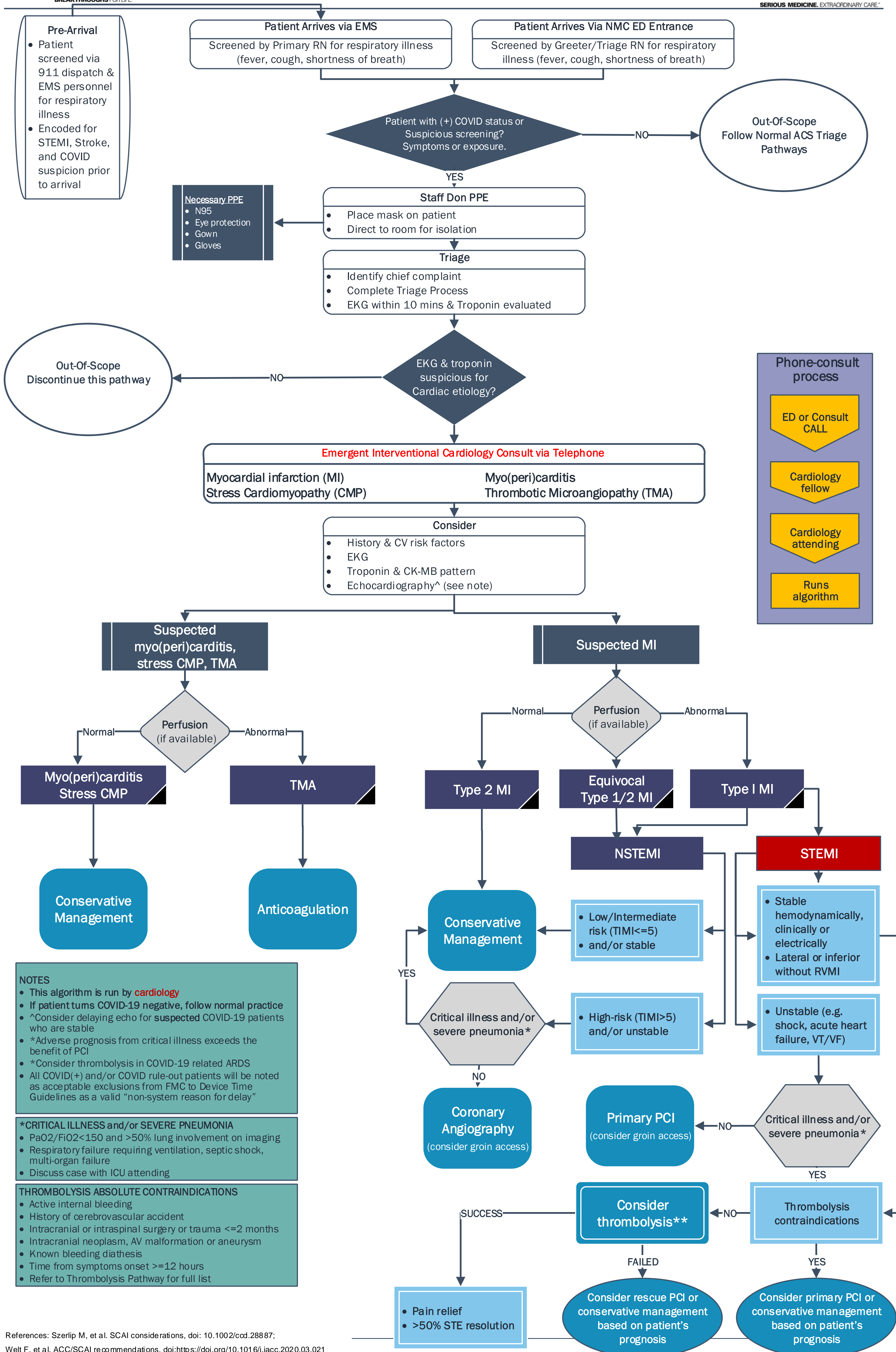
UNMC
BREAKTHROUGHS FOR LIFE.
Management of Troponinemia & Myocardial Infarction for Patients Presenting to Nebraska Medicine Emergency Department with Confirmed or Suspected COVID-19
Nebraska Medicine
SERIOUS MEDICINE. EXTRAORDINARY CARE.
Pre-Arrival
Patient screened via 911 dispatch & EMS personnel for respiratory illness
Encoded for STEMI, Stroke, and COVID suspicion prior to arrival
Patient Arrives via EMS
Screened by Primary RN for respiratory illness (fever, cough, shortness of breath)
Patient Arrives Via NMC ED Entrance
Screened by Greeter/Triage RN for respiratory illness (fever, cough, shortness of breath)
Patient with (+) COVID status or Suspicious screening? Symptoms or exposure.
NO
Out-Of-Scope
Follow Normal ACS Triage Pathways
YES
Necessary PPE
N95
Eye protection
Gown
Gloves
Staff Don PPE
Place mask on patient
Direct to room for isolation
Triage
Identify chief complaint
Complete Triage Process
EKG within 10 mins & Troponin evaluated
EKG & troponin suspicious for Cardiac etiology?
NO
Out-Of-Scope
Discontinue this pathway
Phone-consult process
ED or Consult CALL
Cardiology fellow
Cardiology attending
Runs algorithm
Emergent Interventional Cardiology Consult via Telephone
Myocardial infarction (MI)
Stress Cardiomyopathy (CMP)
Myo(peri)carditis
Thrombotic Microangiopathy (TMA)
Consider
History & CV risk factors
EKG
Troponin & CK-MB pattern
Echocardiography^ (see note)
Suspected myo(peri)carditis, stress CMP, TMA
Perfusion (if available)
Normal
Abnormal
Myo(peri)carditis Stress CMP
TMA
Conservative Management
Anticoagulation
Suspected MI
Perfusion (if available)
Normal
Abnormal
Type 2 MI
Equivocal Type 1/2 MI
Type I MI
NSTEMI
STEMI
Low/Intermediate risk (TIMI<=5) and/or stable
