



Northern Virginia EMS Council
Trauma and Performance Improvement Committee
Meeting held virtually via Zoom
September 13, 2023 Meeting Minutes

Those present were (All attendees were present via Zoom):

Alfred Pacifico	alfred.pacifico@loudoun.gov
Andrew Sanders	asanders@pwcgov.org
Babak Sarani	bsarani@mfa.gwu.edu
Billy Barton	wbarton@manassasva.gov
Brian Orndoff	borndoff@gmail.com
Bruce Ruggeri	bruggeri@phiairmedical.com
Chris Cook	chris.cook@nvers.org
Cindy Parise	cjparise@sentara.com
Dynette Rombough	dxrombou@sentara.com
Elizabeth Franco MD	elizabeth.franco@inova.org
Erin Mustian	erin.mustian@alexandriava.gov
James Cooper	jamie.cooper@loudoun.gov
John Morgan	john.morgan@loudoun.gov
Jordan Tyczka	jordan.tyczka@inova.org
Justin Nelson	jnelson@vhchealth.org
Kate Kramer	kkramer@arlingtonva.us
Laura Vandegrift	laura@vaems.org
Leddyanne Dell	leddyanne.dell@alexandriava.gov
Melinda Myers	melinda.myers@inova.org
Michelle Ludeman	Michelle@vaems.org
Nathan Kee	nathan.kee@inova.org
Ray Whatley	ray@vaems.org
Reed Smith	rsmith@arlingtonva.us
Stephanie Boese	stephanie.boese@gwu-hospital.com
Steve Kling	steven.kling@inova.org
Steven Nakao	sxnakao@sentara.com
William Earley	wearle@arlingtonva.us

Dr. Elizabeth Franco called the Trauma and Performance Improvement Committee meeting to order at 9:04 am.

Approval of the Minutes

Minutes from the June 14, 2023, meeting were sent via email before the meeting for review.

- Motion to approve the minutes as written by Brian Orndoff
 - Seconded by Kate Kramer
 - ***The Motion was unanimously approved***

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Trauma Topic – Tourniquet Use

Data review January 1, 2022 – December 30, 2022

Put in metrics here

- Hospitals
 - Dr. Elizabeth Franco presented the data for Inova Fairfax. A copy of the presentation is at the end of the minutes
 - Dr. Babak Sarani presented the data for GWU Hospital. A copy of the presentation is at the end of the minutes
 - Michelle Ludeman presented the data for Reston Hospital on their behalf as they were unable to attend. A copy of the presentation is at the end of the minutes
 - Sentara
 - 4 patients from PWC EMS
 - Gender
 - Male- 2
 - Female- 2
 - Age range 21-83
 - Mechanism of injury
 - Dialysis fistulas- 2
 - Unintentional cutting- 1
 - Multiple GSWs- 1
 - Tourniquet placed by
 - EMS- 3
 - Police- 1
 - Location of tourniquet
 - Upper extremity- 4
 - Tourniquet removed by
 - ED- 3
 - Deceased- 1
 - Vascular injury
 - Yes- 1
 - No- 3
 - Trauma Activations
 - Both traumas were alerted
 - Outcome
 - Survived 75%
 - Alive- 3
 - Deceased- 1
 - Discharged to
 - Hospital to home- 2

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- ED to home- 1
- Deceased- 1
- Jordan Tyczka from Inova Loudoun Hospital presented their data. A copy of the presentation is at the end of the minutes
 - Dr. Morgan from Loudoun County Fire & Rescue asked whether the tourniquet that was used on the fistula should have been an activation because it was run as an activation but wasn't alerted that way and the patient ultimately received the mass transfusion protocol
 - Jordan stated that if there is a tourniquet in place at all, it should be an activation
 - Dr. Sarani said he is interested to know about the use of tourniquets as seen by the trauma center on arrival by year over the last 5-7 years. Is there an increase in placement?
 - If so, by whom?
 - Are we doing this unnecessarily?
 - Is there a difference between Loudoun vs. DC, for example?
 - Are medics further away more likely to use a tourniquet vs. DC medics who are closer to the hospital?
 - Dr. Sarani is willing to set it up to do a paper for the region to see what that looks like
 - Jordan from Loudoun Hospital said they did a Stop the Bleed night recently and they always get questions about whether it's effective
 - Dr. Franco stated there is a multi-institutional study going on and she'll check on it
 - This would be interesting for our region specifically because we have a lot of data and it would be helpful to see what our area looks like
 - Dr. Sarani advised he will tweak the data set they collect so they'll get IRB and data use approval. This would be a cool paper to produce
- EMS Agencies
 - Brian Orndoff from City of Fairfax Fire Department provided the following data
 - They had 2 total patients
 - Ages 45 and 85
 - The 45-year-old had a chainsaw incident to the upper extremity
 - The 85-year-old patient had a lower extremity injury due to a MVA
 - Bleeding controlled after placement on both
 - The tourniquets appeared to be placed properly as there was no feedback otherwise
 - Most of the incidents they encounter are construction or lacerations historically, not GSWs or violent acts
 - Kate Kramer from Arlington County FD provided the following

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- There were 6 patients based on provider impression but 15 when she searched narratives
 - Ages were 5-98
 - There were six makeshift tourniquets applied by bystanders and six commercial tourniquets applied by PD
 - The need for a tourniquet was due to various injuries
 - The 5-year-old was from a broken window with a phone cord applied by the parent
- Dr. Morgan from Loudoun County Fire & Rescue provided the following:
 - They went from 10 applications to 28 this year
 - 78% were transported to Loudoun, the rest went to Reston
 - Typical mechanisms, nothing out of the ordinary
- Andrew Sanders from Prince William County Fire & Rescue
 - 18 total patients
 - 2 patients were fistula hemorrhages
 - 1 patient was a firework injury
 - The remainder were acts of violence
 - Nine tourniquets were applied prior to arrival of EMS by bystanders
 - Transport destinations
 - 11 to Inova Fairfax
 - 2 to Prince William
 - 2 to Sentara
 - 1 to Union Memorial
 - Dr. Morgan asked about how they were able to transport the firework injury to Union Memorial. We recently had a discussion in another meeting that it was believed that they would only take transfers and not direct admissions from outside their local area.
- Billy Barton from City of Manassas FD stated that when he's worked on helicopter EMS transports, they have been able to assess the patient and call them to provide report so it's similar to a direct admit from PHI. They have called them before in situations where it's an isolated injury and they have been willing to accept them directly because it's isolated.

September Topic Suggestions

- Limb salvage and amputations for the December meeting
 - Dr. Sarani's colleague will do a presentation about GWU Hospitals Surgical Strike Team as he will be at another obligation that day
- 2024 considerations
 - Advancement of TBI assessment and treatment

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- Assessment of “found down”; Is it traumatic? How to do you assess properly? Is it a stroke? Is it TBI?
- New “brain scores” out there for who need a CT, MRI, etc.
- Any new utilities for EMS to investigate
- Loudoun Hospital has a large geriatric population of “found down”. They are often thought of as trauma but they turn out to be stroke. How do make sure we’re catching that?
 - At Inova Fairfax when they activate, they add all the imaging if it is a stroke activation in case any of the tests don’t match the presentation. Is it trauma or stroke? It is often hard to tell.
- Could also add NSTEMI – have patients riding bikes and crash, looks like trauma but is a STEMI
- Agreement was to leave it as **Found Down – TBI vs. Stroke**
 - **Age 50+**
- Consider blood in the field
- Any emerging topics?
 - Exsanguinating hemorrhage – what about non-extremity trauma? Scalp, trunk, chest, pelvis? From MVA or penetrating trauma\surveyor recommended – new study with postpartum
 - Postpartum hemorrhage –
 - Just heard that for 3 months after discharge, new moms wear a bracelet that says “I just had a baby” in case they are found down it could alert responders to consider that
 - What are the numbers of found down for postpartum hemorrhage
 - Are they using TXA? Whole blood?

Include past topics in minutes

The 2023 Regional Trauma/PI meetings are scheduled for

- December 13, 2023

The meeting was adjourned at 10:15 am.

CERTIFICATION OF PERFORMANCE IMPROVEMENT AND TRAUMA MEETING

Northern Virginia EMS Council
7250 Heritage Village Plaza, Ste. 102
Gainesville, VA 20155

Northern Virginia EMS Council
Trauma and Performance Improvement Committee
September 13, 2023, Meeting Minutes

I, Laura Vandegrift, Administrative Coordinator of the Northern Virginia EMS Council, certify that the above minutes are a true and correct transcript of the minutes of the Performance Improvement and Trauma Meeting of the Northern Virginia EMS Council on September 13, 2023. The minutes were officially approved on March 13, 2024, at the meeting of the Committee.



Laura Vandegrift
Northern Virginia EMS Council

03/13/2024

Date



**IFMC Trauma Center
Tourniquet Use
NVEMS Council
September 2023**

*This presentation is a privileged document for PI
under VA Code Ann.8.01-581.17*

January – December 2022 Review:

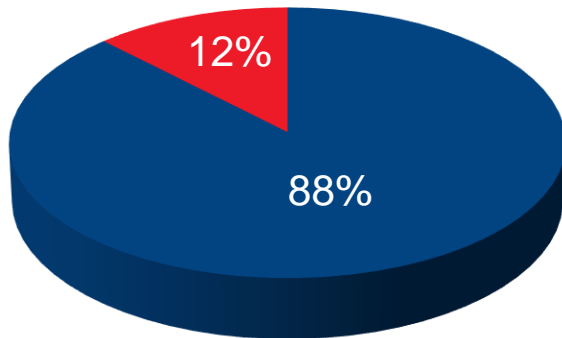
- 80 patients in dataset
- 7 outliers removed from dataset (see below)

Outliers:

- Tourniquets removed by EMS (4)
- Tourniquets removed at OSH (3)

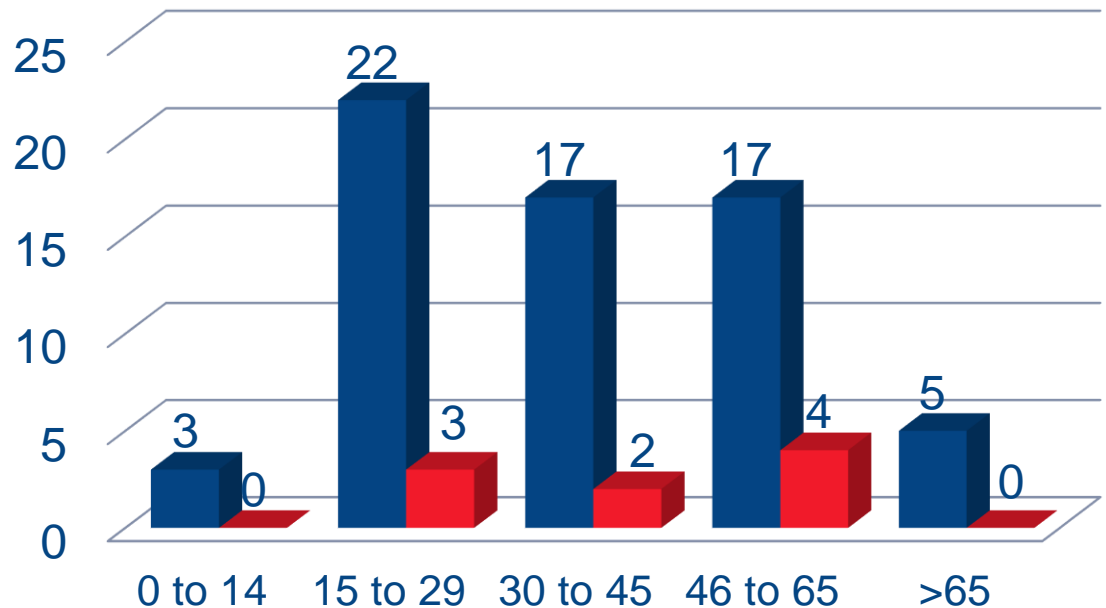
January – December 2022 Tourniquet Review 73 patients

