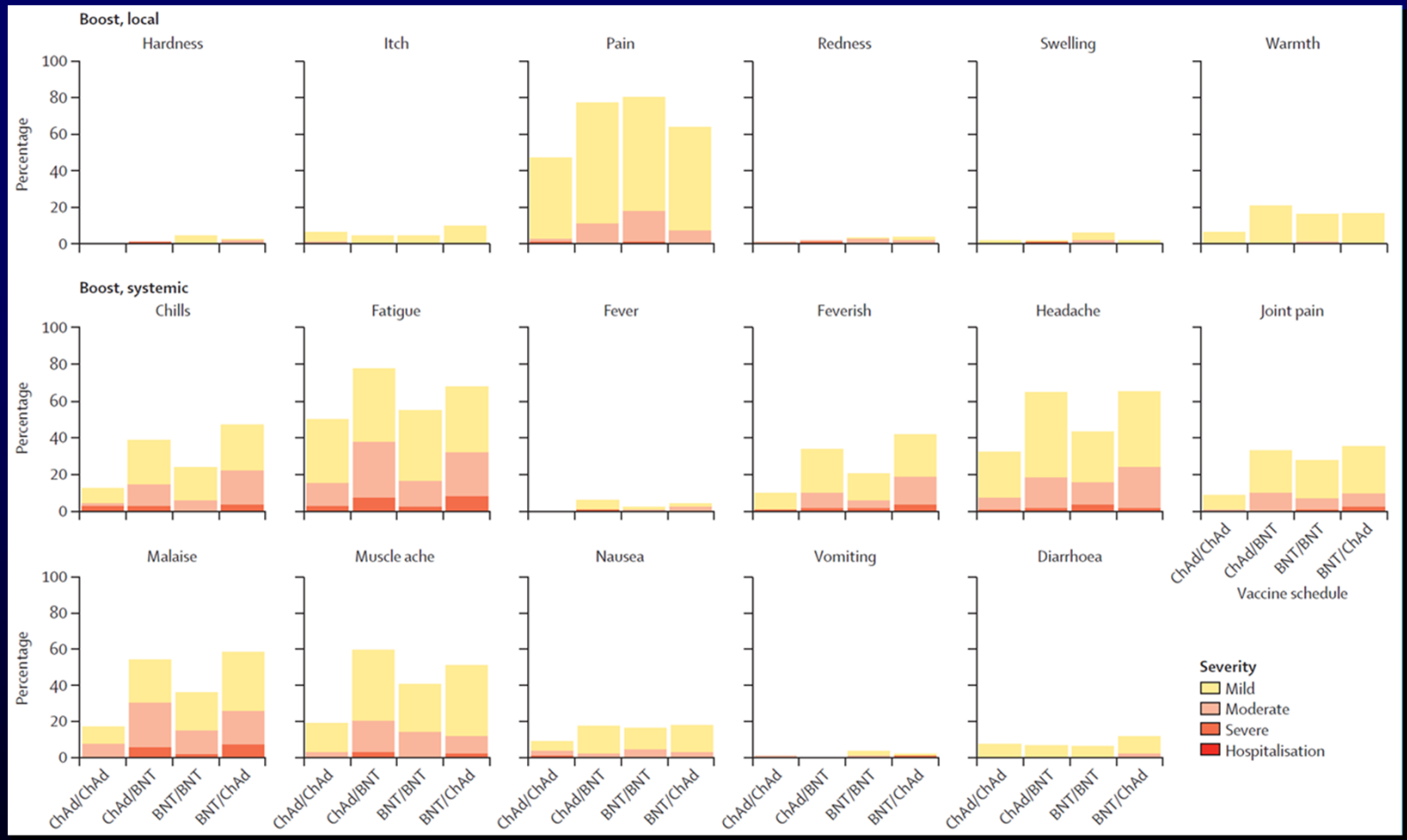
ChAdOx1 nCoV-19 (AZD1222) Vaccine in People Living With and Without HIV

- Here, we show comparable safety and immunogenicity of two doses of ChAdOx1 nCoV-19 between PLWH and HIV-negative individuals in South Africa.
- Furthermore, in PLWH previously exposed to SARS-CoV-2, antibody responses increased substantially from baseline following a priming dose, with modest increases after a booster dose.
- Full-length spike and receptor-binding domain IgG geometric mean concentrations after a single dose of ChAdOx1 nCoV-19 in PLWH previously exposed to SARS-CoV-2 were 6.49–6.84-fold higher than after two doses in those who were SARS-CoV-2 naïve at enrollment.
- Neutralizing antibody responses were consistent with the antibody-binding responses.

Mahdi et al 2021 preprint

Grazie per l'attenzione

Heterologous prime-boost COVID-19 vaccination: initial reactogenicity data



Shaw et al. The Lancet.
Published Online May 12, 2021 https://doi.org/10.1016/ S0140-6736(21)01115-6