

Improving Radiographic Data Capture for the Prisma Health Comprehensive COVID-19 Registry



UNIVERSITY OF
SOUTH CAROLINA
School of Medicine
Greenville

PRISMA
HEALTHSM

Tori Grice¹ and Smitty Heavner, MS, RN²
1 University of South Carolina School of Medicine Greenville
2 Department of Medicine, Prisma Health

Introduction

- COVID-19 is a highly contagious acute respiratory disease that was declared a global pandemic by the World Health Organization (WHO) in March 2020.
- The Prisma Health Comprehensive COVID-19 Registry (PHCCR) was created to allow for analysis of COVID-19 related data. This registry supports local research efforts and allows for collaboration with external partners, such as Viral Infection and Respiratory Illness Universal Study (VIRUS), an international COVID-19 registry with over 300 participating sites in 24 countries.
- Radiographic data are essential to understanding COVID-19. However, the narrative-like reports generated from radiographs are difficult to incorporate into patient registries since they require manual abstraction.

Aims

The purpose of this project is to implement quality improvement practices to make the process of radiology data abstraction more uniform and systematic to contribute to the Prisma Health Comprehensive COVID-19 Registry.

- Aim 1:** Improve the accessibility, availability, and quality of radiology data related to COVID-19 patients captured in the PHCCR
- Aim 2:** Perform quality assessment of radiology data and implement quality metrics in the PHCCR

Method

- A REDCap Survey was created using variables from the VIRUS Data Dictionary Codebook.

Figure 2 shows a screenshot of a REDCap survey form used to abstract radiographic patient data. The form includes fields for Hospital day (1 = day of admission), Admission, Discharge, and Result Date. It also contains several questions with checkboxes and radio buttons, such as 'Were any of these performed today?' (with options for Chest X-ray, CT Chest, Lung US, Cardiac Echo, and Others), 'Were infiltrates present on chest x-ray?' (Yes/No), 'CXR Pattern' (with options for Interstitial pattern, Opacities, Multifocal, Bilateral, and Pleural effusion), 'CT Chest Abnormal' (Yes/No), 'CT Chest Pattern' (with options for Ground Glass Opacity (GGO), Crazy paving, Multifocal, Bilateral, Lymphadenopathy (LAP), Pleural effusion, Opacity, Consolidation, and Pulmonary nodules), and 'Lung Ultrasound Abnormal' (Yes/No).

Figure 2. The REDCap form above shows the survey used to abstract radiographic patient data.

- A data abstraction manual was created in order to ensure reliability of data entry between team members. In addition to instructions regarding the abstraction process, this manual also includes an index of common terms found in radiograph reports and the proper way to input them into REDCap.

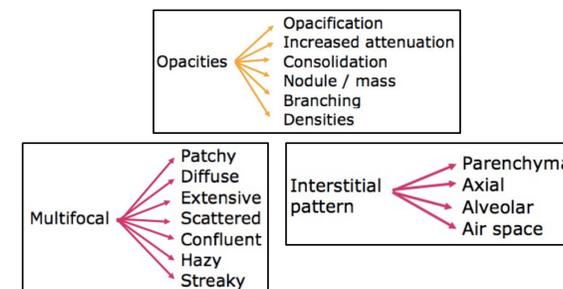


Figure 3. The figure above shows an excerpt from the abstraction manual and demonstrates various terms that signify "opacities", "multifocal", and "interstitial pattern", respectively.

- Data from chest x-rays (CXR), chest CT, lung ultrasound (US) and echocardiograms were manually abstracted from patient's electronic medical records on EPIC and entered into REDCap.

Results to date

- 5,220 COVID-19 positive patients received a total of 5,676 radiographic imaging between March 1, 2020 and August 31, 2020.
- 2,584 of these images have had their interpretations extracted.

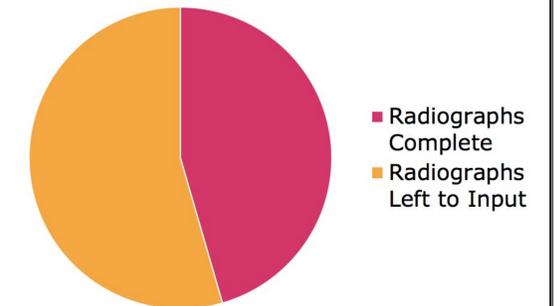


Figure 4. The pie chart above represents the radiographic images whose data have been input into REDCap (pink) versus those that still need to be input (orange).