Sex



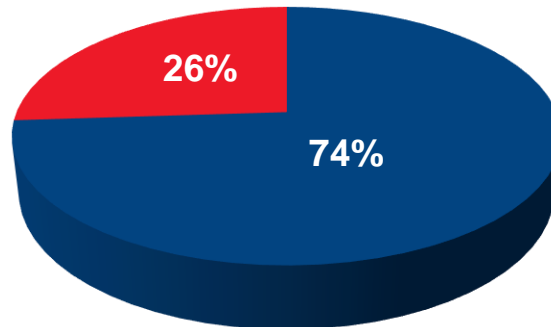
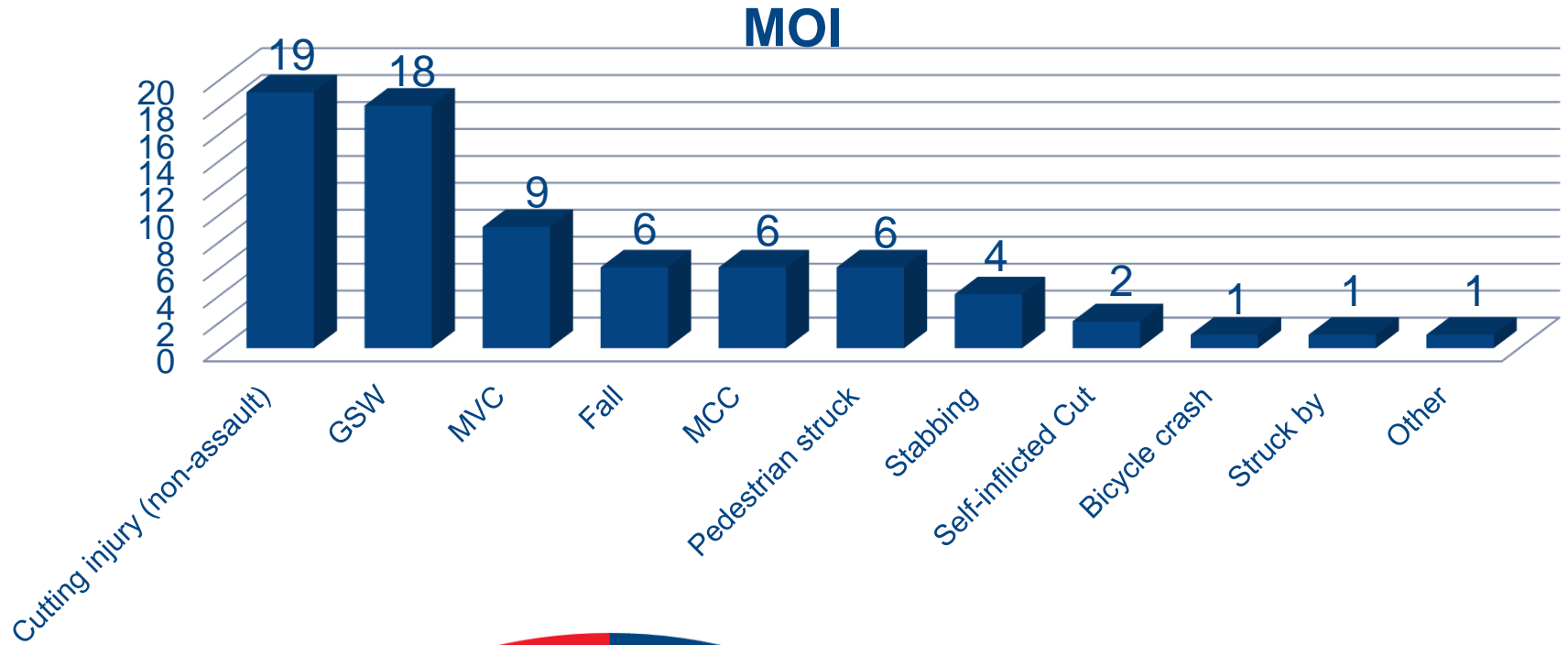
■ Male = 64 ■ Female = 9

Age



■ Male ■ Female

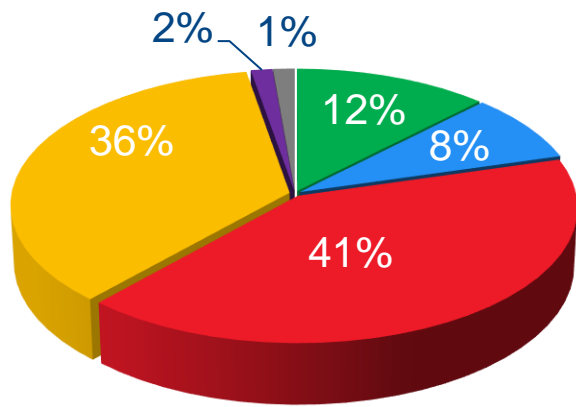
IFMC Trauma Center Tourniquet Data



- Isolated injury = 54
- Multisystem injuries = 19

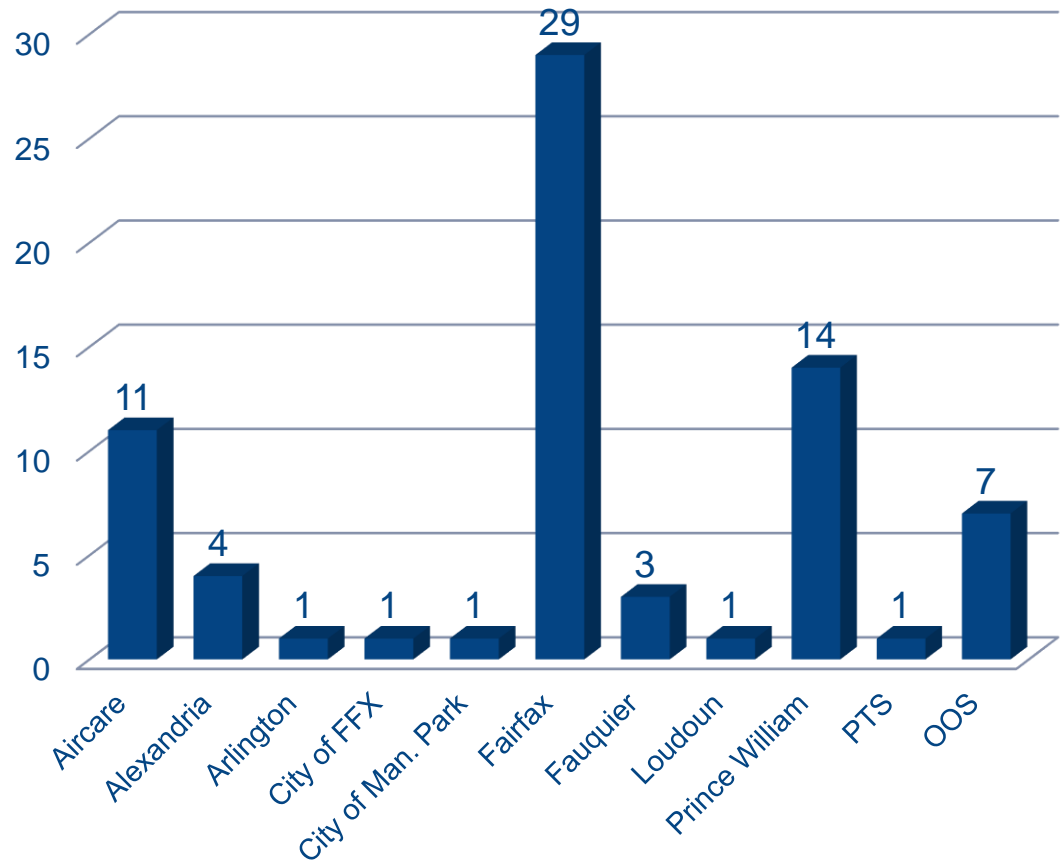
IFMC Trauma Center Tourniquet Data

Tourniquet Placed By



- Bystander = 9
- Self = 6
- Police = 30
- EMS = 26
- OSH = 1
- Unk = 1

Transporting EMS Agencies

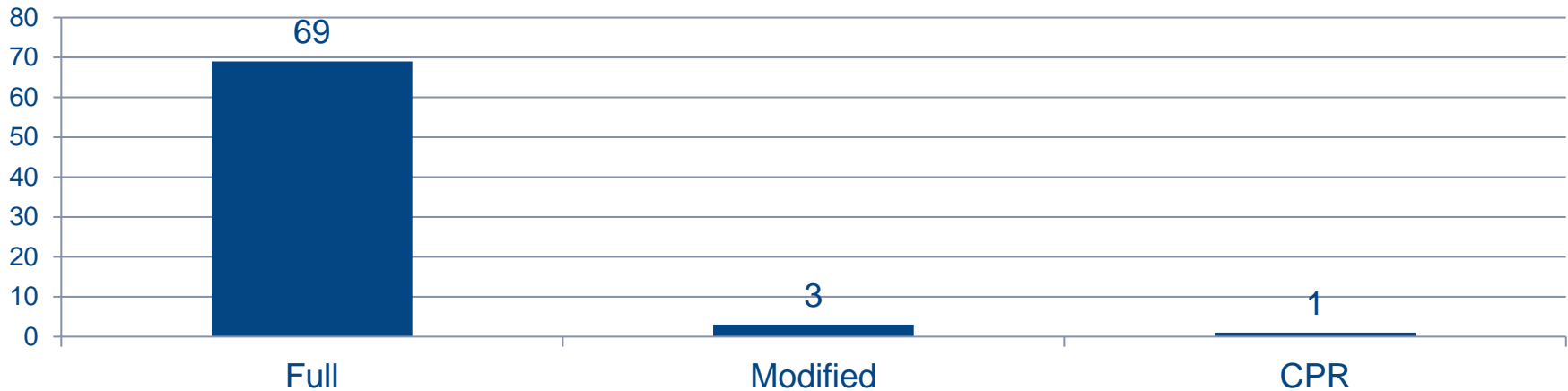


Significant Changes from 2020 Review

- Total # of tourniquets placed = **80** (up from 56)
 - Police placement = **16%** increase (30 up from 13)
 - EMS placement = **13%** decrease (26 down from 27)
 - Bystander/Self placement = **13%** increase (16 up from 4)

IFMC Trauma Center Tourniquet Data

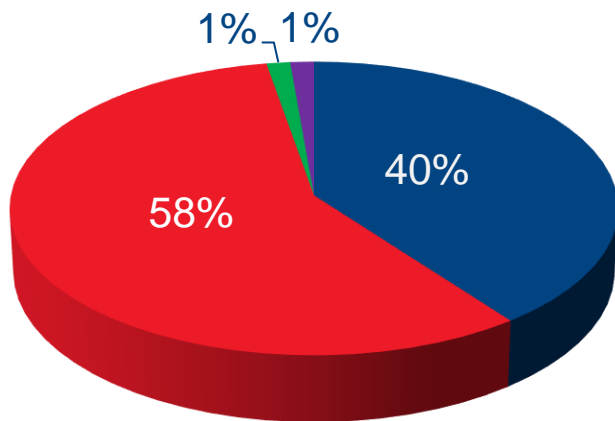
Activation Level



Potential Opportunities for Improvement:

- Modified Activation = 3 patients
 - EMS only reported pressure dressing
 - Comm notes do not mention tourniquet
 - Undertriage case identified

Tourniquet Placement

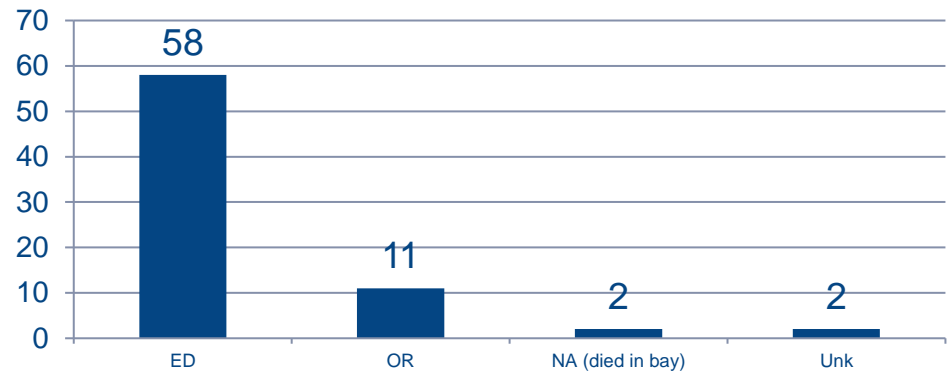


- Upper Extremity = 29
- Lower Extremity = 42
- Bilateral Lower Extremity = 1
- Upper & Lower Extremities = 1

Time Tourniquet on PTA to ED:

- Mean = 41m
- Median = 30m

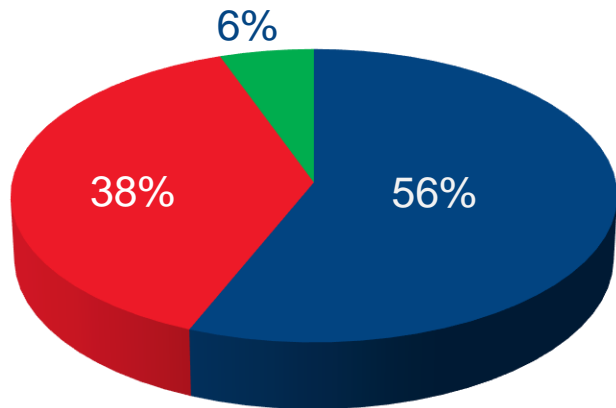
Location Tourniquet Removed



Total Tourniquet Time On:

