COVID-19 Vaccine in Transplant & Immunocompromised Populations - March 25, 2021

Welcome & Introductions:

Dana Wollins, DrPH, MGC
Vice President, Clinical Affairs & Guidelines
Infectious Diseases Society of America

Moderator:

Emily Blumberg, MD
Director of the Transplant Infectious Diseases Program and the Infectious Diseases Fellowship
University of Pennsylvania
Current Past President, American Society of Transplantation

AST | AMERICAN SOCIETY OF TRANSPLANTATION

IDSA
Infectious Diseases Society of America

COVID-19 Vaccine in Transplant & Immunocompromised Populations

Robin K. Avery, MD, FIDSA, FAST
Professor of Medicine
Division of Infectious Diseases
Johns Hopkins Hospital

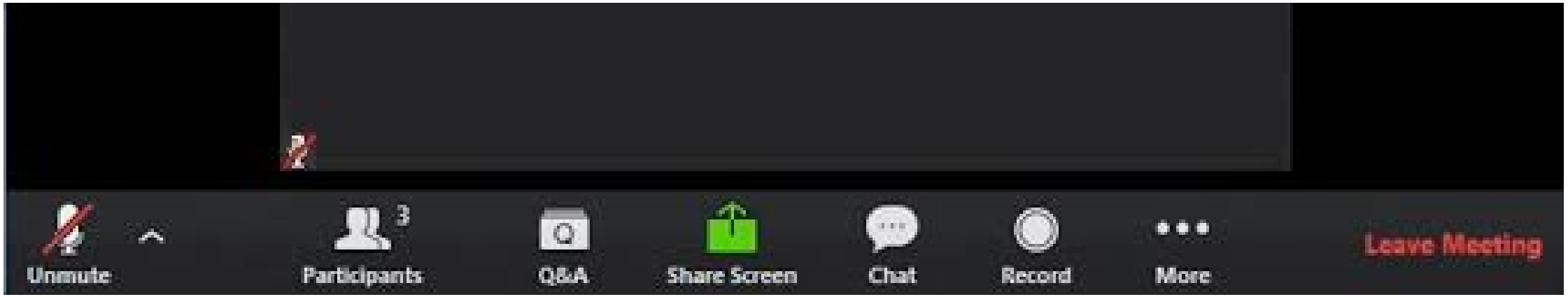
Deepali Kumar, MD, MSc, FRCP(C)
Professor of Medicine
Transplant Infectious Diseases
University Health Network, Toronto

Lara Danziger-Isakov, MD, MPH
Director, Immunocompromised Host Infectious Disease
Professor, Department of Pediatrics
Cincinnati Children's Hospital

Cameron R. Wolfe, MBBS, MPH, FIDSA
Associate Professor of Medicine
Transplant Infectious Diseases
Duke University

Question?
Use the “Q&A” Button

Comment?
Use the “Chat” Button



Disclosures

- **Emily Blumberg, MD -**
  Grant support Takeda, Merck, Hologic
  DSMB - Amplyx
- **Robin K. Avery, MD, FIDSA, FAST -**
  Study/grant support from Aicuris, Astellas, Chimerix, Merck, Oxford Immunotec, Qiagen, Takeda/Shire
- **Kumar Deepali, MD, MSc, FRCP(C)**
  research grants from GSK, Roche
  consultancy fees from GSK, Roche, Sanofi
- **Lara Danziger-Isakov, MD, MPH**
  Consultant – Takeda, Merck
  Contracted Clinical Research support paid to my institution: Ansun Biopharma, Astellas, Merck, Takeda, Viracor
- **Cameron R. Wolfe, MBBS, MPH, FIDSA -** has nothing to disclose.

Johns Hopkins SARS-CoV-2 National Vaccine Safety and Immunogenicity Study in Solid Organ Transplant Recipients

Brian Boyarsky, MD | Jacqueline Garonzik Wang, MD, PhD | William Werbel, MD | Robin Avery, MD | Aaron Tobian, MD, PhD | Dorry Segev, MD, PhD

Disclosures/Acknowledgments

- Robin Avery MD: Study/grant support from Aicuris, Astellas, Chimerix, Merck, Oxford Immunotec, Qiagen, Takeda/Shire
- Thanks to Brian Boyarsky MD PhD, PI of the vaccine study, for the kind loan of his slides, which I have adapted (Brian is at the far left in the photo at right, when President Obama signed the HOPE Act, 2013)

Study Design: Prospective Cohort

- Goal: Vaccine safety and immunogenicity in transplant recipients
- Population: Solid organ transplant recipients in the US
  - Eligibility: age 18+, intention to be vaccinated, prior COVID-19 is not an exclusion
- Recruitment: Open enrollment (online); started Dec 9, 2020
- Exposure: SARS-CoV-2 vaccination (not supplied by the study)
- Outcome:
  - Safety: local & systemic adverse effects; allergy; rejection; neurologic diagnoses; infections; COVID-19 diagnosis
  - Immunogenicity: Serial SARS-CoV-2 anti-spike protein Ab
- Hypothesis: Immunosuppression may impact Ab development

