



Reduce
the Risk:
PCI Bleed

A Campaign of the
American College of Cardiology

ACC Reduce the Risk: PCI Bleed Campaign Webinar May 21, 2019



AMERICAN
COLLEGE of
CARDIOLOGY

Agenda May Webinar

Welcome and Introductions

Andrea Price

“How We Got Started: Two Real-World Examples to Operationalize the ACC Reduce the Risk: PCI Bleed Quality Campaign

INOVA Heart and Vascular Institute Fairfax, Va.
Medical Campus

Marian Hartle RN

The Ohio State University, Wexner Medical Center

Quinn Capers IV M.D, FACC

Questions

Andrea Price

Reduction of Bleeding Complications

Marian Hartle RN; Outcomes Specialist

Julieanne George MSN RN MBA PCCN-K CCRN-K; Clinical Director ICAR

Stephen Ives BS RCIS; Clinical Director Cardiovascular Procedure Labs

Dr. Benham Tehrani- Co-Medical Director Cardiovascular Catherization Lab

Dr. Matthew Sherwood Co-Medical Director Cardiovascular Catherization Lab

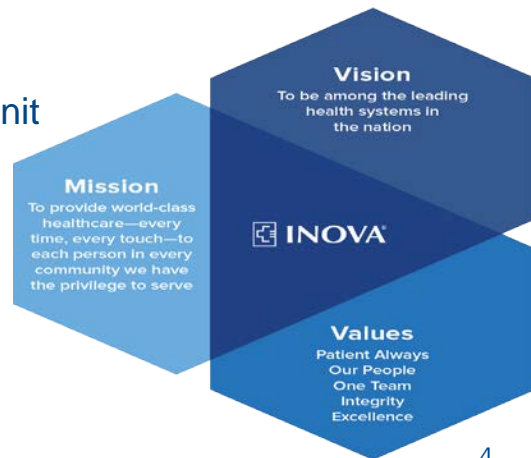
Dr. Charles Murphy CPPS; Chief Patient Safety Officer

About INOVA



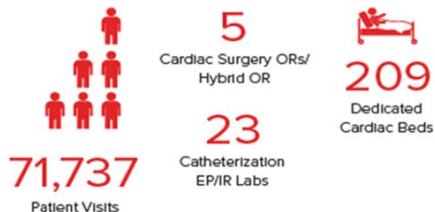
INOVA HEART AND VASCULAR INSTITUTE FAIRFAX MEDICAL CAMPUS

- 9 Invasive Labs
- 4 Cath/PCI Labs 1300
PCI's/year
- 3 EP Labs
- 2 Interventional Radiology
- 1 Hybrid Lab
- 5 Cardiac OR's
- 39-bed Interventional
Admission/ Recovery Unit
- 6 Inpatient Units

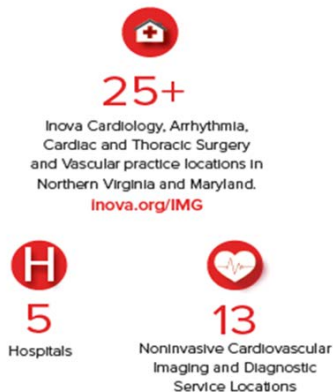


Who are we

About IHVI - 2018



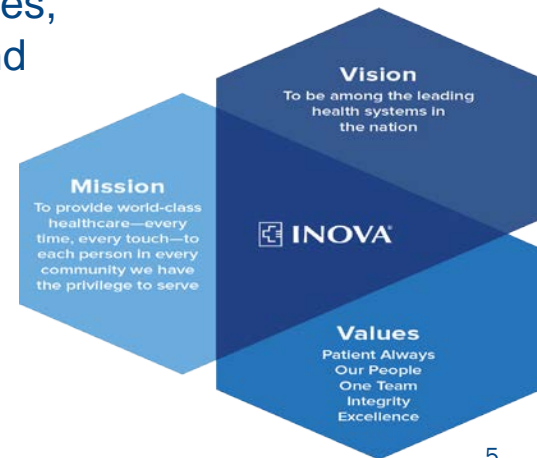
IHVI Sites of Service



Inova is a not-for-profit healthcare system based in Northern Virginia that serves >2 million patients/yr.

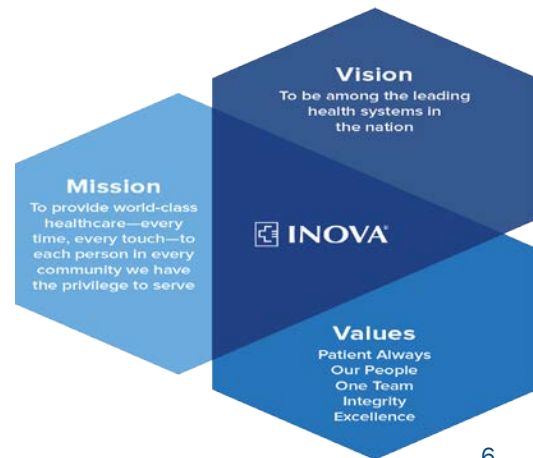
Serving the Washington, DC, metro areas and beyond.

Inova is a comprehensive network of hospitals, outpatient services and facilities, primary and specialty care practices, and health and wellness initiatives.



