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ED Bypass

INCREASING DIRECT TO CATH LAB & DECREASING STEMI OVERCALL

Proud partner of VCSQI

Mission & Vision

- **Mission**: To align Virginia's EMS agencies, providers, and healthcare systems to standardize and promote pre-hospital ECG transmission and direct-to-cath lab processes that minimize first medical contact-to-reperfusion times and improve STEMI outcomes.
- **Vision**: A Commonwealth where pre-hospital STEMI care processes ensure that every STEMI patient receives safe, expedited, and lifesaving reperfusion therapy.

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Background

- **Workgroup Founded February 2024**
- **Key Issue:** Delay in first medical contact(FMC) to reperfusion time can worsen patient outcomes, presenting with acute myocardial infarction.
- **Multidisciplinary team from all regions of Virginia representing EMS, ED, Cardiology, and Quality collaborated to identify opportunities to increase Direct to Cath Lab STEMI practices and reduce time to coronary reperfusion**

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Review of 2024 Efforts

- Reviewed the literature
- Conducted statewide survey
- Analyzed the survey results
- Developed Action Plan for 2025

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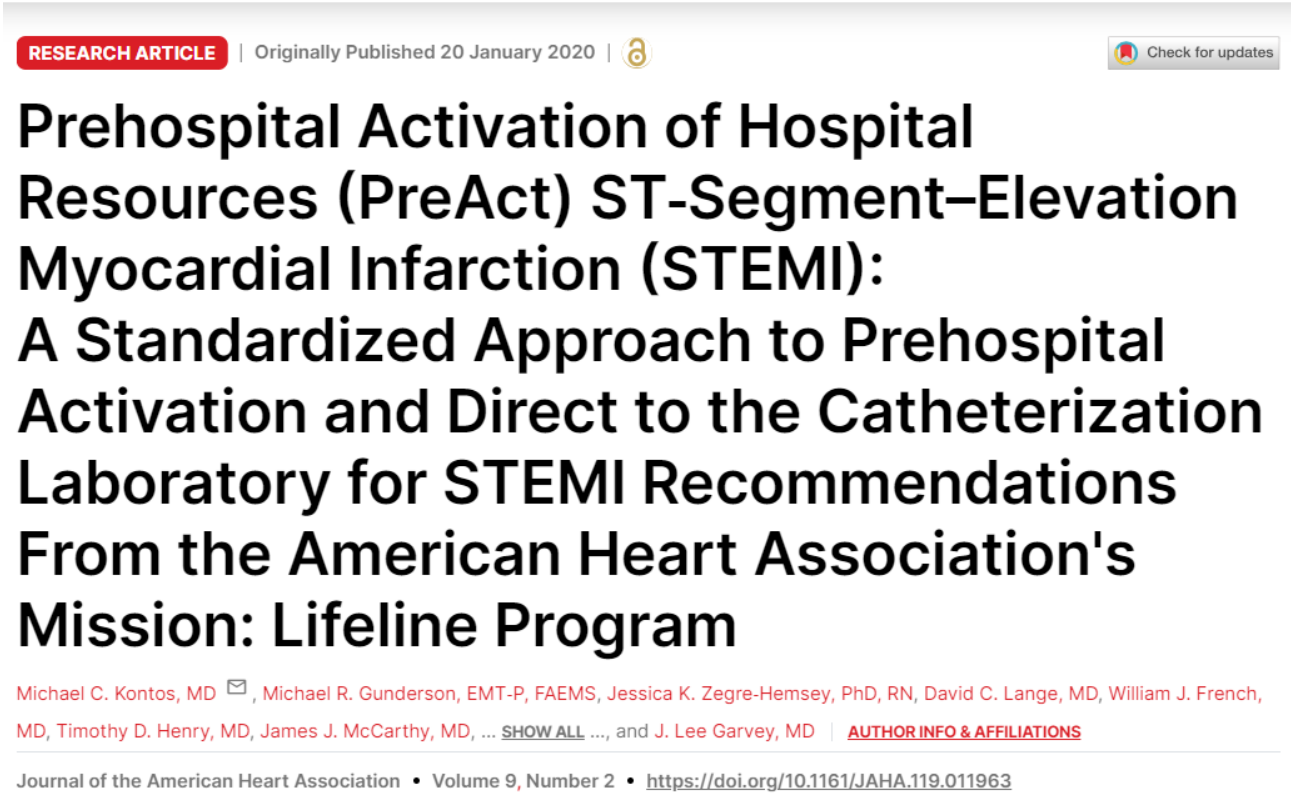
Overview of the Science and/or Guidelines

