


ED Bypass & False Activation

**INCREASING DIRECT TO CATH LAB
& DECREASING STEMI OVERCALL**

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Introduction

- **Multidisciplinary team from all regions of Virginia representing EMS, ED, Cardiology, and Quality collaborated to identify opportunities to increase ED Bypass practices and reduce time to coronary reperfusion**
- **Key Issue:** Delays can worsen patient outcomes, especially during critical times like the “golden hour” for MI treatment.
- **Current Challenges:**
 - **ED Bypass or Direct to Cath Lab:** Lack of protocols and lack of consistent pre-arrival ECG transmissions.
 - **False Activation:** Overcalls for STEMI Activation burdens healthcare systems and operators contributes to “STEMI Fatigue” and hinders utilization of Direct to Cath Lab protocols.

Overview of the Science and/or Guidelines

- **Published Peer Reviewed Articles:**

- Journal of American Heart Association (2020)¹

- ***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>



Definitions

- **ED Bypass/Direct to Cath Lab**
- **Correct Call**
- **Over Call**
- **Under Call**

Assessment

What is the current state of STEMI care in Virginia?

How many hospitals utilize ED Bypass Protocols?

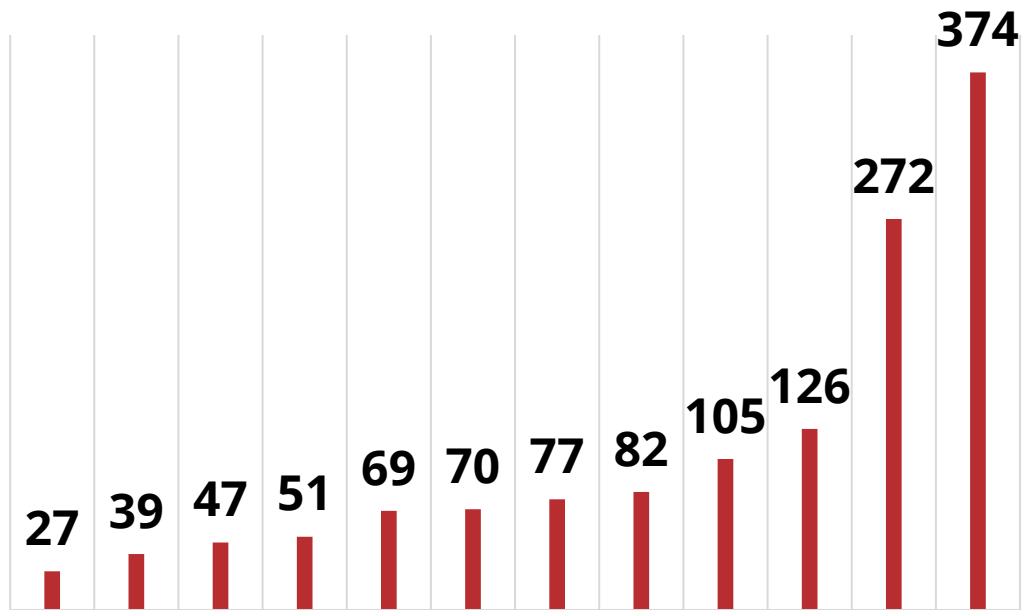
What are barriers to implementation and execution?

How can VHAC/VCSQI promote better outcomes for STEMI patients statewide?

