Cath Lab Digest

CATH LAB SPOTLIGHT

Trinity Health Grand Rapids Heart and Vascular

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Tell us about your cath lab and facility.

The Catholic Church founded the Sisters of Mercy in Dublin, Ireland. Their mission was to follow Christ in his compassion for suffering people. In 1843, they brought their mission to the United States. In 1893, the Sisters of Mercy founded St. Mary Hospital. Throughout the years, the hospital has had several name changes but the mission and commitment to serve the underserved and suffering people has not changed. The hospital has now been a member of Trinity Health, a nationwide Catholic health system, since 2000. As for the Heart and Vascular department, we are comprised of cardiac cath labs, cardiac testing center, cardiac rehab, and a prep and recovery unit. We have a mix of registered nurses, cardiovascular technologists, radiology technologist, and electrophysiologists. Our physicians include diagnostic and interventional cardiologist, and cardiac electrophysiologists.

What procedures are performed in your cath lab?

We perform left and right heart catheterizations, percutaneous coronary interventions (PCI), balloon pump insertions, percutaneous left ventricular assist device, pulmonary embolism and deep vein thrombosis thrombectomy, permanent pacemaker placements, implantable cardiac defibrillator placements, cardiac contractility modulation placements, leadless pacemaker implantation, pericardiocentesis, cardiac ablations, implantable heart failure monitoring device insertions, peripheral angiography/venography, and electrophysiology (EP) studies.

Figure 1. Cardiac Cath Lab Team Members.

How has COVID-19 affected your cath lab?

We have seen an increase in our cardiovascular procedure volumes. It is suggested that these cardiovascular events may be due to COVID complications. Researchers are still gathering data to understand the affects COVID had on the cardiovascular system.

Who manages your cath lab?

The manager of the cath lab is Matthew Sikkema, BSN, RN, CV-BC. He is an integral part of a larger group of individuals who make up the cardiovascular service line team. This team works together to create a positive and efficient work environment for the staff. In turn, these great staff members are empowered to provide the best care possible to the patients we serve.

What are some of the new equipment, devices and products recently introduced at your lab?

Cardiac contractility modulation, coronary and peripheral intravascular lithotripsy, and we have a completely renovated lab with the newest, state-of-the-art equipment, hardware, and software. Soon, we will also have the opportunity to perform renal denervation.

Can you describe the extent and use of radial access at your lab? Is your lab utilizing same-day discharge?

We use radial access on a daily basis. Over the last year+, we have averaged 84% radial, which exceeds both state and national targets. Our lab is utilizing same-day discharge through our prep and recovery area.

Figure 2. Cath Lab Monitor Room.

Who pulls the sheaths post procedure, both post intervention and diagnostic?

The cath lab or interventional radiology technologists pull the sheaths post intervention and diagnostic procedures. We have a sheath removal policy for staff to follow with step-by-step details. We have a robust education and competency process that is implemented and validated by our professional development specialist.

Where are patients prepped and recovered (post sheath removal)?

Patients are prepped and recovered in our prep and recovery area. Hemostasis is handled by the utilization of a transparent radial compression device, if radial access is achieved. If groin access is utilized, hemostasis is achieved most of the time by manual pressure. If intervention is needed, vascular closure devices in the groin are occasionally utilized. Sometimes the sheath is left in and connected to pressure bag arterial line tubing until the activated clotting time (ACT) is at an appropriate level before pulling the sheath. Our prep and recovery RNs are trained to assess and monitor arterial and venous access sites very carefully. They are also trained to respond appropriately if complications arise.

How does your cath lab handle radiation protection for the physicians and staff?

We follow a comprehensive radiation safety protocol and process. We have a radiation safety officer who ensures we are following the highest safety standards for our colleagues, providers, and patients.

Figure 3. Cath Lab with Philips Azurion.

How do you determine contrast dose delivered to the patient during an angiographic procedure?

We practice the highest medication safety standards and use technology to track and identify safe dosing

for all of our patients. We use the MACD (maximum allowable contrast dye) calculation for maximum dosing amount in milliliters for each patient. We closely monitor amounts delivered through the injector manifold to not exceed contrast limit.

Are you tracking the incidence of contrast-induced acute kidney injury in patients?

Through two different registries, the NCDR (National Cardiovascular Data Registry) and BMC2 (Blue Cross Blue Shield of Michigan Cardiovascular Consortium), we are given quarterly reports on our contrast-induced injury metrics. The registries have criteria based on a rise in serum creatinine levels, which does not directly measure kidney injury but instead measures an elevated risk of injury. We also monitor the incidences of risk by direct chart review.

How are you recording fluoroscopy times/dosages?

Times and dosage are entered into the electronic health record at the end of every procedure.

What is the process that occurs if a patient receives a higher than normal amount of radiation exposure? How is the patient notified and what follow-up do they receive?

We follow our organization's disclosure policies, notify the patient in a timely manner, and provide any education that is needed.

