University of Nebraska Medical Center

The UNMC Ruptured Aorta Program

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Disclosures

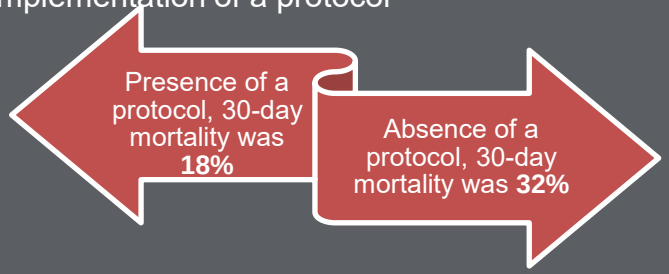
None

Goals

1) Review the goals for ruptured AAA
2) Prognostic Scoring Systems
3) Discuss transfer process
4) Improving outcomes with Collaboration
5) Describe the UNMC team approach to ruptured AAA

Time is Survival

- Rupture is a fatal complication of abdominal aortic aneurysm (AAA)
- Despite improvements in prehospital, operative, and postoperative care, overall mortality following repair of ruptured AAA has not significantly improved.
- Limited studies are available for benchmarking time to intervention for a ruptured AAA
- The Society of Vascular Surgery suggest potential improvement in mortality rates with implementation of a protocol



- The SVS developed guidelines that suggest a "door-to-intervention" time
  - Modeled after the guidelines established by the American College of Cardiology Foundation/American Heart Association for STEMI

Prognostic Scoring for rAAA

Glasgow Aneurysm Score (GAS)

- Age + 17 (shock) + 7 (myocardiac disease) + 10 (cerebrovascular disease) + 14 (renal dysfunction).
- > 85 pts = non-survivable

Hardman Index

- 1 point each for: age > 76, LOC after presentation, Cr 190micromol/L, Hgb < 90g/L, acute MI.
- Score ≥ 3 100% mortality

Physiological and Operative Severity Score for EnUmeration of Mortality and Morbidity (POSSUM)

- 12 preoperative factors
- Scored 1,2,4,8 based on how far from baseline

Edinburgh Rupture Aneurysm Score (ERAS)

- 1 point for Hgb < 9, SBP < 90mmHg, GCS < 15

VSGNE Ruptured Abdominal Aortic Aneurysm Risk Score

- Age < 76
- Pre-operative Cardiac Arrest
- LOC
- Suprarenal Aortic clamp

Door-to-Intervention

A framework of 30-30-30 minutes was suggested to include three periods for the management of the patient with a ruptured aneurysm

Initial Period 30 min

- The time from first medical contact with a patient suspected of having a ruptured aortic aneurysm, including immediate management, to the point when a decision is made to transfer the patient to a regional center, if so required, or emergent in-house vascular surgery evaluation is initiated.

Second Period 30 min

- The time required for rapid transfer to a regional center, if needed, and includes physician-physician phone handoff, transfer of images (if available),and in-transit care.

Final Period 30 min

- The time from evaluation by the in-house or receiving vascular surgery team to arterial access and placement of an aortic occlusion balloon.

Critical Components Nebraska Medicine Protocol

- Provided workflow organization and efficiency
- Defined staff roles and responsibilities

Process Map

- Notification method to alert staff of incoming emergency
- Streamlined patient information pathway

