COVID-19: KEEPING UP WITH A MOVING TARGET
APRIL 22, 2020 UPDATE

Paul Auwaerter, MD

Clinical Director, Division of Infectious Diseases

Sherrilyn and Ken Fisher Professor of Medicine

Fisher Center for Environmental Infectious Diseases

Johns Hopkins University School of Medicine

Baltimore, Maryland

dkbmed

COVID-19
KEEPING UP WITH A MOVING TARGET

CME Information

Jointly provided by Postgraduate Institute for Medicine, DKBmed, and the Institute for Johns Hopkins Nursing.

Disclosure of Conflicts of Interest

Postgraduate Institute for Medicine (PIM) requires instructors, planners, managers, and other individuals who are in a position to control the content of this activity to disclose any real or apparent conflict of interest (COI) they may have as related to the content of this activity. All identified COI are thoroughly vetted and resolved according to PIM policy. PIM is committed to providing its learners with high quality activities and related materials that promote improvements or quality in healthcare and not a specific proprietary business interest of a commercial interest.

The faculty reported the following financial relationships or relationships they or their spouse/life partner have with commercial interests related to the content of this continuing education activity:

Name of Faculty or Presenter	Reported Financial Relationship
Paul G. Auwaerter, MD, MBA, FIDSA	Scientific Advisor: DiaSorin, Shionogi Inc. JNJ: Ownership equity

Dr. Auwaerter has indicated that he will be referencing the unlabeled or unapproved use of agents currently being investigated in on-going studies and trials. These include hydroxychloroquine/chloroquine, hydroxychloroquine/chloroquine in combination with azithromycin, lopinavir plus ritonavir, tocilizumab, corticosteroids, and COVID-19 convalescent plasma. All activity, content, and materials have been developed solely by the activity directors, planning committee members, and faculty presenters, and are free of influence from a commercial entity.

COVID-19
KEEPING UP WITH A MOVING TARGET

dkbmed

CME Information

To attest for CME/CE credit, please visit

COVID19.DKBmed.com

Learning Objectives

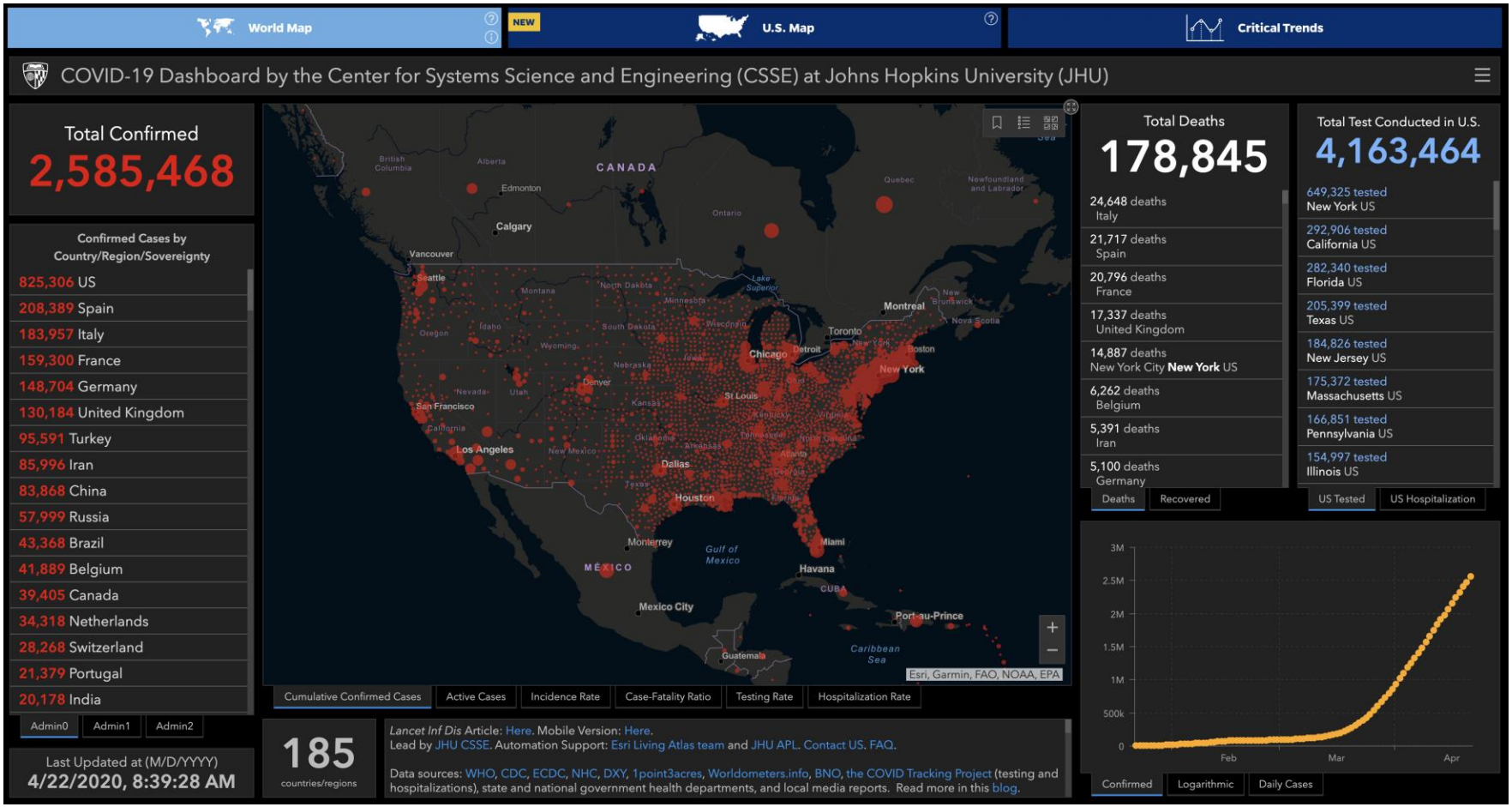
- Describe natural history of COVID-19 illness.
- Discuss risks, management, and precautions associated with COVID-19.
- Describe the COVID-19 Rheumatology Alliance registry data.

