In Search of Appropriateness: Improving Quality of Echo Referrals

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Aim

Increase Appropriate Use Guideline score (AUG) of outpatient echocardiogram referrals from community physicians by an average of 1.5 by June 2018.

Background

The increased volume of echocardiogram referrals has surpassed the capacity of the JPOCSC outpatient echo lab to provide studies in a timely fashion. In 2008, the Canadian Cardiovascular Society set a benchmark of 30 days for non-urgent echoes to be completed[1]. BC Provincial expectations describe three "acceptable" wait times (Urgent within 1 day, Semi-Urgent within 7 days, and Routine within 30 days). However, current wait times range from 8 to 12 months from the time of receipt of the referral to completion of the study.

In 2011, Appropriate Use Criteria were published[2], separating referrals, using an AUG score from 1 to 9, into **Appropriate (Score 7 to 9), May Be Appropriate (Score 4 to 6), and Rarely Appropriate (Score 7 to 9).**

If the echocardiograms being done are limited mostly to those in the Appropriate category, it is hoped that wait times will decrease as the number of studies waiting to be done will diminish.

Project Design & Strategy

Outpatient echo referrals were scored according to the Appropriate Use Criteria. Data were collected during the first 5 weeks to determine stability of the system, and to identify 100 community physicians who were among the most frequent users of the JPOC echo lab.

An **Educational Tool** was created and sent along with a letter to these 100 referring physicians, with a request to reflect on their referral practices, emphasizing the following 4 questions:

1. **Is the patient asymptomatic?**
2. **Is this echo for routine surveillance?**
3. **Does the patient have a previous echo result?**
4. **Does the patient have a change in clinical status or cardiac exam?**

ECHO REFERRAL APPROPRIATE USE GUIDELINE TOOL

APPROPRIATE (AUG SCORE OF 7 – 9)

STRUCTURAL HEART DISEASE	VALVULAR (Initial Evaluation, with reasonable suspicion) SYMPTOMS CONSISTENT WITH CARDIAC ETIOLOGY ; CORONARY ARTERY DISEASE SUSPECT MASSES ; SOURCE OF EMBOLISM
HEART FAILURE	NEW DIAGNOSIS ; SYSTOLIC DYSFUNCTION DIASTOLIC FUNCTION ASSESSMENT RE-EVALUATION TO GUIDE THERAPY (INCLUDING DEVICE THERAPY)
ARRHYTHMIA	ATRIAL FIBRILLATION (new diagnosis) MALIGNANT VENTRICULAR DYSRHYTHMIAS
CARDIOMYOPATHY	INITIAL EVALUATION (Restrictive, Infiltrative, Hypertrophic) RE-EVALUATION ONLY IF CHANGE IN CLINICAL STATUS OR PHYSICAL EXAMAINATION
PERICARDIAL	SUSPECT PERICARDIAL DISEASE ; ASSESSING POSSIBLE TAMPONADE PHYSIOLOGY RE-EVALUATION IF CLINICALLY SUSPICIOUS FOR RECURRENT PERICARDIAL EFFUSION
VALVULAR HEART DISEASE	RE-EVALUATION ONLY IF THERE IS A CHANGE IN CLINICAL STATUS OR PHYSICAL EXAMAINATION SUSPECT PULMONARY HYPERTENSION

RARELY APPROPRIATE (AUG SCORE OF 1 -3)

ROUTINE SURVEILLANCE	LEFT VENTRICULAR FUNCTION (WITH NO CHANGE IN CLINICAL STATUS) < 3 YEARS – MILD VALVULAR STENOSIS WITHOUT CLINICAL CHANGE (NATIVE AND PROSTHETIC)
PRESYNCOPE/SYNCOPE	NO SIGNS OR SYMPTOMS OF CARDIOVASCULAR DISEASE
ROUTINE PRE-OP EVALUATION	NO SIGNS OR SYMPTOMS OF CARDIOVASCULAR DISEASE
INFREQUENT PACs and PVCs	WITHOUT OTHER EVIDENCE OF CARDIOVASCULAR DISEASE
ROUTINE EVALUATION OF HTN	WITHOUT SIGNS OR SYMPTOMS OF HEART DISEASE
ROUTINE SURVEILLANCE OF CHF	< 1 YEAR WHEN THERE IS NO CHANGE IN CLINICAL STATUS

After introduction of the educational tool, all subsequent referrals were scored using the AUG and collated weekly.

Changes Made

A single PDSA cycle was completed during this project. The change made was the introduction of the Educational Tool for referring community physicians. Simultaneously, the physicians were asked to reflect on the need for each echo request.

Results

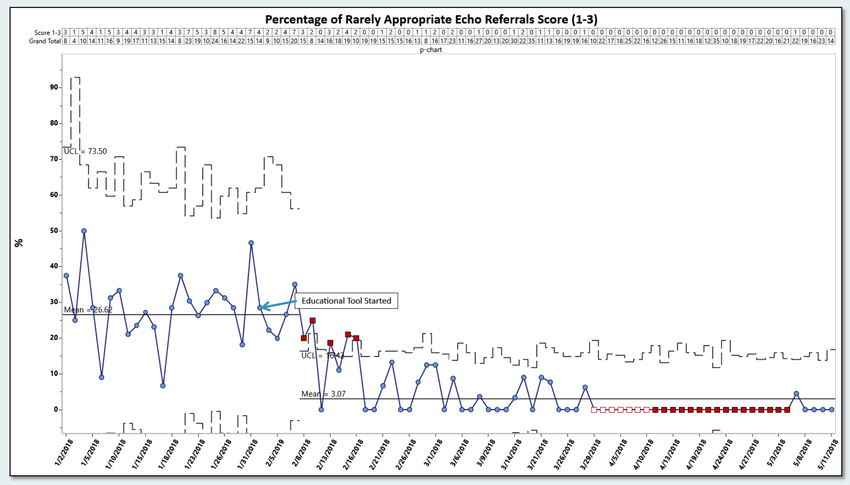

Figure 1: % Rarely Appropriate Echo Referrals. Mean has **decreased** from 26% to 3%.