Team Members

Name	Department	Job Title
Dr. Behnam Tehrani	Inova Medical Group; Interventional Cardiology	Cardiac Catherization Lab Co-Director
Dr. Matthew Sherwood	Inova Medical Group; Interventional Cardiology	Cardiac Catherization Lab Co-Director
Dr. Charles Murphy	Inova Administration, Chief Patient Safety Officer	Cardiovascular Intensive Care Unit (CVICU) Medical Director
Julieanne George MSN RN	ICAR	Clinical Director-Co-Lead for Collaborative Bleeding Initiative
Stephen Ives RCIS	Cardiac Catherization Lab	Clinical Director-Co-Lead for Collaborative Bleeding Initiative
Marian Hartle RN	Outcomes-National Registry for PCI	Outcomes Specialist
Francine DeHaan MSN RN CCRN-K	Professional Practice	Educator ICAR, CVICU- IHVI support
Jayne O'Conner RN	ICAR	Patient Navigator-ICAR
Aaron Bagnola	Pharmacy	Clinical Specialist-IHVI
Megan Rupe MSN, RN	CTU-S	Clinical Director
Rebecca Petros RN and Louisa Villanueva RN	CTU-N	RN Unit Supervisors
Stephanie and Carrie, RN	PCCU	Unit Supervisor
Sharri Robinson, MSN, RN	CTU-N	Clinical Director/Senior Director IHVI
Marina Ocasio BSN RN	PCCU/Interim CICU	Clinical Director



Its all about the Patient Centered Care- Collaborative approach

HOW WE STARTED



TIMING IS EVERYTHING



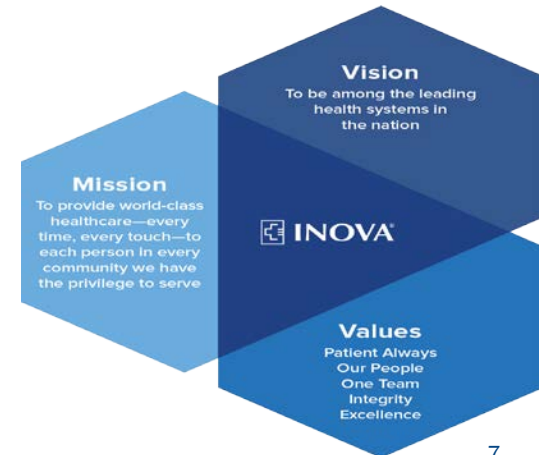
BUILD A TEAM



MEET REGULARLY



PICK YOUR TOOLS



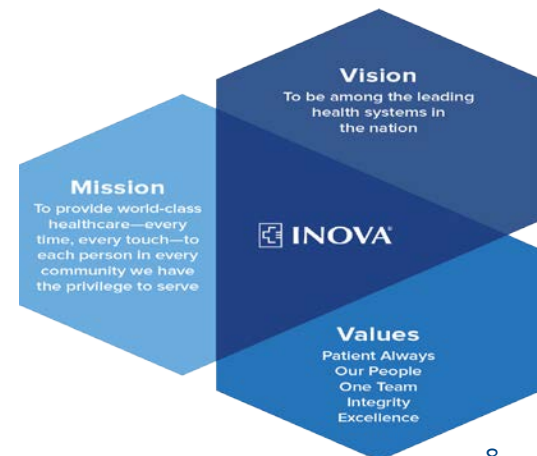
Watch and Learn-Seek to Improve



We had been watching our bleeding matrix/data for some time and made some changes. We switched from femoral to radial artery access, began using ultrasound guidance for femoral access, updated our radial compression band, developed a bleeding tracker and standardized use of an arm board post radial access.

Data showed little improvement.

Then I received the NCDR email about the Reduce the Risk campaign and reached out to a small group of involved cardiology leaders who agreed we should join the campaign.



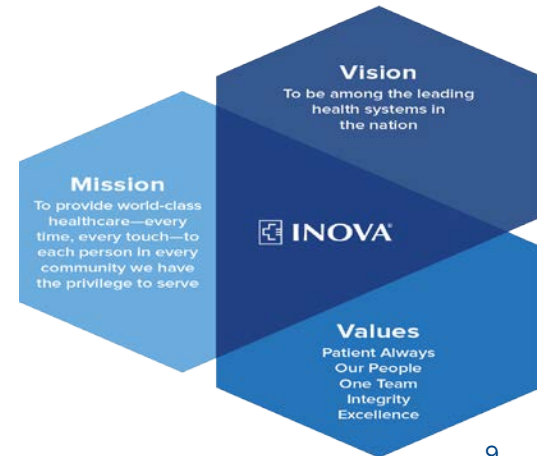
Lets get Started



3 important people stepped up and not only said “Yes” but “I will lead”:

Dr Tehrani - Cardiac Catherization Lab Co-Director
Julianne George MSN RN - Clinical Director of ICAR
Stephen Ives - RCIS Clinical Director of Invasive Labs

We pulled together a team of Interventional Cardiologists, Senior Nursing Leadership, Physician Quality Leadership, Nursing Quality Representative, Pharmacist, Patient Navigator, Nursing Leadership from IHVI Nursing Units, IHVI Nursing Educator and the Cath/PCI Outcomes Specialist .



Lets Discuss and Challenge

Julie George immediately set up an initial meeting with the team members.

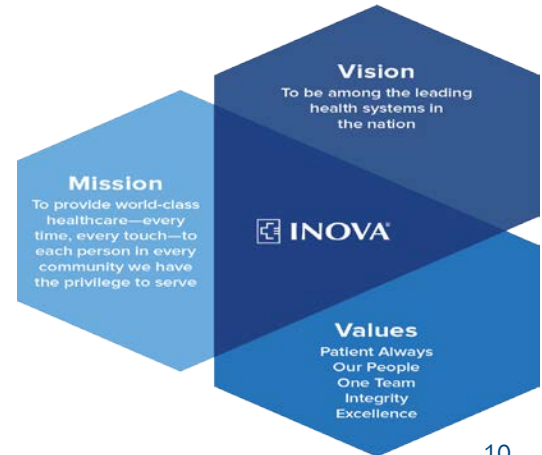
We reviewed the data with Team to show where we were coming from and where we wanted to go.

I shared the tools provided by the NCDR. We reviewed and evaluated the available tools to determine what was useful in our environment.

We agreed to meet monthly, as a full team, and set up a recurrent schedule.

Assignments were made with follow up due at the next meeting.

A smaller “executive group” would meet weekly to review bleeding issues from the previous week.



