

Long-Term Effects of COVID-19

A Hospitalist Perspective



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Introduction and Thanks

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BayCare Clinic, LLP

BayCare Clinic is the largest physician-owned specialty-care clinic in northeastern Wisconsin and Michigan's Upper Peninsula. It is based in Green Bay, Wisconsin.

BayCare Clinic offers expertise in more than 20 specialties, with more than 100 physicians serving in 16 area communities.

BayCare Clinic is a joint partner in Aurora BayCare Medical Center, a 167-bed, full-service hospital.



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Background and Stats

- COVID-19 Pandemic has, at some level, stressed, bent and broken the healthcare system
- More than 83.1 million total infections in the US
 - US among the 5 countries with highest cumulative number of cases
- More than 70.4 million symptomatic illnesses in the US
- More than 4.1 million hospitalizations in the US
- More than 1 million deaths worldwide and counting
 - US among the 5 countries with highest cumulative number of deaths
- Approximately 20 million people globally have “recovered” from COVID (meaning they have survived hospitalization)

Long-Term Effects and Implications

- Busy dealing with immediate effects of pandemic; have yet to focus attention on the future, and long-term effects of this pandemic illness
- Much learned, but more to discover including how COVID affects human body
- A systemic disease presenting treatment challenges as it affects different body systems
- Treatment mostly aimed at either subduing or altering the immune response
- Needs a new perspective – evidence suggests potential health complications after COVID-19 may require ongoing clinical care for some time to come

Now is the time to look at long-term effects to prepare for the future.

Health Consequences

“Longer-ranging longitudinal observational studies and clinical trials will be critical to elucidate the...health consequences attributable to COVID-19 and how these may compare with other serious illnesses.”

C. Del Rio, et al, 2020

Post-COVID Syndrome

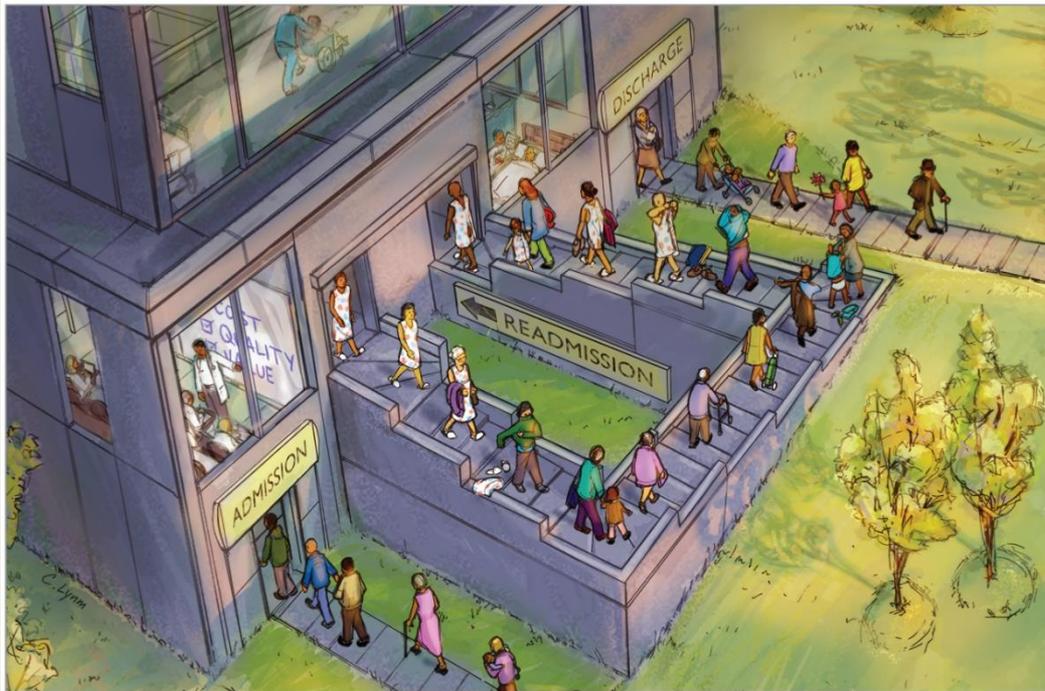
- Currently, no consensus definition of post-acute COVID
 - One study defines as presence of symptoms beyond 3 weeks from initial onset; chronic COVID-19 as extending beyond 12 weeks
- Well recognized in patients recovering from serious illness, especially those who required hospitalization and ICU admission
- However, not just observed in those who had severe illness/hospitalization. A CDC survey of almost 300 adults with confirmed COVID showed:
 - 35% of symptomatic patients reported no return to usual state of health \geq 2 weeks after testing
 - Those older than 50 years of age with presence of 3 or more chronic medical conditions did not return to usual health within 14-21 days after diagnosis
 - Even younger patients (age 18-34) without chronic medical conditions are impacted – 1 in 5 not yet achieving baseline health at a median of 16 days from testing