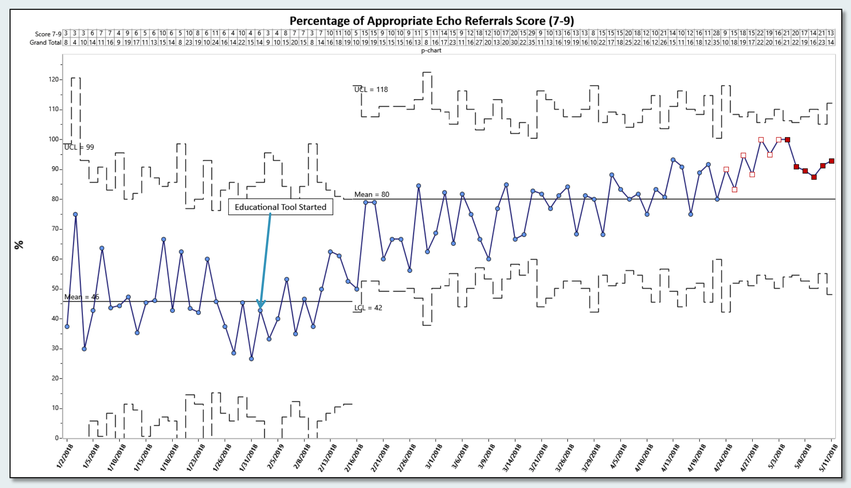

Figure 2: % Appropriate Echo Referrals. Mean has **increased** from 46% to 80%.

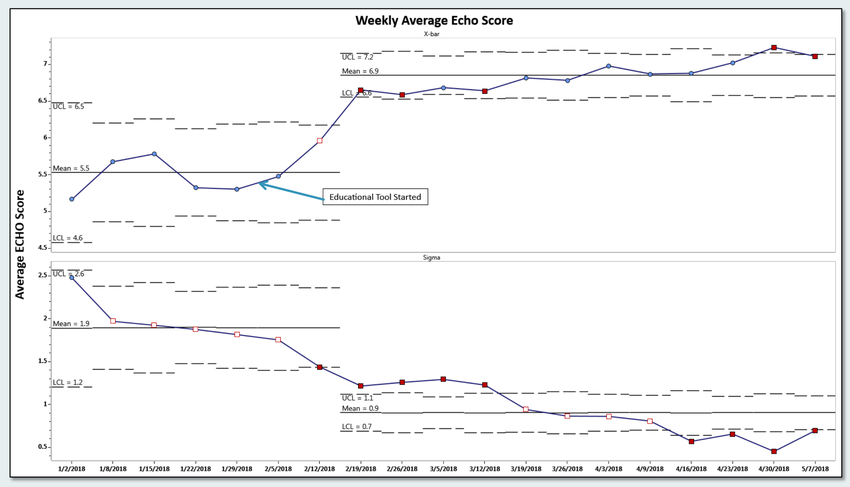

Figure 3: Weekly AUG Score – X Bar S Chart. Average AUG Score has **increased** from 5.5 to 6.9.

Cost Savings

During the run-in phase of this project, it was observed that 27% of referrals were in the Rarely Appropriate category. If Rarely Appropriate studies were excluded from the 75 referrals received each week (average number), approximately 20 extra spots would be "recovered". Given that an average echo study takes 45 minutes, there would be considerable savings in sonographer time (15 hours per week), and there would also be a reduction in work-related repetitive shoulder and elbow injuries. Each echo study costs approximately $275.00 and a savings of $5,500.00 could be realized each week. If only Appropriate studies are mostly done, the waiting list should diminish over time if we waste fewer echo booking spots by filling them with Rarely Appropriate referrals.

Future Plan

- Distribute Educational Tool to remaining community of referring physicians
- Target specific inpatient cohorts, such as the Emergency Physicians and Hospitalists
- Disseminate Educational Tool to other Echo Labs in the Fraser Health Authority

Team

Dr. Raymond Dong – Cardiologist, Project Lead
Dr. Robert McDermid – Medical Sponsor (Site Medical Director, SMH/JPOCSC)
Sandra Sewell – Administrative Sponsor (Director, Medical Imaging)
Geraldine Madaje – SFU Student Volunteer
My Lam – Senior Echo Booking Clerk, JPOCSC
Janice Eng, Jennifer Atchison, Bev Saumer – PQI Team

References

1. Munt, B., O'Neill, B., Koilpillai, C., Gin, K., Jue, J., & Honos, G. (2006). Treating the right patient at the right time: Access to echocardiography in Canada. *Canadian Journal of Cardiology, 22*(12), 1029-1033. doi:10.1016/s0828-282x(06)70318-x

2. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. (2011). *Journal of the American Society of Echocardiography, 24*(3), 229-267. doi:10.1016/j.echo.2010.12.008