#### Lehigh Valley Health Network

#### LVHN Scholarly Works

**USF-LVHN SELECT** 

#### Improving Emergency Physician Availability for Trauma Cases in a **Pod-Based System**

Hernando Castillo MS Lehigh Valley Health Network, hernando.castillo@lvhn.org

Richard S. MacKenzie MD Lehigh Valley Health Network, Richard.MacKenzie@lvhn.org

Follow this and additional works at: https://scholarlyworks.lvhn.org/select-program



Part of the Medical Education Commons

#### Let us know how access to this document benefits you

#### Published In/Presented At

Castillo, H. & MacKenzie, R. (2020). Improving emergency physician availability for trauma cases in a podbased system. Poster presented at Lehigh Valley Health Network, Allentown, PA.

This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact LibraryServices@lvhn.org.

# Improving Emergency Physician Availability for Trauma Cases in a Pod-Based System

Hernando Castillo MSc; Richard S. MacKenzie, MD, MBOE

Lehigh Valley Health Network, Allentown, Pennsylvania

### Background

- The role of the EM physician in trauma care varies across the nation and is determined by factors such as: geographic area, available resources, and the regulatory guidelines.<sup>1</sup>
- Due to a robust trauma system in place in our facility, there previously was no defined role for an EM physician within our clinical practice guidelines.
- In 2018, the Pennsylvania Trauma Systems Foundation (PTSF) notified LVHN-CC that it required an EM physician in all Level 1 alerts.
- Per PTSF guidelines, "When the trauma surgeon is not immediately available, the attending physician assumes control until the attending trauma surgeon arrives" as well as "An Emergency Medicine physician must respond to the highest level of trauma alert.".<sup>2</sup>
- A 2007 study found no statistically significant difference between traumas led by trauma surgeons vs EM physicians when looking at ED length of stay and patient survival.<sup>3</sup>

### Problem Statement

The aim of this project was to trend the rates of Emergency Medicine physicians attending Level 1 alerts while collaborating with the ED/Trauma Liaison Committee to identify and address system barriers.

### Methods

- A multi-disciplinary team composed of physicians, trauma coordinators, and other critical departments was formed. (ED/Trauma Liaison Committee)
- Trauma Activation Clinical Practice Guidelines were updated to establish a role for the EM physician.
- EM Physician response to Level 1 alerts was determined via EPIC use of the .EDTRAUMA1 dot phrase and nursing documentation.
- Real-time feedback helped identify barriers which could be addressed to increase compliance.
- Feedback was discussed at monthly committee meetings in order to rapidly make changes.
- This allowed for multiple Plan-Do-Study-Act (PDSA) cycles within the data collection period.
- Compliance rates were analyzed starting in July 2019 and analysis was completed in December 2019.

