



Research Week 2021

Caring for COVID-19 Inpatients: Lessons Learned In Evidence-Based Electronic Health Record Personalization

Deborah Levy, MD, MPH; Deborah Woodcock, MS, MBA; Yalini Senathirajah, PhD
Submitting author: levyde@OHSU.edu
OHSU / Spaulding Rehabilitation Network, Boston

Keywords

EHR Personalization, Workflow, COVID-19, Project Management

Abstract

Background

The volume and types of data tracked for active COVID-19 inpatients presents a documentation and data visualization challenge. Challenges to efficiency and workflow in documentation are underscored by the multi-organ system involvement, a complex unpredictable recovery after critical illness, and evolving treatments. Clinician burnout is a particular concern.¹ COVID-19 evidence-based materials evolve rapidly, with growing amounts of complex clinical data.

We will present lessons learned in a case of a clinician personalizing the EHR for COVID-19, in a post-acute inpatient setting.

Methods

We used project management frameworks to identify key activities associated with building evidence-based templates through clinician EHR personalization. We developed a table format leveraging auto-importing of clinical COVID-19 timeline data. (Figure 1) Project design and build effort, and resource optimization and planning were critical to achieve the deliverables. Personalizations can be built by trained end users.

Template and smart list development

We created templates for labs, physical exam, and COVID-19 disease course. The time spent researching the data for each template was longer than time to design of the tables. We obtained informal feedback from key stakeholders, and made serial adjustments to the tools. Respected evidence-based clinical information was used, and routinely checked for updates.²

¹ PMID: 32606049 DOI: 10.3949/ccjm.87a.ccc051 | Burnout of healthcare providers during COVID-19
M Bradley, P Chahar. Cleve Clin J Med. 2020 Jul 9.

² Local institutional resources regarding COVID-19 patient care, including: MassGeneralBrigham COVID-19 Grand Rounds series, covidprotocols.org (BWH-developed online resource), and MGH's online COVID-19 protocol site (password required), NEJM Journal Watch, CDC, and Massachusetts Dept of Public Health sites.

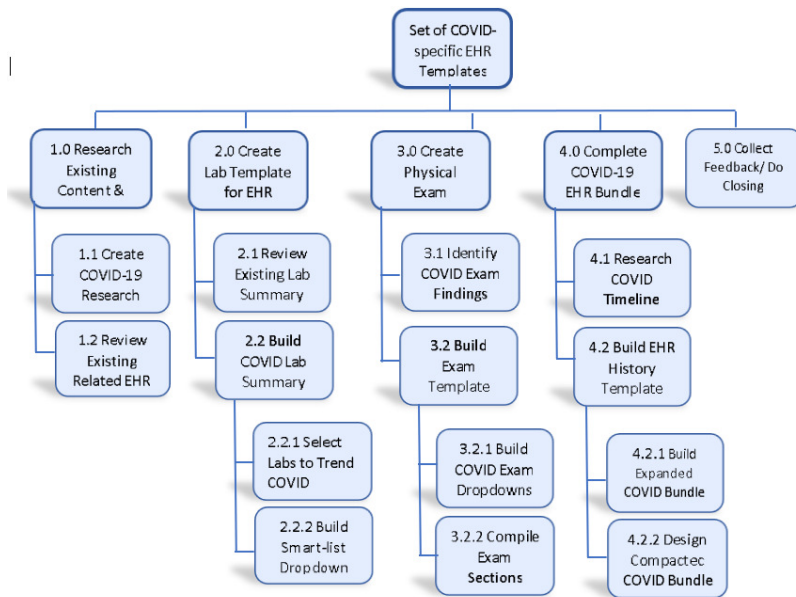
Results

Plan, research, and build time for each template were significantly greater than that for updates. Templates were built in a shareable format.

Highlighting time since diagnosis was critical, especially with CDC-released time-based criteria.³ The timeline guided isolation precaution and retesting strategies at point of care. Compact comprehensive data presentation saved subsequent users from navigating to find the same information. Entering the COVID-19 Bundle data took at least 5 minutes; less for patients from within the EHR system. Data was easily carried forward to future notes. (See Figure 2)

In closing, we will discuss key barriers, risks, and opportunities for those planning similar personalization projects.

Figure 1: Work Breakdown Structure



Key: EHR = Electronic Health Record; COVID/COVID-19 refers to Disease Process attributable to COVID virus infection; Lab = Laboratory findings; Template = An end-user designed set of text that can be imported into clinical documentation in an EHR note; Smart-list = A dropdown menu created for use within an

Figure 2: COVID-Bundle with Example of Dropdown Menu Content

COVID-19 Bundle:	
Date of symptom onset: ***	Date of 1 st test positive: ***
Intubated during course: (F2-Yes/No)	Key symptoms associated: (F2-Smartlist of COVID symptoms)
Telemetry/Oximetry: (F2-Yes/No)	COVID-directed therapy: (F2-Smartlist of treatments)
Access: (F2-Smartlist of PIV/PICC/Central line/Tunneled line/No Access)	Code status: (Import current code status)

COVID symptoms : Fever/Chills, myalgias, taste changes, SOB, cough, nausea, anorexia

COVID-directed therapy (list varies with disease understanding): Hydroxychloroquine, statin, azithromycin, Other agent:***, Study-protocol***

³ Transmission time-based guidelines accessed via CDC website at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-hospitalized-patients.html>