High-risk (TIMI>5) and/or unstable
Conservative Management
YES
Critical illness and/or severe pneumonia*
NO
Coronary Angiography (consider groin access)
Stable hemodynamically, clinically or electrically
Lateral or inferior without RVMI
Unstable (e.g. shock, acute heart failure, VT/VF)
Critical illness and/or severe pneumonia*
NO
Primary PCI (consider groin access)
YES
Thrombolysis contraindications
NO
Consider thrombolysis**
SUCCESS
FAILED
YES
Pain relief
>50% STE resolution
Consider rescue PCI or conservative management based on patient's prognosis
Consider primary PCI or conservative management based on patient's prognosis
NOTES
This algorithm is run by cardiology
If patient turns COVID-19 negative, follow normal practice
^Consider delaying echo for suspected COVID-19 patients who are stable
*Adverse prognosis from critical illness exceeds the benefit of PCI
*Consider thrombolysis in COVID-19 related ARDS
All COVID(+) and/or COVID rule-out patients will be noted as acceptable exclusions from FMC to Device Time Guidelines as a valid "non-system reason for delay"
*CRITICAL ILLNESS and/or SEVERE PNEUMONIA
PaO2/FiO2<150 and >50% lung involvement on imaging
Respiratory failure requiring ventilation, septic shock, multi-organ failure
Discuss case with ICU attending
THROMBOLYSIS ABSOLUTE CONTRAINDICATIONS
Active internal bleeding
History of cerebrovascular accident
Intracranial or intraspinal surgery or trauma <=2 months
Intracranial neoplasm, AV malformation or aneurysm
Known bleeding diathesis
Time from symptoms onset >=12 hours
Refer to Thrombolysis Pathway for full list
References: Szerlip M, et al. SCAI considerations, doi: 10.1002/ccd.28887;
Welt F, et al. ACC/SCAI recommendations, doi:https://doi.org/10.1016/j.jacc.2020.03.021