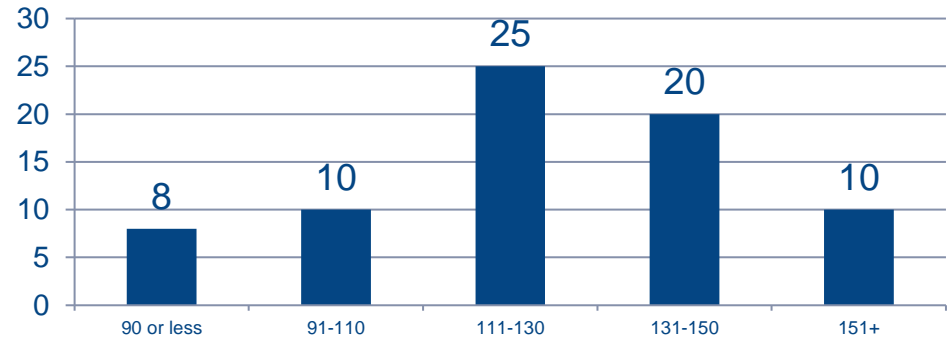
- Mean = 55m
- Median = 50m

Pulse Present with Tourniquet



■ Yes = 41 ■ No = 28 ■ Unknown = 4

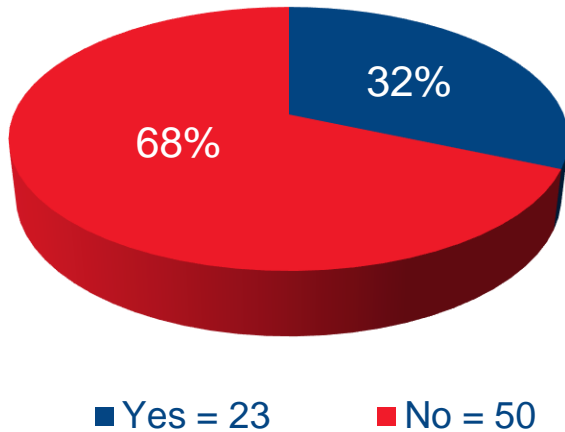
SBP on Arrival



Massive Transfusion Protocol:

- 4 patients required MTP:
 - 2 mangled extremities – required amputations
 - 1 peroneal artery – required IR
 - 1 no vessel injury

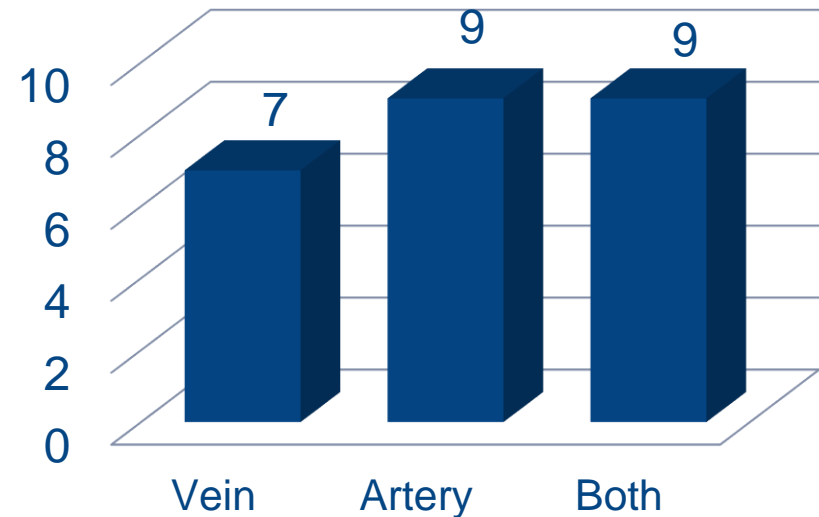
Vascular Injury



Commonly Injured Vessels:

- Radial artery (4)
- Brachial artery (4)
- Femoral vein (2)
- Saphenous vein (2)

Vessel Injury



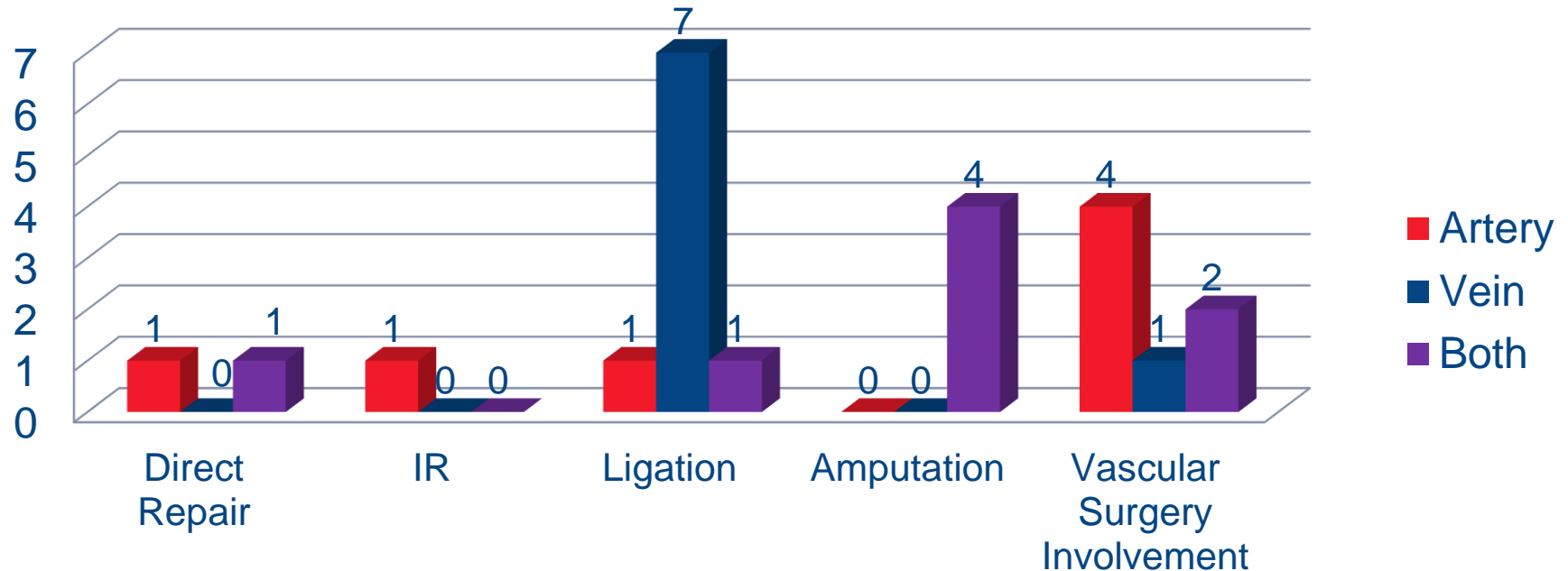
Tourniquet Placed with Vascular Injury

- **46.4%** of patients with EMS placed tourniquet had vascular injury
- **16%** of patients with PD placed tourniquet had vascular injury

Significant Changes from 2020 Review

- Vascular injury found in **18%** less patients (23 down from 28)
 - EMS placement = **7%** less patients had vascular injury (13 down from 15)
 - Police = **38%** less patients had vascular injury (5 down from 7)

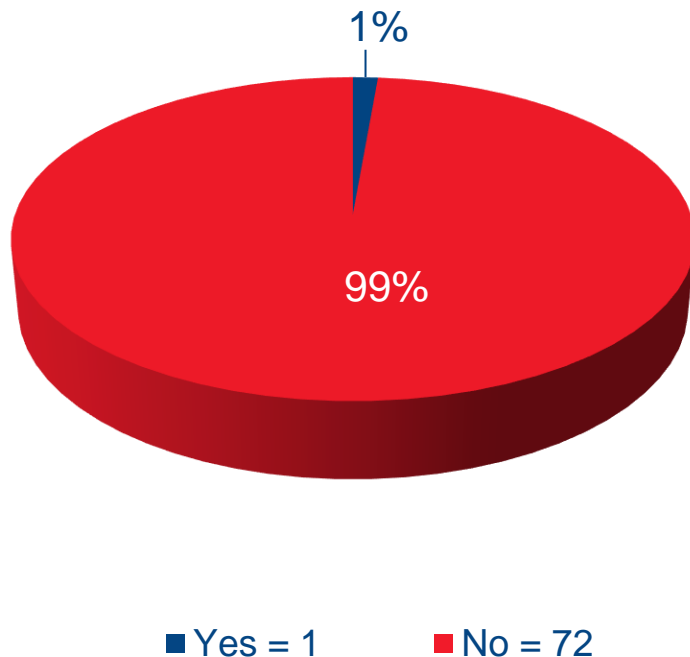
Operative Interventions



Vascular Surgery Procedures:

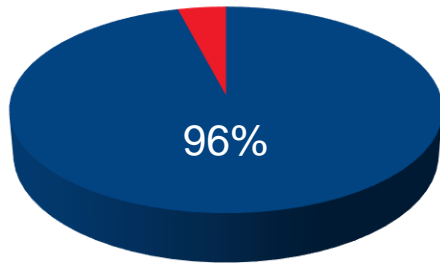
- Bypass brachial artery (2)
- Graft repair of femoral and radial arteries
- Repair with anastomosis popliteal vessels
- Ligation and repair of brachial vessels
- Femoral vein repair

Complication from Tourniquet



- 65F trampled by animal
- Open R tibia fracture
- Tourniquet placed by ground EMS
- Transported from scene via HEMS
- To OR emergently
- Total tourniquet time = 1h 23m
- Developed wound over tourniquet placement site; it became infected and required exploration and abx

Outcome

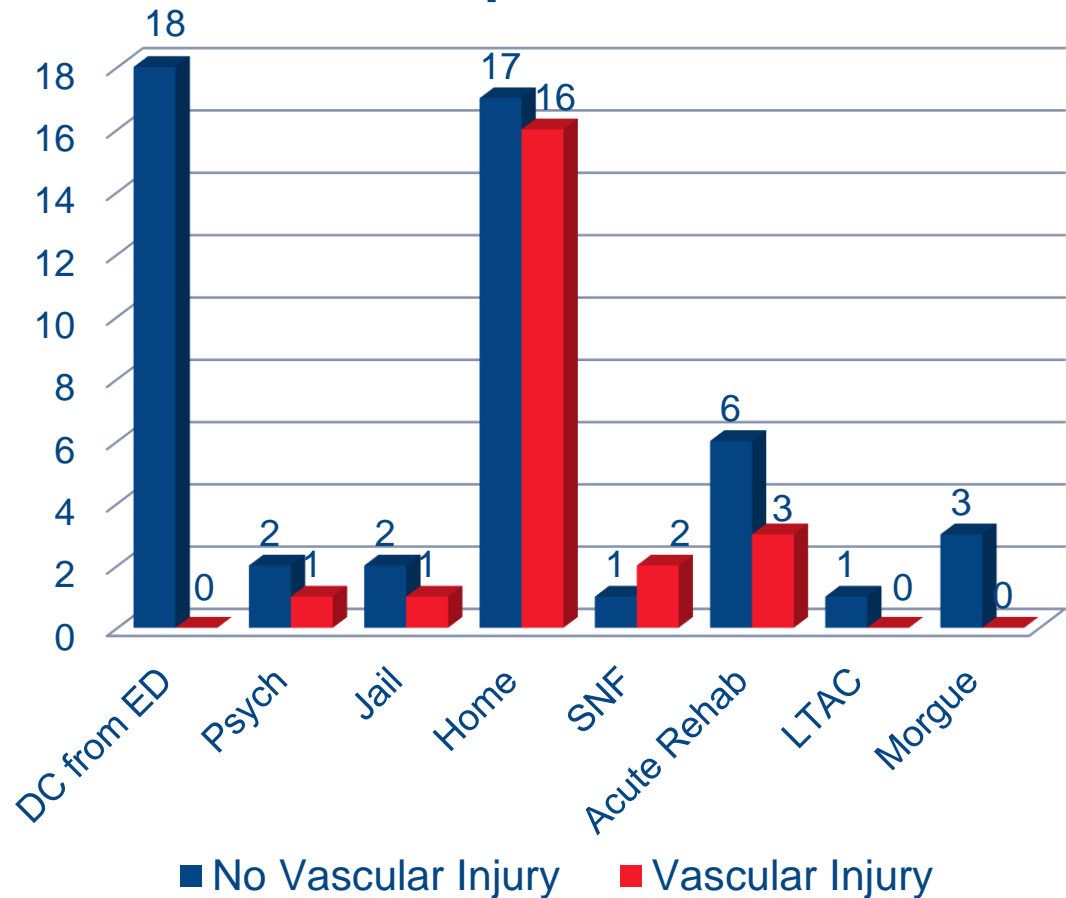


■ Alive = 70 ■ Expired = 3

HLOS:

