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Advanced Imaging Following Arterial Switch Operation

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Quality Improvement Abstract Title:
Advanced Imaging Following Arterial Switch Operation

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IRB Number (if applicable): STUDY00002123

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

QI co-investigator and co-author

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

Problem Statement/Question:

Long-term risk in post-operative cardiac patients exists, and morbidity may be avoided with advanced imaging surveillance.

Background/Project Intent (Aim Statement):

The Appropriate Use Criteria (AUC) for Multimodality Imaging During Follow-Up Care of Patients with Congenital Heart Disease (CHD) was published in 2020 by the American College of Cardiology Foundation. This includes a subsection for D-Looped Transposition of the Great Arteries (D-Loop TGA). The arterial switch operation (ASO) is the preferred method for surgical repair of D-Loop TGA. Appropriate and timely use of advanced imaging is essential in optimizing long-term post-surgical outcomes.

The objective of this quality improvement (QI) project is to improve our institution's clinical practice alignment with this AUC. This AUC states it is often appropriate to obtain cardiovascular magnetic resonance imaging (CMR) or cardiovascular computed tomography (CCT) in asymptomatic patients for routine evaluation of coronary arteries 3-5 years following ASO. These patients would likely require sedation and invasive airway management to obtain these studies. So, we believe it reasonable to obtain once it can be performed with mild sedation or anxiolysis, likely at 7 to 10 years of age.

Methods (include PDSA cycles):

We conducted an IRB-approved retrospective chart review of D-Loop TGA patients that have undergone ASO at our institution from 2000–2015. We selected 2015 as our end-point, as those patients would have been about 7-years-old at the time of this review. Phase 1 of this QI project focuses on increasing provider awareness of the AUC. We have incorporated an alert into the electronic medical record (EMR) that flags patients who are status-post ASO once that patient turns 7-years-old, to order a CCT/CMR. One year after these implementations are made, we will re-evaluate our ASO patients from 2010-2015 to assess surveillance screening; these years because most of these patients (who are currently 7-12 years of age) have not yet received advanced imaging.

Results:

Between this time period, our institution performed 110 ASOs. Nine patients did not survive to discharge. Of the 101 patients, 57 follow in our practice. Of these, 14 (about 25%) received appropriate routine surveillance.

Conclusions:

Initial review of our institution's practices indicates that we have room for improvement in utilizing advanced imaging in monitoring our status-post ASO D-Loop TGA patients. Quality improvement in appropriate use of diagnostics, such as advanced imaging, can improve long-term cardiac surgical outcomes. With the implementation of this EMR alert, we will raise awareness of the recommended AUC in this patient population and re-assess practices after one year of intervention. This QI model may then be translated to similar conotruncal defects.