

Henry Ford Health

Henry Ford Health Scholarly Commons

Quality Expo 2022

Quality Expo

1-25-2022

Project #37: Management Guidelines for Patients with COVID-19: Rapid Cycle Improvement

Rachel M. Kenney

Zachary R. Smith

Amy Beaulac

Erin Eriksson

Shelbye R. Herbin

See next page for additional authors

Follow this and additional works at: <https://scholarlycommons.henryford.com/qualityexpo2022>

Authors

Rachel M. Kenney, Zachary R. Smith, Amy Beaulac, Erin Eriksson, Shelbye R. Herbin, Shaina Kwiatkowski, Marilen Martinez, Michael P. Veve, Jona Lekura, Smitha Gudipati, Gina Maki, Seema Joshi, Raef Fadel, Anita B. Shallal, Patrick Bradley, Junior Uduman, Jeffrey H. Jennings, Sara Hegab, Jayna Gardner-Gray, Jennifer Swiderek, John J. Stine, Joseph M. Johnson, Kristin M. Griebe, Mathew Jones, Laura Hencken, Long To, Michael Peters, Brian M. Church, Robert McCollom, Scott Kaatz, Indira Brar, Anne Chen, Allison Weinmann, Vivek Kak, Nasir Husain, Asgar Boxwalla, Tricia Stein, Erica Herc, Jonathan Williams, Odaliz Abreu-Lanfranco, Nicholas Yared, John McKinnon, Pallavi Bhargava, Geehan Suleyman, Robert J. Tibbetts, Linoj Samuel, Marcus J. Zervos, George Alangaden, and Mayur Ramesh



#37

Management Guidelines for Patients with COVID-19: Rapid Cycle Improvement

(HFHS)



Management Guidelines for Patients with COVID-19: Rapid Cycle Improvement

Rachel Kenney, PharmD, HFH Pharmacy; Zachary Smith, PharmD, HFH Pharmacy; Amy Beaulac, PharmD, HFHB Pharmacy; Erin Erickson, PharmD, HFH Pharmacy; Shelby Herbin, PharmD, HFWH Pharmacy; Shaina Kwiatkowski, PharmD, HFMI Pharmacy; Marlen Martinez, PharmD, HFMI Pharmacy; Michael Vee, PharmD, HFH Pharmacy; Janel Lohr, PharmD, HFH Pharmacy; Smith Gaidipati, MD, Infectious Diseases; Gina Malik, MD, Infectious Diseases; Serrina Joshi, MD, Infectious Diseases; Raef Fadel, MD, Internal Medicine; Aneta Shukri, MD, Infectious Diseases; Shana Bradley, MD, Pulmonary & Critical Care Medicine; Junaid Usmani, MD, Respiratory & Critical Care Medicine; Jeffrey Jennings, MD, Pulmonary & Critical Care Medicine; Sara Hegab, MD, Pulmonary & Critical Care Medicine; Jayna Gardner-Gray, MD, Pulmonary & Critical Care Medicine; Jennifer Salsinski, MD, Pulmonary & Critical Care Medicine; John Slone, RPh, HFH Pharmacy; Joseph Johnson, PharmD, HFH Pharmacy; Kristin Grube, PharmD, HFH Pharmacy; Matthew Jones, HFH Pharmacy; Laura Hencken, PharmD, HFH Pharmacy; Long To, PharmD, HFH Pharmacy; Michael Peters, RPh, HFH Pharmacy; Brian Church, PharmD, Epic Helios; Robert McCollum, PharmD, Epic Helios; Scott Katz, MD, Hospital Medicine; Indra Brar, MD, Infectious Diseases; Anne Chin, MD, Infectious Diseases; Allison Weinmann, MBS, FRACP Infectious Diseases; Clinical Quality & Safety; Infection Diseases; HFH; Near Health; MD, Infectious Diseases; HFH; Alper Bonawit, MD, Infectious Diseases; HFH; Tissa Saini, MD, Infectious Diseases; HFH; Erica Hest, MD, Infectious Diseases; Jonathan Williams, MD, Infectious Diseases; Odalis Abreu-Lanfranco, MD, Infectious Diseases; Nicolas Yared, MD, Infectious Diseases; John McKinnon, MD, Infectious Diseases; Pallavi Bhargava, MD, Infectious Diseases; Geetha Suleyman, MD, Infectious Diseases; Robert Tabbutt, PhD, Microbiology; Linzi Samuel, PhD, Microbiology; Marcus Zervas, MD, Infectious Diseases; George Alagardis, MD, Infectious Diseases; Mayar Ramess, MD, Infectious Diseases; and the HFHS Antimicrobial Subcommittee; HFHS Pulmonary & Critical Care; Epic Helios; System Incident Command.

Aims:

- To rapidly devise, continually improve, educate, and implement a live and changing COVID-19 management guideline based upon emerging best available evidence.
- To optimize the care of patients with COVID-19 and improve patient outcomes.