Questionnaires

Eligibility

Medical history questionnaire

Vaccine date

Safety questionnaire

Safety questionnaire

Safety questionnaire

6-month

Completion questionnaire

Baseline antibody test

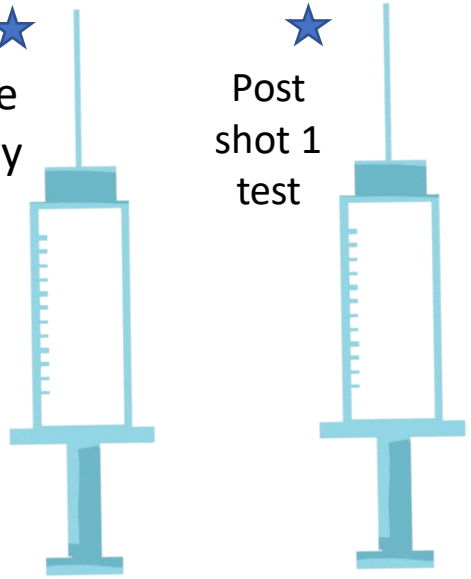
Post shot 1 test

1 month post shot 2

3 months post shot 2

6 months post shot 2

12 months post shot 2

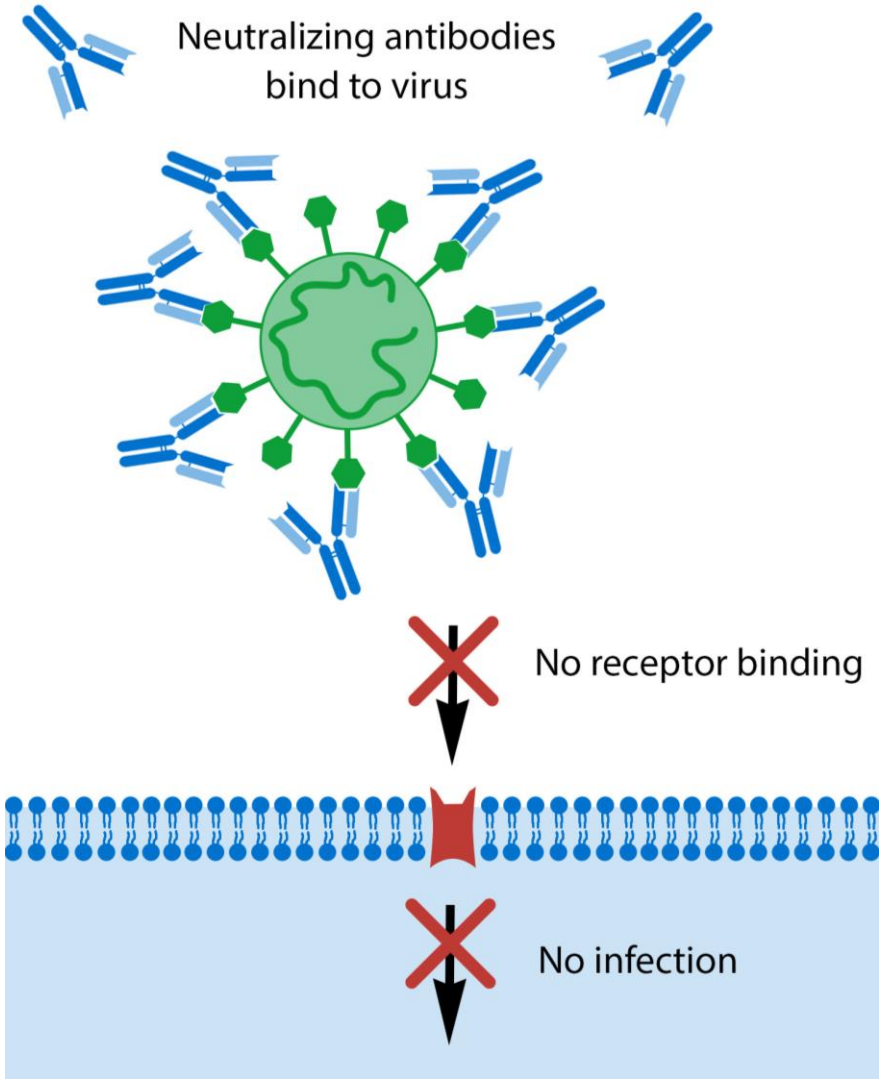


Antibody Testing

Antibody Testing

- EUROIMMUN Anti-SARS-CoV-2 ELISA

- Roche Elecsys® Anti-SARS-CoV-2 S



Patel/Tobian, *JCM* 2020

Enrollment: December 9 - March 16

Enrolled	3,200

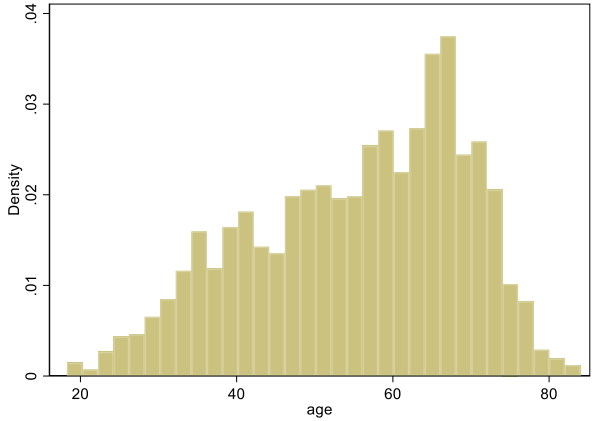
Received first dose	1611
Post first-dose Ab testing	804

Received second dose	926
Post second-dose Ab testing	211

Recruitment

- Social media! Highly effective to spread the word
- Email announcements to major transplant organization members
- National and local organizations, support groups
- Special thanks to patients and to transplant clinicians who advocated energetically (e.g. Dr. Steve Pergam, right)

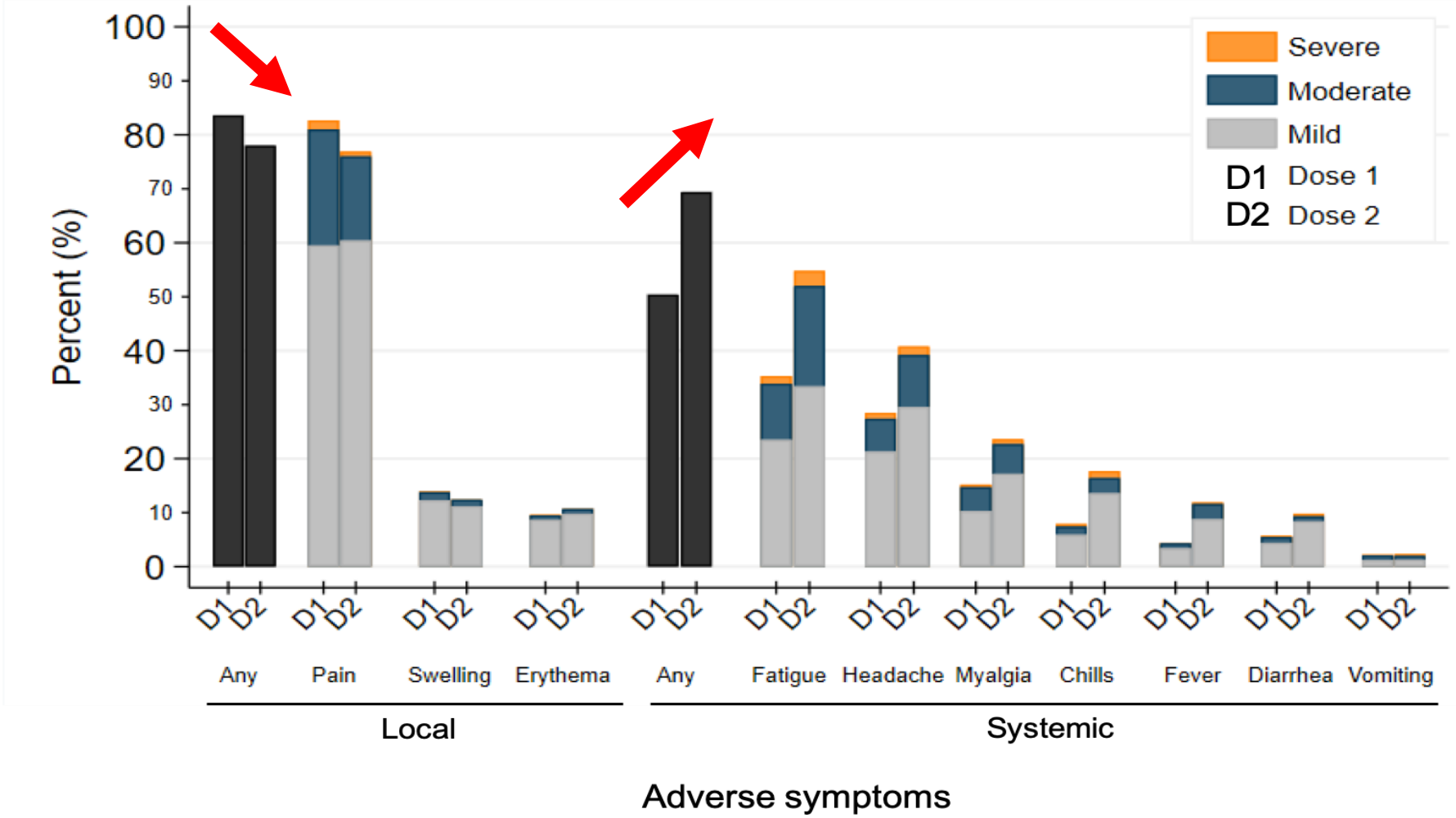
Enrollment demographics



- **Median (IQR) age, years**: 58 (45-66)
- **Median (IQR) years since txp**: 6 (3-12)
- **Transplant type**: kidney (48%), liver (21%), heart (13%), lung (11%), KP (3%), pancreas (2%), multi-organ (2%)
- **Female**: 55%
- **Non-white:** 10%
- **Hispanic:** 5%
- **Education:** 73% college or graduate degree
- **Prior COVID diagnosis**: 3%
- **Recruitment**: 41% social media, 24% other advert, 35% transplant team

Reactogenicity of Complete Vaccine Series

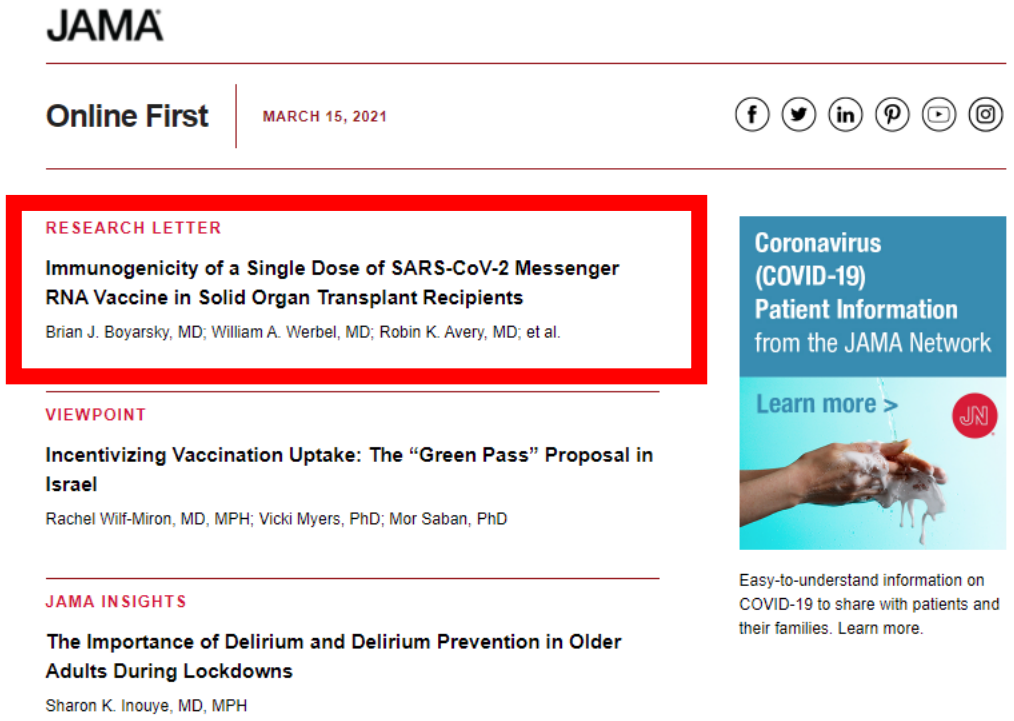
- N=742 (54% Pfizer, 46% Moderna)
- No COVID-19
- 1 acute rejection (D2)
- No neurologic conditions
- Infections 3% D1, 0% D2
- Younger patients, females (<65 yo): ↑D1, D2 systemic reactions



Boyarsky/Segev/Garonzik Wang, *In Revision*

First dose (limited) immunogenicity

- N=436
- No prior COVID diagnosis
- **<u>Antibody was detectable in only 76/436 (17%) of participants</u>** (95% CI 14-21%) at a median (IQR) of 20 (17-24) days after the first dose



JAMA

Online First | MARCH 15, 2021

RESEARCH LETTER

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

Brian J. Boyarsky, MD; William A. Werbel, MD; Robin K. Avery, MD; et al.