### Results

June 1 Staffing concerns due to new responsibility for EM Physicians not all aware of change to trauma response and its importance 2 Physicians unsure who is supposed to respond to Level 1 alert, alerts not being covered rannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in Physicians undersignated as primary Level 1 alert responder New pager assigned to physicians to be notified of Level 1 alerts feedback tool created which notifies physicians of alerts that occurred during their shift and their response	Staffing concerns due to new responsibility for EM Physicians not all aware of change to trauma response and its importance   Physicians unsure who is supposed to respond to Level 1 alert, alerts not being covered trannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in						
June 1 Staffing concerns due to new responsibility for EM Physicians during peak trauma times (late evening/early morning)  Physicians not all aware of change to trauma response and its importance  August 3 Physicians unsure who is supposed to respond to Level 1 alert, alerts not being covered responder New pager assigned to patient rooms, physicians unaware a Level 1 alert is coming in  Physicians unaware a Level 1 alert is coming in  Physicians unaware if they miss an alert due to not hearing overhead message  Added a new shift for providers during peak trauma times (late evening/early morning)  52.4% N/A  Physicians unsure who is supposed to respond designated as primary Level 1 alert responder  New pager assigned to POD 4 physicians to be notified of Level 1 Alerts Feedback tool created which notifies physicians of alerts that occurred during their shift and their response	June 1 Staffing concerns due to new responsibility for EM Physicians serving peak trauma times (late evening/early morning)  Physicians not all aware of change to trauma response and its importance Administration by ED Administration  August 3 to level 1 alert, alerts not being covered responder to heard in patient rooms, physicians unaware a Level 1 overhead alert cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in Physicians to be notified of Level 1 alert set 1 alert even to the heard in patient rooms, physicians unaware a Level 1 alert is coming in Physicians to be notified of Level 1 alerts feedback tool created which not hearing overhead message  November 5 Providers uncertain as to who is scheduled for alert coverage during their shift and their response ED Physician response ED Physician response ED Physician Physician of a lert coverage schedule for alert coverage during their shift and their response ED Physician Physician of a lert coverage schedule for alert coverage during their shift and their response ED Physician Physician of a lert coverage schedule for alert coverage during their shift and their response ED Physician Physician of a lert coverage schedule for alert coverage during their shift and their response ED Physician Physician of a lert coverage schedule for alert coverag	Month		Barrier	Intervention	Compliance	
August 3 Physicians unsure who is supposed to respond to Level 1 alert, alerts not being covered cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in  October 5 Physicians unaware if they miss an alert due to not hearing overhead message  October 5 Physicians unaware if they miss an alert due to not hearing overhead message  of change to trauma communication by ED Administration  POD 4 Physician designated as primary Level 1 alert responder  New pager assigned to POD 4 physicians to be notified of Level 1 Alerts  Feedback tool created which notifies physicians of alerts that occurred during their shift and their response	August 3 Physicians unsure who is supposed to response and its importance POD 4 Physician designated as primary Level 1 overhead alert cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming overhead message Physicians of alerts that to not hearing overhead message Physicians of alerts that occurred during their shift and their response ED Physician so alert to who is scheduled for alert coverage during shift and their responsible for alert coverage during shift and incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time physicians are created to incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time physicians are contacted contacted which notifies physician of an incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time physicians are contacted contacted contacted to the physicians of alert share occurred alert coverage and ensure used 100% of the time physicians are created to standardize alert process and ensure used 100% of the time physicians are contacted contacted contacted to the physicians are contacted contacted contacted to the physicians are physicians are physicians are physicians are physicians are physicians are	June	-	to new responsibility	shift for providers during peak trauma times (late evening/early	52.4%	
August  3 Physicians unsure who is supposed to respond to Level 1 alert, alerts not being covered  Level 1 overhead alert cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in  October  5 Physicians unsure who is supposed to respond designated as primary Level 1 alert responder  New pager assigned to POD 4 physicians to be notified of Level 1 Alerts  Feedback tool created which notifies physicians of alerts that occurred during their shift and their response  Physicians unaware if they miss an alert due to not hearing overhead message  Physicians unsure who is supposed to respond designated as primary Level 1 alert as primary Level 1 alert responder  New pager assigned to POD 4 physicians to be notified of Level 1 Alerts  Feedback tool created which notifies physicians of alerts that occurred during their shift and their response	August 3 Evel 1 alert, alerts not being covered to Level 1 overhead alert cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in Physicians to be notified of Level 1 alert due to not hearing overhead message  October 5 Physicians unaware if they miss an alert due to not hearing overhead message  Providers uncertain as to who is scheduled for alert coverage during shift Pob Dagram created to standardize and incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time used 100% of the time physicians are contacted  PHYSICIANS AT LEVEL 1 ALERTS  Physician unaware if they miss an alert due to not hearing overhead message  Providers uncertain as to who is scheduled for alert coverage during schedule posted in POD 4  New Trauma Flow Diagram created to standardize alert process and ensure contacted  I E H I G H V A L L E Y H E A L T H N E T W O R K  EM PHYSICIANS AT LEVEL 1 ALERTS	July	2	of change to trauma response and its	communication by ED	54.2%	1.8%
Cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in  October  5  Cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in  Physicians unaware if they miss an alert due to not hearing overhead message  Cannot be heard in patient rooms, physicians to be notified of Level 1 Alerts  Feedback tool created which notifies physicians of alerts that occurred during their shift and their response	Cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming in  October 5 Physicians unaware if they miss an alert due to not hearing overhead message  Providers uncertain as to who is scheduled for alert coverage during shift  December 7 PoD 4 physicians to be notified of Level 1 Alerts  Physicians unaware if they miss an alert due to not hearing overhead message  Providers uncertain as to who is scheduled for alert coverage during shift  System to notify EM physician of an incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time physicians are contacted  Figure 1 shows the individual PDCA cycles instituted during the project  EM PHYSICIANS AT LEVEL 1 ALERTS	August	3	is supposed to respond to Level 1 alert, alerts	Physician designated as primary Level 1 alert	62.0%	7.8%
October  5  Physicians unaware if they miss an alert due to not hearing overhead message overhead message  Created which notifies physicians of alerts that occurred during their shift and their response	Physicians unaware if they miss an alert due to not hearing overhead message  Providers uncertain as to who is scheduled for alert coverage during shift  System to notify EM physician of an incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time used 100% of the time physicians are contacted  EMPHYSICIANS AT LEVEL 1 ALERTS  Created which notifies physicians of alerts that occurred during their shift and their response ED Physician responsible for alert coverage schedule posted in POD  4  New Trauma Flow Diagram created to standardize alert process and ensure physicians are contacted  EMPHYSICIANS AT LEVEL 1 ALERTS	September	4	cannot be heard in patient rooms, physicians unaware a Level 1 alert is coming	New pager assigned to POD 4 physicians to be notified of	82.0%	20.0%
	November 6  Providers uncertain as to who is scheduled for alert coverage during shift  System to notify EM physician of an incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time physicians are contacted  Figure 1 shows the individual PDCA cycles instituted during the project  LEHIGH VALLEY HEALTH NETWORK  EMPHYSICIANS AT LEVEL 1 ALERTS  100.0%	October	5	they miss an alert due to not hearing	created which notifies physicians of alerts that occurred during their shift and their	90.0%	8.0%
November  6 Providers uncertain as to who is scheduled for alert coverage schedule shift posted in POD  82.0% -8.0%	System to notify EM physician of an incoming Alert (Overhead alert, page, ASCOM call) not being used 100% of the time physicians are contacted  Figure 1 shows the individual PDCA cycles instituted during the project  LEHIGH VALLEY HEALTH NETWORK  EMPHYSICIANS AT LEVEL 1 ALERTS  100.0% 90.0%	November	6	to who is scheduled for alert coverage during	ED Physician responsible for alert coverage schedule posted in POD	82.0%	-8.0%
System to notify EM Flow Diagram physician of an created to incoming Alert standardize (Overhead alert, page, alert process ASCOM call) not being and ensure used 100% of the time physicians are	EMPHYSICIANS AT LEVEL 1 ALERTS  100.0% 90.0%	December	7	physician of an incoming Alert (Overhead alert, page, ASCOM call) not being	Flow Diagram created to standardize alert process and ensure physicians are	82.4%	0.4%
70.0% 75.0% 76.5% 76.5% 76.5%		50.0% 40.0%	50	0.0%			
62.0% 73.0% 70.3% 70.3% 50.0% 50.0% 50.0%	50.0% 40.0% 43.0% 30.0% 20.0%	20.0%					