Has your cath lab recently expanded in size and patient volume, or will it be in the near future?

We have seen an increase in cardiovascular procedures, year after year, for the past 5 years and anticipate this growth to continue. We are monitoring our volumes very closely to provide data for future vision and planning.

Figure 4. Cardiac Cath Lab Monitor.

How does your lab communicate information to staff and physicians to stay organized and on top of change?

We use a variety of methods to communicate with staff. Some include weekly email updates, regular staff meetings, daily huddles, and monthly in-services.

Can you share some data about your lab's door-to-balloon (D2B) times and some of the ways employees at your facility have worked together in order to lower D2B times?

We track six specific metrics on each ST-elevation myocardial infarction (STEMI). Two of the numbers we look at closely are door-to-EKG and D2B. We have been tracking data closely. We have averaged 5.9 minutes on door-to-EKG (our standard is 7 minutes) and our D2B has averaged 63 minutes. We work on these metrics in two different ways. Every STEMI activation is reviewed by the cardiac coordinator. Every actual STEMI is reviewed in depth and a standard form is sent to all emergency department (ED) and cath lab staff involved in the case, along with physician and nursing leadership of both the ED and cath lab for follow-up. The form includes all metrics listed above, results of the intervention, and a narrative on the case. Any glaring outliers (such as extended EKG time) are reviewed on a deeper basis by a select team of ED and cath lab staff to identify issues. We also send feedback to the EMS agency involved, if applicable. The cath lab and ED physician and nursing leadership meet monthly to review and discuss all STEMI activations. We look at metrics, and outcomes, and identify and discuss opportunities for

improvement. Finally, we have representatives from the ED and cath lab on the local medical control Acute Coronary Syndrome panel. We meet monthly to review EMS cases and work on pre-hospital process improvement.

Who transports the STEMI patient to the cath lab during regular and off hours?

During regular business hours, the Cath Lab RN goes to the emergency department with the interventional cardiologist to retrieve the patient. The emergency department RN and nurse's aide assists with transporting to the lab. During off hours, the on-call Cath Lab RN retrieves the patient from the emergency department and transports patient to the lab with the emergency physician, ED RN, and nurse's aide.

What do you do when the call team is already busy doing a procedure and a STEMI comes into the ED?

We have an interventional radiology call team that is cross-trained in cath lab and will assist if needed. They are able to get the other room ready while the initial case is underway. They can assist in getting the patient to the department and set up when deemed appropriate by the cardiologist on call. The ED physician can accompany the second patient during the case overlap. We have activated a second cardiologist on rare occasions. Finally, we have a protocol to treat the second patient with lytics based on set criteria such as expected delay, etc.

Is there a particular mix of credentials needed for each call team?

Each call team has 2 RNs, 1 technologist, and 1 cath lab monitor. We assist in providing time off for the staff. As the schedule allows, we either inform the staff to come to work late or we get them out early based on staffing and caseload at that time.

How does your lab schedule team members for call?

Our call teams have one day a week, 1630-0700 the next morning, that they are assigned to, and every fourth weekend, from 1630 Friday afternoon to 0700 Monday morning. Team members are expected to arrive to the lab within 30 minutes.

Do you have flextime or multiple shifts?

We do not have flextime. Our regular hours are 0700-1630. Any procedures that extend beyond regular hours are completed by the scheduled call teams. For slow shifts, which are few and far between nowadays, we let some staff leave early or even allow for voluntary off days.

What quality control measures are practiced in your cath lab?

Figure 5. Cardiac Prep and Recovery RNs.

We have a quality control team that comes to our department on a regular basis. They provide audits and assessments throughout our department to ensure that we are meeting our standards. They will also provide tips on how we can exceed our standards of care as well. We regularly utilize data from the NCDR and BMC2, and hold monthly PCI/STEMI case review meetings.

Has your lab recently undergone a national accrediting agency inspection?

Yes, by Corazon. We are a Corazon Center of Excellence (CVSLoE) because we are accredited for three

different specialties: PCI, EP device implantation, and peripheral vascular procedures. Our last visit was September 2023 when we obtained the accreditation for peripheral vascular and therefore, our Center of Excellence accreditation.

What is unique or innovative about your cath lab and staff?

We are a close-knit group of people that get along well. We often have social events outside of work to connect. A lot of staff would say we are family. We are also continually seeking new technology being introduced into the market. We have a value analysis team that reviews the proposed new technology and supplies that supports bringing the most up-to-date technology and products into our labs.

How is coding and coding education handled in your lab?

We have a coding specialist that monitors our coding for appropriate coding and billing. We partner with our coding specialist and finance team to ensure appropriate coding and billing is occurring, to optimize reimbursement.

Who documents medication administration during the case?

The RN or technologist in the monitor role will document medication administration in the lab. The circulating RN will document their own controlled substances.