- Non-Vascular Injury Patients
 - Mean = 6 days
 - Median = 1 day
- Vascular Injury Patients
 - Mean = 8.9 days
 - Median = 7 days

Disposition



Tourniquets

Dates: 01/01/2022-12/31/2022

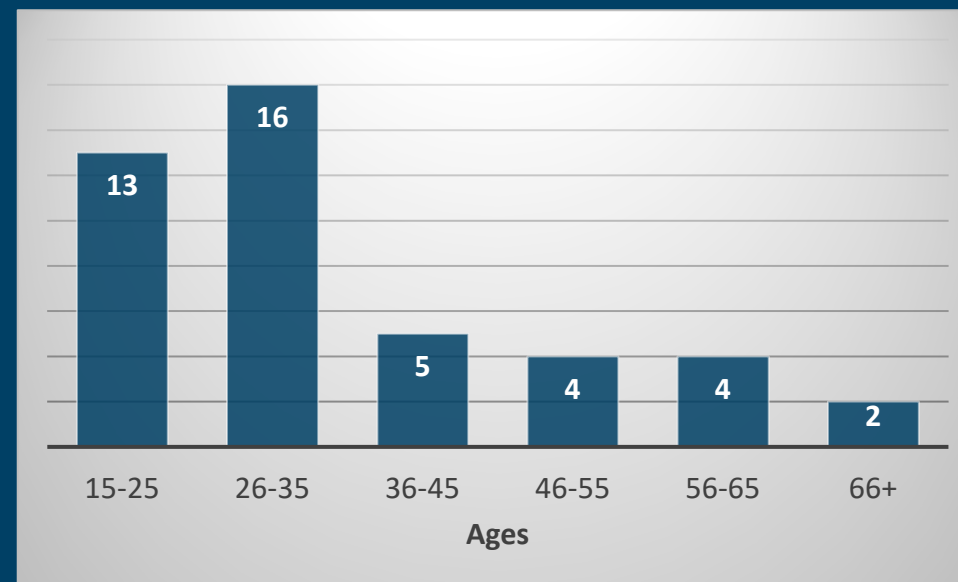
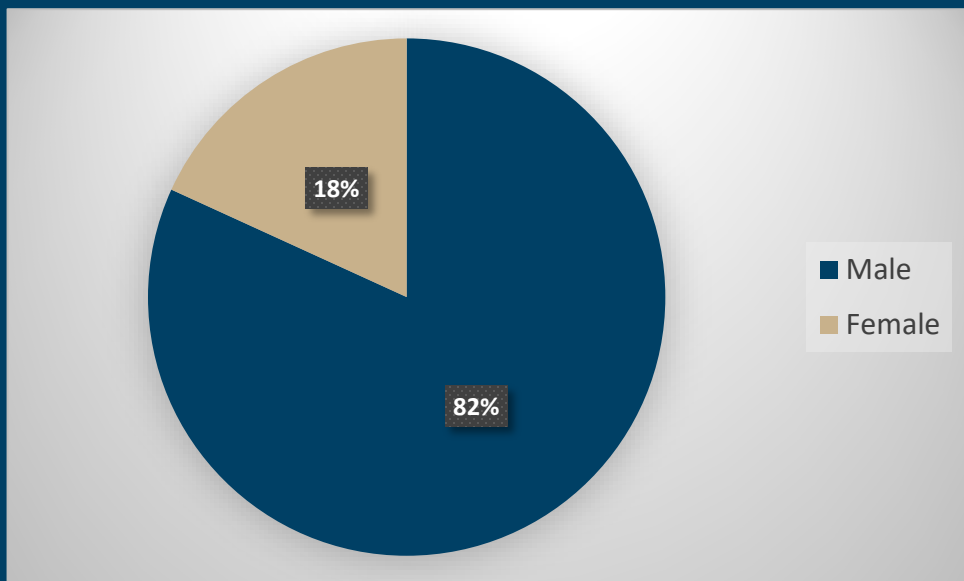


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Total Patients: 44

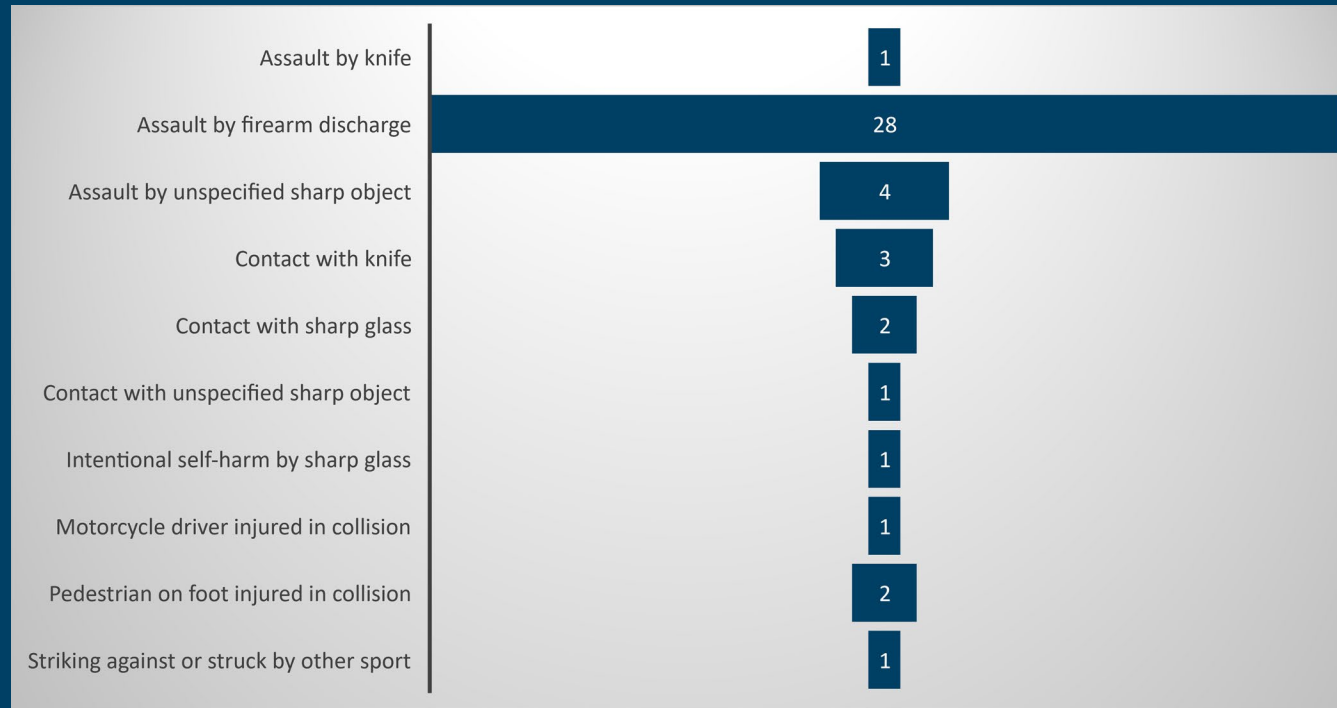
Demographics



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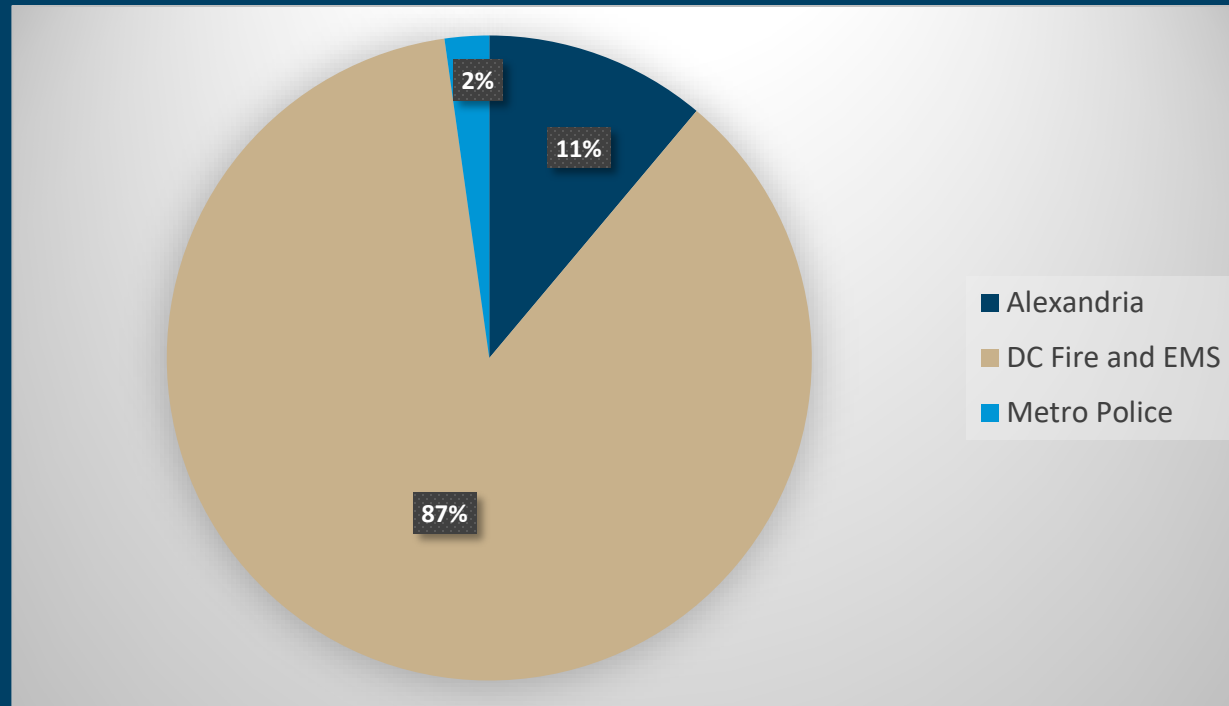
Mechanism of Injury



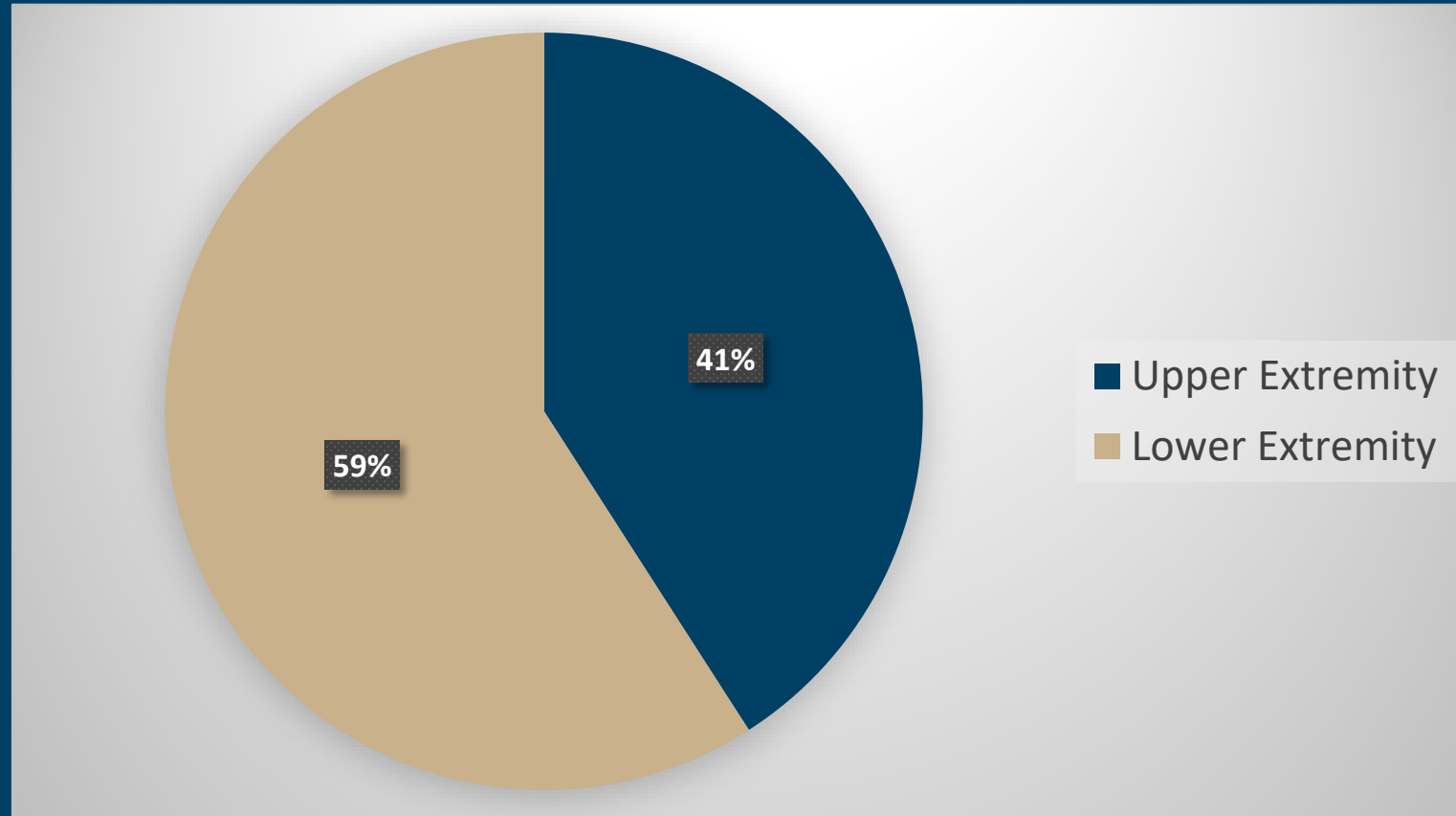
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Tourniquet placed by



