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Required Skills:

Java, Python,Web (HTML / JS / CSS), Angular, React,MySQL, Oracle.

Preferred Team Communications:

Conference Call, to be discussed

Data Sources:

To be discussed.

Other Items:

N/A

Team Info:

Needs a Developer and Tester.
Allows one team of 4-6 members.

DEVELOPMENT OF A FHIR APPLICATION TO CAPTURE PATIENT REPORTED MEASURES (PRM) FOR PATIENTS WITH RIB FRACTURES

There is a large national effort to integrate patient reported outcome measures (PROM) to develop patient-centered and coordinated care. Typically, when we think of patient reported measures we are talking about outpatient measures; however, inpatient reporting of specific measures is additionally of extreme value. A prime example of a disease process where inpatient management is nearly 100% driven by patient reported measures is rib fractures. Rib fractures carry a significant morbidity (50%) and mortality (22% in patients > 65%). Rib fractures are the most common injury sustained following an elderly fall, accounting for over 10% of trauma admissions. Furthermore, as the trauma population ages, rib fractures are becoming a serious epidemic. The mainstay of treatment of rib fractures includes frequent patient directed respiratory therapy. Patients are recommended by nursing to use an incentive spirometer on their own 10 times every hour to help expand their lungs, reduce atelectasis, and improve lung volumes. This is imperative as the leading cause of death following rib fractures occurs secondary to atelectasis and subsequent pneumonia. An additional, measure essential to optimal outcomes is adequate pain control allowing patients to take deep inspirations. Early warning systems for patients with rib fractures exist which can identify patients at high risk for decompensation before an actual decompensation event occurs. The primary system is called the PIC score and calculates a score based on the patients inspiratory volume, pain score, and subjective cough. Typically, physicians place an order requesting nurses to document each of these elements every 8 hours, unfortunately studies and clinical experience have shown that these data elements are frequently not documented.

PROJECT OBJECTIVES

This project would develop a mobile FHIR application allowing patients to complete a brief 2 question survey each hour after they complete their respiratory therapy. This survey would be provided to patients via a tablet provided by nursing. Additionally, educational patient materials related to rib fractures can be placed on this table. The FHIR application would then input these data elements into the EHR in the patient's record under a patient flowsheet field. An early warning clinical decision support module can then re-calculate the patients PIC score each time a patient reported PIC element or nursing reported PIC element is documented. When a PIC score is documented below 4 (standard threshold for PIC decompensation), an automated alert would prompt the nurse and provider of risk for respiratory decompensation and provide recommended treatments (i.e. epidural, bipap, ICU transfer). The development of a FHIR application to facilitate the utilization of patient reported measures to guide early warning clinical decision support systems is a highly novel and innovative aspect of this project. The final product from this project would be immediately implemented within the University of Minnesota EHR, we would also be able to facilitate development within our development environment.

Intellectual Property: Ask Mentor

SUCCESSFUL PROJECT

To Be discussed.