- **Published Peer Reviewed Articles:**
  - Journal of American Heart Association (2020)[1]
  - Catheterization & Cardiac Interventions (2020)[2]
- ***Best EMS Practices***
  - 12-lead ECGs and Pre-Arrival Transmissions
- ***Goals:***
  - *Reduce STEMI activation overcalls*
  - *Promote Direct to Cath Lab Practices, decreasing time to PCI*



RESEARCH ARTICLE | Originally Published 20 January 2020 | Check for updates

Prehospital Activation of Hospital Resources (PreAct) ST-Segment–Elevation Myocardial Infarction (STEMI): A Standardized Approach to Prehospital Activation and Direct to the Catheterization Laboratory for STEMI Recommendations From the American Heart Association's Mission: Lifeline Program

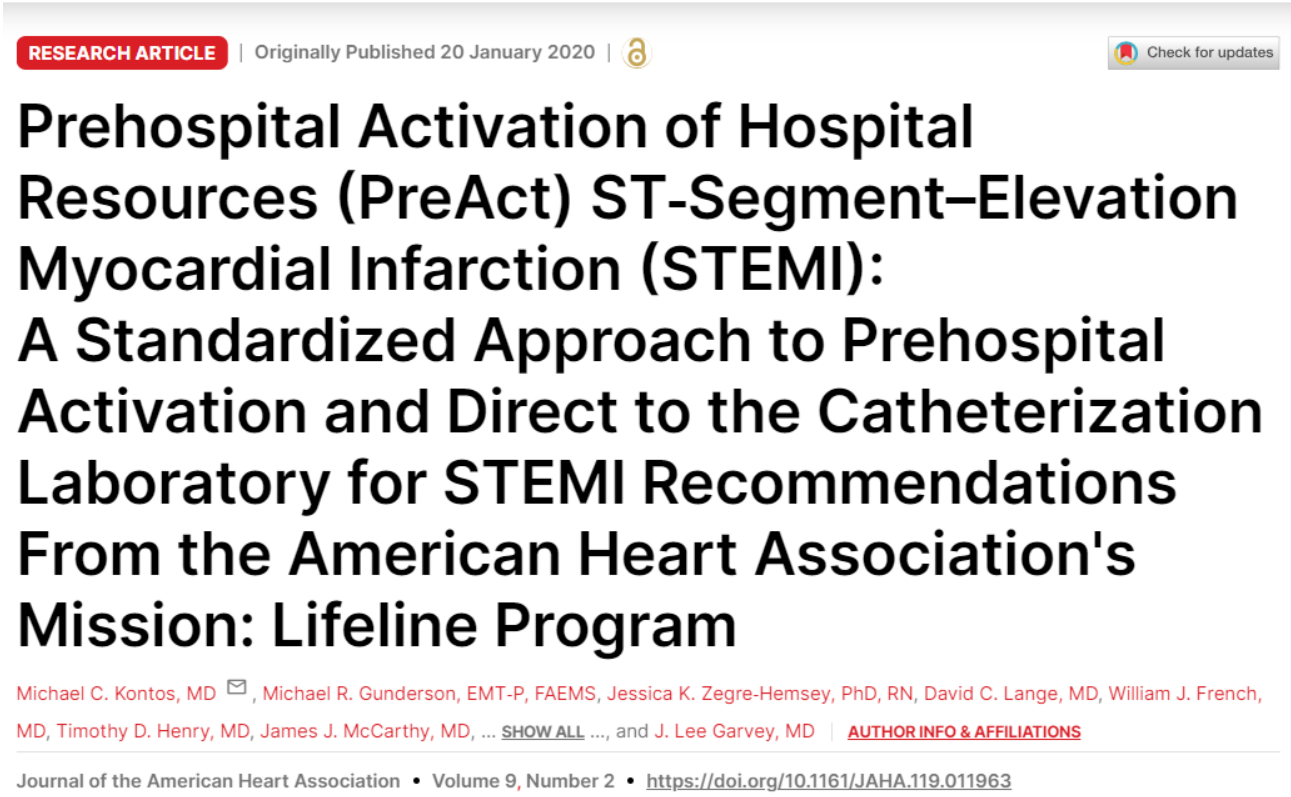
Michael C. Kontos, MD, Michael R. Gunderson, EMT-P, FAEMS, Jessica K. Zegre-Hemsey, PhD, RN, David C. Lange, MD, William J. French, MD, Timothy D. Henry, MD, James J. McCarthy, MD, ... SHOW ALL ..., and J. Lee Garvey, MD | AUTHOR INFO & AFFILIATIONS