Location of Tourniquet Placed



Tourniquet removed by

100% Trauma Provider

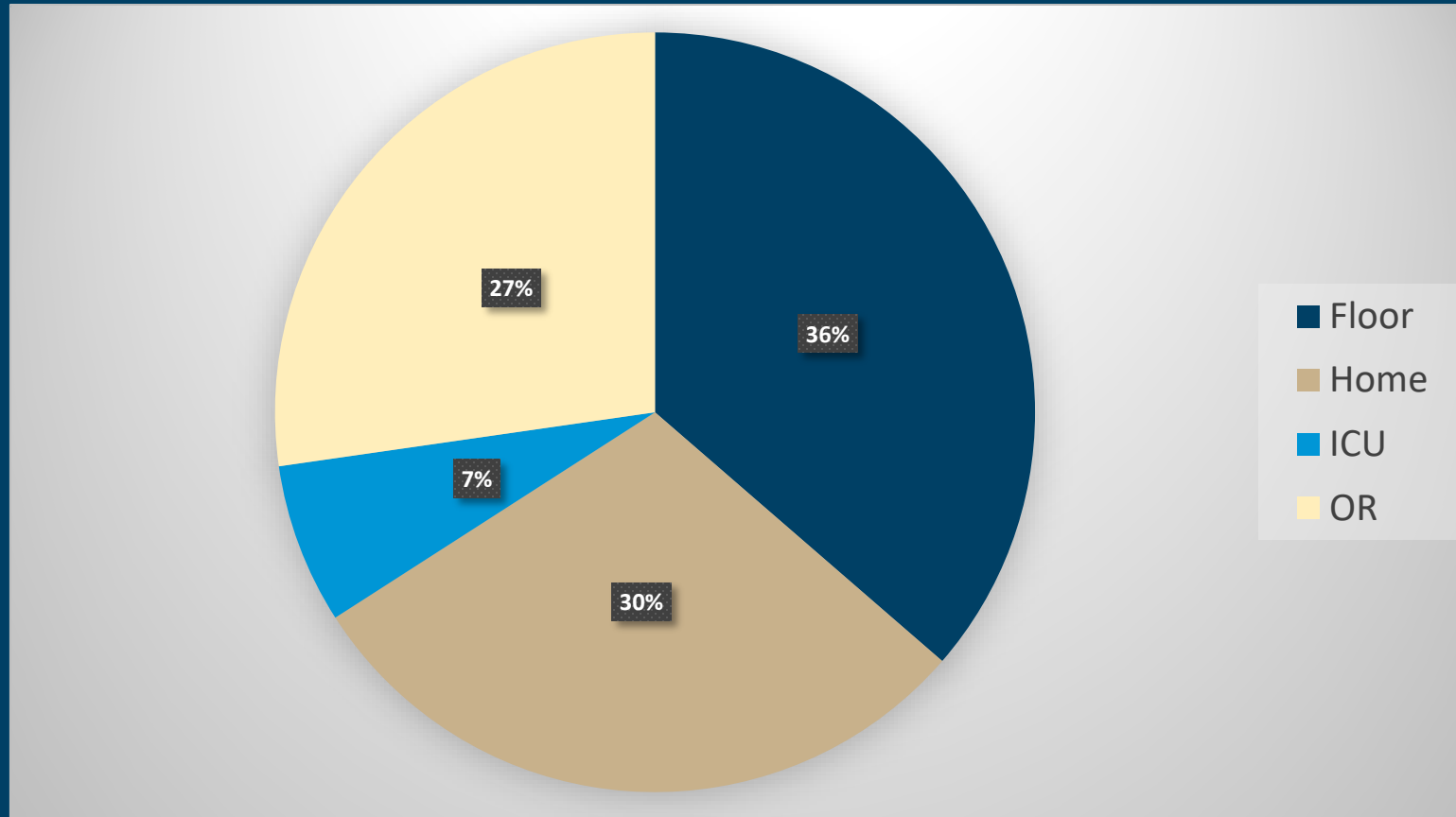
*Tourniquet applied in field is high tier activation



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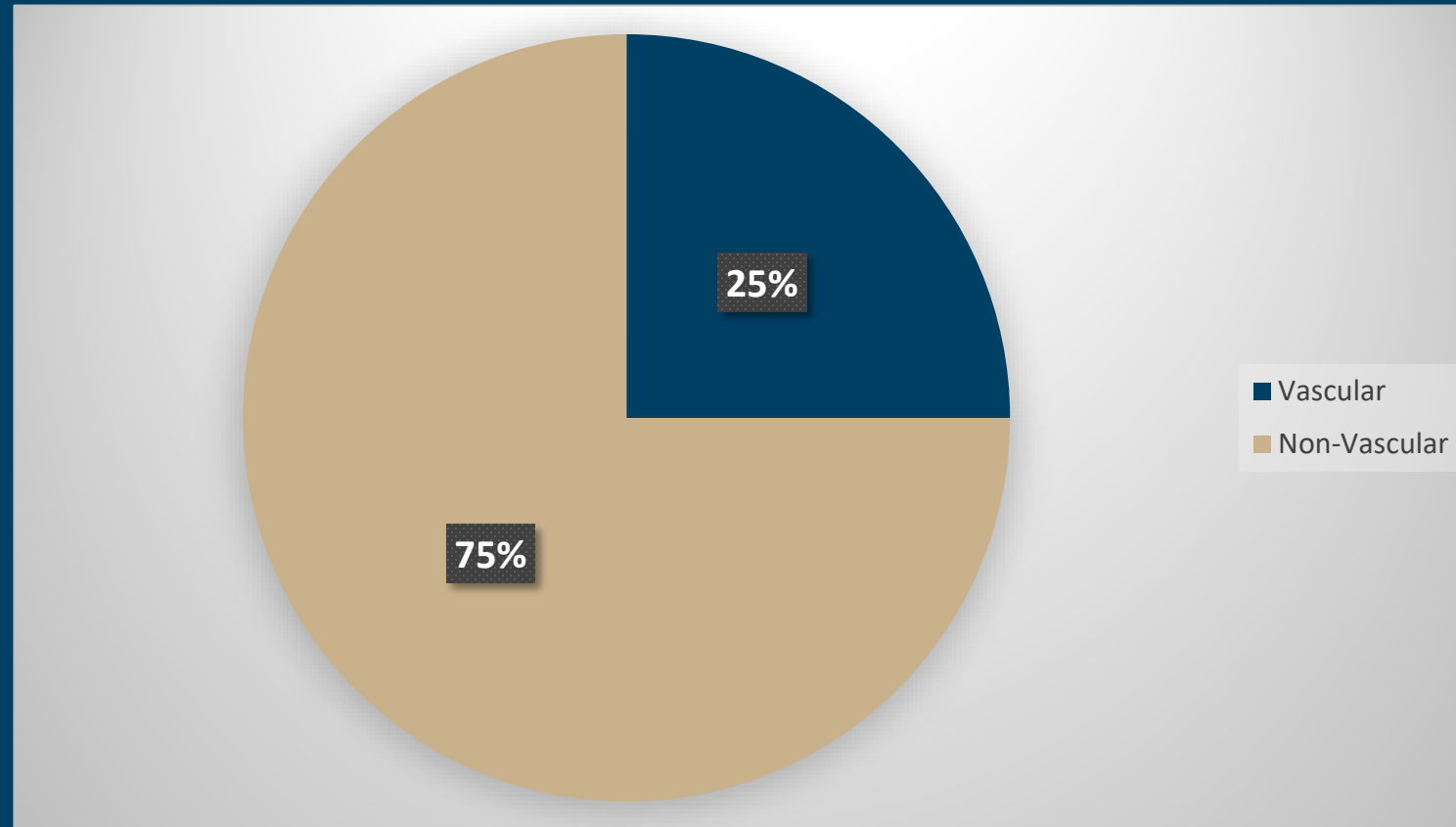
Post ED Disposition