VIEWPOINT

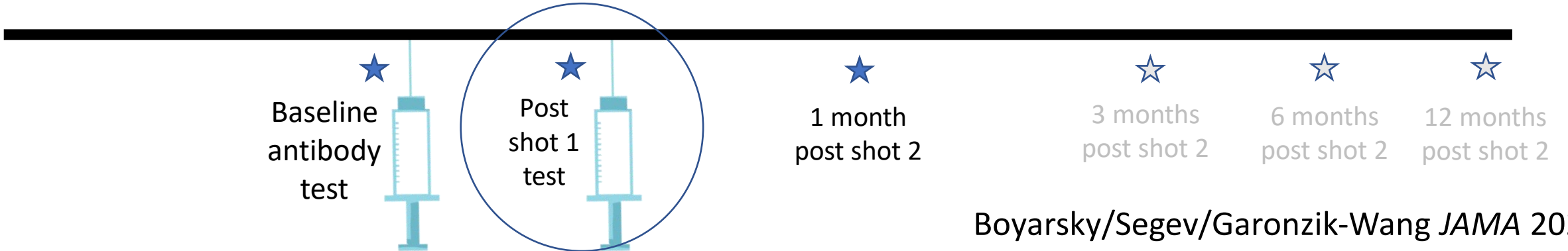
Incentivizing Vaccination Uptake: The "Green Pass" Proposal in Israel

Rachel Wilf-Miron, MD, MPH; Vicki Myers, PhD; Mor Saban, PhD

JAMA INSIGHTS

The Importance of Delirium and Delirium Prevention in Older Adults During Lockdowns

Sharon K. Inouye, MD, MPH



Boyarsky/Segev/Garonzik-Wang *JAMA* 2021

	Detectable antibody (n=76)	Undetectable antibody (n=360)	IRR bivariable (95% CI) p-value	aIRR multivariable (95% CI) p-value
Age category, years				
18-39	30 (39)	69 (19)	0.81 (0.71-0.93) p=0.003	0.83 (0.73-0.93) p=0.002
40-59	18 (24)	132 (37)		
≥60	28 (37)	159 (44)		
Sex, no. (%)				
Female	48 (64)	212 (59)	1.12 (0.73-1.73) p=0.60	
Male	27 (36)	138 (41)		
Race¸ no (%)				
Non-white	8 (11)	38 (11)	0.99 (0.51-1.94) p=0.99	
White	67 (89)	312 (89)		
Organ, no. (%)				
Kidney	31 (41)	188 (53)	0.68 (0.45-1.04) p=0.07	
Liver	28 (37)	50 (14)		
Heart	9 (12)	57 (16)		
Lung	4 (5)	45 (13)		
Pancreas	1 (1)	4 (1)		
Other multi-organ	2 (3)	12 (3)		
Years since transplant				
<3	13 (17)	106 (30)	1.88 (1.21-2.93) p=0.005	1.45 (0.96-2.20) p=0.08
3-6	12 (16)	77 (22)		
7-11	19 (25)	82 (23)		
≥12	31 (41)	89 (25)		
Maintenance immunosuppression, no. (%)				
Includes anti-metabolite	28 (37)	292 (81)	0.21 (0.14-0.32) p<0.001	0.22 (0.15-0.34) p<0.001
Does not include anti-metabolite	48 (63)	68 (19)		
Vaccine¸ no. (%)				
Moderna	52 (69)	152 (43)	2.14 (1.24-3.69) p=0.006	2.15 (1.29-3.57) p=0.003
Pfizer/BioNTech	23 (31)	200 (57)		

Limitations

- Correlates of protection are not yet fully understood
- First dose preliminary data only (more to come!)
- Unmeasured confounding
  - Lymphodepletion
  - Rejection
  - Drug levels
- Assays validated for response to infection (vs. vaccination)

Conclusions

- SARS-CoV-2 mRNA vaccines have similar safety profiles in SOT recipients compared to the clinical trial populations
- No safety signals for rejection or neurologic syndromes
- Poor anti-spike antibody responses after Dose 1 of mRNA vaccines
  - Anti-metabolite, older age associated with decreased response; mRNA 1273 associated with increased response
  - However, too early to modify guidelines
- SOT recipients may continue to be at higher risk for SARS-CoV-2 despite vaccination, and should continue all safety measures

Ongoing or Future Studies

- Dose 2 immunogenicity (submitted)
- Followup antibody testing out to 12 months
- Investigation of strategies to increase vaccine responses
- Correlation between reactogenicity and immunogenicity
- Memory B cell responses
- T cell responses
- Parallel studies in other immunocompromised populations

Dorry Segev, MD, PhD
Founder and Director

Leadership and Core Faculty

Jacqueline Garonzik-Wang, MD, PhD
Director of Training and Education
Associate Professor of Surgery

Macey Levan, JD, PhD
Director of Policy and External Affairs
Assistant Professor of Surgery & Nursing

Allan Massie, PhD
Director of Data and Analytics
Assistant Professor of Surgery and Epidemiology

Tanjala Purnell, PhD, MPH
Director of Community and Stakeholder Engagement
Assistant Professor of Epidemiology and Surgery

Andrew Cameron, MD, PhD
Division Chief, Transplant Surgery
Professor of Surgery

Elizabeth King, MD, PhD
Assistant Professor of Surgery

Sunjae Bae, KMD, PhD
Instructor of Surgery

Christine Durand, MD
Associate Professor of Medicine

Sommer Gentry, PhD
Professor of Mathematics
United States Naval Academy

Mara McAdams-DeMarco, PhD, MS
Associate Professor of Surgery and Epidemiology

Douglas Mogul, MD, PhD
Assistant Professor of Pediatrics
Hepatology and Nutrition

Abimereki Muzaale, MD, MPH
Assistant Professor of Surgery

Lauren Nicholas, PhD
Associate Professor of Health Policy and Management

Fellows, Residents, Medical and Graduate Students

Transplant Surgery Fellows
Michelle Nguyen, MD
Eliza Lee, MD
Sharon Weeks, MD

Surgery Residents
Andrew Arking, MD
Victoria Bendersky, MD
Brian Boyarsky, MD
Mackenzie Eagleson, MD
Andrew Hallett, MD
Kayleigh Herrick-Reynolds, MD
Jessica Ruck, MD
Amber Kernodle, MD

Fellows & Grad Students
Jamilah Perkins, MD, MHS
Aly Strauss, MD, MIE
Alvin Thomas, MSPH
William Werbel, MD

Medical Students
Ashton Shaffer, PhD
Mary Grace Bowring, MPH
Michael Ou
Darius Johnson
Jake Ruddy
Madeleine Waldram

Data Analysts

Tanveen Ishaque
Jennifer Motter
Michael Mankowski
Yijing Feng
Sarah Van Pilsum Rasmussen
Karen Vanterpool, PhD
Hannah Sung, PhD

Epidemiology Research Group in Organ Transplantation

JOHNS HOPKINS MEDICINE

Research Staff

Maria (Malu) Lourdes Perez, DVM
Research Program Manager

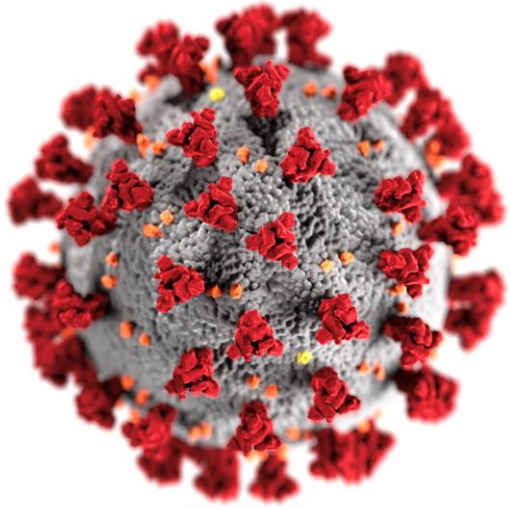
Research Program Coordinators
Ross Greenberg, BS
Amrita Saha, MSPH
Carolyn Sidoti, BS
Alexander Ferzola, BS
Leyla Herbst, BS
Shivani Bisen, BS
Abigail Shegelman, MSPH