What we did

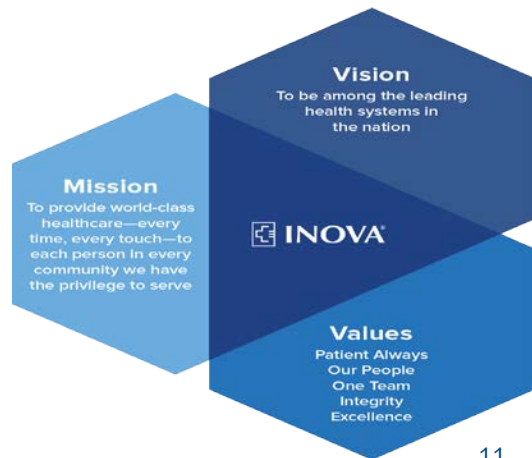
Data Presentations were made to Physicians, Cath lab staff and Nursing Units to show where we currently stood and where we needed to be.

A Bleeding Tracking Tool was developed by Julie and her staff for use in ICAR. The tool was made available for all patient care areas in IHVI.

The Bleeding Risk Score, already available in EPIC, was underutilized. It was made mandatory for pre-op notes and for Cath lab handoff.

Micro puncture/Ultra sound Guidance was made the standard of practice for all femoral access.

Review of NCDR available tools to assist in updating our policies, order sets, and staff education.



Increased the use of the Bleeding Risk score for elective PCI by making it a mandatory part of the pre op notes and hand off.

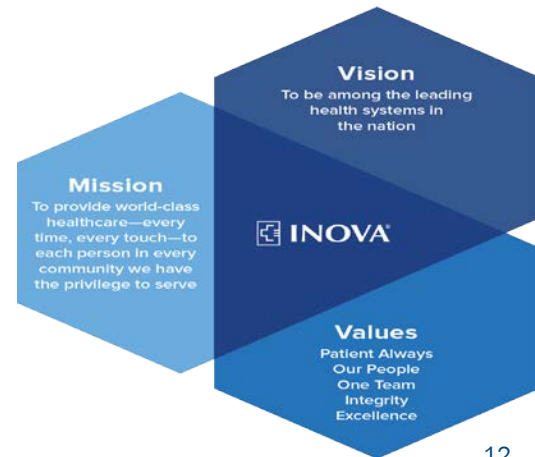
Increased the use of ultrasound guidance by making this the standard of practice.

Use of the arm board post procedure for radial access

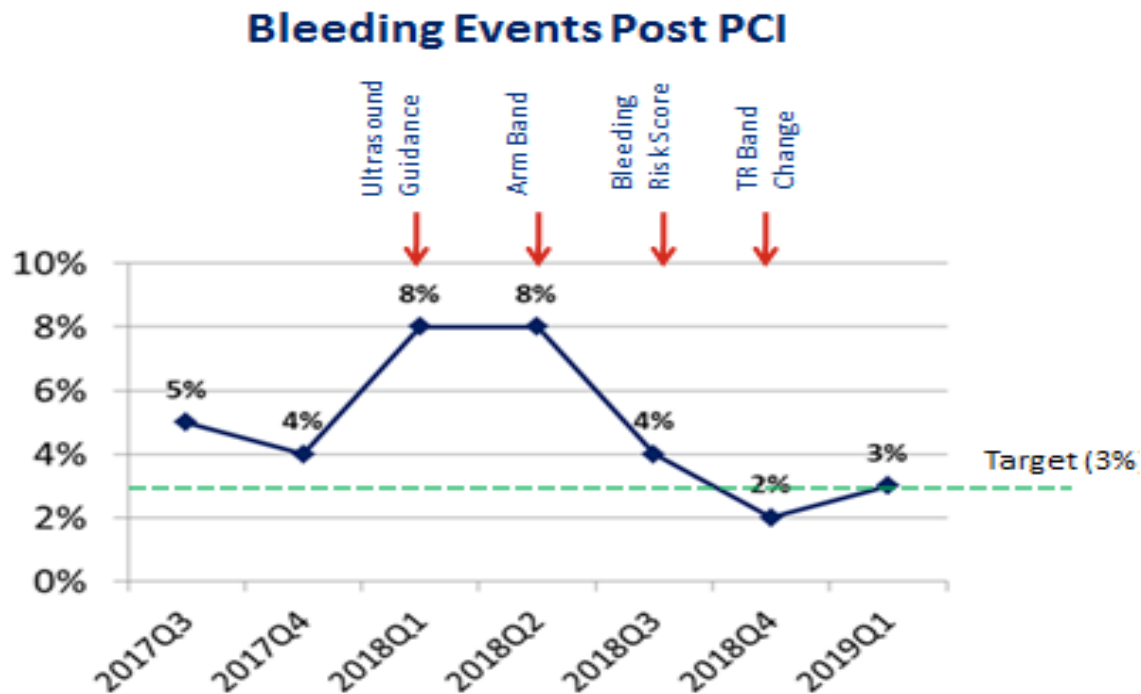
Updated the post procedure order sets to allow for Interventionalists to order a hold on DVT prophylaxis.

Updated post procedure care policies and educated IHVI staff on the care of access site with an emphasis on bleeding.

Heightened awareness that this was a team effort here at INOVA as well as a team approach across the country to deliver best care.