Plan

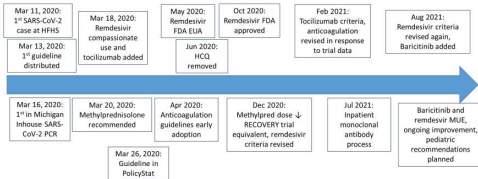
Background

- HFHS was impacted early in the global COVID-19 pandemic when virtually no information was known about the novel SARS-CoV-2 virus
- The first SARS-CoV-2 infection was detected at HFHS on March 11, 2020
- Since 2020, HFHS has experienced 4 distinct surges of COVID-19 patients

Do

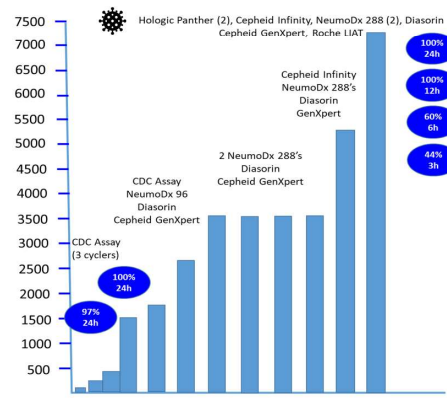
Interventions Implemented

Major Milestones in COVID-19 Guideline Rapid Cycle Improvement



SARS-CoV-2 Testing

- HFHS lab first in Michigan to offer in house PCR testing
- Leveraged 6 different testing platforms to maximize capacity and ensure rapid turn around time
- Supply chain continues to be an ongoing challenge, daily monitoring is required for lab supplies, swabs and transport media



Data courtesy Dr. Zarbo, HFHS Pathology and Lab Medicine

Do

Interventions Implemented

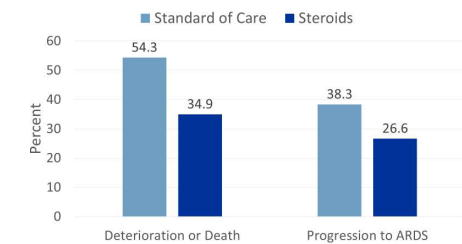
- Early adopter remdesivir:** March 18, 2020 guidelines; multiple revisions to remdesivir criteria in response to clinical trial data and ongoing
- Early adopter steroids:** March 20, 2020 guidelines; dose reduction to RECOVERY trial equivalent in December 2020
- Early adopter immunomodulators:** March 18, 2020 guidelines; multiple revisions to criteria in response to clinical trial data and ongoing
- Early adopter anticoagulation:** Anticoagulation tier 1 formalized April 2020; Added link to COVID-19 management guideline
- Education and Implementation:** supported by Infectious Diseases, with daily unit rounding during the first surge of the pandemic in 2020
- Epic Helios support for implementation:** GPU and ICU add on order sets; Epic orderables with mandatory questions and criteria embedded for baricitinib, remdesivir, and tocilizumab; frequent updates as guidelines change
- Incident command facilitated rapid cycle improvement to guidelines:** Monthly committee meetings were not always timely enough to facilitate practice improvements to COVID-19 management. Incident command facilitated rapid approvals as needed. Antimicrobial subcommittee and Medication Management Committee approved all changes electronically or at monthly meetings following all incident command approvals, refining the final product published in PolicyStat.
- Ongoing improvements:** include criteria changes to COVID therapeutics, dose changes, addition of anticoagulation recommendations, monoclonal antibodies, and more

Check

Results

Rapid cycle improvements have been subject to multiple observational studies by the HFHS team, demonstrating patient outcome improvements, and resulting in meaningful peer-reviewed publications

Early corticosteroids for hypoxia associated with improved COVID-19 outcomes

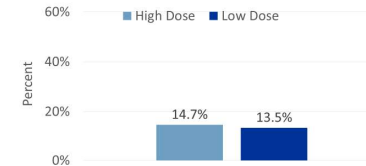


Fadel R et al. Clin Infect Dis 2021

Check

Results

No difference in 28-day mortality with high vs. low dose corticosteroids



Joshi S et al. Open Forum Infect Dis 2022

Earlier administration of tocilizumab is associated with improved outcomes

Factors Associated with 28-day mortality in multivariable regression

Factor	Adj OR	95% CI	p-value
Tocilizumab within 12 days of symptom onset	0.296	0.098–0.889	0.030
Male sex	2.363	0.809–6.903	0.116
SOFA ≥ 8	2.842	1.042–7.753	0.041

Morrison AR et al. Journal of Autoimmunity 2020; 114: article 102512

Act


Sustain and Spread

- Medication use evaluations were completed for baricitinib and remdesivir in 2021 to ensure guideline criteria were met and to target resources for maximum benefit
- Education ongoing at division conferences & meetings as guidelines evolve
- Key stakeholders rapidly review newly published literature and refine the guidelines in response to this continually evolving pandemic
- Pediatric COVID-19 and outpatient therapeutic recommendations (nirmatrelvir, molnupiravir, and remdesivir 3-day course)
- Conference abstracts and publications in the peer reviewed literature help to spread best practices outside of HFHS

Debrief

Lessons Learned and Keys to Success

- Teamwork! Leveraged antimicrobial stewardship infrastructure of interdisciplinary stakeholders.
- 1st in Michigan inhouse PCR testing
- Rapid cycle improvement and early adoption of testing, antivirals, immunomodulators, anticoagulation, non pharmacologic interventions saved lives
- Incident command essential to rapid cycle improvement
- Infectious Diseases leadership on education and implementation
- Epic Helios team critical to implementation

- 
- Scored high in **Safety and Quality**
 - **Team Members include:** Rachel Kenney, PharmD, BCIDP- ID PGY2 Pharmacy Residency Director, HFHS and **many many others...**