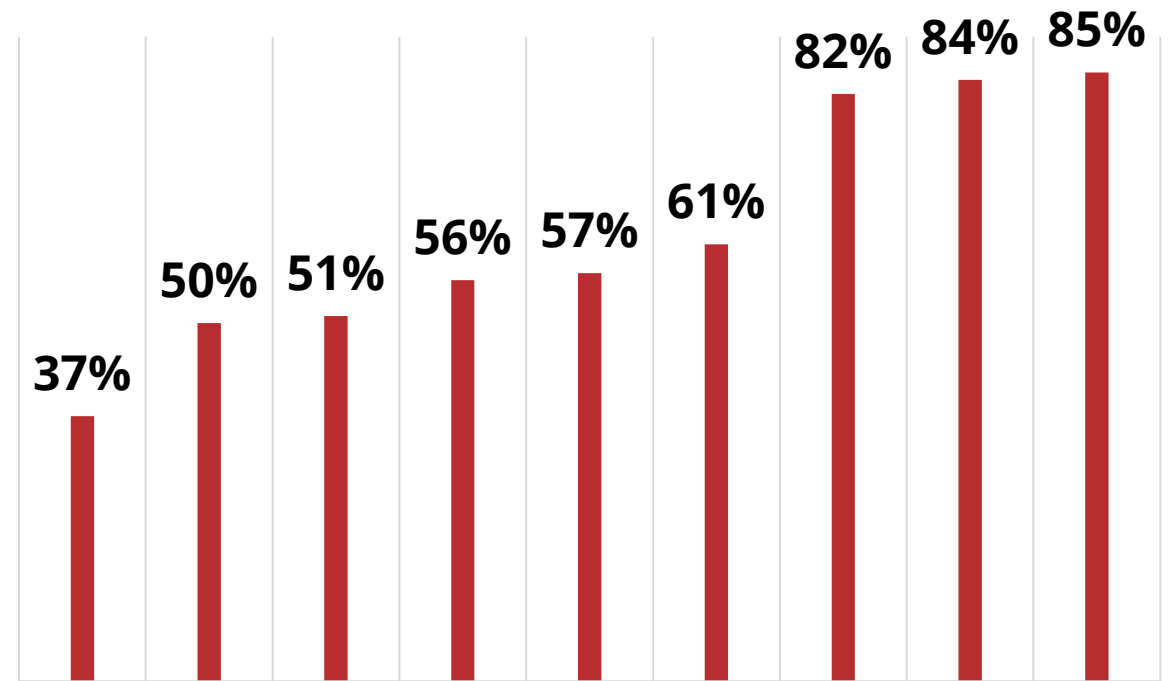
Survey Results

N=14 Responses

WHAT WAS YOUR ANNUAL NON-TRANSFER STEMI VOLUME IN CALENDAR YEAR 2023 (PER NCDR CATHPCI)?



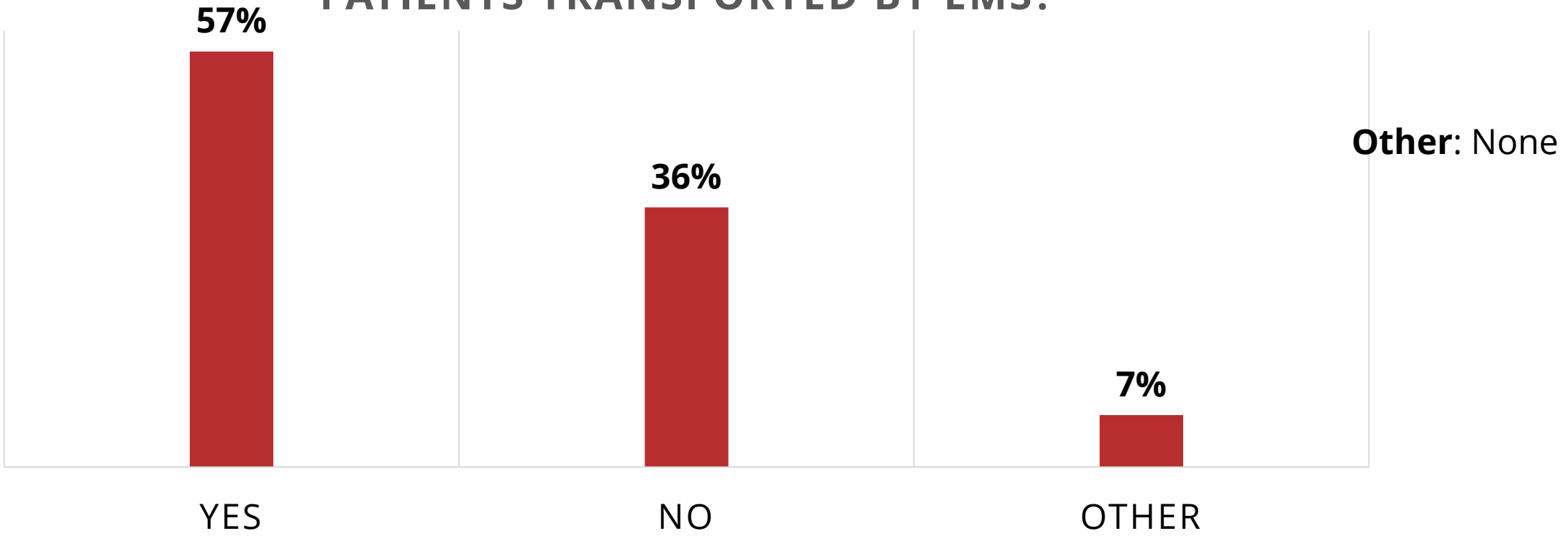
WHAT PERCENTAGE ARRIVED BY EMS?