Results



Bleeding Tracking Form



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Patient Label

Date: _____

ICAR Bleeding Complications Tracker

**Complete for any access point that requires additional intervention to obtain hemostasis*

Procedure Information:

IR ☐ Cath ☐ EP ☐

Procedure: _____

Physician: _____

Left ☐ Right ☐

Femoral ☐ Radial ☐ Brachial ☐ IJ ☐

Closure Device? Yes ☐ No ☐ What Type: _____

Stent Placed? Yes ☐ No ☐ N/A ☐

Figure 8 Closure* Used? Yes ☐ No ☐ N/A ☐

**Ablations Only*

Interventions Used (check all that apply):

Dressing Changed ☐

Manual Pressure Held ☐ Duration: _____

Fem Stop Applied ☐ Duration: _____

• Requiring >1 application ☐ How Many? _____

Vasc Band Reapplication ☐

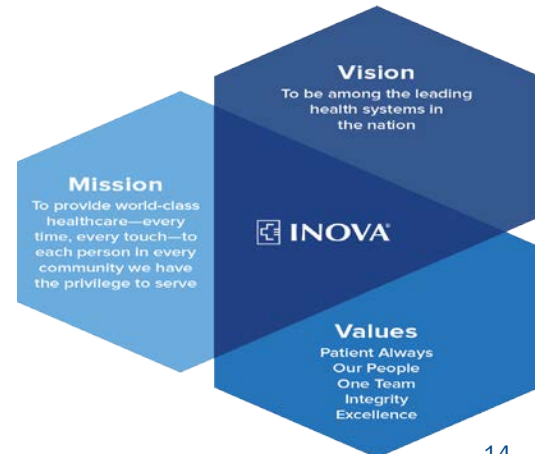
Additional Testing (e.g. CT, Ultrasound) ☐

Other (Fluids, Transfusion, etc.) ☐ Detail: _____

Upgrade in Level of Care ☐

MSET or RRT Initiated ☐

Physician Notified ☐ If yes, who? _____



Physician Pre Procedural Note



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H&P UPDATE WITH ASA/MALLAMPATTI

Date Time: 05/17/19 10:49 AM

PROCEDURE:

Left and right heart cath, possible percutaneous coronary intervention

INDICATIONS:

valvular heart disease

H&P:

The history and physical including past medical, family, and social history were reviewed and there are no significant interval changes from what is currently available in the chart from prior evaluation. He has no complaints. He was seen and examined by me prior to the procedure.

ALLERGIES:

Patient has no known allergies.

LABS:

Lab Results

Component

Value

Date

ASA PHYSICAL STATUS

Class 3 - Severe systemic disease, limits normal activity but not incapacitating

MALLAMPATTI AIRWAY CLASSIFICATION

Class II: Visibility of hard and soft palate, upper portion of tonsils and uvula

ACC BLEEDING RISK SCORE

Total Score: 30 = INTERMEDIATE RISK for bleeding (1.1% to 3.1%)

PLANNED SEDATION:

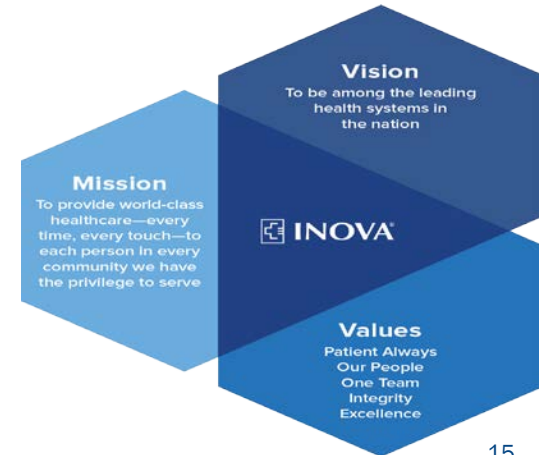
☐ NO SEDATION

☒ MODERATE SEDATION

☐ DEEP SEDATION WITH ANESTHESIA

CONCLUSION:

The risks, benefits and alternatives of the procedure have been discussed in detail and he has indicated that he understands the procedure, indications, and risks inherent to the procedure and is amenable to proceeding. All questions were answered. Informed consent was signed and verified.



Cath Lab Procedure Handoff Report

CATH LAB PROCEDURE HANDOFF REPORT

Date Time: 05/16/19 10:50 AM

INDICATIONS:

Coronary Artery Disease

PROCEDURE:

Impella assisted DES to LM and LAD

ALLERGIES:

Umeclidinium and Clindamycin

ACC BLEEDING RISK SCORE

Total Score: 30 = INTERMEDIATE RISK for bleeding (1.1% to 3.1%)

MEDICAL HISTORY:

Past Medical History:

Diagnosis

- Abnormal vision
reading glasses
- COPD (chronic obstructive pulmonary disease)
CT scan in 2013 showed emphysema
- Coronary artery disease
stents

Date

- HTN (hypertension)
on Rx 118/72

05/2019

- Hyperlipidemia
on Rx

- Pneumonia
last 4/2019

ACCESS:

8 Fr. sheath in right femoral artery

Hemostasis: Single Perclose device deployed for hemostasis

Post procedure pulses: palpable in right leg/foot

Visual appearance: clean/dry/intact with good distal pulses

14 Fr. sheath in left femoral artery

Double Perclose devices deployed for hemostasis

Post procedure pulses: palpable in left leg/foot

Visual appearance: clean/dry/intact with good distal pulses

4 Fr. sheath in left femoral vein

Sheath left in place

MEDICATIONS:

Versed: 3 mg IV

Fentanyl: 75 mcg IV

Heparin: 16,000 units IV

Adenosine: 180 mcg/kg/min IV during procedure only (dc'd)

Nitro: 400 mcg IA

Loading Dose of: Clopidogrel 300 mg PO

IV Drips: 0.9% normal saline

VITALS:

BP: 140/80 HR: 75 Rhythm: sinus rhythm w/ PVC's O2 SAT: 99% on 4 L/min

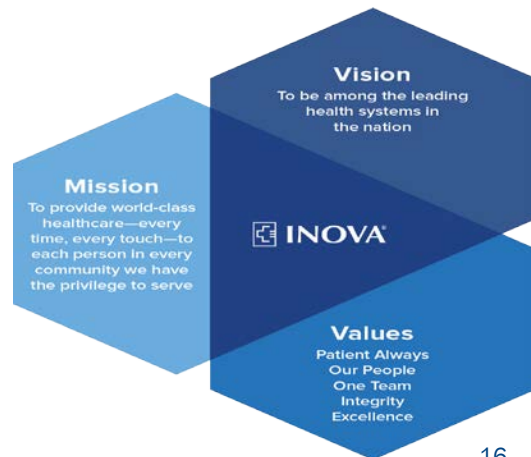
PROCEDURE DETAILS:

