

Implementation of standardized longitudinal EMR-based monitoring of patients with post-COVID conditions

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Background

- SARS-CoV2 has had a global impact with over 138 million cases in July 2021 with almost 4 million deaths¹. Soon after the beginning of the Coronavirus pandemic in 2020, some patients were reporting prolonged symptoms lasting many months after their acute infection².
- Beyond the acute effects, some individuals have experienced persistent residual symptoms. These patients became known as “Covid long haulers^{3,4}”.
- Post-Covid conditions are characterized by occurring after a SARS-CoV-2 infection usually within three months^{5,6}, that last for at least 2 months, and are not due to an alternative diagnosis.
- An important step in understanding the effects of Covid and effectively treating the long-term effects is gathering and documenting meaningful data in an organized fashion.
- A structured data field for these Covid Long-Haulers was constructed in the Hope clinic EMR, eClinicalWorks, in December 2020.

Objective

- Educate all family medicine providers at the Hope Clinic how to record in the structured data fields for Covid-Long and which ICD 10 code to use to capture all of the patients that are suspected of having Covid-Long.
- Determine if educational interventions improve the 36 family medicine providers’ ability to capture patients with Covid-Long and increase usage of structured data elements
- Generate a structured database that will allow for efficient recall and reporting of patients with Covid-Long for future dissemination of education and treatments as they become available to afflicted patients.

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Methods

Pre-Implementation Chart Review

Educational Sessions with providers

Post-Implementation Chart Review

- Pre-Implementation:** Chart review collected between January 1st 2021 to January 1st 2022

Table 1 – Pre implementation versus post-implementation data

	Pre-Implementation	Post-Implementation
Patients recorded as Covid-Long	17	TBD
Number of Providers recording Covid-Long patients	10	TBD

- Educational Sessions:** Two in-person training sessions, one with Hope Providers at the All Staff Meeting and another with Family Medicine residents during Didactics. Additionally, an instructional email with all steps included will be sent to Hope Clinic Providers and residents.

Name	Value
<input type="checkbox"/> long Covid tracker	
<input type="checkbox"/> brain fog	
<input type="checkbox"/> exercise tolerance, decreased	
<input type="checkbox"/> fevers/feverishness	
<input type="checkbox"/> fatigue	
<input type="checkbox"/> headache(s)	
<input type="checkbox"/> hospitalized for Covid-19?	

Figure 1 – Structured Data Field in eClinicalWorks

ICD-10	Consent	Diagnosis (Using Smart Search)
U09.9	public	COVID-19 long hauler

Figure 2 – ICD 10 code U09.9 as it appears in eClinicalWorks

- Post-Implementation:** Chart review three months after implementation of intervention

Discussion

Using structured data fields in the EMR allows for more standardized documentation and tracking of patients impacted by post-COVID conditions

There is no standard of care for these patients and the spectrum of symptoms makes clear standards difficult to develop⁷. Additional studies are needed to identify possible treatment modalities.

Structured data allows for more precise and accurate queries, enabling future analysis and longitudinal patient tracking.

The project is still in the early stages and additional data cycles are needed to monitor implementation.

Conclusion

- In the upcoming months, it is anticipated that the number of providers using the Covid-long structured data field as well as the ICD 10 code for Covid Long-Haulers will increase after the educational interventions
- Increasing provider usage from 10 to 36 may capture an additional 15 patients in a three month period

References

- Crook H, Raza S, Noewil J, Young M, Edison P. Long covid- mechanisms, risk factors and management. *BMJ* 2021;374:n1648. <http://dx.doi.org/10.1136/bmj.n1648>
- Crispo A, Bimonte S, Porcillo G, Fonte C-A, et al. Strategies to evaluate outcomes in long-COVID-19 and post-COVID survivors. *Infect Agents Cancer* (2021) 16:62. <https://doi.org/10.1186/s13027-021-00401-3>
- Berenguera A, Jacques-Aveno C, Medina-Perucha L, Puente D. Long term consequences of COVID-19. *European Journal of Internal Medicine* 92 (2021) 34-35. <https://doi.org/10.3399/ijgp211X717521>
- Singh C. Long COVID: playing the long game. *BJGP Life*. July 2021. DOI: <https://doi.org/10.3399/ijgp211X717521>
- Asadi-Pooya AA, Akbari A, Emami A, Lotfi M, Rostamihosseinkhani M, Nemati H, et al. Risk Factors Associated with Long COVID Syndrome: A Retrospective Study. *Iran J Med Sci November 2021; Vol 46 No 6*.
- Baig A-M. Chronic COVID syndrome: Need for an appropriate medical terminology for long-COVID and COVID long-haulers. *J Med Virol*. 2021;93:2555-2556. <https://doi.org/10.1093/jmvi/26624>
- Peluso M-J, Datchman A-N, Torrest L, Iyer N, et al. Long-term SARS-CoV-2 specific immune and inflammatory responses in individuals recovering from COVID-19 with and without post-acute symptoms. *Cell Reports* 36. August 2021. <https://doi.org/10.1016/j.celrep.2021.109518>