Survey Results

N=14 Responses

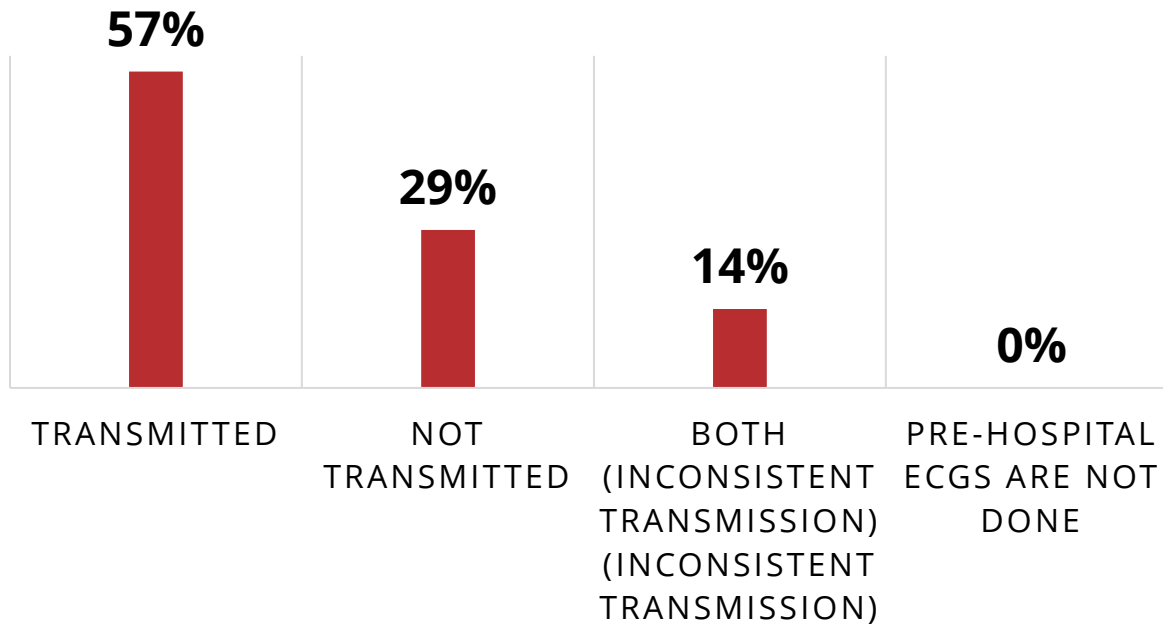
DOES YOUR PROGRAM BYPASS THE ED WITH STEMI PATIENTS TRANSPORTED BY EMS?



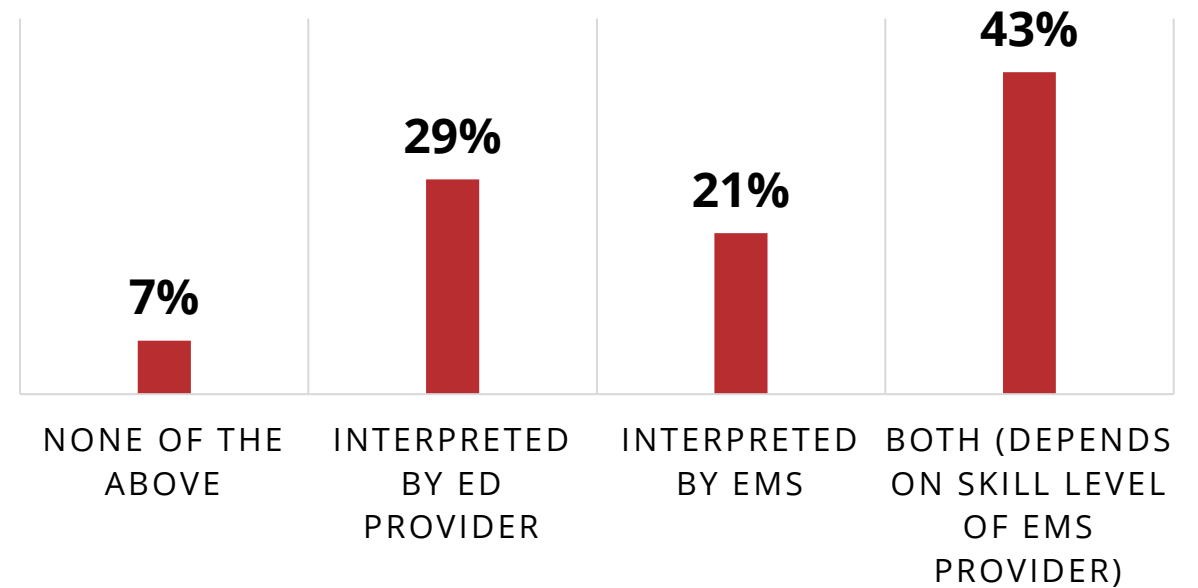
Survey Results

N=14 Responses

YOUR ECGS ARE ____ FROM THE FIELD. (FILL IN THE BLANK)



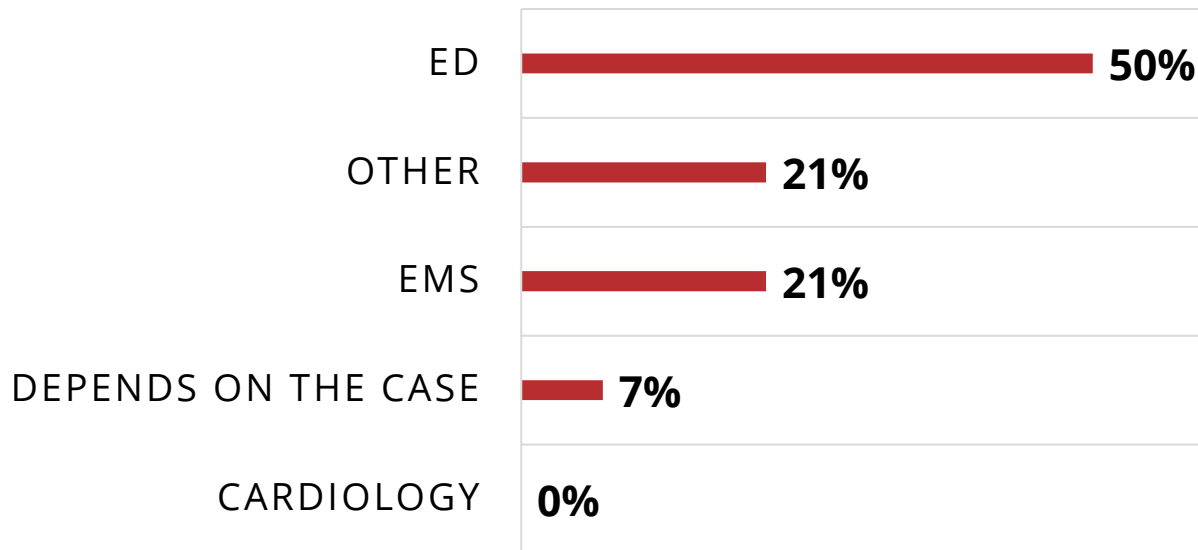
ECGS DONE IN THE FIELD ARE _____. (FILL IN THE BLANK)