Outcomes: successful PCI

Last ACT: 246 sec @ 1012

Complications: none

Final Chest Pain Assessment: 0/10

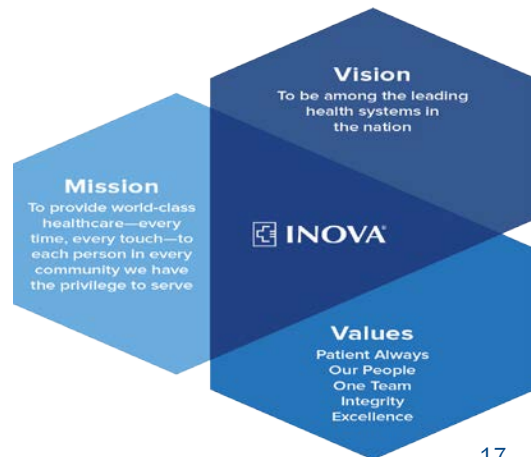


Questions



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Improving People's Lives Through Innovations in Personalized Health Care

ACC-NCDR Cath/PCI Registry Reduce the Risk of PCI Bleeding The Ohio State Wexner Medical Center

Quinn Capers IV M.D, FACC
Danielle Blais PharmD, BCPS-AQ Cardiology
Mindy Hazlett BSN, RN, NE-BC
Patricia A. Blake RN, MSN
Julia Salinas RN, BSN

OSU Recognized as Top 25 in the U.S. in Cardiovascular Quality



Consistently recognized as one of America's Best Hospitals by *U.S. News & World Report*



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

About Ohio State

- A world-class public research university
 - 59,000 undergraduate, graduate and professional students
 - 34,000 full-time employees
- One of the largest and most diverse academic medical centers in the country, the only academic medical center in central Ohio and the Midwest's highest-ranked hospital for safety and patient care.
- Our seven hospitals and our network of community-based offices and care centers manage more than 1.7 million patient visits each year.
- The University Hospital - 900 beds
 - Ross Heart Hospital - 150 bed hospital
- High volume center -diagnostic cath's- ~ 5000, PCI's ~1800 per year
 - Cath labs - 8
 - Interventional Cardiologists - 8
 - Fellowship Program



Team



Dean Boudoulas MD, FACC Medical Director Cath Lab



Quinn Capers MD, FACC-Director of Interventional Cardiology Fellowship Program



Eric Ballinger- Director Cardiac Catherization Lab



Danielle Blais- PharmD, BCPS-AQ Cardiology



Mindy Hazlett- Manager Cardiac Catherization Lab



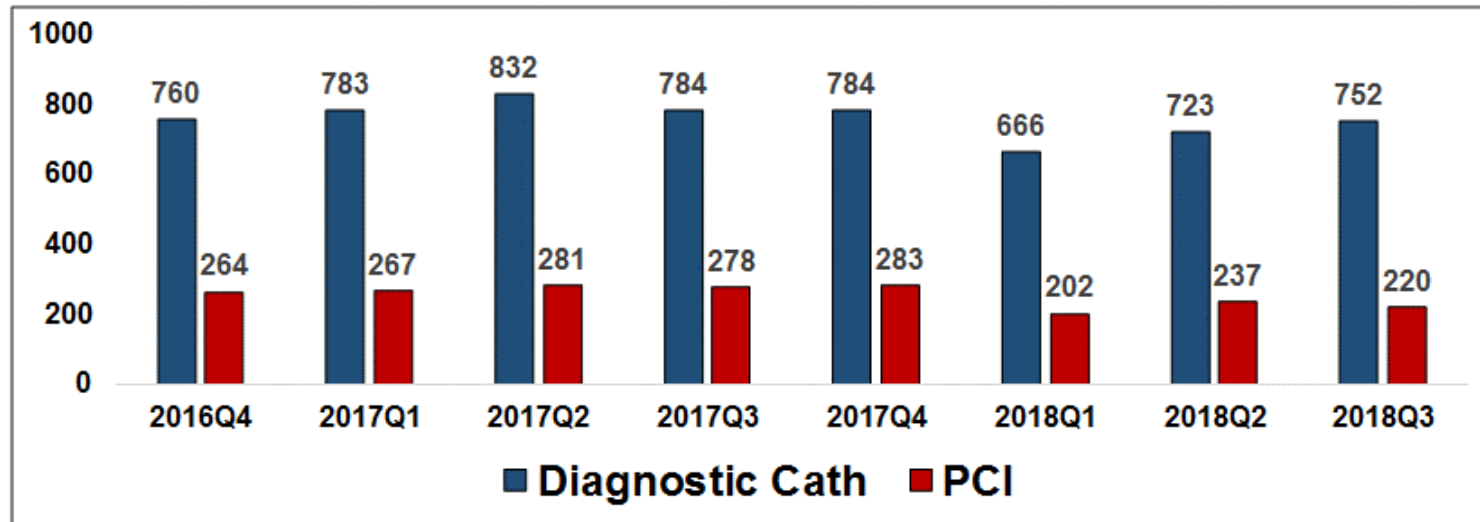
Patty Blake- Senior Cardiovascular Quality Manager



Julia Salinas- Cath/PCI Program Manager



Cath/PCI Volumes



CathPCI Procedure Volumes	2016Q4	2017Q1	2017Q2	2017Q3	2017Q4	2018Q1	2018Q2	2018Q3
Diagnostic Cath	760	783	832	784	784	666	723	752
PCI	264	267	281	278	283	202	237	220