Thank You

This program is brought to you through the generous support of DKBmed, Postgraduate Institute for Medicine, and the Institute for Johns Hopkins Nursing.

Please see **COVID19.DKBmed.com** for additional resources and educational activities

Total Cases: N. America (4/22/20)



coronavirus.jhu.edu/map.html

COVID-19
KEEPING UP WITH A MOVING TARGET

dkbmed

NYC Experience: Two hospitals

Table 1. Characteristics of the Patients.*

Characteristic	All Patients (N=393)	Invasive Mechanical Ventilation (N=130)	No Invasive Mechanical Ventilation (N=263)
Baseline and demographic			
Median age (IQR) — yr	62.2 (48.6–73.7)	64.5 (51.7–73.6)	61.5 (47.0–75.0)
Male — no. (%)	238 (60.6)	92 (70.8)	146 (55.5)
White race — no. (%)†	147 (37.4)	46 (35.4)	101 (38.4)
Current smoker — no. (%)	20 (5.1)	6 (4.6)	14 (5.3)
Obesity — no./total no. (%)‡	136/380 (35.8)	56/129 (43.4)	80/251 (31.9)
Diabetes — no. (%)	99 (25.2)	36 (27.7)	63 (24.0)
Hypertension — no. (%)	197 (50.1)	70 (53.8)	127 (48.3)
Chronic obstructive pulmonary disease — no. (%)	20 (5.1)	7 (5.4)	13 (4.9)
Asthma — no. (%)	49 (12.5)	17 (13.1)	32 (12.2)
Coronary artery disease — no. (%)	54 (13.7)	25 (19.2)	29 (11.0)
On arrival in ED			
Fever — no./total no. (%)	100/392 (25.5)	45/130 (34.6)	55/262 (21.0)
Highest level of supplemental oxygen within first 3 hr — no. (%)			
None	244 (62.1)	40 (30.8)	204 (77.6)
Invasive mechanical ventilation	19 (4.8)	19 (14.6)	0
Infiltrates on initial chest radiograph — no. (%)	296 (75.3)	114 (87.7)	182 (69.2)
During hospital stay			
Arrhythmia — no. (%)	29 (7.4)	24 (18.5)	5 (1.9)
Vasopressor support — no. (%)	128 (32.6)	124 (95.4)	4 (1.5)
Bacteremia — no./total no. (%)	19/338 (5.6)	15/126 (11.9)	4/222 (1.8)
New renal replacement therapy — no./total no. (%)	18/375 (4.8)	17/128 (13.3)	1/247 (0.4)
Death — no. (%)	40 (10.2)	19 (14.6)	21 (8.0)
Discharge from hospital — no. (%)	260 (66.2)	23 (17.7)	237 (90.1)

* ED denotes emergency department, and IQR interquartile range.
† Race was determined by the clinical team.
‡ Obesity was defined as a body-mass index (the weight in kilograms divided by the square of the height in meters) of 30 or higher.