Survey Results

N=14 Responses

IN THE MAJORITY OF CASES, WHO ACTIVATES THE CATH LAB BASED ON PRE-HOSPITAL ECGS?



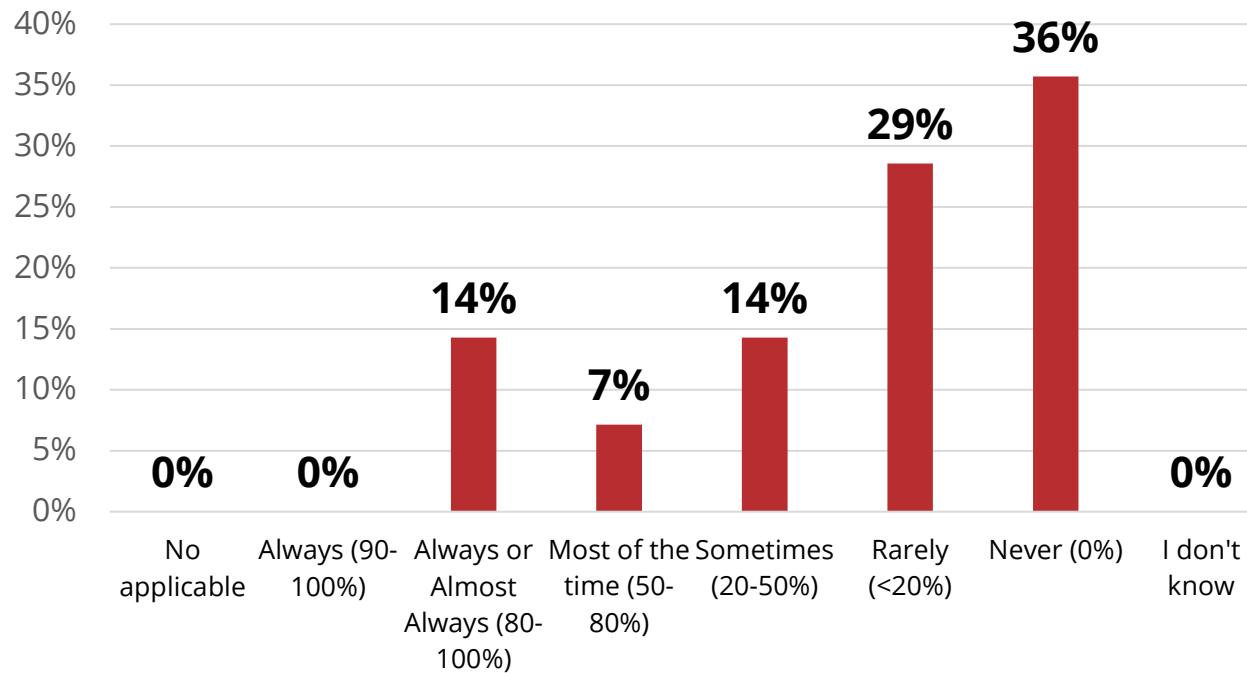
Other:

- Transmitted EKGs are reviewed by the ED doc and the ED doc activates with the team paged out and the IOC then connected to the ED doc through access. ED docs can also call for an EKG consult through access, and they will get connected with the IOC pre-activation. If the transmitted EKG is questionable then the ED doc may do that instead of activate themselves and if the IOC thinks it's a STEMI, then they may be the one that activates in that case. Majority of activations are from the ED doc
- Based on prehospital ECG interpretation
- EMS calls a CODE STEMI from the field, but ED staff will not announce/activate it until EMS arrives at ED and they do the EKG for themselves