Bleed Reduction

Two Pronged Approach- Radial, Blood Use

- How did our facility decide to work on bleeding rates? How did you get your team engaged in radial first approach?
 - ACUTY Trial indicated patients receiving blood fared worse outcomes
 - Radial approach had less vascular complications, less blood transfusions
 - Physician education and commitment
 - Physician reports comparing radial approach to their peers
 - Patients preferred radial approach
- Are you using any tools that have been helpful?
 - Bleeding risk calculator
 - Protocols for Heparin Dosing, Transfusions and Sheath Pulling

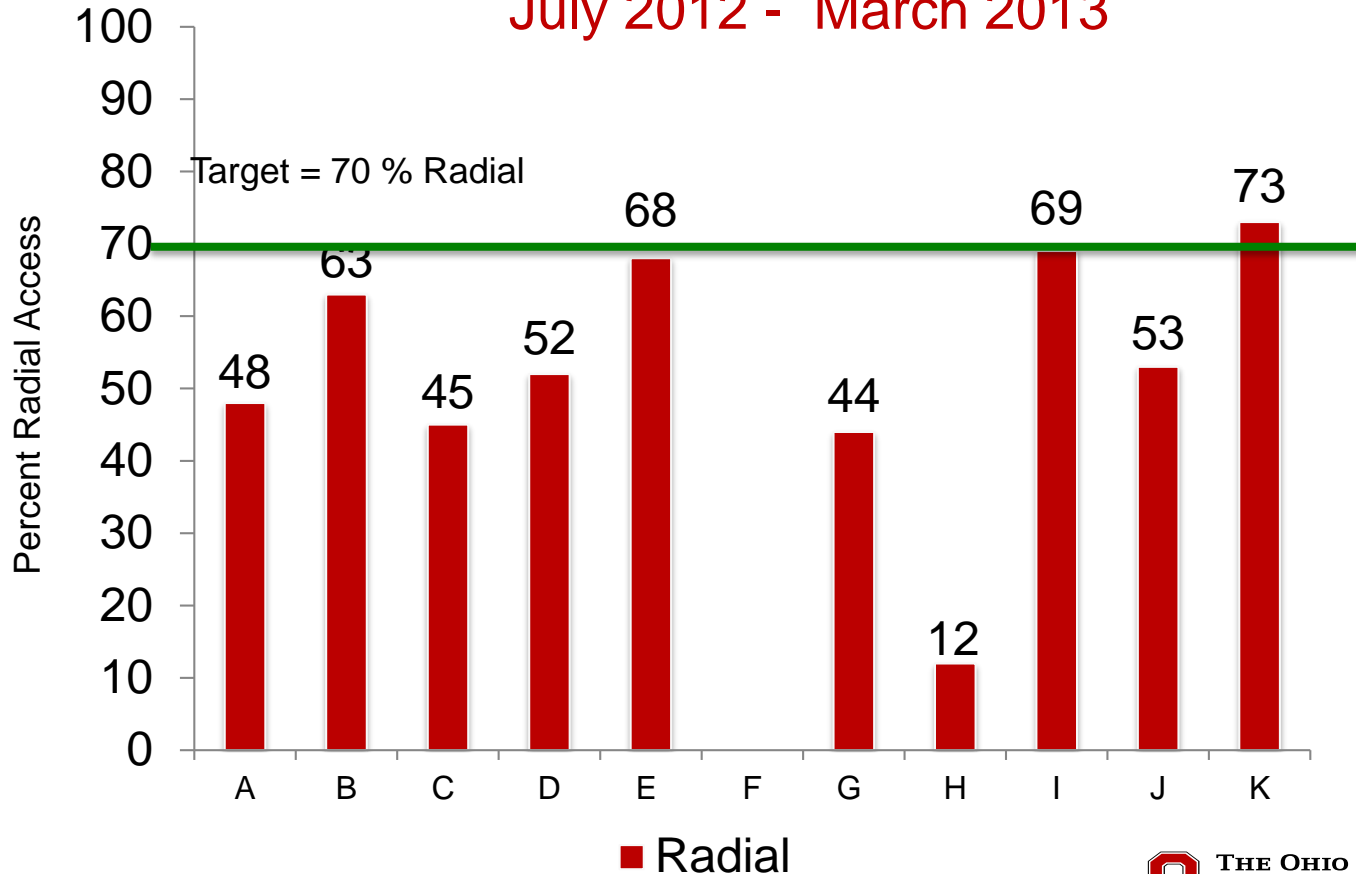
Bleeding/Vascular Complication Reduction Task Force

- Originated in March of 2013
- Review of RP bleeds and mortalities
- Missions of the task force
 - Increase use of radial approach to a goal of 70%
 - Reduction in blood usage
 - Engaged front line staff to improve the process
 - Reporting of quality metrics to evaluate the process
 - Improve patient satisfaction and safety as well as staff satisfaction



Example of
physician report

Radial Access By Operator July 2012 - March 2013



Bleeding/Vascular Complications Task Force

Radial First go live on October 1st, 2013

- Revised order sets
- Specific communication plan when complication occurs
- Extensive training for nurses pulling sheaths using the simulation lab
- Transfusions- Stringent Approach
 - Protocol driven transfusion, standardize transfusion threshold (i.e. below Hg 8 or only if patient symptomatic)
 - MD to MD discussion prior to ordering blood
 - Resident/Fellow mandated to call interventionalist prior to ordering blood





Reduction of Bleeding Quality Initiatives

- Radial first approach (2011)
- Sheath pulling team to standardize process (2013)
- Transfusion protocol (2013)
- Bleeding risk calculator (2014)
- Ticagrelor preferred P2Y₁₂ inhibitor/Reduce GP IIb/IIIa use (2016)
- Heparin dosing protocol (Start 2017/Revised April 2018)
- ACC definition Access site change (3 gram drop to 4 gram drop) (2018)
- Mandatory Comorbidities documented in post op EMR note (2018)
- Reduce the Risk: ACC PCI Bleed Quality Campaign (2018)

Heparin Dosing and ACT Goals for PCI

(Round Heparin doses UP to the nearest 1,000 units)