Journal of the American Heart Association • Volume 9, Number 2 • https://doi.org/10.1161/JAHA.119.011963

Overview of the Science and/or Guidelines

- **Essential Criteria for ED Bypass**

1) **Paramedic confident in the STEMI diagnosis**
2) **Emergency physician and/or cardiologist confident in the STEMI diagnosis**
3) **Ability to provide informed consent**
4) **No "do not resuscitate" (DNR)**



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2024 Statewide Survey Results Summary

- 50% of those surveyed participated (N=14/27 facilities)
- Considerable variances in STEMI Activation protocols across the state/region
- Anywhere from 37% to 85% of STEMIs arrived via EMS to PCI Center
- 1/3 of PCI Centers had EMS ***STEMI Cancellation Rates greater than 50%***
- Approximately 50% of PCI Centers supported Direct to Cath Lab Processes
- ***62% of PCI Centers do not have a current, written Direct to Cath Lab Protocol in place***
- PCI Centers ***almost never*** utilized Direct to Cath Lab Protocols during non-business hours
- PCI Centers ***infrequently*** utilized Direct to Cath Lab Protocols during normal business hours at best

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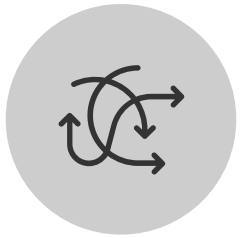
Barriers to Success

INCONSISTENT PRACTICES

TERMINOLOGY CONFUSION



COORDINATION CHALLENGES

RESOURCE LIMITATIONS

HIGH LEVELS OF INAPPROPRIATE CATH LAB ACTIVATIONS

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Review of 2024 Efforts

- Reviewed the literature
- Conducted statewide survey
- Analyzed the survey results
- Developed Action Plan for 2025
  - Definitions
  - Process recommendations/protocols

Definitions

- ED Bypass → Direct to Cath Lab
- STEMI Team Activations
  - Correct Call
  - Over Call
  - Under Call

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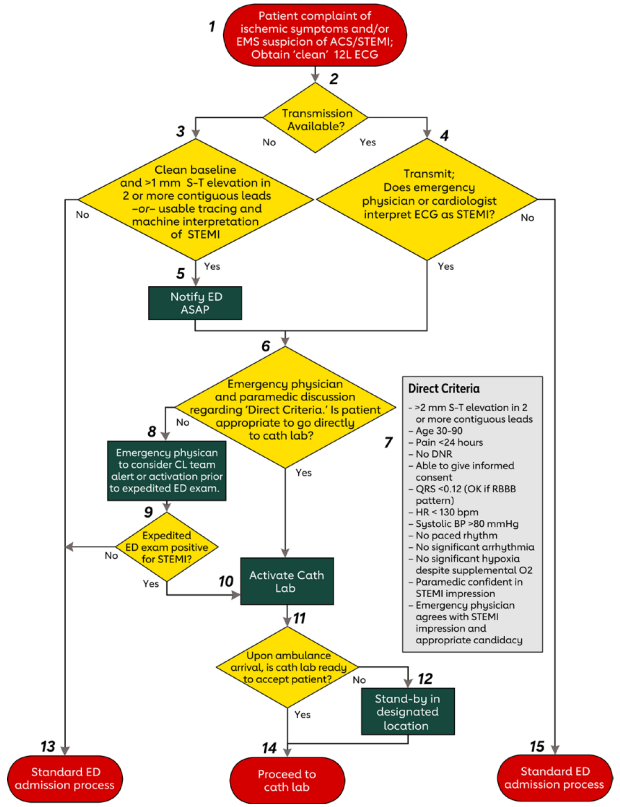
Protocol Presentation

What is needed for Virginia to adopt the AHA recommendation for Direct to Cath Lab Practices?