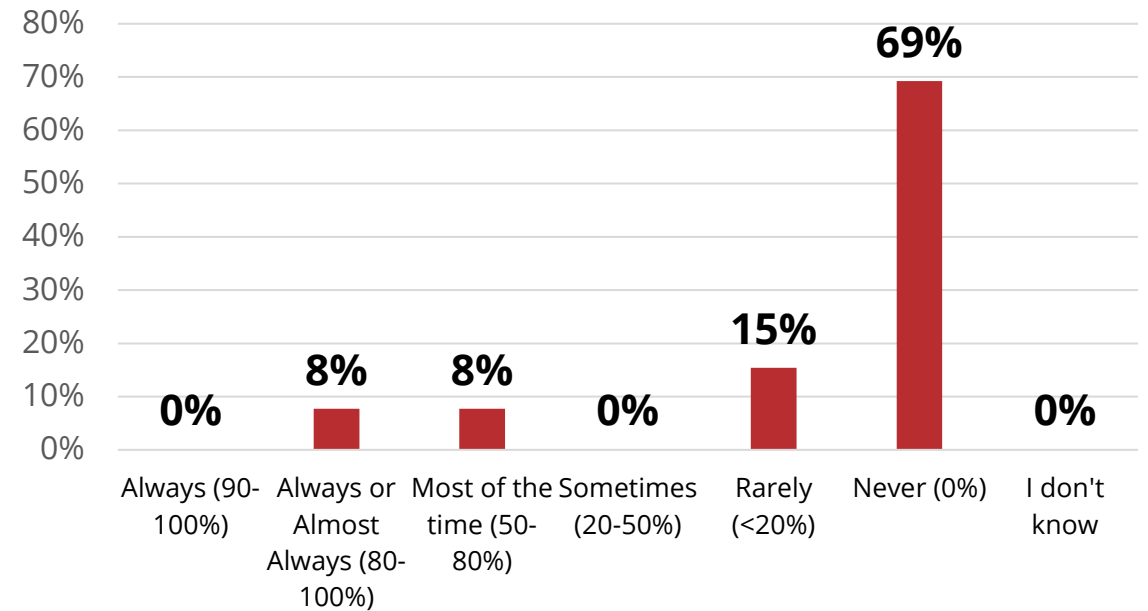
Survey Results

N=14 Responses

HOW FREQUENTLY DO YOU PERFORM ED BYPASS DURING NORMAL BUSINESS HOURS?



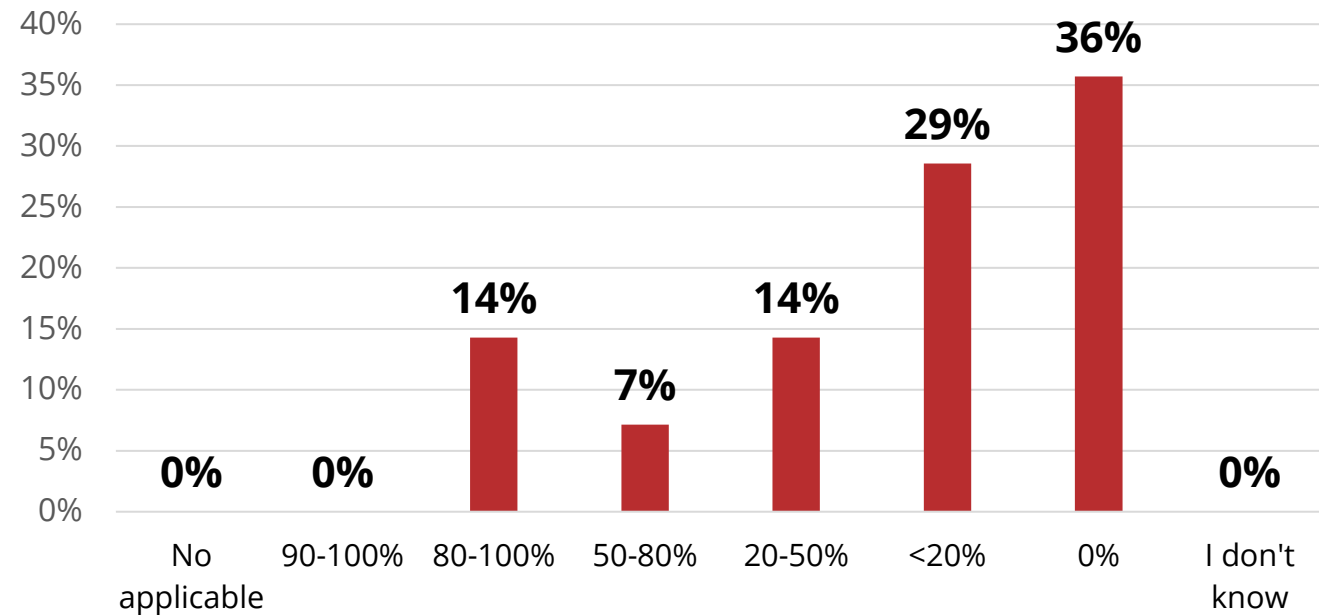
HOW FREQUENTLY DO YOU PERFORM ED BYPASS DURING OFF HOURS (NIGHTS, WEEKENDS, HOLIDAYS)?