Hospitalist Experience

- Seeing long-term effects and complications related to:
 - Neurologic: from brain fog to extreme deficit, sensory defects
 - Cardiovascular: myocarditis, embolic disease, arrhythmias
 - Pulmonary: fibrosis, interstitial thickening, decreased lung function
 - Psychiatric: depression, anxiety, post-traumatic stress disorder, substance abuse
 - Hematologic: thromboembolic disease
- Cause of long-term effects
 - Believed to be related to endothelial injury
- Preventing long-term effects
 - Early diagnosis and treatment
 - Prevention measures including vaccination

Readmissions

Nearly 1 in 10 patients who were discharged after receiving inpatient care for COVID-19 in early 2020 were readmitted within two months.



B. Kuehn, 2020

Hospital Readmission is Common Among COVID-19 Survivors

CDC investigators reviewed data for 125,000+ patients with COVID who were hospitalized:

- 15% of patients died during initial hospitalization
- 9% of survivors were readmitted within 2 months
- 1.6% of survivors were readmitted more than once
- Diseases of the circulatory, respiratory or digestive systems were the most common discharge diagnoses for those with readmissions
- The odds of readmission increased with age (among those > 65 years), preexisting pulmonary disease, heart failure, diabetes or chronic kidney disease, hospitalization within 3 months preceding the index hospitalization, and if discharge from index stay was to a SNF or to home with health care assistance

This data adds new urgency to the need to curb COVID infections – particularly among high-risk populations.

A. Lavery, et al, 2020

ICU Patient Outcomes

A systematic review and meta-analysis of observational studies of ICU outcomes in COVID patients showed:

- In-ICU mortality ranged from 0 to 84.6%
- Proportion of patients discharged from the ICU varied from 24.5% to 97.2%
- Inpatients with completed ICU admissions, combined ICU mortality was 41.6%

Note:

The authors identified that the survival rates between studies are highly variable; thus, these results should be interpreted with caution.

R. Armstrong, et al 2020

Side Effects of COVID on Non-COVID Patients

- Delay in patients seeking care
 - Per physician survey on COVID impact, 72% of physicians indicated that COVID will have serious consequences for patient health in their communities because many patients delayed getting care they needed during the pandemic
 - ER visits are down, but patients sicker on presentation
 - Delays in cancer diagnosis
 - Increase in CVA cases due to delayed health care/maintenance

Emotional Health and Well Being

The Toll on Patients and the Workforce

Percentage of COVID-19 Infection, Symptomatic Illness and Hospitalizations by Age Group:

Age Group	Infections	Symptomatic Illness	Hospitalizations
0-4 Years	4%	4%	1%
5-17 Years	18%	18%	2%
18-49 Years	50%	51%	26%
50-64 Years	17%	17%	25%
65 and Older	11%	10%	46%

CDC 2021

Burnout in the Workforce and Its Implications

- Occupational stress that leads to burnout for healthcare providers has been aggravated during COVID-19
- In a 2020 physician survey on the COVID impact:
 - 58% of physicians often have feelings of burnout, compared to 40% in 2018
 - 13% of physicians have sought medical attention for a mental health problem caused by COVID's effect on their practice or employment situation
 - 37% of physicians would like to retire in the next year

Overall Impact will be Huge

- Disability's (short- and long-term) effect on our healthy workforce
- The healthcare resources required could be significant if we don't act fast
- It could again stress our healthcare system to the point that we don't recover from it
- Effects of physician and nursing burnout on healthcare workforce

Solutions for the Future

- Vaccination to prevent the transmission and achieve herd immunity
- Need strategy around multidisciplinary approach to patient care
- Post-COVID clinics
- Registry for high risk COVID-19 survivors – especially those with prolonged hospitalizations and ICU stay
- Need care pathways and workflows specially designed to treat long-term effects of COVID
- PCPs will become the new front line healthcare provider in fight against COVID after the pandemic is over
- Evidence-based approaches for preventing burnout may help identify appropriate measures to enlist to promote a healthy workplace

Conclusion

Questions?