Research Assistants
Briana Dang
Max Downey
Kevin Gianaris
Archita Goyal
Nicole Hada
Michael Irving
Jamie Klunk
Anna Kinter
Michelle Krach
Molly Ma
Alexis Mooney
Kathryn Marks
Mimi Mensah
Marie Nunez
Georgia Parsons
Chantal Riggs
Chia-Chen (Wendy) Tsai
Aura Teles
Wasurut Vihokrut
Adam Wight
Adam Zois
Alexandra Zois

Affiliates

Fawaz Al Ammary, MD, PhD
Medical Director, Living Donation
Robin Avery, MD
Transplant Infectious Diseases
Anna Beavis, MD
Gynecology
Gerald Brandacher, MD
Plastics and Reconstructive Surgery
Daniel Brennan, MD
Medical Director, Comprehensive Transplant Center
Errol Bush, MD
Director, Lung Transplant Program
Olga Charnaya, MD
Pediatric Nephrology
Victor Chen, MD
Transplant Hepatology
Josef Coresh, MD, PhD
Epidemiology
Morgan Grams, MD, PhD
Nephrology
Niraj Desai, MD
Transplant Surgery
Elliott Haut, MD, PhD
Trauma Surgery
Shane Ottman, MD
Transplant Surgery
Lindsay Toman, PharmD
Transplant Pharmacy
Aliaksei Pustavoitau, MD
Anesthesiology
Daniel Scharfstein, ScD
Biostatistics
Daniel Warren, PhD
Islet Transplantation
Jason Wheatley, LCSW-C
Transplant Social Work

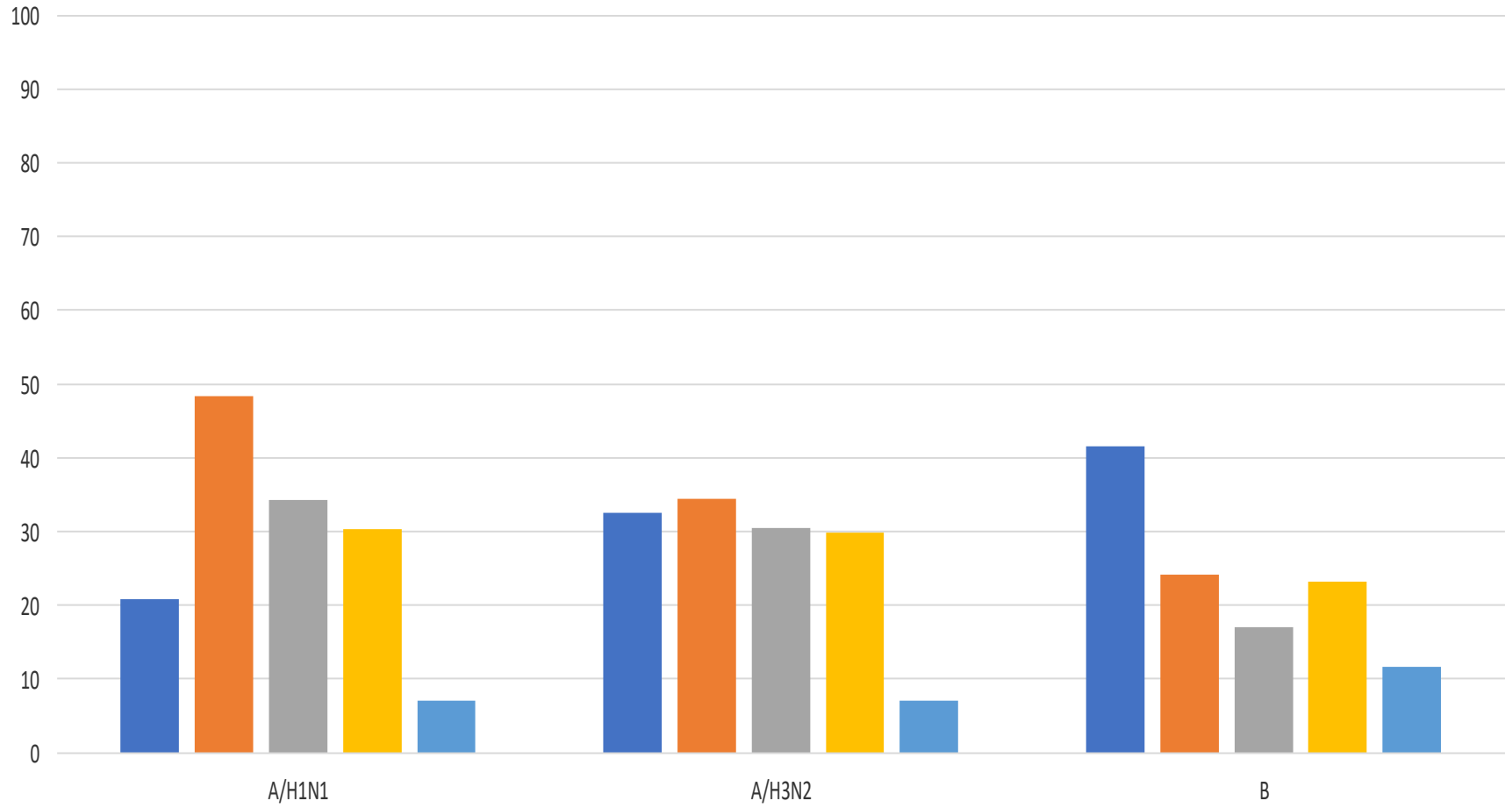
Making Guidelines for COVID-19 Immunization in Solid Organ Transplant – Lessons Learned from Influenza Vaccine



Where do we start

- Majority of SOT vaccine guidelines are extrapolation of recommendations in healthy persons
- Vaccine efficacy studies are difficult to do in transplantation
  - Most studies rely on immune response
  - Correlates of protection (antibody levels, T-cell responses) are often unknown or may differ in an immunosuppressed population
- Vaccine immunogenicity is suboptimal for many vaccines
- Patients are heterogeneous (type of transplant, immunosuppression)
- Adverse event concerns are different than the general population
  - Live vaccines may cause disease
  - Rejection of graft

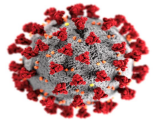
Seroconversion rates (%) in influenza vaccine studies of organ transplant recipients are low



Natori, CID 2018; Kumar, Transplantation 2017; Baluch, AJT 2013; Manuel JHLT 2011, Scharpe, AJT 2008