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Injuries



Outcomes

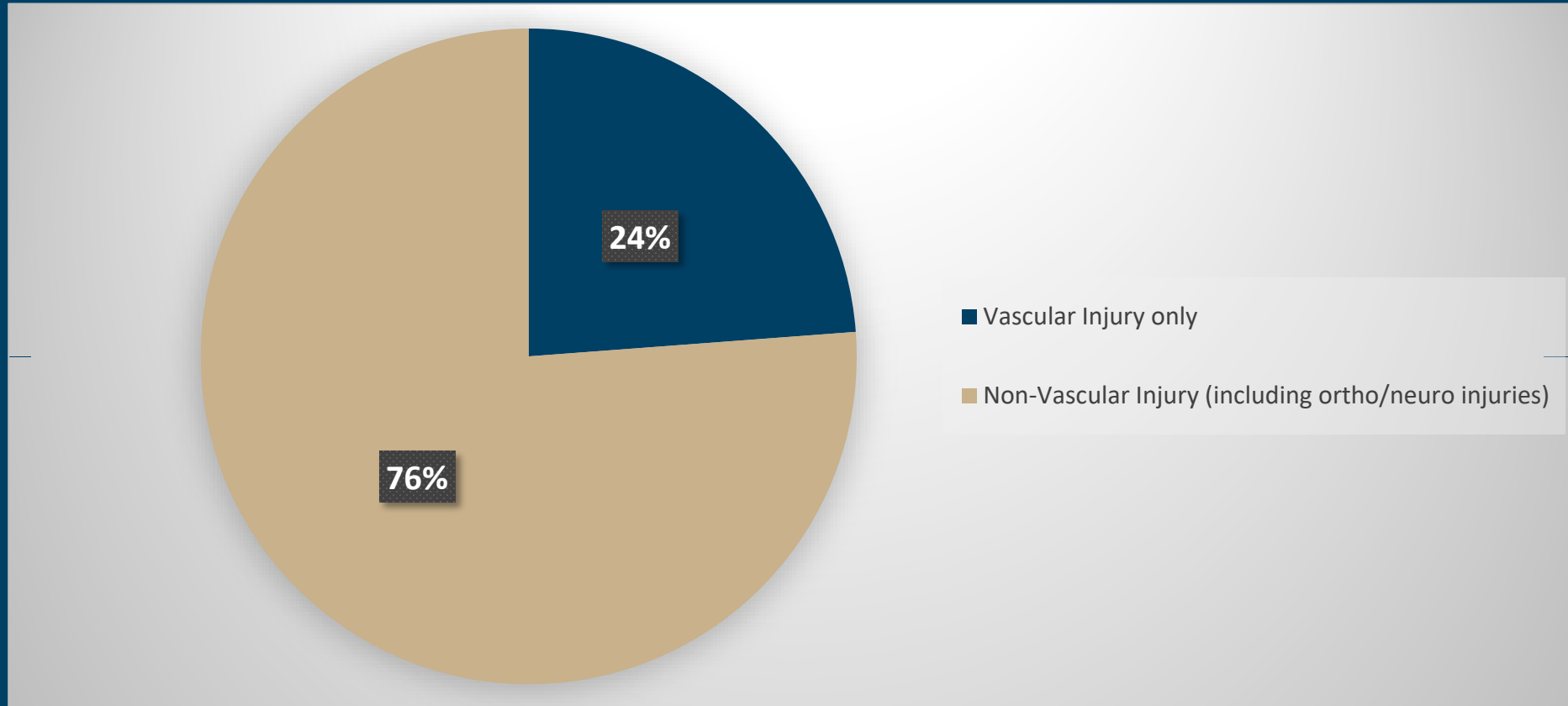
100% of patient's survived



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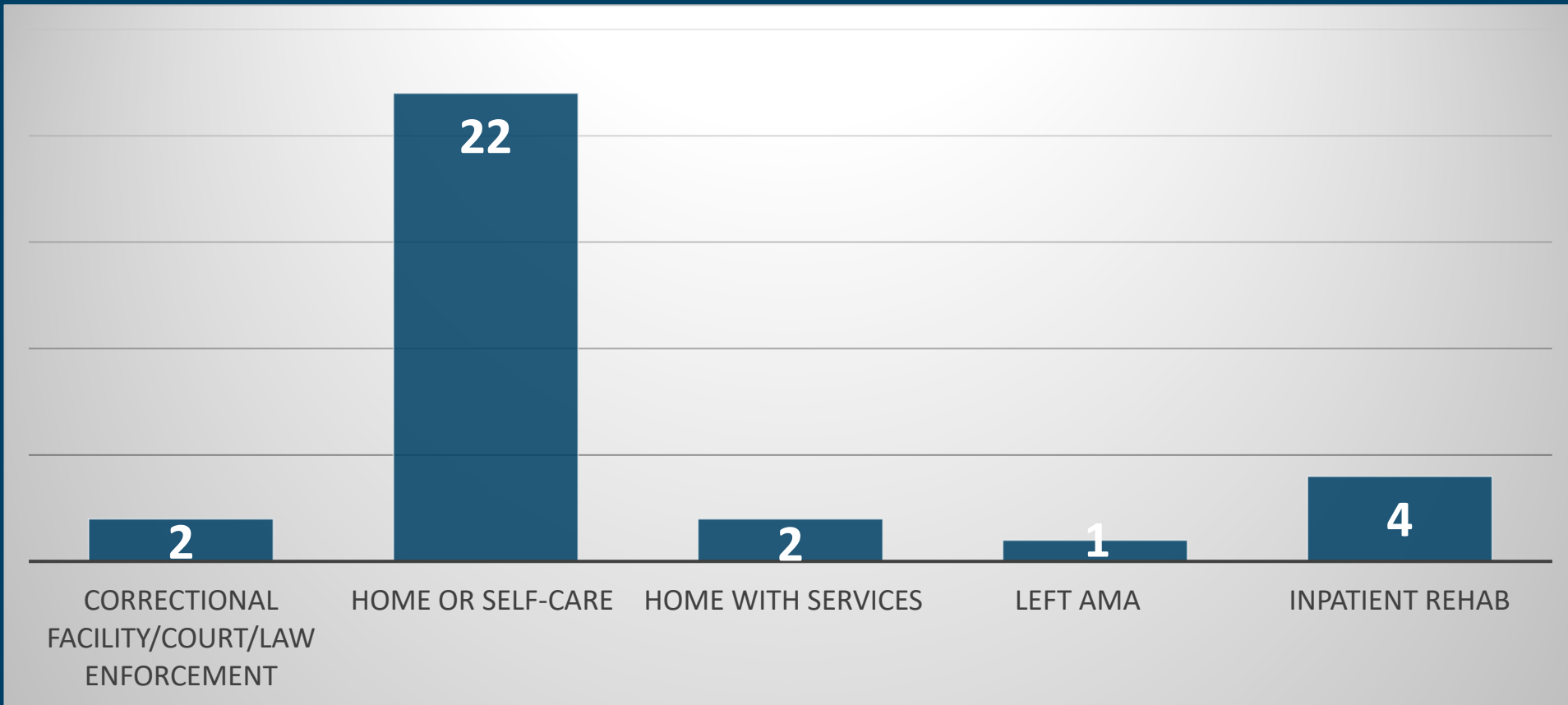
Length of Stay



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Discharged to



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Reston Hospital Center 2022

Volume

17 patients arrived with a tourniquet

Arrival

100% from EMS

Trauma Activation

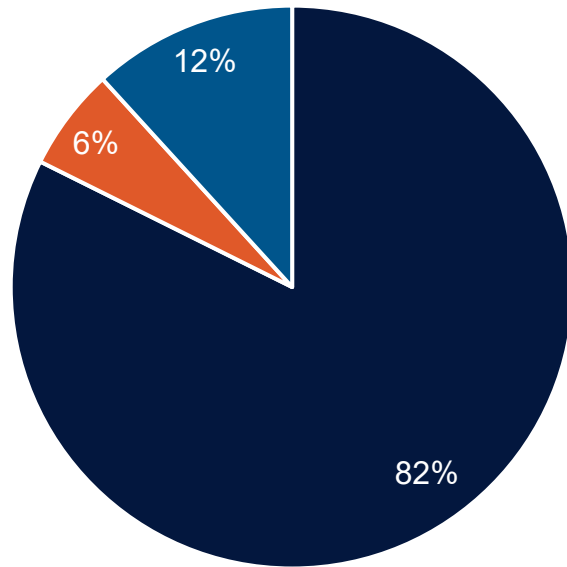
100% were Level I TTA- Alpha (appropriate to criteria)

