Non Invasive Imaging Quality Metrics

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Shubhika Srivastava MBBS, FACC, FASE
Chief Cardiology and Co-Director of Nemours Cardiac Center
Medical Director of the Echocardiography Laboratory
Professor Pediatrics, Sidney Kimmel Medical College

Thomas Jefferson University
Imaging Quality Metrics

- Standardize practice, identify gaps
- Learning environment – continued improvement image acquisition and reporting
- Process evaluation
- Evaluation of appropriate use of modality
- Evaluation of outcomes – critical reporting
Noninvasive QM Members

- Terri Tacy (Stanford)
- Sowmya Balasubramanian (Michigan)
- Seda Tierney (Stanford)
- Katie Jo Stauffer (Stanford)
- Sarina Behera (Stanford)
- Ann Kavanaugh-McHugh (Vanderbilt)
- Daniel Saurers (Vanderbilt)
- David Parra (Vanderbilt)
- Ritu Sachdeva (Emory)
- Eric Ferguson (Emory)
- Joe Kreeger (Emory)
- Rick Michelfelder (Emory)
- Lowell Frank (DC)
- Lisa Hom (DC)
- Angira Patel (Chicago)
- Luciana Young (Seattle)
- Joe Camarda (Chicago)
- Mike Puchalski (Salt Lake)
- Puneet Bhatla (NYU)
- Beth Printz (San Diego)
- Divya Suthar (Atlanta)
- Anita Moon Grady
- Mary Donofrio
- Craig Fleishman (Orlando)
- Nao Sasaki (Miami)
- Leo Lopez (Miami)
- Kenan Stern (Mount Sinai)
- Mark Fogel (CHOP)
- Shobha Natarajan (CHOP)
- Vivek Allada (Pittsburgh)
- Oscar Benavidez (MGH)
- Cathy Webb (Michigan)
- Phil Spevak (Johns Hopkins)
- Sarah Chambers (Mednax)
- John Kovalchin (Columbus)
- Anitha Parthiban (Kansas City)
- Pei-Ni Jone (Denver)
- Alicia Chaves (Maryland)
- Puja Banka (Boston)
- Michael Pettersen (Mednax)
- Matt Park (Mednax)
- Mike Brook (UCSF)
- Sujhata Buddhe (Seattle)
- Nadine Choueiter (Montefiore)
- Shubhika Srivastava (Mount Sinai)
- Divya Suthar (Atlanta)
Overview of Imaging QMs

- Developed by over 50 members – QM-development working group with ACPC
- Metrics approved and endorsed by ASE, SOPE, FHS
Imaging QM

- #025 Echocardiography Diagnostic Accuracy
  - 03.11.2018
- #026 Initial Transthoracic Echocardiogram Image Quality
  - 03.11.2018
- #027 Comprehensive Echocardiographic Examination
  - 03.11.2018
- #028 Application of the Pediatric Appropriate Use Criteria (AUC) To Initial Outpatient Echocardiogram Orders
  - 01.01.2021
- #029 Quality Metric TEE 1: Accuracy of Pediatric Pre-Cardiac Surgery Transesophageal Echocardiogram (3 Sites)
  - 01.01.2021
- #030 Quality Metric TEE 2: Transesophageal Echocardiogram Adverse Events
  - 01.01.2021 (2 Sites)
- #031 Diagnostic Accuracy of Fetal Echocardiography
  - 04.01.2021
- #032 Prenatal Detection of Severe Structural Congenital Heart Defects
  - 04.01.2021
- #033 Comprehensive Fetal Echocardiographic Examination
  - 04.01.2021
Non Invasive Imaging Quality Metrics

Approved and posted 2016
Critical Results Reporting QM
Sedated Echo Adverse Events QM
Approved and Posted after ACC 2018 (has been through > 3 cycles of data submission)
TTE Comprehensive Study QM
TTE Image Quality Metric
Diagnostic Accuracy QM
New Quality Metrics: Pilot testing- 2021

- Comprehensive Fetal Echo Study QM
- Fetal Echo Diagnostic Accuracy QM
- Prenatal Detection of Critical CHD QM
- Critical Fetal Results Reporting QM
- Initial Fetal Echocardiogram Image Quality Metric
- Cardiac MRI (CMRI) study reporting for Lesion specific CHD (TOF).
Lessons Learned: Pilot Testing

- How to develop a self-explanatory metric
- Understand and share process involved
- Institutional variability – and how each institution can use the metric to inform change
- Education needs regarding the required standards
Key Driver Diagram
Fetal Comprehensiveness/Quality Metric

SMART AIM

Improve average Image Quality Assessment Score and Comprehensive Exam Assessment Score to 90% after 2 PDSA cycles

GLOBAL AIM

Improve detection of anomalies by echocardiogram; reduce diagnostic error on all patients presenting for echo

KEY DRIVERS

Adequate sonographer knowledge /Education

Revised and standardized process

Critical self-appraisal system - Documentation

Appropriate equipment and technology

Adopt / Incorporate change and communicate

Standardize reporting elements based on imaging comprehensiveness and quality

INTERVENTIONS

Record a demo case for use as example

Define rating criteria where needed

Teaching session with the sonographers

Allocation of sufficient time for study completion

Revise imaging protocol as needed

Identify weakness of the lab; patterns across the lab

Optimize reporting elements and recording of missing elements on reports

Optimizing machine settings

Quarterly lab meeting to review metric data and identify areas of improvement

Ergonomics and work environment

Authors: Kenan Stern, Nao Sasaki, T Tacey, S Srivastava, R Sachdeva
Metric 27: Comprehensive Echocardiographic Examination

Utilization

Average Score
## Non Invasive Imaging Quality Metrics

### #004 Non-invasive Imaging: Critical Results Reporting in Pediatric Echocardiography

### #005 Non-invasive Imaging: Adverse Events with Sedated Pediatric Echocardiography

### #009 Echocardiogram for exertional chest pain

### #019 Kawasaki Disease: Complete Echocardiogram Evaluation

### #021 Echocardiogram performed during the first year of life for ASO Patients

### #025 Echocardiography Diagnostic Accuracy

### #026 Initial Transthoracic Echocardiogram Image Quality

### #027 Comprehensive Echocardiographic Examination

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Conclusion

- QM use allow an institution to evaluate practice and process and compare within and to others
- Allows standardization of clinical practice
- Allows process improvement
- Assess diagnostic errors
- Critical and adverse event reporting
- Span all imaging modalities