Are your physicians dictating their cath procedure reports, or do they use a structured reporting tool?

The physicians dictate their own cath procedure reports.

Do you use the American College of Cardiology National Cardiovascular Data Registry (ACC-NCDR) or any other outside data collection registry?

We use the NCDR (National Cardiovascular Data Registry) and BMC2 (Blue Cross Blue Shield of Michigan Cardiovascular Consortium). BMC2 is a Michigan-based registry that not only collects data, but meets often for education and process improvement. The goal of BMC2 is to improve outcomes for the patients in the state of Michigan. Our cardiac coordinator is an active member of BMC2, serving on an advisory committee and presenting several times at statewide meetings.

How do you use ACC-NCDR Outcome Reports to drive quality improvement (QI) initiatives at your facility?

We have undergone several QI initiatives based on our NCDR and BMC2 data:

- Extensive work on D2B times for STEMI
- Deceased the use of contrast to prevent contrast-induced nephropathy (CIN)
- Decreased the use of heparin during PCI to decrease bleeding risks
- Increased radiation safety for patients and staff including the use of Zero-Gravity lead and improved radiation software
- Improved composite med prescription at discharge such as ASA, P2Y12 inhibitors, and statins
- Increased fluid hydration to reduce the incidence of CIN
- Developed a hospital-wide smoking cessation counseling program

How are you populating the registry data?

We use our electronic health record system for our documentation. We have a statewide data analytics

team at Trinity Health to help extract the data from EHR, to generate a monthly PCI list for cross-checking to ensure all cases are captured. We populate the NCDR through a mix of auto-populating and manual abstraction. BMC2 is manual abstraction. BMC2 is primarily set up to abstract data that NCDR does not.

Do you require clinical staff to take the registry exam for the Registered Cardiovascular Invasive Specialist (RCIS) credential?

We do not require staff to take the exam in our department. We do highly encourage them to obtain a cardiology certification. We provide support groups to assist in the training for the exams. There is also an organizational nurse advancement system that incentivizes certification.

How does your cath lab compete for patients? Has your institution formed an alliance with others in the area?

Trinity Health markets our Heart and Vascular program in many different ways to attract patients. Trinity Health and University of Michigan are involved in a joint operating agreement and partner with an area hospital, University of Michigan Health West. This partnership provides both access and choice for our patients in West Michigan. This partnership is called “Cardiovascular Network of West Michigan.” We have an active EMS outreach program. We have an EMS coordinator that works closely with the local EMS agencies. We have completed several educational opportunities for EMS in which we provide a dinner, educational stations, and presentations by our providers for the EMS staff to earn CEUs.

How do you handle vendor visits to your lab?

We have an institutional vendor policy that is in alignment with regulatory standards.

How is staff competency evaluated?

Staff competency is evaluated regularly throughout our preceptor program. We have a professional development specialist that educates staff and performs competency checks regularly.

What continuing education opportunities are provided to staff members?

The organization will cover the cost of one certification and test attempt for all colleagues desiring certification. There are also education opportunities throughout the year that include but are not limited to HealthStream, conferences, and in-services.

What works well for your lab in onboarding new team members?

We have a preceptor program, professional development system, and utilize manager and supervisor check-ins. There are frequent assessments on preceptee progression to identify any barriers that can be addressed early on.

Does your lab have any physical (layout) challenges?

As we grow, the leadership team is continually assessing and planning for future needs.

What do you like about the physical space in which you work?

One of our cath labs was just completely renovated and a brand-new system was installed. The four labs in our department are nicely arranged in a square, with a large control room in the center. Our prep and recovery area recently underwent a renovation that included new flooring and wall paint. The break room

is large, and half of the room has floor-to-ceiling glass block which allows for natural light. A retired interventional cardiologist is an amateur photographer and has donated several of his photographs for the main hallway wall.

Do staff members have any little or big particular perks that you might like to share?

We offer to pay for continued education and conference attendance. We also offer call-in incentive and premiums. We guarantee 2 hours of pay for every staff member when they are called in. If case is cancelled, staff still gets paid for 2 hours for the inconvenience. The cost of American Nurses Association (ANA) certification is covered by the hospital. We have competitive benefits, encourage and support professional development, and are recognized as a Magnet organization.

Is there a problem or challenge your lab has faced? How was it addressed?

As previously mentioned, our leadership team has been monitoring closely the significant increase in volume. All problems or challenges in the cath lab are escalated as needed through our leadership team in the cath lab and to our senior leadership.

What's special about your city or general regional area in comparison to the rest of the U.S.?

Grand Rapids has been one of the top ranked cities in the United States in many areas including high quality of life, one of the best places to live, and one of the best places to raise a family. The city is in the process of building a very large amphitheater along the Grand River and are also breaking ground for a soccer stadium. Grand Rapids is the second-largest city in Michigan, but still has a small city feel. We are also minutes away from some of the best Great Lakes beaches.

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