Trauma Flow

Trauma RN calls ED physician

ASCOM (follows schedule in Trauma Bay) A note must be written on all patients even if no

are provided. Use .EDTRAUMA1 in course section

trauma template for your note.

Pod 4 ASCOM 2114

Assigned ED physician responsible

to respond to Trauma

12.4.19 Page 1

NO► for calling alternative ED physician

Pod 3 "extra" ASCOM 2092

AP sends page to activate alert

ED Attending of incoming level 1 trauma.

1. Pod 4 ASCOM # 2114

Figure 3 is the new trauma alert system in place

ED physician stays in Trauma bay until:

1. Arrival of Trauma team

2. services no longer needed

2. ED Physician writes ED note on ALL level 1

.1 Use .EDTRAUMA1 for chart

AP overheads trauma Alert in ED: "Adult/Peds Level 1 trauma alert ETA

2. Pod 3 "extra physician" when present 4pm-1am ASCOM # 2092

3. AP calls appropriate ED Attending ASCOM (Schedule located at AP desk ) to alert

### Discussion

- Using repetitive PDSA cycles, the ED/Trauma Liaison Committee was able to rapidly address barriers and create interventions to increase compliance.
  - It is important to note there are other factors which could have also affected the changes in compliance rates each cycle.
- A multi-disciplinary team composed of physicians, administration personnel, and team coordinators allowed for both lateral and top-down leadership.
- The Committee is still monitoring data and implementing changes presently. Current changes include:
  - A checklist to standardize the notification process. This includes steps to ensure the physician is aware and to make sure if they are unavailable a secondary physician is contacted to cover the alert.
- The PTSF does not have a minimum compliance level which LVHN-CC must achieve; therefore efforts are to reach 100% compliance.
- It is important to achieve maximum compliance before the next PTSF review as well as before the move into the new Emergency Department.
  - The current timeline for transition is in December 2020.
     Maximizing compliance before this would help avoid a possible set back as this transition will increase the number of changes providers and staff have to deal with.

## Conclusions

- This project's aim to trend the compliance rates and the efforts of the ED/Trauma Liaison team to increase those rates has shown that while more work is still necessary, the interventions implemented thus far have led to a net increase.
- As there is no direct minimum compliance rate given by the PTSF it is critical for the hospital system to achieve the highest possible compliance rate in order to assure accreditation in the coming review cycle.
- While compliance rates have fluctuated up and down, there has not been a decrease under 80% since that rate was surpassed earlier in the year.
- Further efforts into identifying why physicians are missing alerts they are responsible for will continue to identify barriers which require intervention.

#### REFERENCES

- 1. Grossman MD. The role of emergency medicine physicians in trauma care in North America: evolution of a specialty. Scand J Trauma Resusc Emerg Med. 2009;17:37.
- 2. "Standards of Accreditation Adult Levels I-III." *PA Trauma Systems Foundation PA Trauma Adult*, Graphcom, 1 Apr. 2019, digital.graphcompubs.com/publication/?i=267432&pp=1#{"issue\_id":"267432","numpag es":"1","page":37}.
- 3. Cummings GE, Mayes DC. A comparative study of designated Trauma Team Leaders on trauma patient survival and emergency department length-of-stay. CJEM. 2007;9(2):105-10.

© 2018 Lehigh Valley Health Network





