



TITLE	Management of Cardiology Patients during COVID-19 Pandemic		
TODAY'S DATE	March 29, 2020		
SECTION	<input type="checkbox"/> Organization Wide <input type="checkbox"/> Emergency Department <input type="checkbox"/> Ambulatory <input type="checkbox"/> Nursing	<input checked="" type="checkbox"/> Inpatient <input type="checkbox"/> Medical staff [physicians and advance care practitioners]	

APPLICABLE LOCATIONS	<input type="checkbox"/> All Bozeman Health locations <input checked="" type="checkbox"/> Bozeman Health Deaconess Hospital <input type="checkbox"/> Big Sky Medical Center
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	<input type="checkbox"/> Belgrade Clinic + UrgentCare <input type="checkbox"/> Hillcrest Senior Living <input type="checkbox"/> b2 UrgentCare <input type="checkbox"/> b2 MicroCare
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PURPOSE: This policy and protocol is to establish proper management of cardiovascular patients with confirmed positive or suspected for COVID-19 at Bozeman Health Deaconess Hospital.

NOTES:

Most recommendations noted below are from ACC.org COVID-19 hub, ACC Interventional Council, SCAI Address Cath Lab Considerations during COVID-19. In clinical situations that were not covered in this ACC pre-proof article, recommendations are agreed upon by the cardiology physicians at Bozeman Health Deaconess Hospital.

Cardiovascular goals during COVID-19

- Provided treatment and management of life threatening cardiovascular disease
- Reduce potential exposure and risk to patients and staff
 - Postpone non-urgent cardiac work up and elective procedures
 - Utilize clinical judgment and appropriate testing during COVID-19
 - Limit hospitalizations and length of stay
 - Adhere to appropriate personal protective equipment (PPE) standards

Patient selection for the catheterization laboratory

- The cardiac cath lab will utilize the phased approach in regards to the scheduling of non-essential cardiac and IR procedures.
- The Bozeman Health – COVID-19 Screening and Testing prior to elective/non-essential procedures outside of the Main OR (Downtown Surgery Center, Endoscopy, Cath Lab, Radiology/Interventional Radiology) policy/protocol will be followed.
- The definition of truly elective requires clinical judgement, because in some cases deferral of patients may have independent deleterious effects.



STEMI patients

- In the patient with known COVID-19 and STEMI, the balance of staff exposure and patient benefit will need to be weighed carefully.
 - If primary PCI is to be performed, appropriate PPE should be worn including gown, gloves, face shields, shoe covers, and an N95 mask especially given the limited ability to take a history from the patient as well as the potential for clinical deterioration in STEMI cases. The use of Powered Air Purifying Respirator (PAPR) systems may also be reasonable, especially for patients who may be vomiting (e.g. inferior STEMI), or those who may require CPR and/or intubation.
 - Fibrinolysis can be considered an option for the relatively stable STEMI patient with active COVID-19. There will be patients in whom lytic therapy will not be successful, and these patients would require rescue PCI (higher risk patients).
 - Use of a negative pressure catheterization labs. Catheterization labs will require a terminal clean, including UV light, following the procedure leading to delays for subsequent procedures.
- In the patient with STEMI and suspected COVID-19,
 - Timing should allow for obtaining diagnostic tests (not necessarily waiting for results), and the balance of staff exposure and patient benefit will need to be weighed carefully.
 - If primary PCI is to be performed, appropriate PPE should be worn including gown, gloves, face shields, shoe covers, and an N95 mask especially given the limited ability to take a history from the patient as well as the potential for clinical deterioration in STEMI cases
 - Use of a negative pressure catheterization labs. Catheterization labs will require a terminal clean, including UV light, following the procedure leading to delays for subsequent procedures.
- In the patient with STEMI and no COVID-19 symptoms,
 - Treat per usual with probable primary PCI
 - As patients may be asymptomatic carriers, appropriate PPD should be worn including gown, gloves, face shields, shoe covers and a N95 mask or PAPR.
 - Use of a negative pressure catheterization labs. Catheterization labs will require a terminal clean, including UV light, following the procedure leading to delays for subsequent procedures.

NSTEMI patients:

- It is important to remember that Type 2 NSTEMI (myocardial injury not due to plaque rupture) is not uncommon.
 - An elevated troponin does not necessarily equate to acute myocardial infarction
 - Efforts should be made to try to differentiate between these Type 2 MIs vs. “primary” acute coronary syndromes, with consideration of deferral of invasive management in the former, especially if the patient is hemodynamically stable.
- In the patient with known COVID-19 and NSTEMI, the balance of staff exposure and patient benefit will need to be weighed carefully.
 - If primary PCI is to be performed, appropriate personal protective equipment (PPE) should be worn including gown, gloves, face shield, shoe covers, and an N95 mask.
 - Use of a negative pressure catheterization labs. Catheterization labs will require a terminal clean, including UV light, following the procedure leading to delays for subsequent procedures.