OR Cases

53% Patients went to the OR from the ED emergently

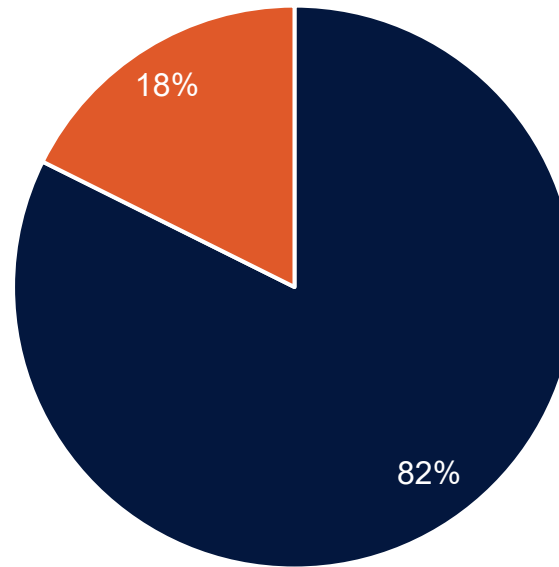
Reston Hospital Center

Age



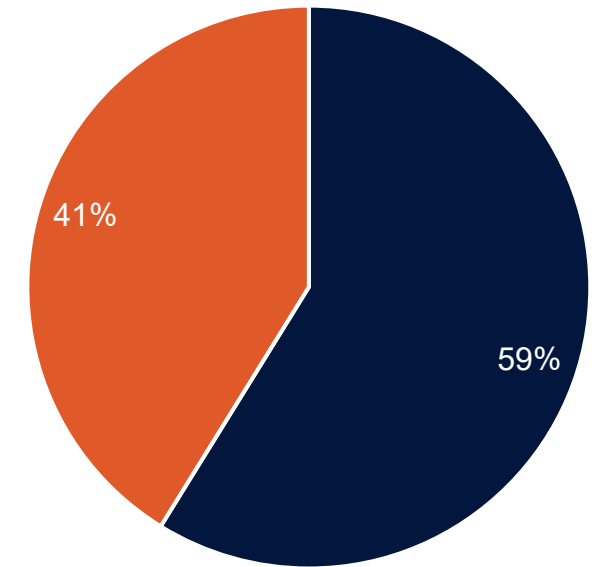
■ 15-64 ■ 65-75 ■ >75

Gender



■ Male ■ Female

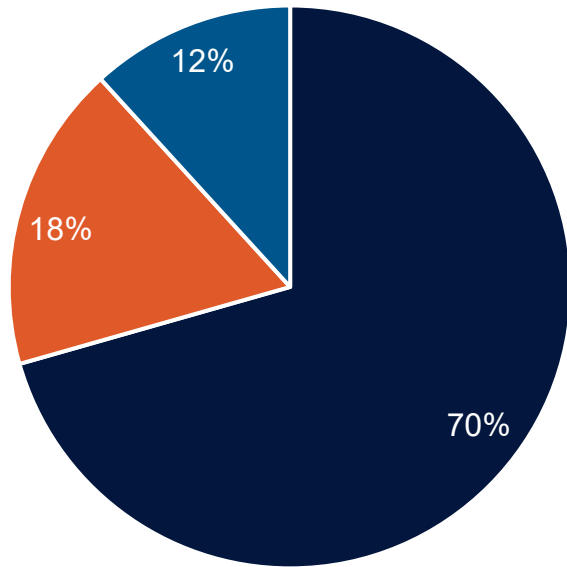
Time of Day



■ 0700-1900 ■ 1901-0659

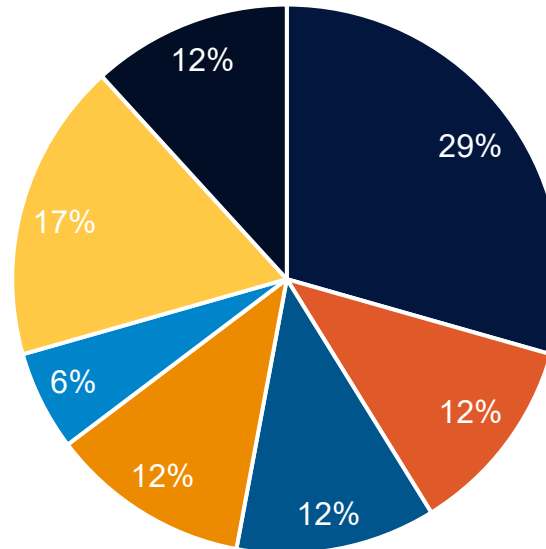
Reston Hospital Center

EMS



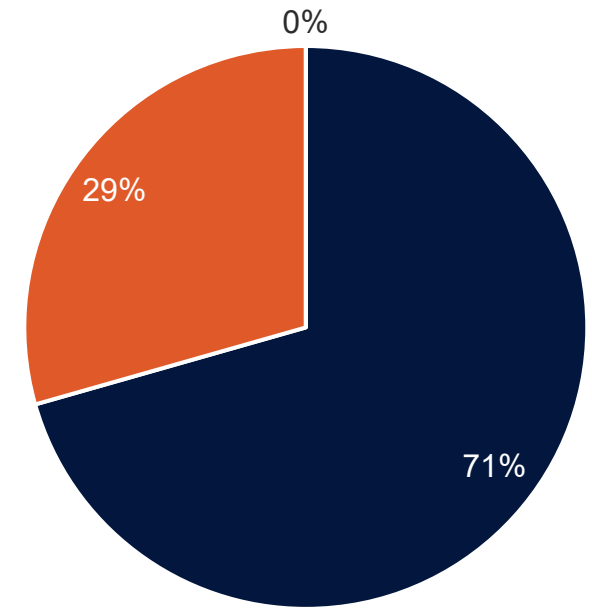
■ Fairfax ■ Louden ■ Sterling

MOI



■ Assault -stab ■ Fall
 ■ Handgun ■ SI
 ■ Industrial ■ MVC
 ■ Motorcycle

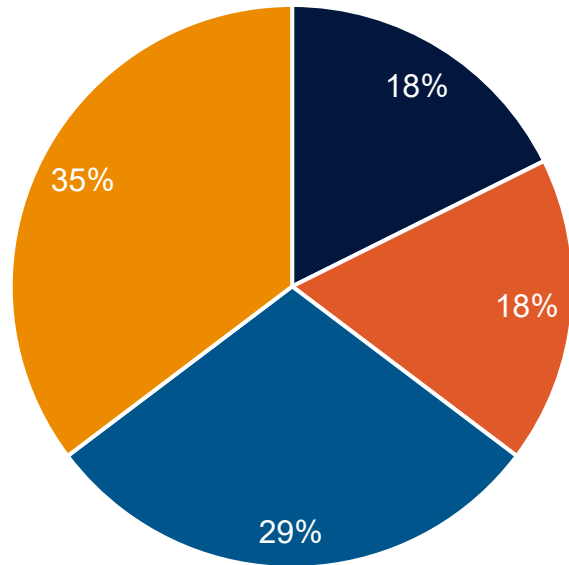
Who Applied



■ EMS ■ LEO ■ Bystander

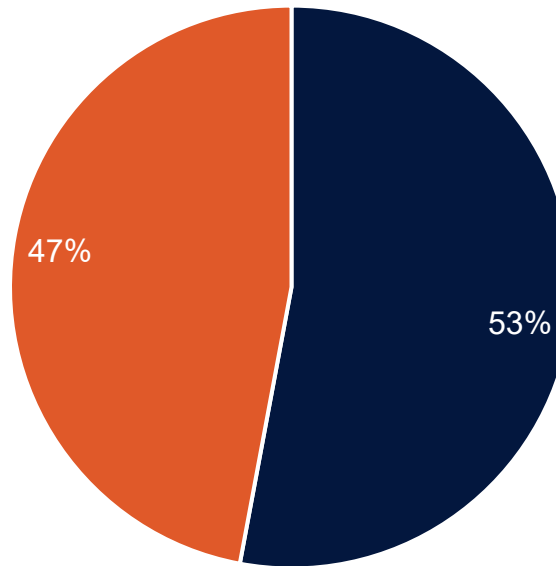
Reston Hospital Center

Injury



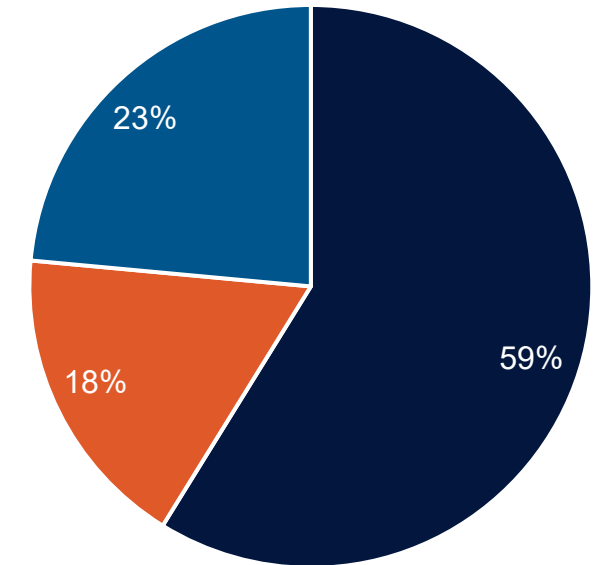
■ Amputation ■ Open Fx
■ Vascular ■ Laceration

Location



■ Upper extremity ■ Lower extremity

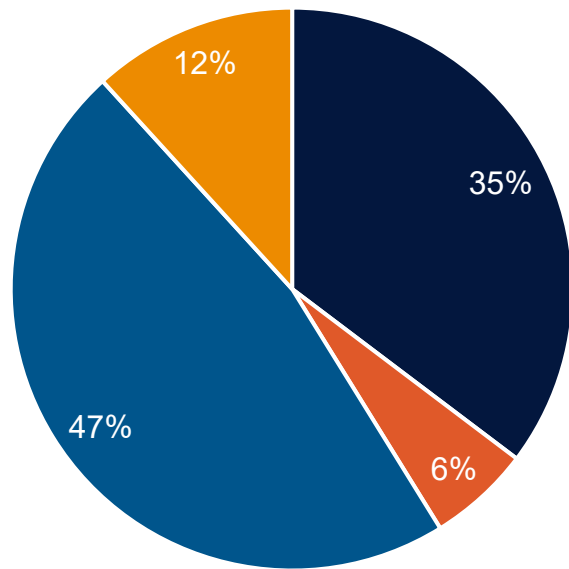
Removed by:



■ Trauma Surgeon ■ Vascular Surgeon
■ Orthopaedic

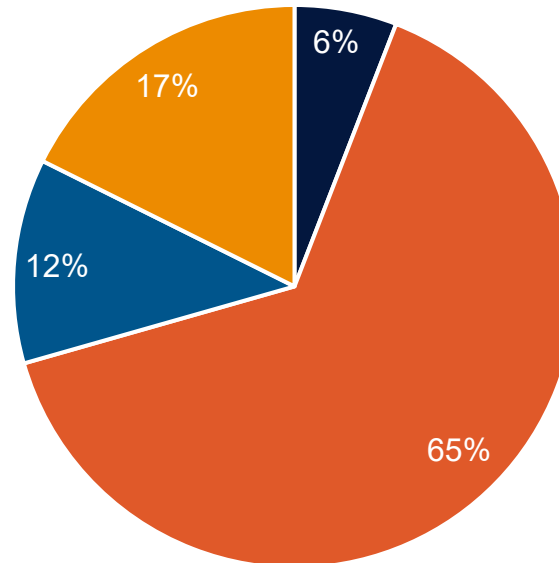
Reston Hospital Center

ED Dispo




■ Floor ■ ICU ■ OR ■ Mental Health

Hospital DC



■ Acute Care ■ Home
■ Mental Health ■ Rehab

NVEMSC Topic:



Tourniquet Use & Other Vascular Injury Interventions

**Inova Loudoun Hospital
Trauma Services
Q1 - Q4, 2022**

2022 Case Demographics

21

Total Cases

19

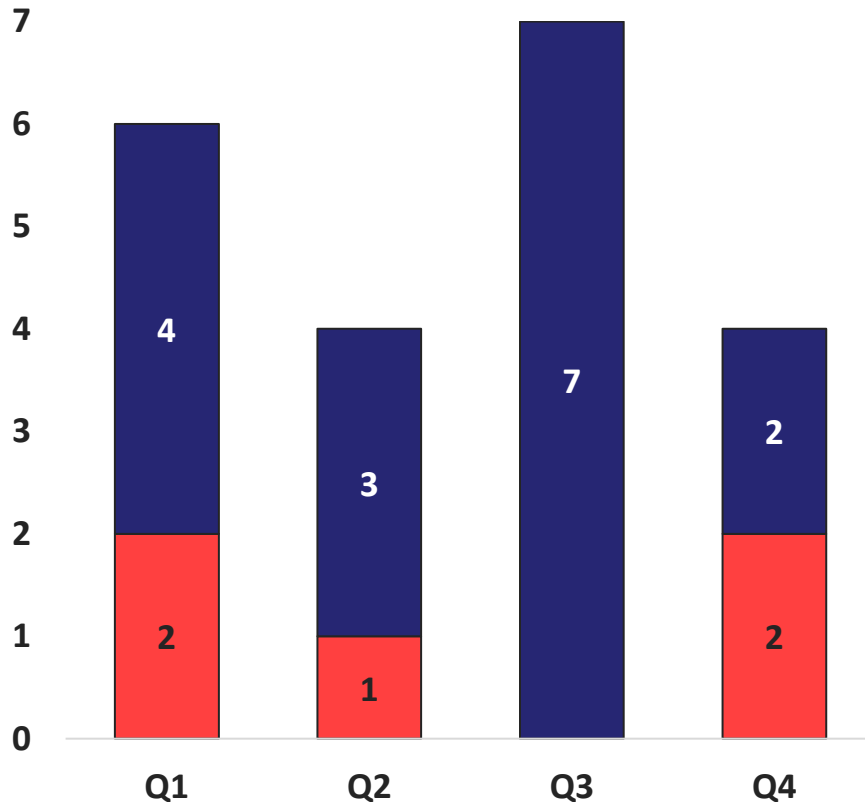
Adult Cases

2

Pediatric Cases

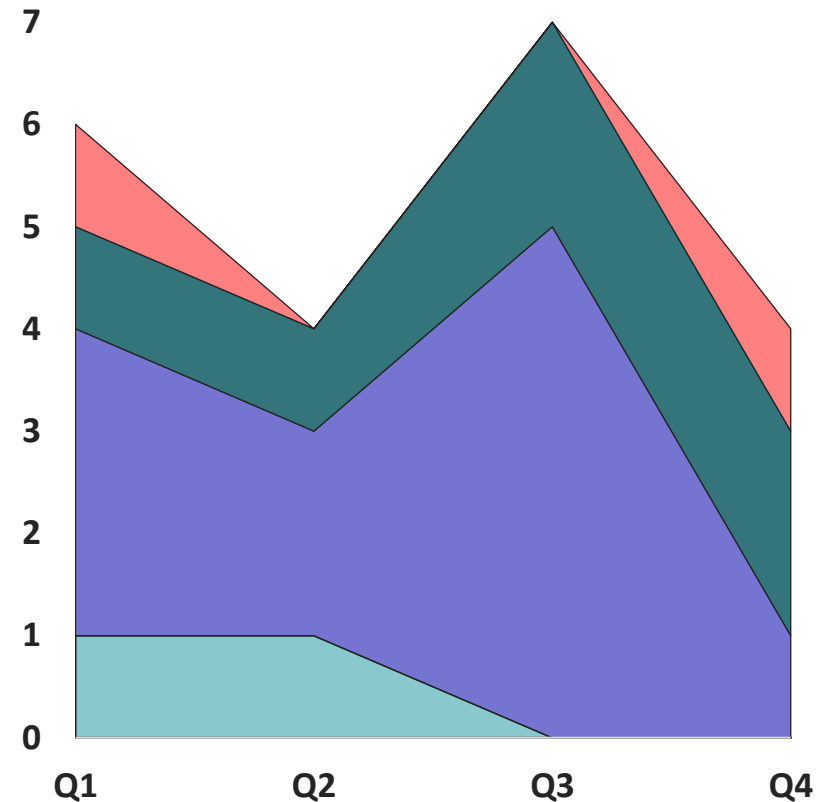
Quarterly Sex Distribution

Female Patients Male Patients



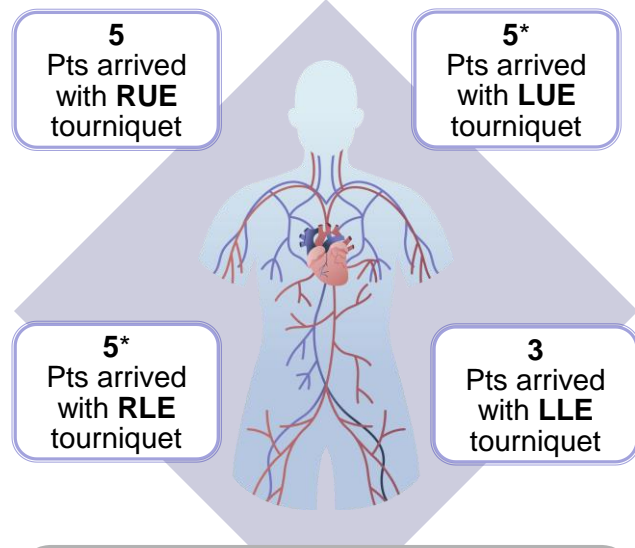
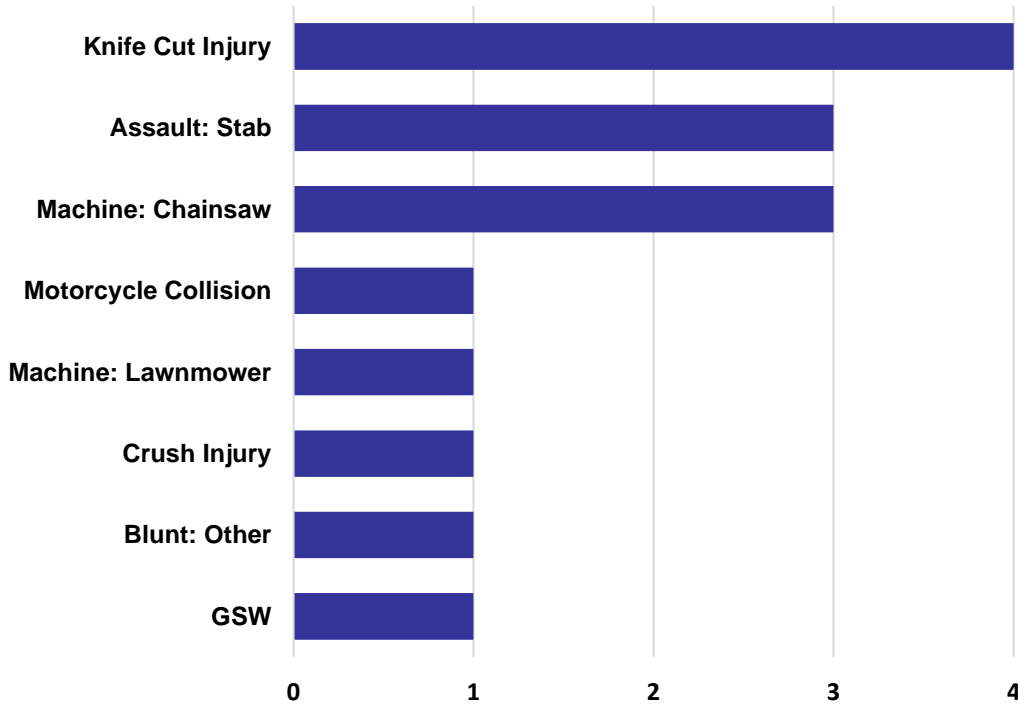
Quarterly Age Distribution