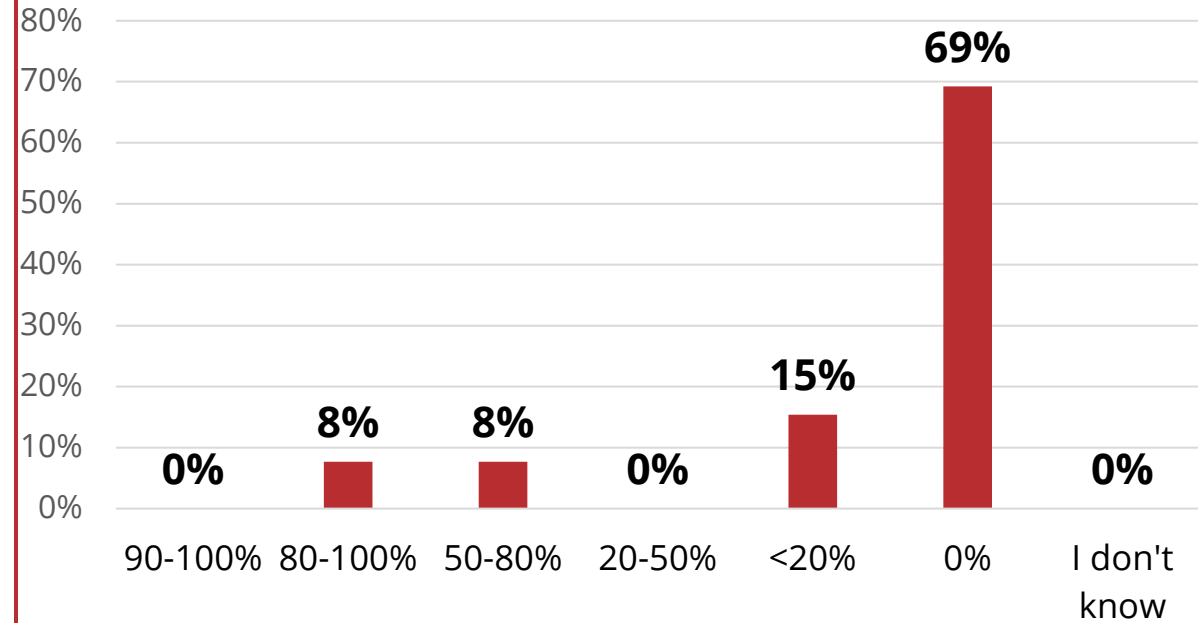
Survey Results

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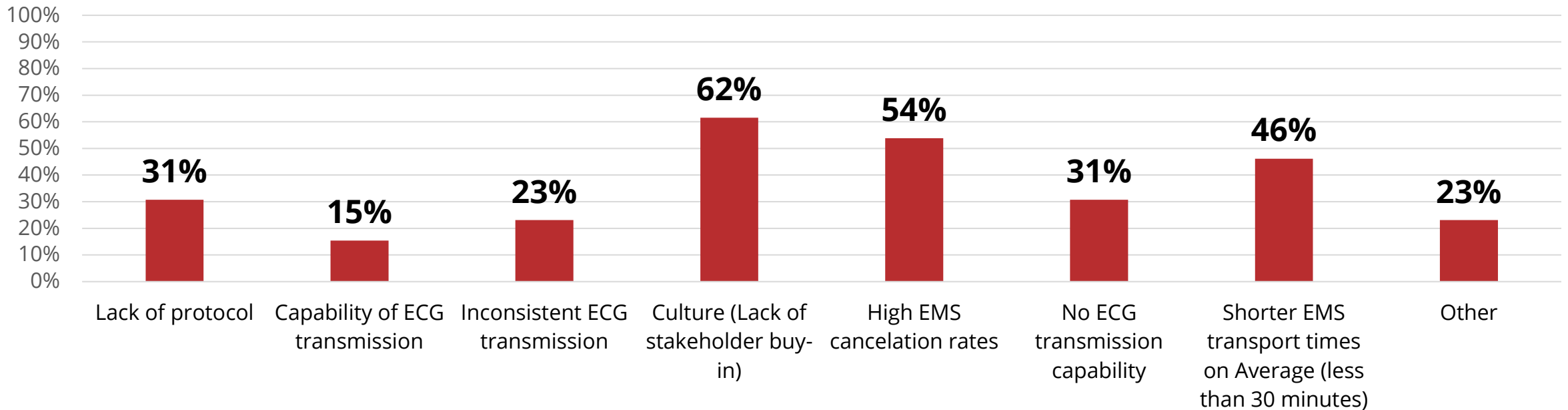
HOW FREQUENTLY DO YOU PERFORM ED BYPASS DURING OFF HOURS (NIGHTS, WEEKENDS, HOLIDAYS)?



Survey Results

N=14 Responses

WHAT ARE YOUR BARRIERS TO PERFORMING MORE BYPASS?



