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Improved Coordination of Care for PICU Patients With Newly Diagnosed Anterior Mediastinal Masses

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IMPROVED COORDINATION OF CARE FOR PICU PATIENTS WITH NEWLY DIAGNOSED ANTERIOR MEDIASTINAL MASSES

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IRB Number (if applicable): STUDY00000560

Describe role of Submitting/Presenting Trainee in this project (limit 150 words):

I am a member of the multidisciplinary action committee that brought to life the organizational standard protocol that now exists on the hospital's intranet outlining the steps that should be taken when a patient first presents to our hospital with an anterior mediastinal mass. I also collected retrospective data on all patients diagnosed from 2015-2019 (patients included in study prior to 2015 had data collected prior to my employment at CMH). I have analyzed all of the data and tracked our progress via a run chart. I created and published on Cerner a "huddle note" for the hem/onc fellows to fill out after huddle concludes so as to hold all parties accountable for the plan that was discussed. I also participated in the course: Problem Solving for Fellows: Continuous Quality and Practice Improvement which helped me perfect the project. I also continue to collect prospective data on new patients.

Problem Statement/Question, Background/Project Intent (Aim Statement), Methods (include PDSA cycles), Results, Conclusions limited to 500 words

Problem Statement/Question:

Anterior mediastinal (AM) masses comprise a heterogeneous group of tumors of the lung, mediastinum and pleura. Since these masses differ in type, clinical evolution and size, children may present with a spectrum of cardiorespiratory symptoms, making them medical emergencies that require prompt intervention, including rapid diagnosis and initiation of treatment. There were 32 Children's Mercy Hospital (CMH) PICU patients diagnosed with AM masses from 2010-2017. The time from presentation to initiation of treatment was longer when patients required surgical biopsy (mean 153 hours) compared to those who did not (mean 58 hours).

Background/Project Intent (Aim Statement):

This project's main objective is to reduce time from admission to obtaining a diagnostic surgical specimen to less than 24 hours for all patients admitted to the PICU with newly diagnosed AM masses with a secondary objective of reducing time to initiation of chemotherapy.

Methods (include PDSA cycles):

Using Plan-Do-Study-Act quality improvement methodology, a bedside huddle (intervention #1) was implemented that requires the presence of an oncologist, intensivist, anesthesiologist, interventional radiologist, and ENT surgeon to determine the safest approach to obtain a diagnostic specimen from patients. The huddle occurs at the time of admission, or prior to 0800 if the patient presents overnight. All of the above-mentioned departments within CMH were notified/educated and agreed upon the process. In addition, a new organizational standard protocol that guides this multidisciplinary, team-based diagnostic approach is now available on the hospital's intranet (intervention #2). It can also be found within the mediastinal mass power plan that was created within our electronic medical record (intervention #3).

Results:

Baseline data was collected on all patients who presented to the PICU with an AM mass from 2010-2017. The baseline mean time for obtaining surgical diagnostic procedures in historical group of 22 patients was 34 hours. Seven patients have been treated since implementation of these interventions in January 2018; the mean time from presentation to surgical diagnostic procedure for these patients was 16.8 hours (50.5% decrease, $p=0.02$). The mean time to initiate therapeutic chemotherapy has also been decreased from 155 hours to 83 hours since implementation of interventions (46% decrease, $p=0.03$).

Conclusions:

We demonstrated that with improved communication and coordination between services, time from admission to obtaining a diagnostic surgical biopsy specimen can be safely reduced to less than 24 hours. This subsequently leads to a quicker diagnosis and thus quicker initiation of therapy, which overall lessens the risk of cardiovascular compromise due to tumor growth.