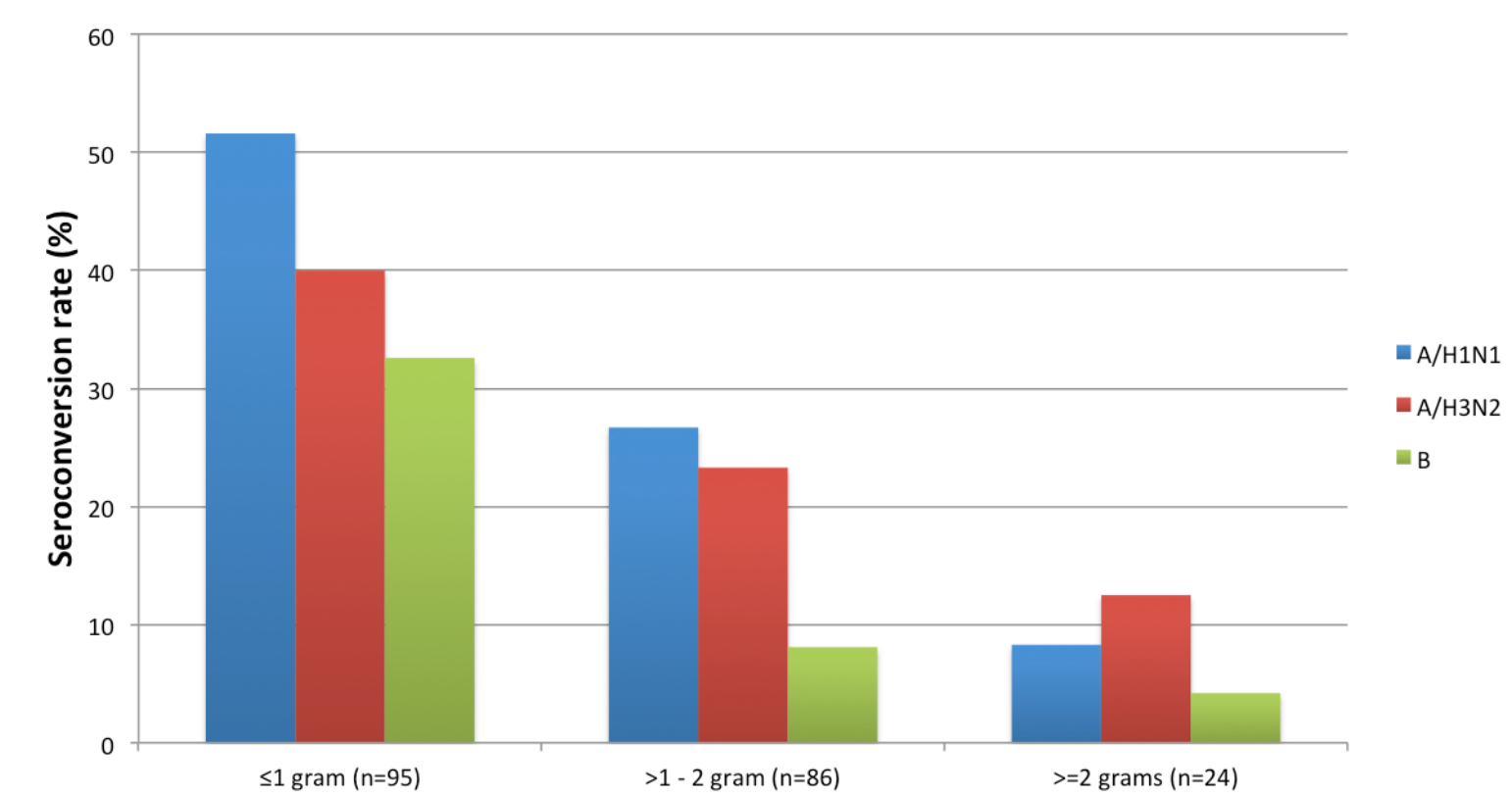
Mycophenolate

LESSON #1: SOME IMMUNOSUPPRESSIVES IMPACT VACCINE RESPONSE MORE THAN OTHERS



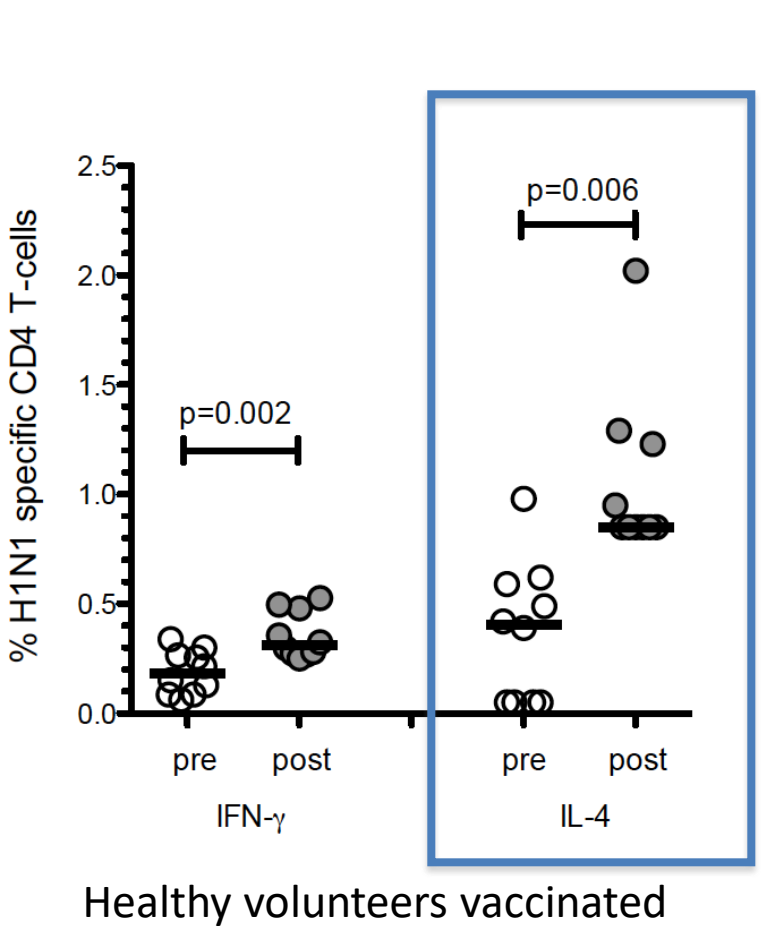
Effect of Immunosuppression (Mycophenolate and Influenza Vaccine)

- **Several studies have shown that MMF in high doses reduces the immunogenicity of influenza vaccine**

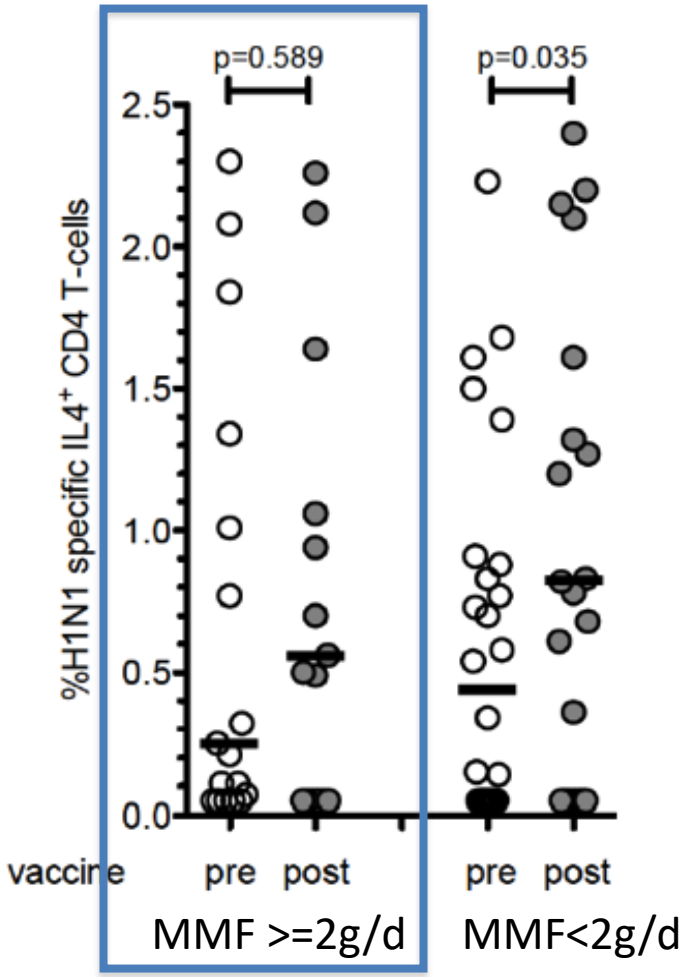


Baluch et al, AJT 2013

Mycophenolate blunts influenza-specific IL4 response in transplant patients



Healthy volunteers vaccinated



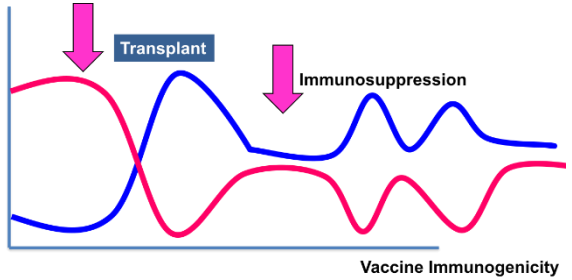
Transplant patients

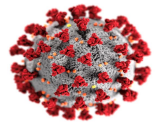
Egli et al., JID, 2015

- Pre-transplant: Immunize at least 2 weeks before transplant
- Vaccine series started in the pre-transplant period can be completed post-transplant
- Post-transplant: Restart immunization at >1 month
- After therapy for acute rejection, restart immunization at 1 month post-steroid bolus or 6 months post-rituximab

Danziger-Isakov & Kumar, ClinTransplant, 2019

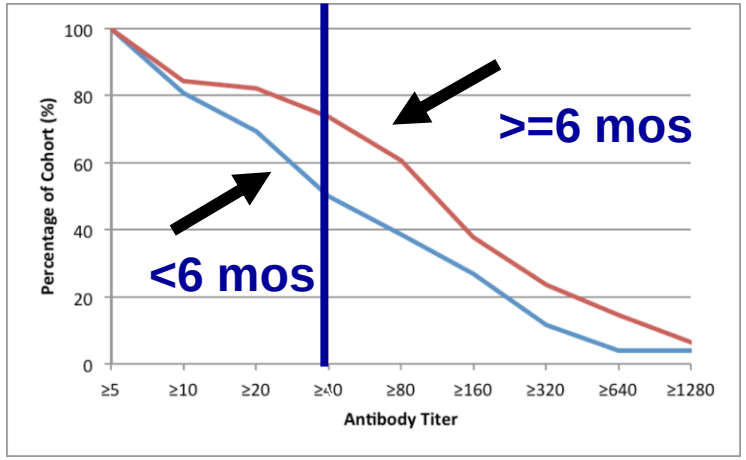
LESSON #2: TIMING OF VACCINATION IS CRITICAL IN ACHIEVING OPTIMAL VACCINE RESPONSE