Thrombolytics Pathway for COVID-19 Patients at Nebraska Medicine

Suspected or Positive

Thrombolytics Pathway

Door to Needle Goal = 30 mins

Interventional Cardiologist

Assess for absolute & relative contraindications for TNKase

Absolute Contraindications:

- Any prior ICH
- Known structural cerebeal vascular lesion (arteriovenous malformation)
- Known malignant intracranial neoplasm (primary or metastatic)
- Ischemic stroke within 3 months (except acute ischemic stroke within 4.5 hours)
- Suspected aortic dissection
- Active bleeding or bleeding diathesis (excluding menses)
- Significant closed-head or facial trauma within 3 months
- Intracranial or intraspinal surgery within 2 months
- Severe uncontrolled hypertension (unresponsive to emergency therapy)
- For streptokinase, prior treatment within previous 6 months.

Relative Contraindications:

- History of chronic, severe, poorly controlled hypertension
- Significant hypertension on presentation (SBP >180mmHg or DBP>110mmHg)
- History of prior ischemic stroke > 3months
- Dementia
- Known intracranial pathology not covered in absolute contraindications
- Traumatic or prolonged (>10min) CPR
- Major surgery (<3weeks)
- Recent (within 2-4 weeks) internal bleeding
- Noncompressible vascular punctures
- Pregnancy
- Active peptic ulcer
- Oral anticoagulant therapy

Does pt have any absolute or Relative Contraindications?

YES →

- Out-Of-Scope
- Discontinue this pathway

NO ↓

Ordering TNKase

Tenecteplase Order Panel placed by Interventional Cardiologist or Emergency Department attending

Notify Pharmacy

- Emergency Department- Notify ED pharmacy (531-557-3986)
- In-House- Notify responding RRT pharmacist from unit

Nursing Preparation

- Obtain accurate patient weight for dosing (scaled-bed)
- Place 2nd IV for administration
- If invasive lines are needed (e.g. foley) consider placing prior to administration to minimize trauma-related bleeding

Initiate Adjunctive Anti-platelet Therapy

Oral administration of:

- <75years= Aspirin 324mg chewable AND Plavix 300mg
- >75years= Aspirin 162mg chewable AND Plavix 75mg

Initiate Adjunctive Anticoagulation Therapy

- UFH weight adjusted parenteral bolus/infusion
- Utilize current ACS UHF order set/dosing policy

TNKase Administration

- Emergency Department- retrieve TNKase kit, compound at bedside and follow weight-based bolus
- In-House- retrieve TNKase kit from RRT pharmacist, compound at bedside and follow weight-based bolus

Post Procedure/Therapy

Nursing to assess for the following after lytic administration:

- Reperfusion Ectopy
- ACS Symptoms (persistent or refractory CP)
- Bleeding
- Hemodynamic instability
- Neurological changes
- Angioedema

Thrombolytic therapy successful?

YES → Cardiology to follow and determine optimal delay between lytic administration and angiography.

NO → **Immediate Angiography for RESCUE PCI**

- Activate Cath Lab through dispatch via (402-559-5555)
- Follow COVID(+) Transport Guidelines
- Follow COVID(+) STEMI Activation Process

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Note: All COVID(+) and/or COVID rule-out patients will be noted as acceptable exclusions from FMC to Device Time Guidelines as a valid "non-system reason for delay"

High level STEMI Activation Process
Updated 4.9.2020 to Accommodate for COVID-19 Preparations

STEMI activation (Direct Presentation) to occur via:
1. Dispatch paging at 402-559-5555
2. PerfectServe Notification of Interventional Provider-On-Call

STEMI activation (Transfers) to occur via:
1. Transferring facility calls STEMI Hotline with live connection to Interventional Cardiologist
2. BEDS/PPU call dispatch at 402-559-5555 to activate cath lab.

Note:
If a patient is deemed COVID-19(+) or is suspicious for COVID-19, it is recommended that an **emergent consult with Cardiology takes place **prior** to activating the cardiac cath lab
Please verify with the cath lab staff that they are ready to accept the patient prior to transfer **(CCL TL 531-557-2700)

Deviations/Additions to STEMI activation for suspected or confirmed COVID-19 cases