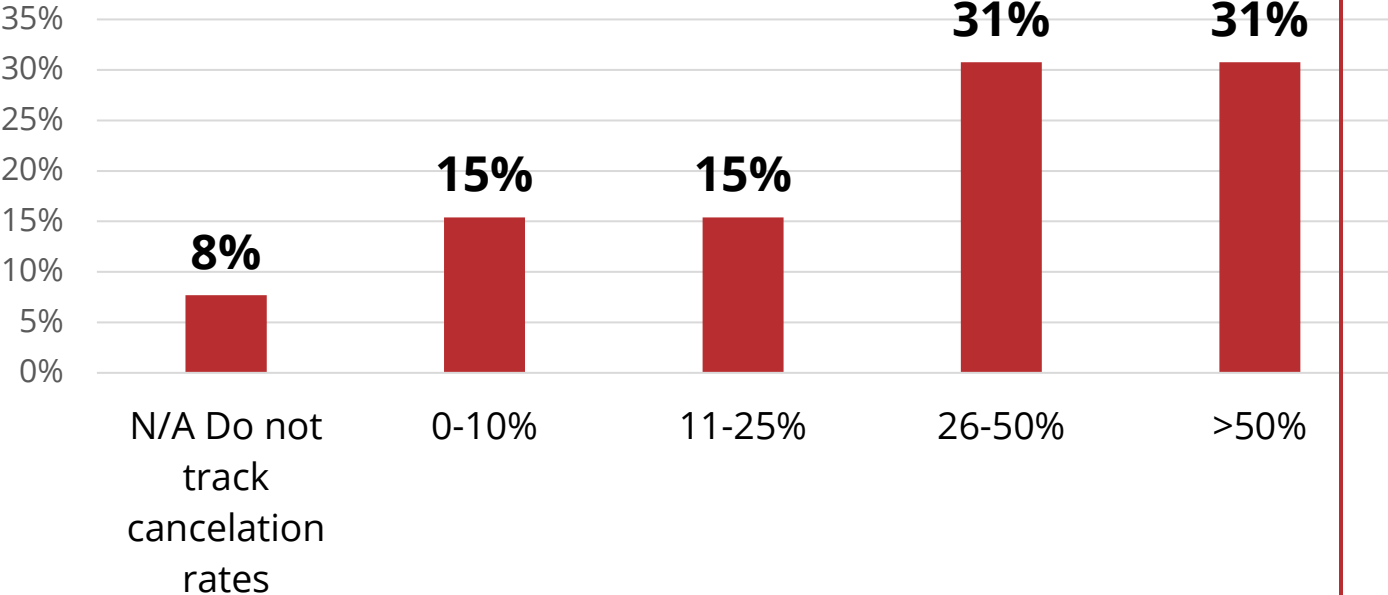
Other:

- Patients are assessed/registered in ED prior to cath lab transport.
- Presents registration issues, getting the patient into the system so that the cath lab can enter orders.
- ED Bypass is only used for Transferred patients.

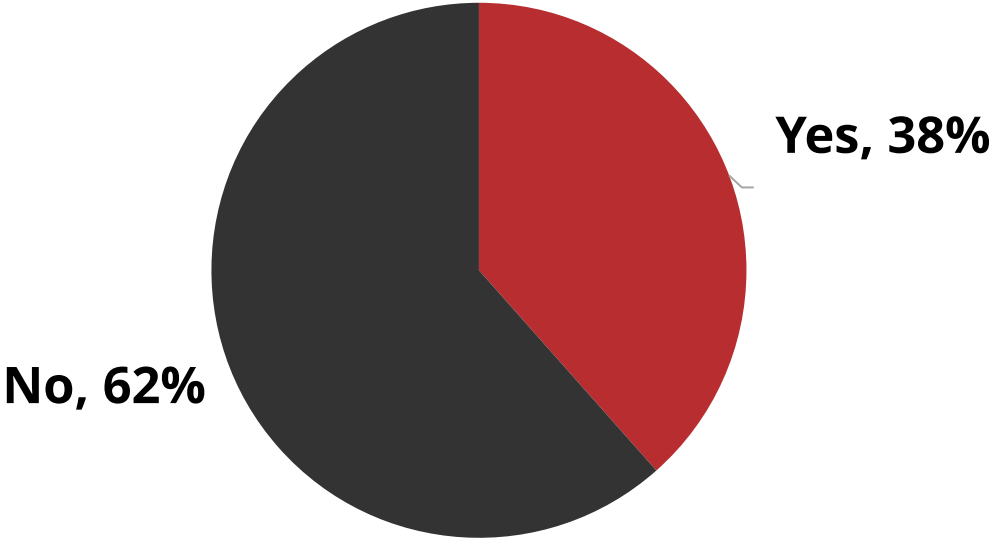
Survey Results

N=14 Responses

WHAT'S YOUR ANNUAL EMS STEMI ALERT CANCELLATION RATE?



DO YOU HAVE A CURRENT ED BYPASS PROTOCOL?



Result Summary

- **Responses returned:** 50% of those surveyed participated (N=14/27 facilities)
- **Considerable variances in STEMI Activation protocols across the state/region:**
 - Single-Tier Activations vs. Two-Tier Activations
 - Pre-Alert STEMI vs. STEMI Activation
 - Inconsistent Pre-Arrival ECG Transmissions
 - Variations in who can activate the STEMI Team
 - Lack of standardized protocols
 - Lack of standardized ECG education for EMS providers

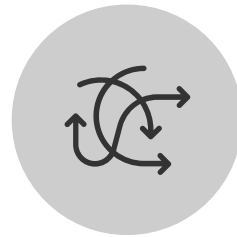
Barriers to Success



**INCONSISTENT
PRACTICES**



**TERMINOLOGY
CONFUSION**



**COORDINATION
CHALLENGES**



**RESOURCE
LIMITATIONS**



**HIGH LEVELS OF
INAPPROPRIATE
CATH LAB
ACTIVATIONS**

Vision



Standardize Protocols: Establish standardized STEMI Protocols and activation criteria.