- Pre-hospital ECG Transmissions (optimal)
- EMS Education
- Improved communication between EMS and hospitals
- Stakeholder buy-in
- Regular review of the process with supportive data



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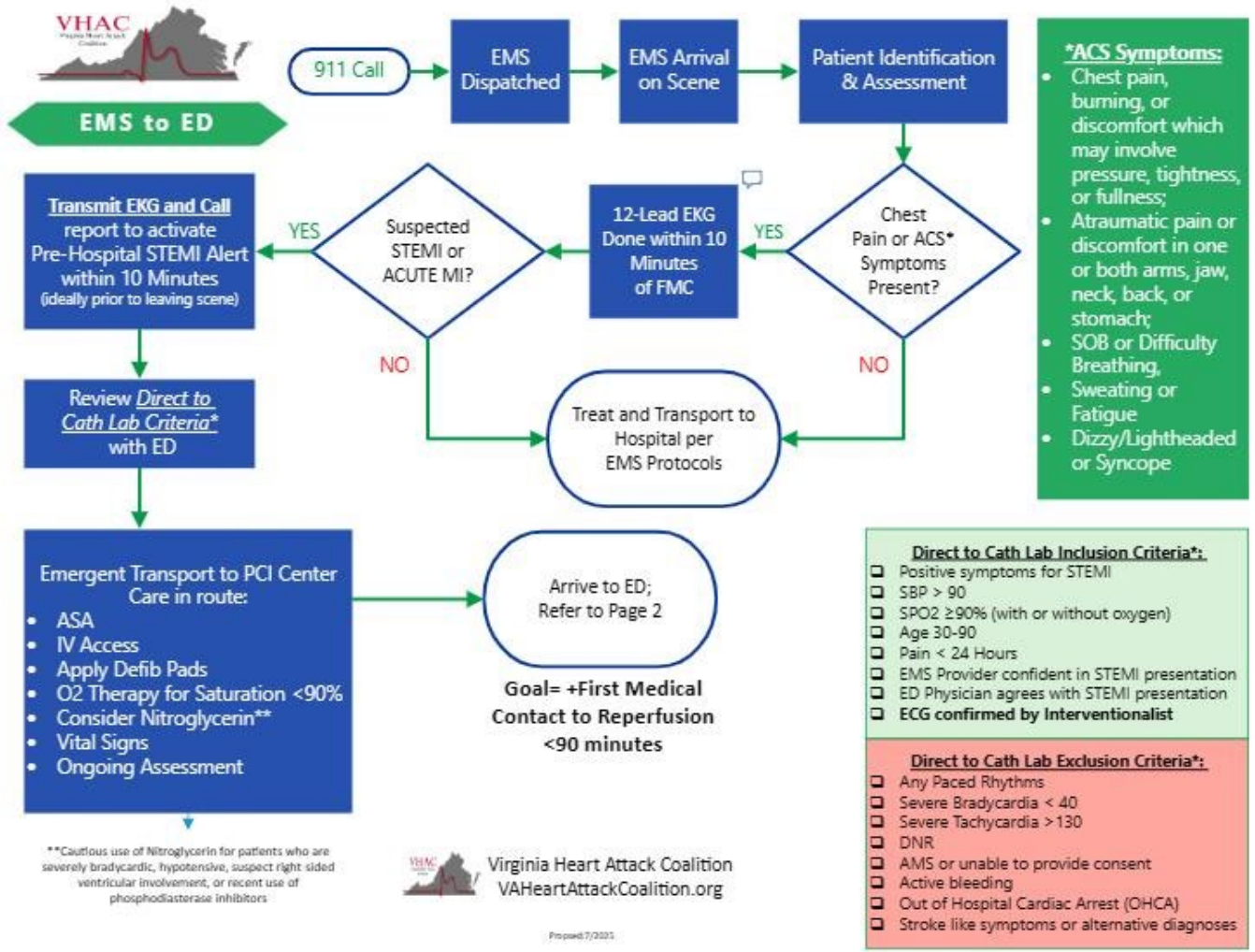
2025 Direct to Cath Lab STEMI Guideline