Goyal et al NEJM 4/20/20

COVID-19 Rheum Alliance: Early results from the global provider registry (234 patients)

RHEUM-COVID.org

- Primary rheumatic disease:
  - 37% rheumatoid arthritis
  - 19% systemic lupus erythematosus
  - 9% axial spondyloarthritis
  - 9% psoriatic arthritis
  - 7% vasculitis
  - 7% Sjogren's
- Gender: 76% are female; 24% are male
- Age: 21% are older than age 65
- Race/Ethnicity: 54% white, 19% black, and 15% Hispanic
- Comorbid conditions: 35% hypertension, 20% lung disease, 11% diabetes, 9% cardiovascular disease, 7% morbid obesity

COVID-19 Rheum Alliance: Early results from the global provider registry (234 patients)

- Medications prior to COVID-19 diagnosis:
  - 68% on conventional DMARDs
  - 37% on biologic DMARDs
  - 32% on glucocorticoids
  - **29% on hydroxychloroquine**
  - 12% on NSAIDs, 6% on JAK inhibitors
- Outcomes: 10 patients (4%) died, 91 (39%) hospitalized
- Infection status: 68 (29%) resolved, 132 (56%) unresolved, 34 (15%) unknown
- Of patients on hydroxychloroquine:
  - 53% on other conventional DMARD, 19% on biologic DMARD, 3% on JAK inhibitor.
  - **39% are on no other immune-modulating medication.**

https://rheum-covid.org/updates/combined-data.html

Early results from the patient experience survey (over 6000 responses):

- Primary rheumatic disease: 24% with rheumatoid arthritis, 15% with systemic lupus erythematosus, 6% with axial spondyloarthritis, 3% with psoriatic arthritis
- 309 (5%) reported COVID-19 infections
- 142 (46%) were taking hydroxychloroquine at the time they were diagnosed with COVID–19

At present, no drug has been proven to be safe and effective for treating COVID-19.

- HCQ or CQ insufficient data to recommend for or against (AIII)
  - HCQ + AZ recommend against (AIII)
- Remdesivir insufficient data to recommend for or against (AIII)
- Lopinavir/ritonavir (AI) or other protease inhibitors (AIII) recommend against
- Convalescent plasma, hyperimmune IgG insufficient data to recommend for or against (AIII)
- IL-6 or IL-1 inhibitors insufficient data to recommend for or against (AIII)
- Interferons (AIII) or Janus kinase inhibitors (AIII) recommend against

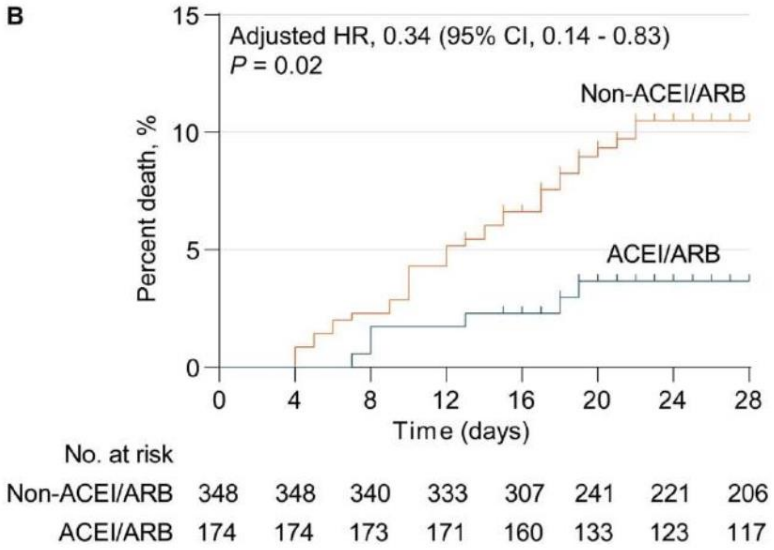
https://covid19treatmentguidelines.nih.gov/ (accessed 4/21/20)

Association of Inpatient Use of Angiotensin Converting Enzyme Inhibitors and Angiotensin II Receptor Blockers with Mortality Among Patients With Hypertension Hospitalized With COVID-19

Peng Zhang, LiHua Zhu, Jingjing Cai, Fang Lei, Juan-Juan Qin, Jing Xie, Ye-Mao Liu, Yan-Ci Zhao, Xuewei Huang, Lijin Lin, Meng Xia, Ming-Ming Chen, Xu Cheng, Xiao Zhang, Deliang Guo, Yuanyuan Peng, Yan-Xiao Ji, Jing Chen, Zhi-Gang She, Yibin Wang, Qingbo Xu, Renfu Tan, Haitao Wang, Jun Lin, Pengcheng Luo, Shouzhi Fu, Hongbin Cai, Ping Ye, Bing Xiao, Weiming Mao, … See all authors

Originally published 17 Apr 2020 | https://doi.org/10.1161/CIRCRESAHA.120.317134 | Circulation Research. ;0:null