- In the patient with NSTEMI and suspected COVID-19,
 - Timing should allow for obtaining diagnostic tests. If patient is stable, we recommend waiting for COVID results to have a more complete discussion when weighing the balance of staff exposure and patient benefit.
 - If primary PCI is to be performed, appropriate personal protective equipment (PPE) should be worn including gown, gloves, face shield, shoe covers, and an N95 mask.
 - Use of a negative pressure catheterization labs. Catheterization labs will require a terminal clean, including UV light, following the procedure leading to delays for subsequent procedures
- In the patient with NSTEMI and no COVID-19 symptoms
 - Treat per usual
 - As patients may be asymptomatic carriers, appropriate PPD should be worn including gown, gloves, face shields, shoe covers and a N95 mask or PAPR.
 - Use of a negative pressure catheterization labs. Catheterization labs will require a terminal clean, including UV light, following the procedure leading to delays for subsequent procedures.

Pacemaker Implantation

- As noted above, will postpone implantation of elective pacemakers in an effort to preserve resources, and avoid exposure of patients.
- As noted above, the definition of truly elective requires clinical judgement, because in some cases deferral of patients may have independent deleterious effects.

Patients requiring intubation, suctioning, or CPR:

Intubation, suction, and active CPR likely result in aerosolization of respiratory secretions increasing likelihood of exposure to personnel. Patients who are already intubated pose less of a transmission risk to staff given that their ventilation is managed through a closed circuit.

- Patients with COVID-19 or suspected COVID-19 requiring intubation should be intubated prior to arrival to the catheterization laboratory.
- The threshold to consider intubation in a patient with borderline respiratory status may need to be lowered in order to avoid emergent intubation in the catheterization laboratory.
- CPR:
 - Please refer to the Hospital Wide Code Blue Resuscitation during COVID-19 pandemic on MIND.

Protection of Healthcare Workers and Personal Protective Equipment (PPE)

All catheterization laboratory personnel should be fit-tested for N95 masks and be well versed in the proper techniques for doffing and donning PPE including eye protection. There may be situations where the use of PAPR systems are advised. All catheterization lab directors and managers should work closely with their institutional infection control group in order to ensure adequate availability and training in the use of this equipment. Ideally for patients with known COVID-19 or suspected COVID-19 who are required to come to the catheterization laboratory, the patient should wear a surgical mask, and all members of the catheterization laboratory team should don PPE (preferably for aerosolized precautions given the risk of emergent intubation/suctioning/CPR). In addition to the known shortage of N95 masks, there are emerging reports of shortages of gowns, gloves, and regular surgical masks. This supports the

deferral of elective cases and a reduction in the number of people who scrub into procedures.

Any patient undergoing a cardiac procedure will be donned with a mask or a facial drape to minimize respiratory droplets and potential exposure to hospital staff.

Utilize clinical judgment and appropriate testing during COVID-19

- See above for decision making and treatment of ACS patients in the catheterization lab
- Echocardiography
 - We will follow American Society of Echocardiography recommendations, and may require all echocardiograms be approved by a cardiologist during COVID-19.
- Stress testing
 - Stress testing in an outpatient population is by definition elective. All requests for stress testing will be reviewed by an MD. If there is concern for accelerated angina or ACS stress testing in this group is inappropriate. We implore you to use Bayes Theorem. If the pre-test probability of disease is high, begin empiric therapy (ASA, high dose atorvastatin or rosuvastatin, beta blockade, prn NTG) with advice to go to the ER should symptoms become unstable. Outpatient cardiologists will review requests and those deemed by us to have a low pre-test probability of disease will not be scheduled. We will offer telehealth consultations for those with intermediate or a high pre-test probability of disease. It is very important that in your conversations with your patients you set reasonable expectations.
- Laboratory testing
 - ACC has recommended ordering BNP and troponin labs only if acute MI or heart failure are being considered on clinical grounds.
 - We recommend using Bayes Theorem for “rule out MI.” Two negative high sensitivity troponin values two hours apart are enough to rule out acute myocardial infarction or ischemic chest pain of significant duration. Two negative hs-troponin values do not rule out unstable angina.
 - As always, clinical judgment and clinical context need to be used when risk stratifying a patient.

Limitation of hospitalization and length of stay

- Rapid discharge of stable cardiac patients should be a priority to maximize bed availability and to reduce patient exposure.
- Outpatient follow up via telehealth will be sufficient for most patients.