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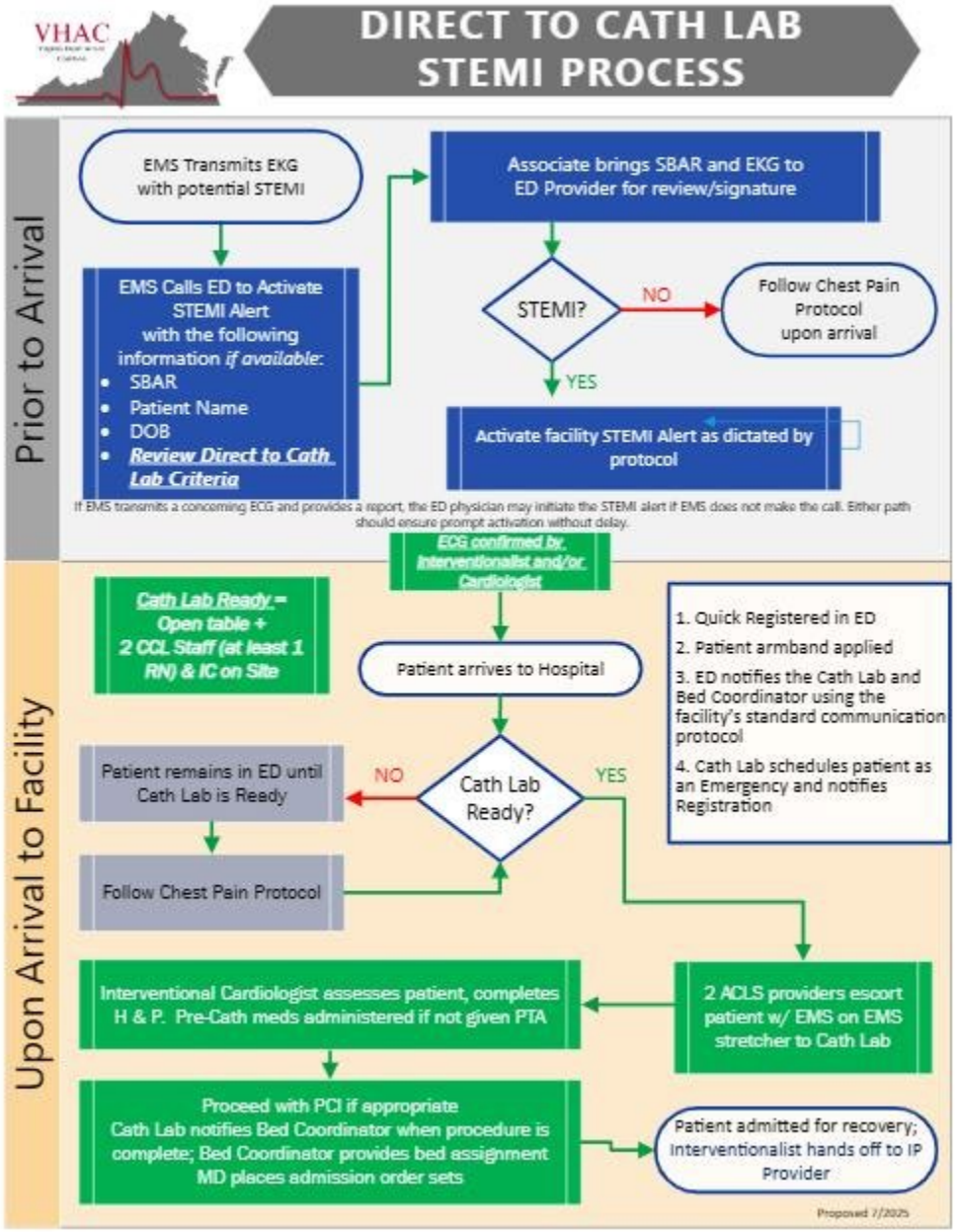