Not on heparin drip - give Heparin 70 units/kg

Received heparin in the past 2 hours or recent DOAC* or Warfarin Use - Check baseline ACT prior to starting PCI and give heparin according to the following nomogram

*DOAC: Direct Oral Anticoagulant e.g. Apixaban (Eliquis®), Betrixaban (Bevyxxa®), Dabigatran (Pradaxa®), Edoxaban (Savaysa®), Rivaroxaban (Xarelto®)

Heparin + GP IIb/IIIa or Thrombolytics Target ACT 200 – 250 seconds

ACT	Weight Based Heparin Dose (units/kg)
Less than 150	50
151 – 175	25
176 – 199	12.5

Heparin Only Target ACT 300 – 350 seconds

ACT	Weight Based Heparin Dose (units/kg)
Less than 150	70
151 – 175	62.5
176 – 200	50
201 – 225	37.5
226 – 250	25
251 – 299	12.5

Check ACT

- ✓ 3 - 5 minutes after initial bolus to confirm heparin went into the patient
- ✓ 10 - 15 minutes after first bolus and then every 10 - 15 minutes to adjust

Re-dose heparin according to above nomogram

Pre-Procedure

Case Tracking Handoff to Intraop Notify Family

ARRIVAL INFORMATION

Case Information

Checklist

Patient Belongings

NPO Status

Allergies

Home Medications

OB/Gyn Status

Implants

Associate Devices

History

Pre-Cath Assess...

Pre-Cath Assess...

PX PASS TASKS

Tasks

ORDERS

BestPractice

Procedure Orders

ASSESSMENT

Travel Screening

Vitals

Pain Assess

PCS

Fall Risk

Reconcile LDAs

Active LDAs

Wounds/Incisions

EDUCATION/DISCHARGE PLAN

Patient Education

Patient Instructions

Restore

Close

Cancel

Pre-Cath Assessment Risk & Info

+ New Reading

Pre-Cath Assessment Risk & Info

Admission (Discharged) from 5/15/2019 in CILRSS
05/15/19
1049

General Info

EF within 6 months
Preferred Stent
Same day outpatient PCI
Pre-hydration
Aspirin
Comments

Anticoag Administration

Clopidogrel maintenance
Ticagrelor maintenance
Prasugrel maintenance
Clopidogrel load
Ticagrelor load
Prasugrel load

Risk scores

Bleeding (%)
Bleeding risk
CIN risk
Contrast threshold
Contrast timeout

Risk scores

Bleeding (%) 2
Bleeding risk Low
CIN risk Medium
Contrast threshold 85
Contrast timeout 42

No

2

Low

Medium

85

42 (CC 42)

OSUWMC Cardiac Cath Lab Team Safety Checklist

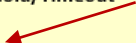
Sign-In / Time-Out

- ☐ Team Introduction
- ☐ Patient Identification (Name, D.O.B & MRN)
- ☐ Procedure with Consent Completed (attending name, date, time, & signed)
- ☐ Medical History and Indication for Procedure
- ☐ ASA Last Dose
- ☐ P2Y12 Load and Last Dose
- ☐ Anti-coagulation Last Given (date, time, dose)
- ☐ Candidate DES vs. BMS (e.g., b1, b2)
- ☐ Chemistry, CBC and PT/INR lab
- ☐ Contrast Threshold/Timeout
- ☐ Bleeding Risk
- ☐ Access Site and Equipment
- ☐ Allergies
- ☐ Sedation Order
- ☐ Questions/Concerns