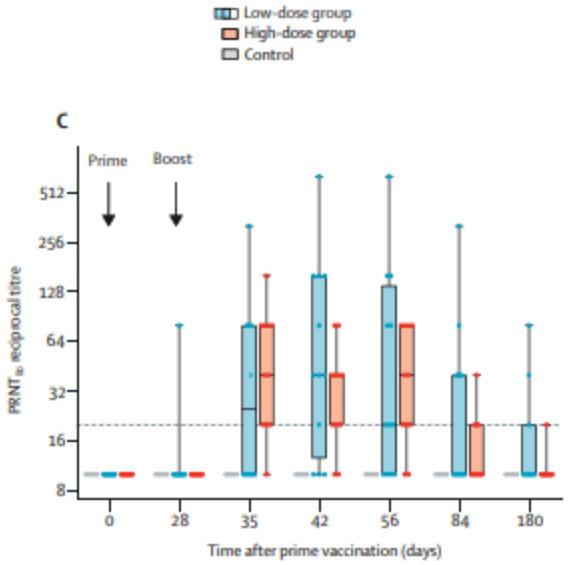
- Retrospective, 1128 pts w/ HTN
- ACEI/ARB upon subgroup analysis associated with decreased mortality (adjusted HR, 0.30; 95%CI, 0.12-0.70; P = 0.01)



A preview from MERS-CoV?

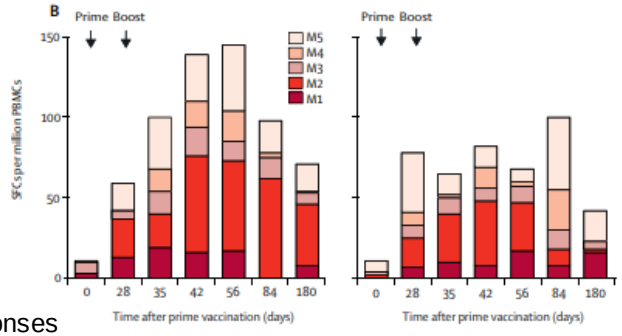
Safety and immunogenicity of a modified vaccinia virus Ankara vector vaccine candidate for Middle East respiratory syndrome: an open-label, phase 1 trial

Till Koch, Christine Dahlke*, Anahita Fathi, Alexandra Kupke, Verena Krähling, Nisreen M A Okba, Sandro Halwe, Cornelius Rohde, Markus Eickmann, Asisa Volz, Thomas Hesterkamp, Alen Jambrecina, Saskia Borregaard, My L Ly, Madeleine E Zinser, Etienne Bartels, Joseph S H Poetsch, Reza Neumann, Robert Fux, Stefan Schmiedel, Ansgar W Lohse, Bart L Haagmans, Gerd Sutter, Stephan Becker, Marylin M Addo*

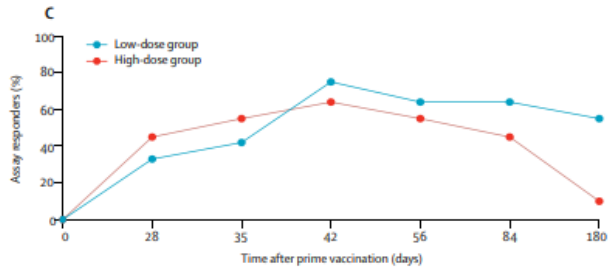


Neutralizing antibody responses

- Phase I trial, spike protein
- Both antibodies and T cell-mediated immunity generated
  - Which more important?
  - Booster doses needed
  - Acceptably safe



T Cell mediated responses



COVID-19
KEEPING UP WITH A MOVING TARGET

dkbmed

Lancet ID 4/20/20

To submit your own question for Dr. Auwaerter, please email QA@dkbmed.com

- **There are several IgG/IgM tests for COVID-19 appearing online - available to "Professionals only." How do we know which ones are reliable?**
- **Is it too early to purchase these kits, particularly for group homes/ day programs?**

What is the data around the success of using the plasma from a patient who has recovered from COVID-19 to treat a patient for the virus?

COVID-19
KEEPING UP WITH A MOVING TARGET

dkbmed

What can we glean from the data from antibody testing being performed in Los Angeles County?

What do data show about transmission of the virus within the same household?

- There is information regarding the pediatric population and a post viral presentation of redness/rash to their toes/fingers being linked to COVID-19. Is there benefit to test these children for the virus or is this symptom more an indication that they may have had it?
- What is the timeframe of presentation of this in relation to infectious status?

A few reports have come out that show relatively low prevalence of asthma in people with COVID-19. Are people with asthma at low risk of complications?

To receive CME/CE credit:

- Complete the evaluation on at COVID19.DKBmed.com
- Upon registering and successfully completing the activity evaluation, you will have immediate access to your certificate.

To access more resources related to COVID-19:

- Access our resource hub at COVID19.DKBmed.com

To ask your own question to Dr. Auwaerter:

- Email QA@dkbmed.com

COVID-19
KEEPING UP WITH A MOVING TARGET

dkbmed