2025 Direct to Cath Lab STEMI Guideline

2025 Direct to Cath Lab STEMI Guideline

EMS STEMI Direct to Cath Lab

Inclusion Criteria	Exclusion Criteria
❑ Positive symptoms for STEMI ❑ SBP > 90mmHg ❑ SpO2 ≥ 90% (with or without oxygen supplementation) ❑ Age 30-90 years ❑ Pain <24 hours ❑ EMS Provider Confident in STEMI Presentation ❑ ED Physician agrees with STEMI presentation/ candidacy ❑ **ECG confirmed by Interventionalist and/or Cardiologist**	❑ Any Paced Rhythms ❑ Severe Bradycardia < 40 bpm ❑ Severe Tachycardia > 130 ❑ DNR ❑ AMS or unable to provide consent ❑ Active bleeding ❑ Out of Hospital Cardiac Arrest (OHCA) ❑ Stroke Like Symptoms or alternative diagnosis

If Cath Lab is Not Immediately Available (Chest Pain Protocol):

❑ Immediate ED Bed Assignment ❑ ED Provider assess patient and completes H&P ❑ Disrobe Patient ❑ Place in Hospital Gown ❑ Cardiac Monitor ❑ Apply Defib Pads ❑ VS: Blood Pressure, Pulse, Respirations, Oxygen Saturation, Temp	Consider clipping and prepping groin and wrist access sites to minimize procedural delay ***See STEMI Order Set: Medication Guidelines*** Heparin bolus Aspirin or alternative if allergic P2Y12 Inhibitor (in absence of onsite open-heart backup) NTG (if not contraindicated) Labs: HS Troponin, CBC, CMP, PT/PTT 2 IV sites Supplemental Oxygen if Saturations < 90% Chest XR

***DO NOT DELAY TRANSPORT TO CATH LAB FOR ANY OF THE ABOVE**

Thoughtful Pause for Out of Hospital Cardiac Arrest with STEMI

Total Score = 1 point for each applicable element

KEY

- 0-1 Proceed to Cath Lab
- 2-4 Thoughtful Pause
- > 4 Consider Delay to CCL

CPR

- ❑ Unwitnessed arrest
- ❑ No bystander CPR
- ❑ CPR > 20 min prior to ROSC

Patient Parameters

- ❑ Age > 80
- ❑ Core Temp <32° C (90° F)
- ❑ pH < 7.2
- ❑ Persistent hypotension w/pressers
- ❑ GCS =3

Other Concerns

- ❑ Community DNR band
- ❑ Terminal diagnosis
- ❑ Non-cardiac arrest
- ❑ Active bleeding/ known bleeding disorder
- ❑ Poor functional status with advanced dementia or nursing home resident

Next Steps

- [x] Continue workgroup meetings
- [x] Developed a standardized Direct to Cath Lab Protocol
- [x] Launching pilot program Quarter 1 2026
- [ ] Continue monitoring and review data for effectiveness
- [ ] Recommend unified STEMI Protocol for Virginia Hospitals and EMS Councils

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2026 Priorities:

OPTIMIZE RESOURCE USE

IMPROVE COMMUNICATION

STANDARDIZE PRACTICES

IMPROVE TIME-SENSITIVE CARDIAC CARE

REDUCE DELAYS

BETTER PATIENT OUTCOMES

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Targeted Goals

Develop Guidelines: Create comprehensive guidelines for efficient patient transfer from the field to the Cath lab.

Improve Communication: Enhance pre-hospital communication between EMS and hospitals.

Provide Education: Implement continuous training and simulation for EMS and hospital staff.

Standardize Terminology & Data Monitoring: Set up systems for ongoing data monitoring and analysis of ED Bypass and False Activation incidents.

Statewide ECG transmissions: Advocate for 100% Statewide capability to transmit and receive ECG transmissions.

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Thank You

Contact Sherri@vcsqi.org for information for further inquiries

CLINICAL
WORKGROUP
RESOURCES

SCAN ME

References

Kontos, M., Gunderson, M., Zegre-Hemsey, J., Lange, D., French, W., Henry, T., McCarthy, J., …Garvey, J. (2020) Prehospital activation of hospital resources (PreACt) ST-Segment-Elevation Myocardial Infaction (STEMI): A standardized approach to prehospital activation and direct to catherization laboratory for STEMI recommendations from the American Heart Association's Mission: Lifeline Program. Journal of American Heart Association, 9 (2). https://doi.org/10.1161/JAHA.119.011963

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