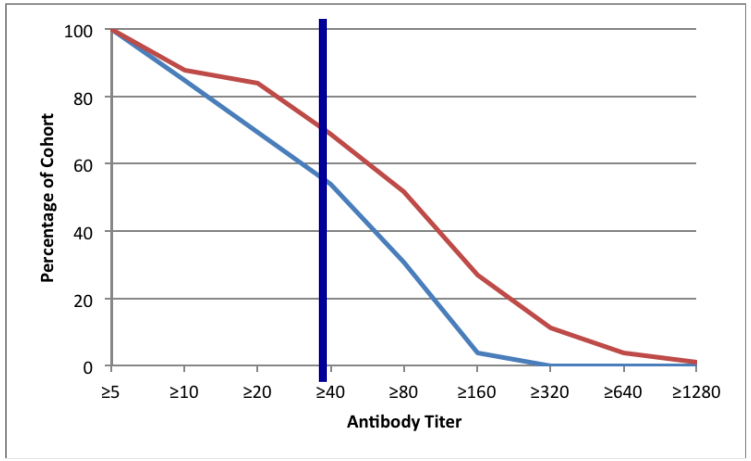


Influenza Vaccine Response: Time from transplant (n=228)

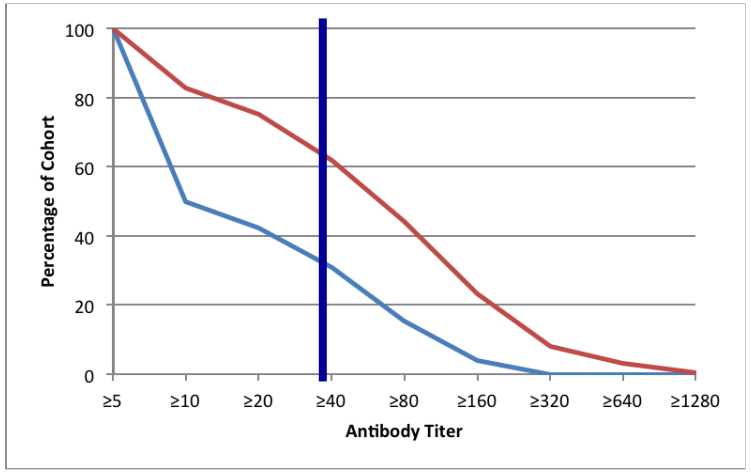
H1N1



H3N2



B



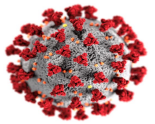
<u>Seroconversion to at least one antigen:</u>
19.2% in those <6 mos from transplant vs. 53.2% in those >6 months, p=0.001

Baluch et al., AJT, 2013

Multiple doses

Higher doses

LESSON #3: VACCINE DOSING CAN BE VARIED TO IMPROVE IMMUNE RESPONSES



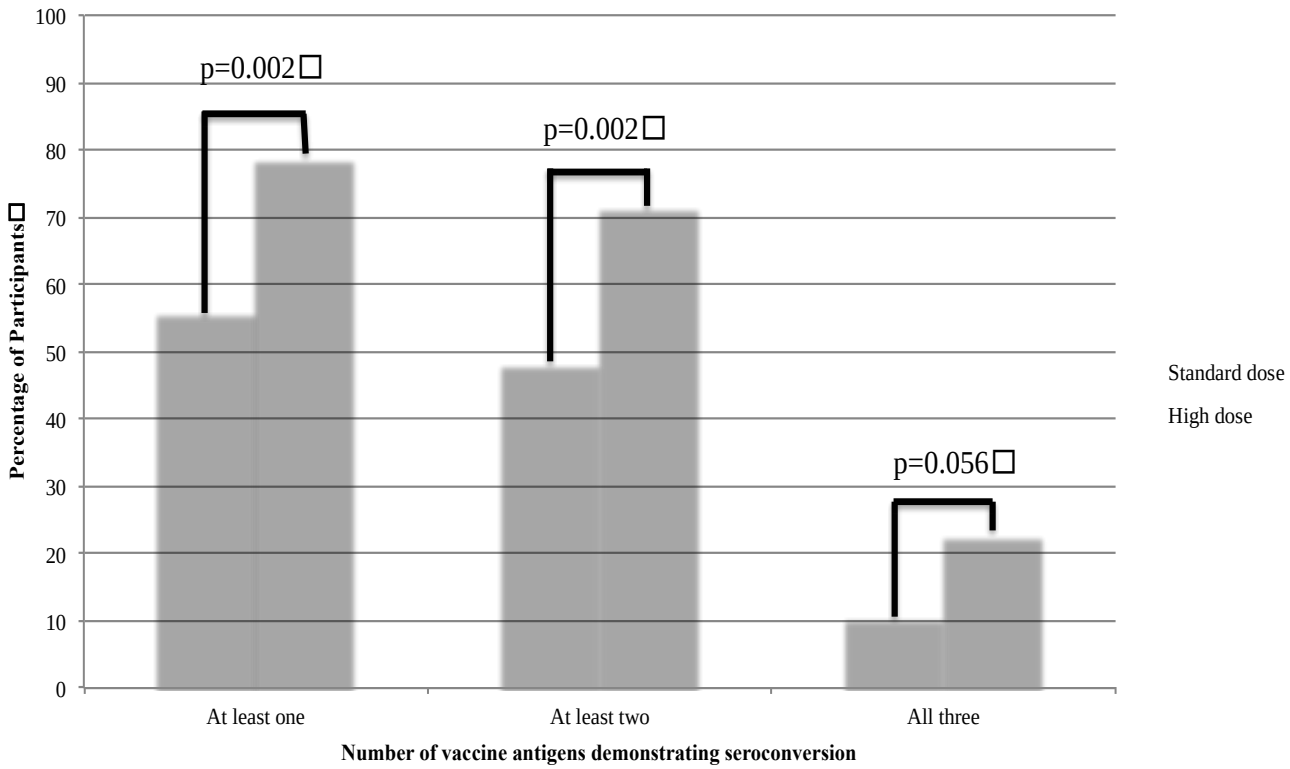
Two doses of influenza vaccine

Variable	Single-Dose Vaccination Group (n = 213)	Booster Dose Vaccination Group (n = 211)	OR (95% CI)/ β Coefficient (95% CI)	NNT (ARR, %) With Booster Dose
Short-term seroconversion rate				
A(H1N1)pdm	33 (32.7)	43 (46.7)	**1.81 (1.009–3.24)***	12 (14.1)
A(H3N2)	38 (30.2)	45 (39.1)	1.49 (.87–2.54)	8 (9)
Influenza B	53 (63.9)	63 (75.9)	1.78 (.91–3.50)	9 (12)
Long-term seroconversion rate				
A(H1N1)pdm	20 (19.8)	19 (20.7)	1.05 (.52–2.13)	…
A(H3N2)	57 (45.2)	47 (40.9)	0.84 (.50–1.40)	…
Influenza B	42 (50.6)	53 (63.9)	1.73 (.93–3.21)	…
Short-term seroprotection rate				
A(H1N1)pdm	92 (43.2)	114 (54)	**1.54 (1.05–2.27)***	10 (10.8)
A(H3N2)	97 (45.5)	120 (56.9)	**1.58 (1.08–2.31)***	9 (11.3)
Influenza B	153 (71.8)	176 (83.4)	**1.97 (1.23–3.16)****	9 (11.6)

N=499 adult SOT patients randomized 1:1 to receive single dose or two doses of influenza vaccine 5 wks apart

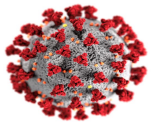
Cordero et al., CID, 2017

RCT of High dose vs. standard dose influenza vaccine in adult SOT (n=172)