Age: 0 - 15 Age: 15 - 44 Age: 45 - 64 Age: 65+



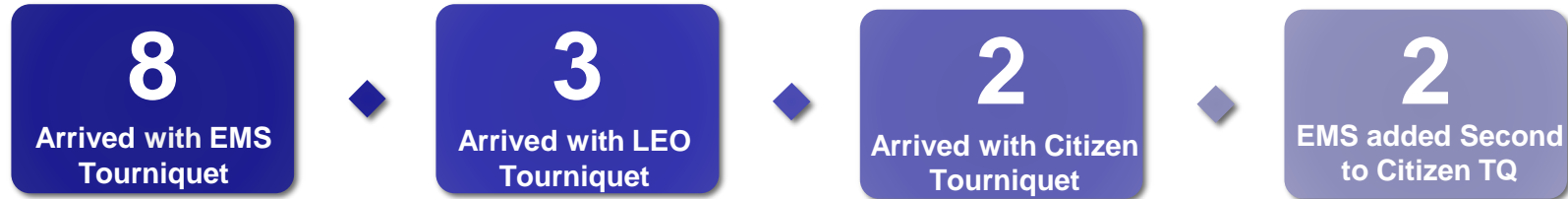


Mechanisms of Injury (Fulls / Transfer In)

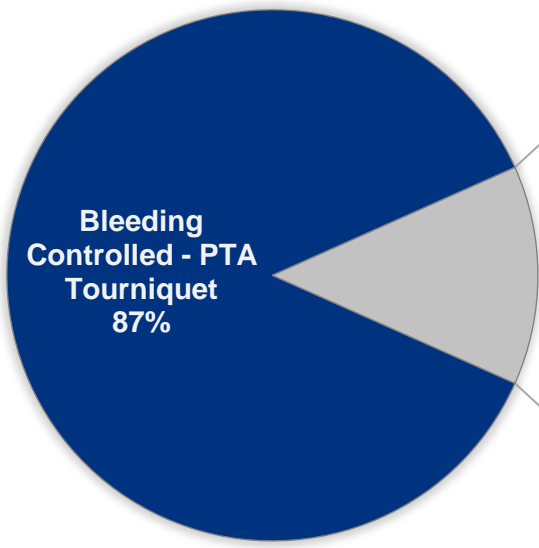
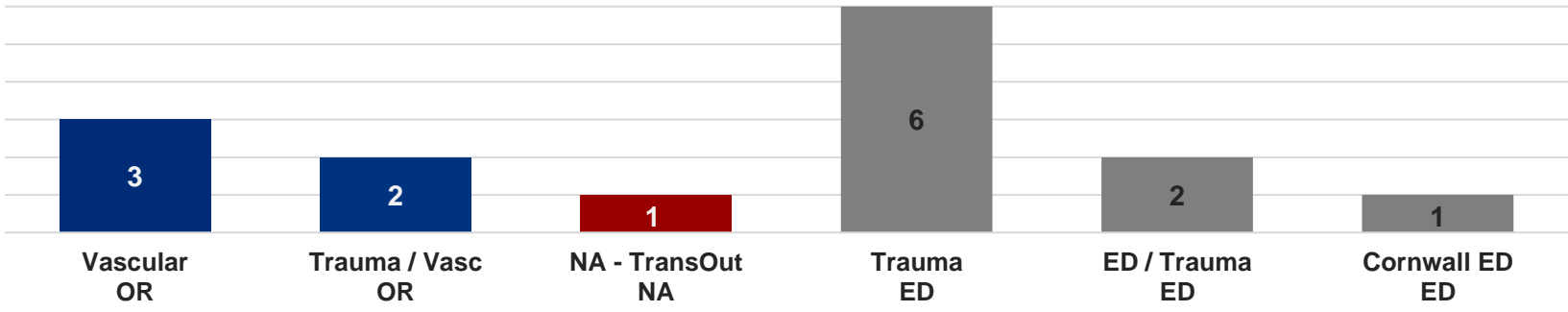


*At least one patient presented with 2+ tourniquets on extremity. 5 Non-Activated patients arrived with pressure dressings/bandages, no tourniquet.

Activated / Trans. Patient Arrival Details



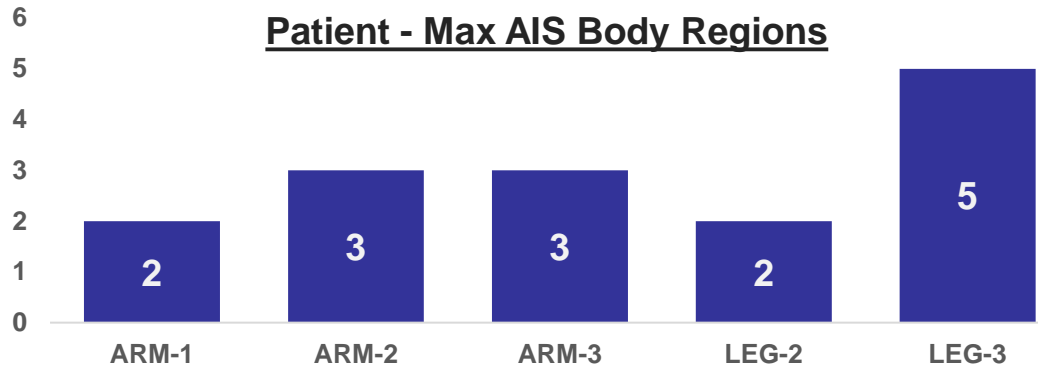
Tourniquet Taken Down by Provider / Location



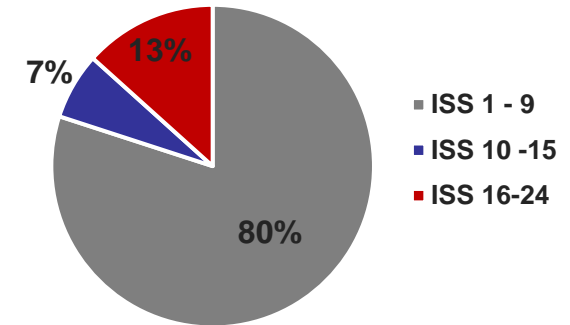
Pt - CRG; Bleeding noted beyond the tourniquet per ED MD. Patient taken directly to OR by Vascular Surgeon.

Pt - SLR; 3rd TQ placed above 2 EMS TQs with no improvement. EMS hemostat packing reinforced. Bleeding finally controlled- TQs left in place for transfer out.

Patient - Max AIS Body Regions



Injury Severity Scores



Vascular Injuries

- Laceration of radial artery x2
- Laceration of posterior tibial artery
- Laceration of ulnar artery
- Laceration of forearm vein
- Laceration of forearm blood vessels

Orthopedic Injuries

- Displaced fracture of shaft of tibia x2
- Crushing injury of lower leg
- Displaced fracture of shaft of femur
- Displaced fracture of shaft of ulna
- Displaced fracture of shaft of fibula
- Traumatic compartment syndrome
- Zygomatic fracture

Other Traumatic Injuries

- Laceration w/o foreign body x4
- Laceration of muscles, fascia, and tendons x4
- Injury of median nerve at wrist and hand level
- Injury of ulnar nerve
- Injury of tibial nerve

Activated / Trans. Patient Procedures



8
Direct ED to OR



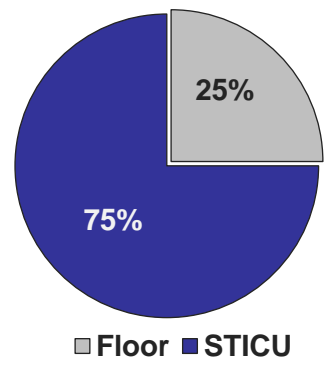
7
ED Admit - No OR



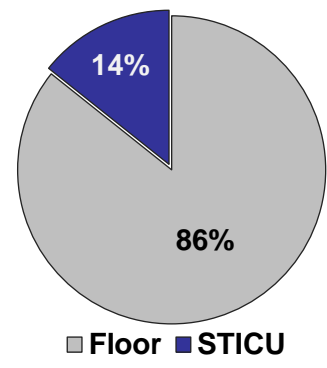
53.4%
ED to OR

Top OR Procedures Performed Directly from ED	
Repair Arm and Wrist Muscle	3
Release/Repair Median Nerve	2
Repair Upper Artery	2
Repair Arm and Wrist Tendon	2
Additional OR Procedures Performed Directly from ED	
Reposition Ulna with Internal Fixation Device	
Release/Repair Ulnar & Radial Nerves	
Repair Arm Subcutaneous Tissue and Fascia	
Repair Upper Arm Vein and Muscle	
Extraction of Leg Muscle and Skin	
Detachment at Right Upper Leg	

Direct ED to OR- Admit Unit



ED Admission- Admit Unit



Final Patient Disposition		
Discharge Home	8	53.3%
Discharge Home with Home Health	3	20%
Discharge to Psych	2	13.3%
Skilled Nursing Facility	1	6.67%
Transfer to Washington Hospital Center	1	6.67%

Non-Activated Patient Outcomes



1
Arrived with EMS Tourniquet
– RUE Fistula

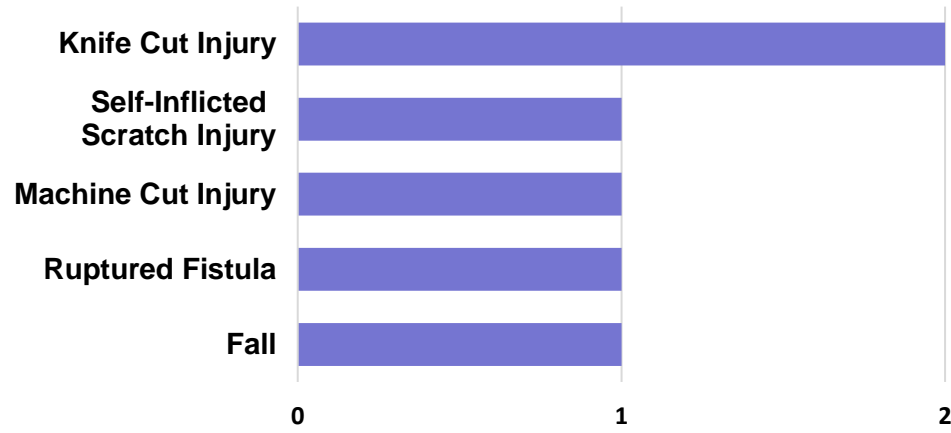


4
Arrived with Bandage / P. Dressing
- Citizen TQ Removed in Field

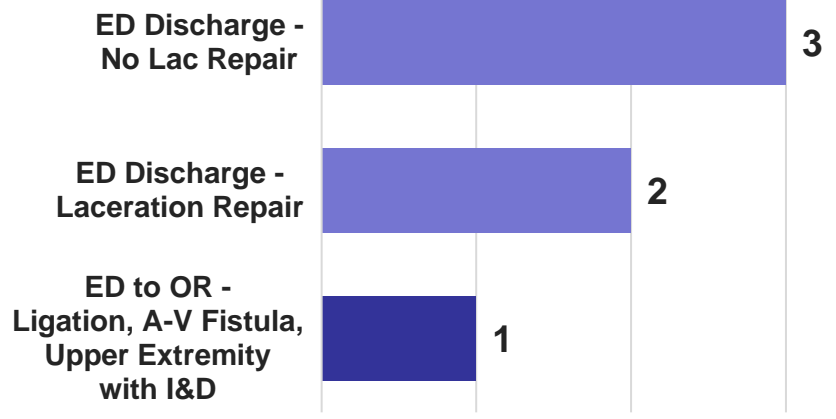


1
Arrived with Bandage/
Pressure Dressing Only

Mechanisms of Injury (Non-Activations)



ED Disposition / Procedures



Diagnosed Injuries

Superficial lacerations, puncture wounds, or bleeding from varicose veins	3
Hemorrhage due to an infected, blowout of right brachial cephalic AV fistula	1
Laceration of left lower extremity	1
Laceration of left wrist	1

Patient Dispositions

ED Discharge: Home	4
ED Discharge: Psych	1
Inpatient Admit: Floor ILH Discharge: Home (LOS: 6 Days)	1



Questions?