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.



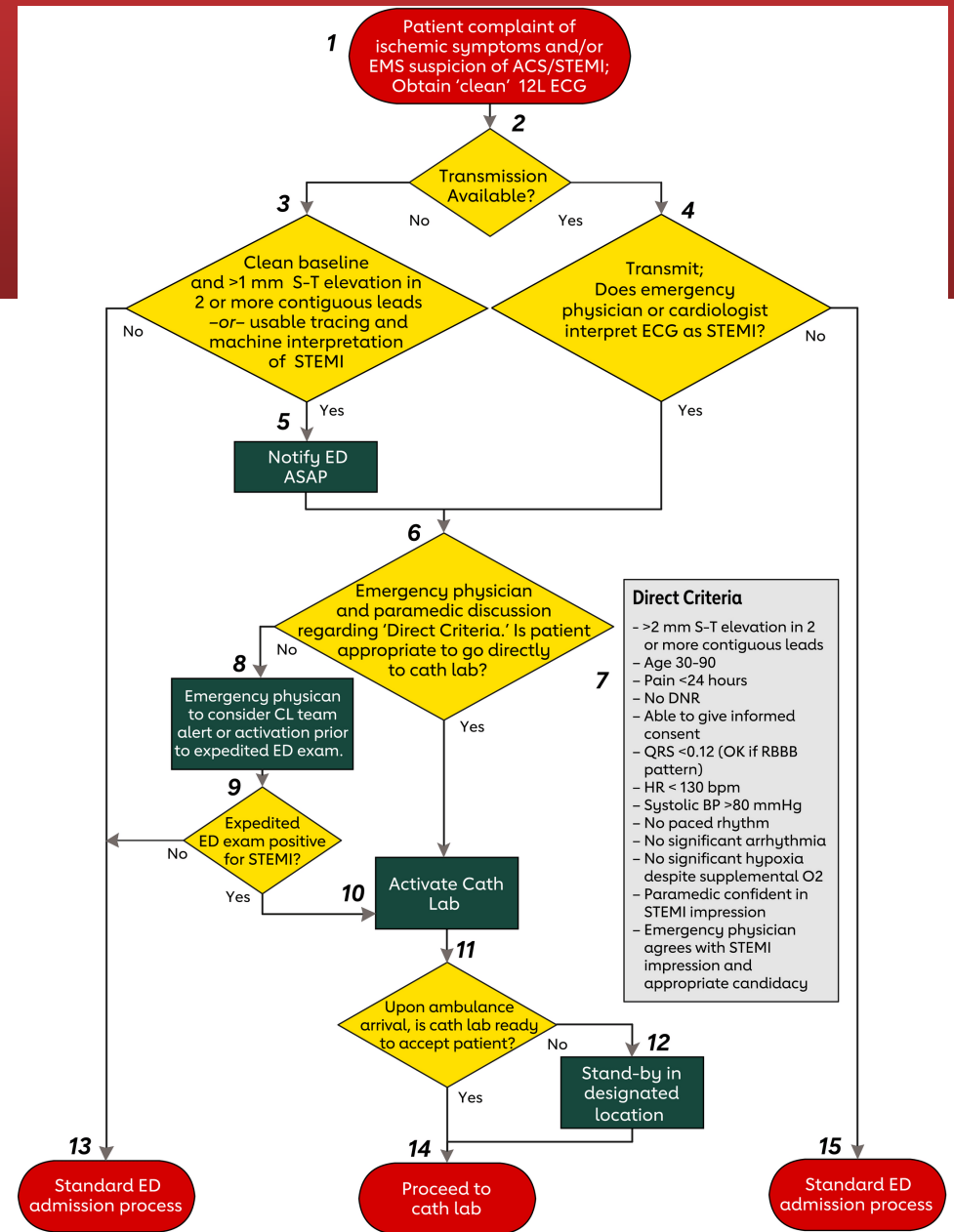
Standardize Terminology & Data Monitoring: Set up systems for ongoing data monitoring and analysis of ED Bypass and False Activation incidents.



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

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



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 Infarction (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>



Next Steps



Continue workgroup meetings



Provide recommendations to the state



Consider pilot program



Continue monitoring and review data



Develop a unified STEMI Protocol for Virginia Hospitals

Goal: Unified Protocol for the State



**OPTIMIZE
RESOURCE USE**



**IMPROVE
COMMUNICATION**



**STANDARDIZE
PRACTICES**



**IMPROVE TIME-
SENSITIVE CARDIAC
CARE**



**REDUCE
DELAYS**



**BETTER PATIENT
OUTCOMES**

Thank You

Expression of gratitude to team members, partners, and stakeholders

- Contact information for further inquiries (Insert QR code)



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 Infarction (STEMI): A standardized approach to prehospital activation and direct to catheterization laboratory for STEMI recommendations from the American Heart Association's Mission: Lifeline Program. *Journal of American Heart Association*, 9 (2).
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