☐ Contrast Threshold/Timeout

☐ Bleeding Risk

☐ Access Site and Equipment

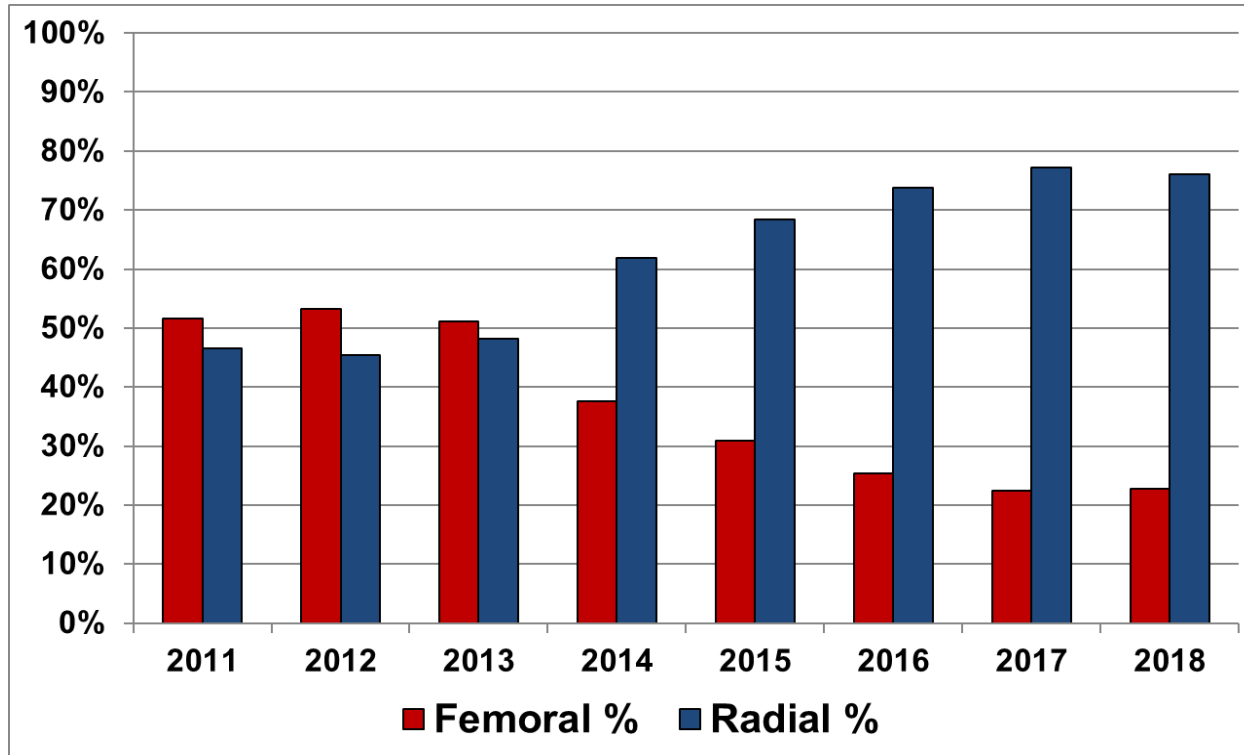


OSUWMC Cardiac Cath Lab Team Safety Checklist

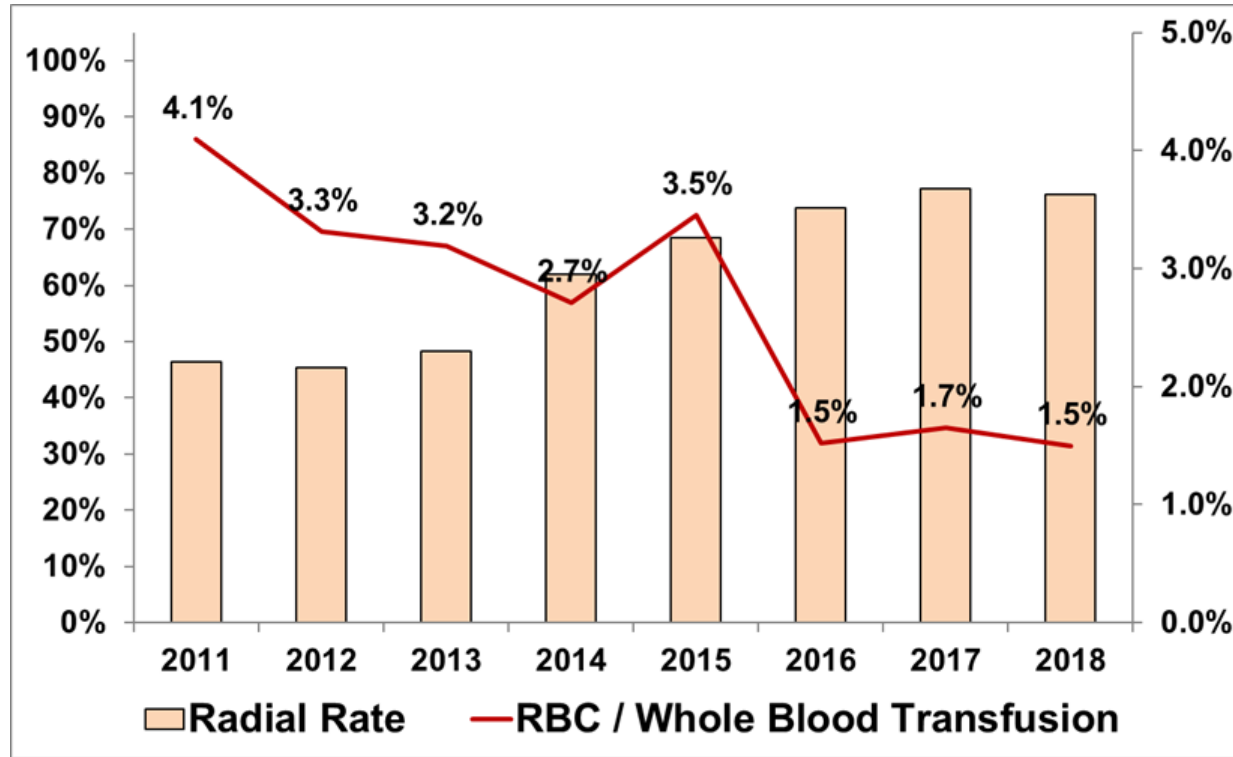
Sign-Out / Debrief

- ☐ Assess Access Site
- ☐ P2Y12 Management for PCI
- ☐ If Anti-Coagulation Needs to be Reinitiated use Post-Cath Order Set and Notify Team
- ☐ Assess Total Contrast Used / Volume Status (LVEDP) and Hydrate Accordingly
- ☐ Complete Brief Procedure Note
- ☐ Assign Family and Referral Team Communication
- ☐ Questions/Concerns

Radial vs Femoral Evolution



RBC/Transfusions Excluding CABG



ACC-NCDR PCI Risk Adjusted Bleeding Moving in the Right Direction

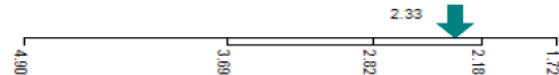
Currently no data after Q2 2018 - Q3 2018 due to registry update

2018
Q1

PCI In-Hospital Risk Standardized Bleeding (all patients)

My Hospital	US Hospitals 50th Pctl	US Hospitals 90th Pctl
2.33	2.82	1.72

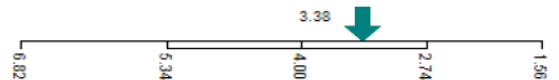
Your hospital's risk adjusted rate of bleeding events for patients with PCI procedures using the NCDR® PCI bleeding risk adjustment model. [Detail Line:1822]



2017
Q1

My Hospital	US Hospitals 50th Pctl	US Hospitals 90th Pctl
3.38	4.00	1.56

Your hospital's risk adjusted rate of bleeding events for patients with PCI procedures using the NCDR® PCI bleeding risk adjustment model. [Detail Line:1823]



2016
Q1

PCI in-hospital risk adjusted rate of bleeding events (all patients)

My Hospital	US Hospitals 50th Pctl	US Hospitals 90th Pctl
4.69	4.14	1.75

Your hospital's risk adjusted rate of bleeding events for patients with PCI procedures using the NCDR® PCI bleeding risk adjustment model. [Detail Line:1823]