Conclusion

- Given its novelty, it is important to collect radiographic data about COVID-19 to understand how the disease process affects patient populations, its progression, and to evaluate patient outcomes.
- The data collected from the PHCCR can be used in the future to answer novel research questions to increase the knowledge base on COVID-19.

Are you interested in using data from the PHCCR?

Scan this QR code to find out more information about how you can use COVID-19 data collected through Prisma Health for your own research.



Acknowledgements

T.G. was a UofSC SOMG Summer Research Scholar funded by the Sargent Foundation.

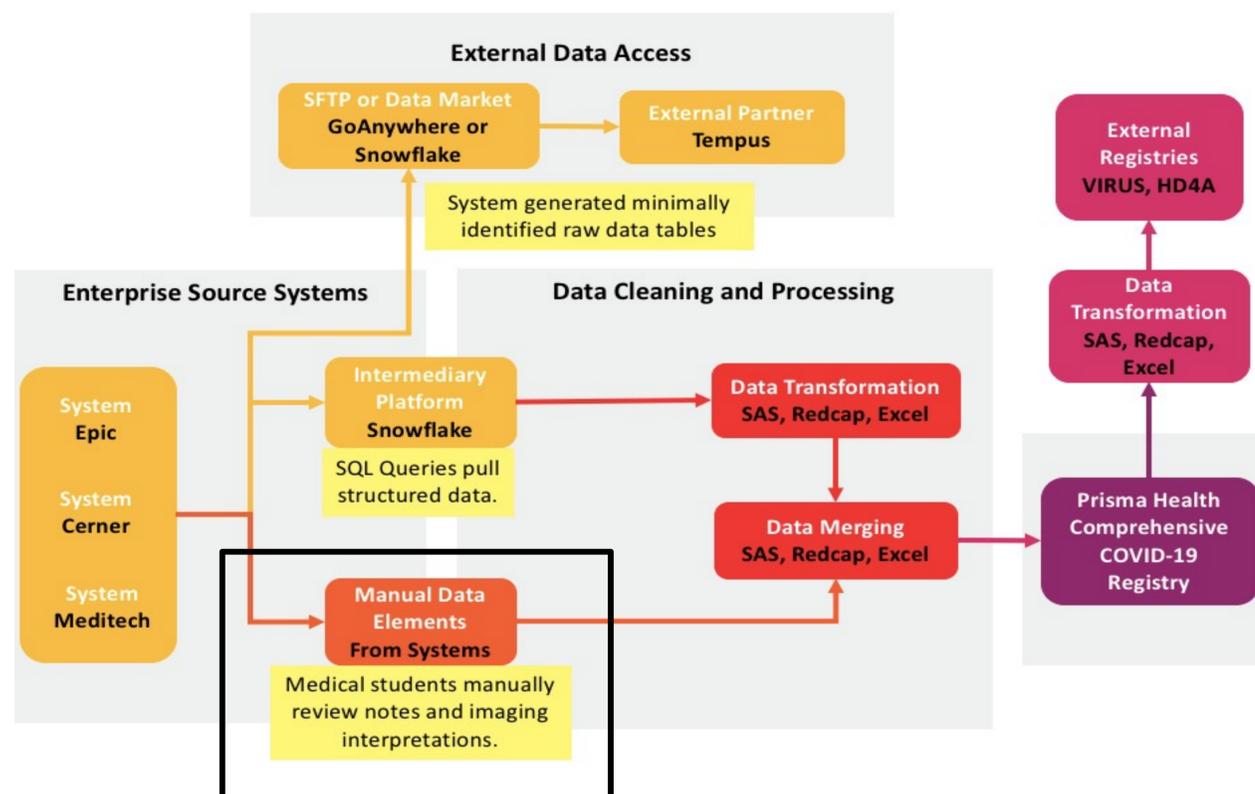


Figure 1. The chart above provides a framework for the Prisma Health Comprehensive COVID-19 Registry. The box outlined in black, entitled "Manual Data Systems" is the focus of this quality improvement project.