Natori et al., CID, 2018

LESSON #4: VACCINATION MAY ATTENUATE DISEASE EVEN IF IT DOESN'T PREVENT



N=616 transplant patients with influenza

Benefits of being vaccinated

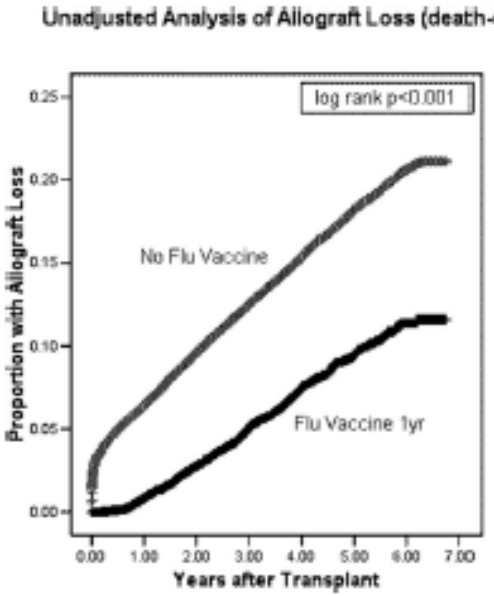
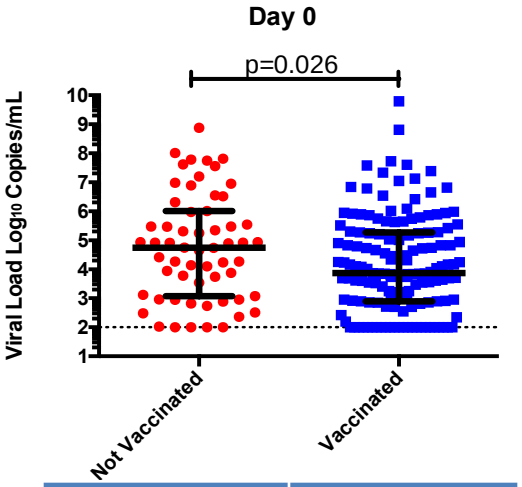


Figure 1. | Time to allograft loss (death-censored) among adult Medicare primary renal transplant recipients who did or did not have Medicare claims for influenza vaccine in the first year post-transplantation.

Hurst et al, Clin J Am Soc Nephrol 2011

Vaccinations more likely in:
- diabetics
-Older age

-Vaccine less likely to be given if:
-- African-American
-- high PRA
--induction immunosuppression

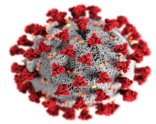


Variable	Odds Ratio for ICU admission (95% CI)
Age*	1.01 (0.99-1.03)
Influenza A vs. B	2.28 (0.93-5.59)
Hospital-acquired influenza	2.46 (0.97-6.25)
Antiviral therapy* Early (<48 hours)	0.41 (0.20-0.84)
Immunization with current season influenza vaccine*	0.40 (0.21-0.78)

***also significantly associated with pneumonia**

Kumar et al., Clin Infect Dis, 2018

LESSON #5: VACCINATION DOES NOT LEAD TO REJECTION



ELSEVIER

The Journal of
Heart and Lung
Transplantation
http://www.jhltonline.org

Does vaccination in solid-organ transplant recipients result in adverse immunologic sequelae? A systematic review and meta-analysis

William R. Mulley, BMed, PhD,[a,b] Claire Dendle, MBBS,[b,c]
Jonathan E.H. Ling, MBChB,[a,b] and Simon R. Knight, MChir, MA[d,e]

Does Influenza Vaccine Induce de novo DSA (donor-specific antibody)?

Table 2 Studies Examining De Novo Donor Specific Antibodies After Vaccination

Study (first author, year)	Transplant type	Vaccine	Method	Incidence of de novo DSA
Kumar, 2010	Lung	Influenza	Screen/SAg	0 of 59 (0%) at 56 days
Kimball, 2000	Heart	Influenza	Screen/SAg	0 of 29 (0%) at 21 days
Danziger-Isakov, 2010	Mixture	Influenza	Screen/SAg	0 of 17 (0%) at 94 days
Vermeiren, 2014	Mixture	H1N1 + influenza	Screen/SAg	0 of 169 (0%) at 28 days
Baluch, 2013	Mixture	Influenza	Screen/SAg	0 of 229 (0%) at 30 days
Mujtaba, 2015	Kidney	H1N1 + influenza	SAg	0 of 47 (0%) at 28 days
Mujtaba, 2013	Kidney	H1N1 + influenza	SAg	0 of 57 (0%) at 50 days
Kumar, 2016	Kidney	Influenza	SAg	0 of 34 (0%) at 30 days
Rinaldi, 2014	Kidney	Influenza	Screen/SAg	0 of 81 (0%) at 21 days
LeCorre, 2012	Kidney	H1N1	SAg	1 of 121 (0.82%) at 21 days
Fairhead, 2012	Kidney	H1N1	Screen/SAg	3 of 124 (2.4%) at 30 days
Candon, 2009	Kidney	Influenza	SAg	3 of 66 (4.55%) at 30 days
Brakemeier, 2012	Kidney	H1N1	Screen/SAg	3 of 60 (5%) variable follow-up
Katerinis, 2011	Kidney	H1N1	Screen/SAg	13 of 151 (8.60%) at 42 days
Total				23 of 1,244 (1.85%) at 21 to 94 days

Mulley et al. JHLT, 2018

www.myast.org/covid-19-vaccine-faq-sheet

COVID-19: VACCINE FAQ SHEET

The AST has received queries from transplant professionals and the community regarding the COVID-19 vaccine. The following FAQ was developed to relay information on the current state of knowledge. This document is subject to change and will be updated frequently as new information or data becomes available.

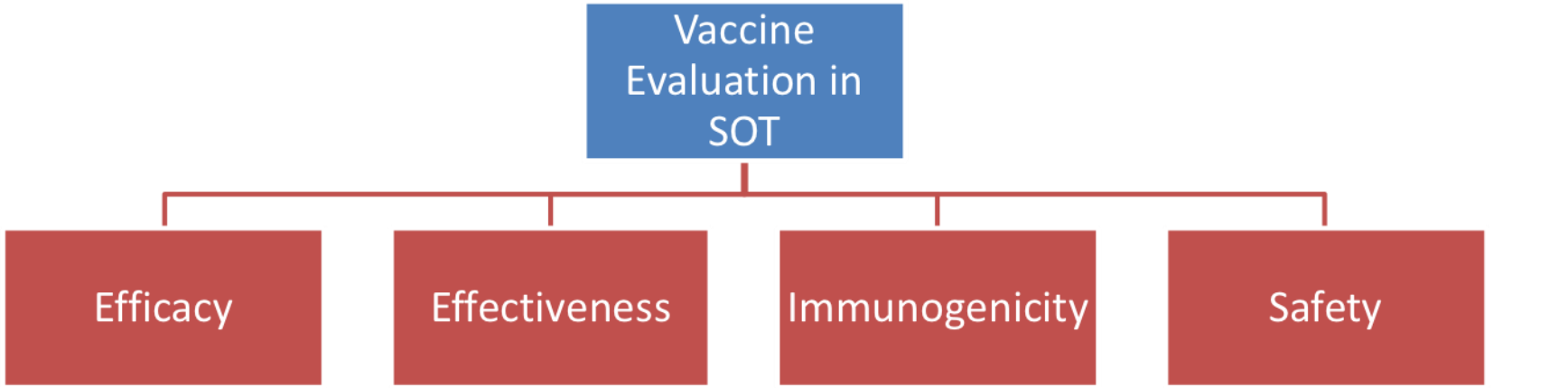
READ MORE

View all COVID-19 Resources

Emily Blumberg
Lara Danziger-Isakov
Deepali Kumar
Marian Michaels
Nicole Theodoropoulos

Shweta Anjan
Valida Bajrovic
Emily Blodget
Jennifer Chow
Anmary Fernandez
Jay Fishman
Michael Ison
Carol Kao
Olivia Kates
Daniel Kaul
Rosy Priya Kodiyanplakkal
Camille Kotton
Vineeta Kumar
Maricar Malinis
Megan Morales
Hannah Nam
Ronald Parsons
Marcus Pereira
Stephanie Pouch
Joanna Schaenman
Aruna Subramanian
Cameron Wolfe
Ann Woolley