Communication Exceptions for COVID-19	Assumptions
1. When activating user is calling dispatch in Step #1, please inform dispatch of COVID-19 suspicion/confirmation. Request STEMI Activation, with the following in the "special instructions" field- **"COVID 19"**	A. COVID Status is Known B. COVID should be assumed if any suspicion, even if not confirmed by lab tests
2. 7HVU TL is the "captain of the ship" for all STEMI activations and should be informed of COVID-19 status, regardless of inpatient, emergency or transfer status **(7HVU TL Number- 531-557-2139)**	7HVU TL is available to respond to all STEMIs
3. **For inpatient STEMIs-** 7HVU will be responsible for communicating COVID-19 status to the cath lab staff. This may occur when confirmation of the page is received or when arriving to get report.	
4. **For EMS/ED arrivals**, 7HVU TL should be notified of COVID patient with STEMI Activation page and called directly by ED TL	
5. When ED attending is giving provider-to-provider report to Interventional Cardiologist via PerfectServe, COVID-19 status should be communicated verbally.	Provider-to-Provider communication is facilitated by PerfectServe "STEMI" activation
Transport Exceptions for COVID-19	**Assumptions**
1. Follow COVID-19 precautions (airborne/contact) per organizational policy	Communication of COVID 19 status has occurred
2. Patient should wear procedure mask and be covered with a clean sheet. ED staff should put procedural mask on patient if symptomatic (cough, fever, SOB)	
3. Staff/transporter wears procedure mask per Infection Prevention. ED staff will follow protocol for inpatient COVID transport to CCL through STEMI door (refer to "***Guidance for Transporting Patients with or under investigation for COVID-19***" protocol)	
4. Limited personnel should be involved in transporting	
5. Carts should be disinfected with grey-top cleaner or EVS "Oxivir" wipes	
Pre-Case Preparations Exceptions for COVID-19	**Assumptions**
1. All staff should be familiar with N95 sizing & fitting with appropriate shaving. Staff should be minimized to the following: -Circulator RN -Scrub Rad Tech -Monitor -Attending Interventional Cardiologist	
2. CCL staff to donn COVID PPE (see below) before patient arrival if aware of positive symptoms, or when made aware	
3. Donning process should include the following: *Yellow or Disposable Blue Gown for Circulator & Monitor* *Sterile Blue Gown for Scrub* *N95 mask and Face Shield/goggles* *Gloves*	All CCL staff & providers should be educated on donning/doffing by PPE Super Users & Education Videos
4. Considering cath procedures are generally considered non-aerosolized-generating procedures, the use of appropriate PPE listed above will provide sufficient respiratory protection for staff	
5. If a patient is at high-risk for respiratory compromise, intubation should be considered and ideally performed in a negative pressure environement prior to transfer to CCL	
6. COVID-19 ROOM sign will be posted on the CCL room door to inform staff and minimize exposure	
During the case Exceptions for COVID-19	**Assumptions**
1. PCI2 is the preferred room for STEMI cases and should be considered for these patients unless another case is ongoing	
2. Patient should wear procedure mask throughout procedure	
3. Femoral approach is preferred for COVID(+) patients UNLESS the patient has also receieved thrombolytics and this is a RESCUE PCI. In those cases, default to Radial approach to minimize bleeding risk	
4. The cath labs remain positive pressure. Keep all doors closed as much as possible to keep room pressures regulated.	
5. Anyone allowed in room should be appropriately donned with PPE as listed above. Retrieve from COVID cage	
6. Before any AGMPs (e.g., intubation and extubation) are performed, all personnel must don an N95 respirator plus face shield or a PAPR, in addition to gown and gloves. If not scrubbed during the intubation, personnel should wait 15 minutes prior to entering the room after intubation to gown and glove.	
7. Perform procedure - case ends	
Post-Procedure & Recovery for COVID-19	**Assumptions**
1. Due to cohorting of COVID-19 patients, sheath removal and initial monitoring should occur with the CCL sheath pull team if needed (femoral sheath still in place) using appropriate COVID PPE within the cath lab immediately after procedure.	*****Please note that sheath removal should ONLY be performed by specially trained staff**
2. Patient should not be transferred back to inpatient unit for 30 minutes post manual pressure to mitigate bleeding risk.	
3. Once procedural care has ceased (after sheath pull procedure), patient **and** staff must remain in room with PPE for 15 minutes to mitigate risk, consdering the proper air exchanges for the CCL.	
All patients	**Assumptions**
1. All staff should remain in PPE until patient is transferred to cart & mask/sheet applied to patient	
2. Remaining staff to move away from patient and doff with N95 removal as last step, upon exiting the lab	
3. Circulating RN & tech should perform hand hygiene over gloves	
4. Circulating RN & tech should clean patient cart	
5. Circulating RN & tech should perform doffing procedure	
6. Sheath pull team should don appropriate PPE as describe in the transport protocol and then transport patient to appropriate inpatient room within COVID department. Please refer to "**Guidance for Transporting Patients with or under investigation for COVID-19**" protocol to follow transport procedures	
Post-Procedure Cleaning for COVID-19	**Assumptions**
1. Due to airflow exchanges taken into account for CCL specific room, no downtime is required for vacancy. Notify Infection Control (ICE 402-888-4646) for all procedures for known or suspected COVID19 cases	EVS Staff informed of cleaning procedures for COVID-19 with correct cleaning solutions available.
2. Sheath pull team to page EVS per usual and inform them of a COVID-19 clean required	
3. All vertical and horizontal surfaces should be cleaned and allowed to dry completely prior to next case	Oxivir & Defender agents will suffice
4. Utilize other PCI room if available for next STEMI if above steps cannot be completed in PCI2	

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