Questions that need to be answered for COVID vaccine

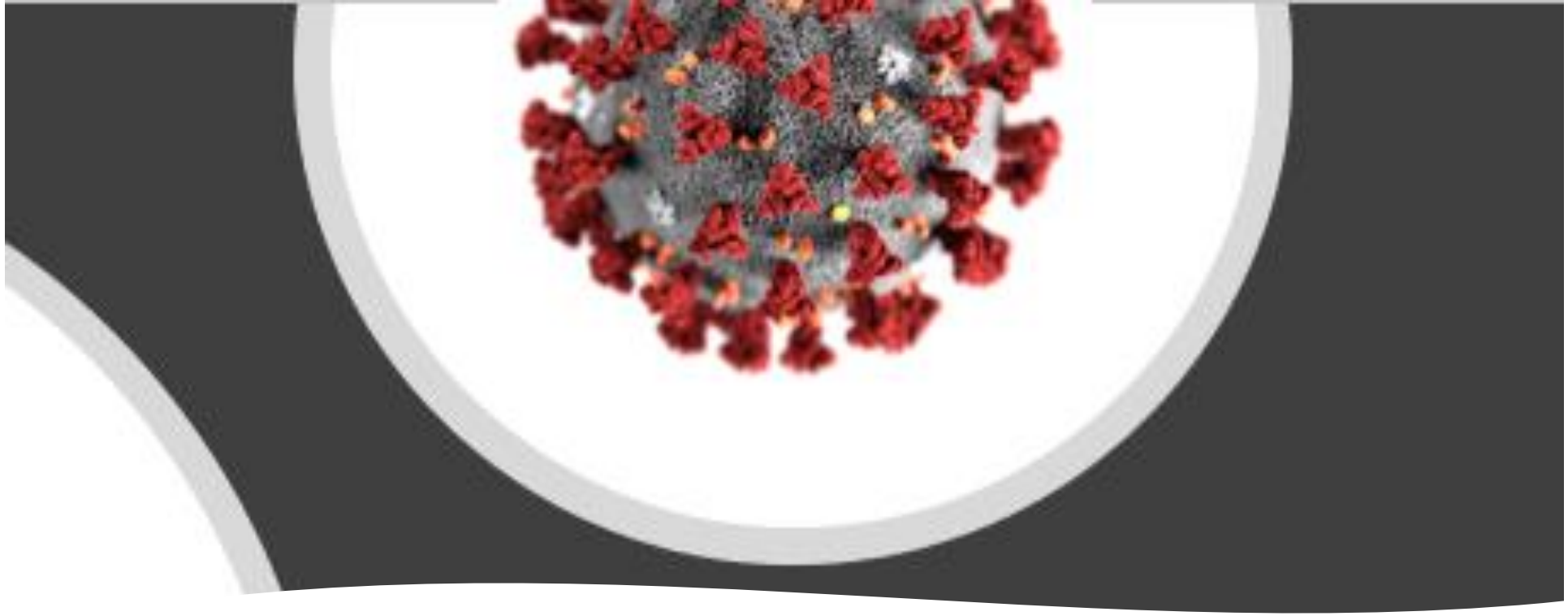


- **Vaccine Dosing**
- **Timing post-transplant**
- **Type of Transplanted Organ**
- **Immunosuppression (induction and maintenance, rejection)**
- **Other immunologic factors (IgG levels, lymphocyte counts etc)**

Q&A and Discussion

References for articles mentioned in the webinar

- Boyarsky BJ, Ou MT, Greenberg RS, et al. Safety of the first dose of SARS-CoV-2 vaccination in solid organ transplant recipients. Transplantation 2021 Feb 4; doi: 10.1097/TP.0000000000003654
- Boyarsky BJ, Werbel WA, Avery RK, et al. Immunogenicity of a single dose of SARS-CoV-2 messenger RNA vaccine in solid organ transplant recipients. JAMA 2021 March 15; doi: 10.1001/jama.2021.4385
- Mulley WR, Visvanathan K, Hurt AC, et al. Mycophenolate and lower graft function reduce the seroresponse of kidney transplant recipients to pandemic H1N1 vaccination. Kidney International 2012; 82: 212-219.
- Salles MJC, Sens YAS, Boas LSV, Machado CM. Influenza virus vaccination in kidney transplant recipients: serum antibody response to different immunosuppressive drugs. Clin Transpl 2010; doi: 10.1111/j.1399-0012.2009.01095
- Scharpe J, Evenepoel P, Maes B, et al. Influenza vaccine is efficacious and safe in renal transplant recipients. Am J Transpl 2008; 8: 332-7.
- Haddadin Z, Krueger K, Thomas LD, Overton ET, Ison M, Halasa N. Alternative strategies of posttransplant influenza vaccination in adult solid organ transplant recipients. Am J Transplant. 2021 Mar;21(3):938-949. doi: 10.1111/ajt.16295. Epub 2020 Sep 23. PMID: 32885604.
- Danziger-Isakov L, Kumar D; AST ID Community of Practice. Vaccination of solid organ transplant candidates and recipients: Guidelines from the American society of transplantation infectious diseases community of practice. Clin Transplant. 2019 Sep;33(9):e13563. doi: 10.1111/ctr.13563. Epub 2019 Jun 5. Erratum in: Clin Transplant. 2020 Mar;34(3):e13806. PMID: 31002409.



AST Resources for Professionals and Patients

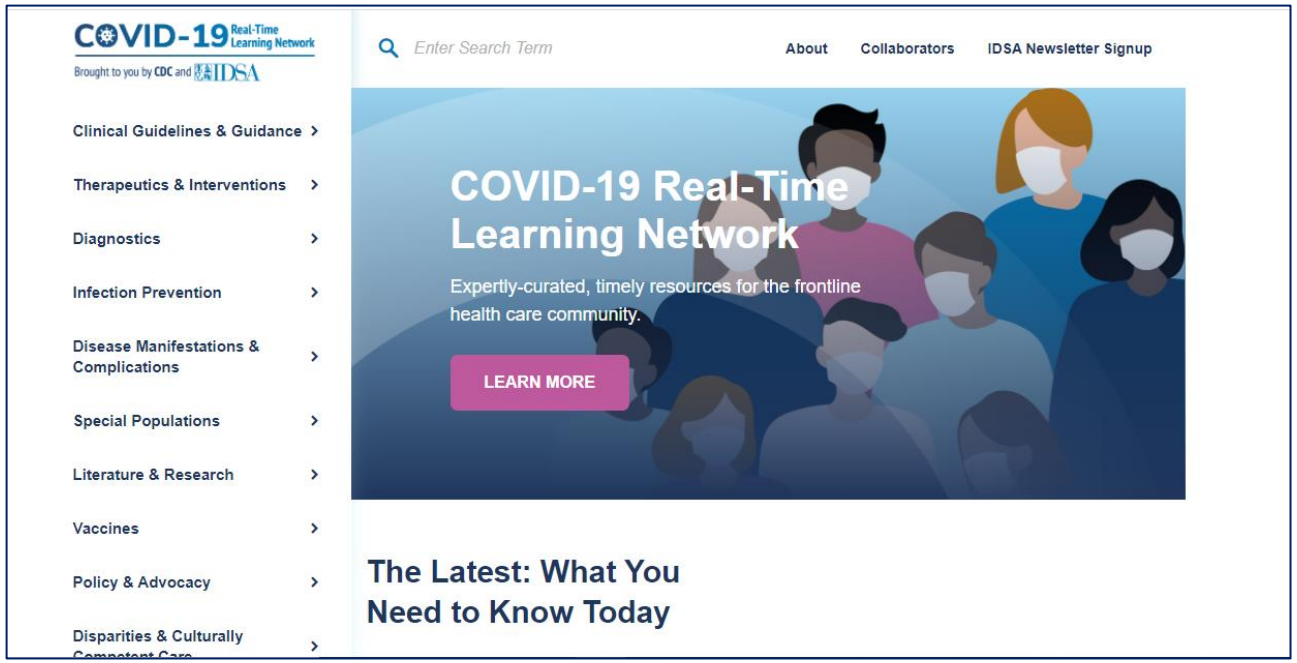
https://www.myast.org/covid-19-vaccine-faq-sheet

https://www.myast.org/covid-19-information

COVID-19 Real-Time Learning Network

Brought to you by CDC and IDSA

An online community bringing together information and opportunities for discussion on latest research, guidelines, tools and resources from a variety of medical subspecialties around the world.



www.COVID19LearningNetwork.org
@RealTimeCOVID19
#RealTimeCOVID19

SPECIAL NOTICE - UPCOMING WEBINAR

ASCO/IDSA Global Webinar: COVID-19 Vaccines and Cancer Care

Tuesday, March 30th - 8 a.m. ET/ 11 a.m. PT

Join ASCO and IDSA for an important COVID-19 vaccines webinar at 8 a.m. EST on March 30th.
Following a short presentation on currently available vaccines, a panel of invitees from the Infectious Diseases Society of America (IDSA), a nurse, a medical oncologist, a hematologist, and a patient advocate will discuss and answer questions for the remaining hour. Shaheenah S. Dawood, MBBCh, MPH, FACP, FRCP a Consultant Medical Oncologist at Mediclinic Middle East in Dubai, UAE will moderate.

This webinar is not part of the CDC/IDSA COVID-19 Clinician Call series and requires separate registration.

To Register: https://asco1.zoom.us/webinar/register/WN_B5a0zz4JR1yqdb4zseu6jA

ASCO® AMERICAN SOCIETY OF CLINICAL ONCOLOGY

IDSA Infectious Diseases Society of America

Continue the conversation on Twitter

@RealTimeCOVID19
#RealTimeCOVID19

Thank You!

A recording of this call will be posted at

www.idsociety.org/cliniciancalls

And

www.myAST.org/covid