Group Page

- List of necessary equipment, devices, and supplies
- Prepping instructions

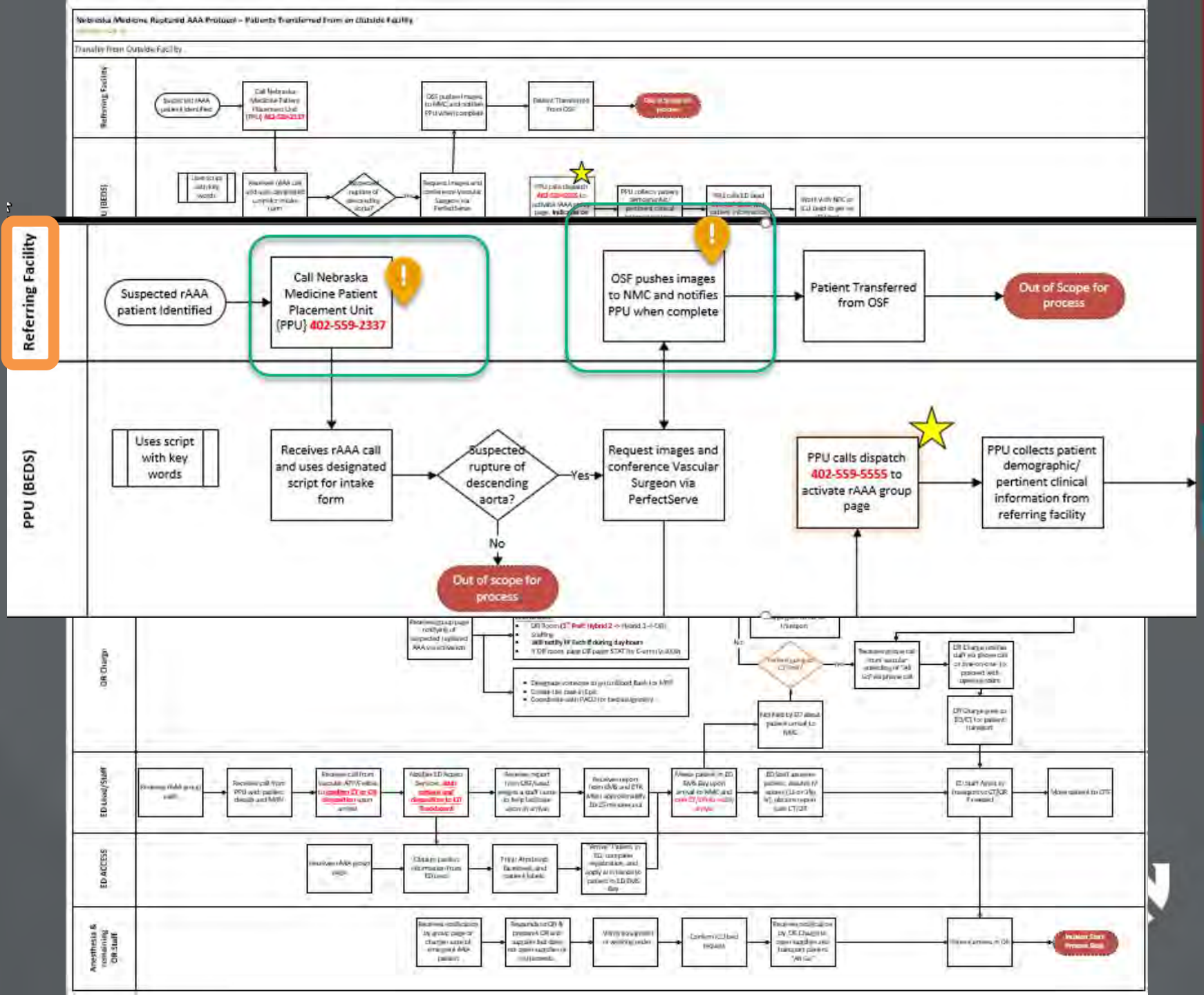
Aortic Emergency OR Checklist

- Written guidelines for BP management of the rAAA patient
- Avoid large volume resuscitation
- Ideal SBP >70 (ideal 80-100 mmHg)

Permissive Hypotension Guidelines

- Known expectation that patients will go direct to the OR upon arrival
- If CT necessary at NMC, patient will go directly from CT to OR

Direct to OR


Referring Facility
PPU (BEDS)
Suspected rAAA patient Identified
Call Nebraska Medicine Patient Placement Unit (PPU) 402-559-2337
OSF pushes images to NMC and notifies PPU when complete
Patient Transferred from OSF
Out of Scope for process
Uses script with key words
Receives rAAA call and uses designated script for intake form
Suspected rupture of descending aorta?
Yes
No
Request images and conference Vascular Surgeon via PerfectServe
Out of scope for process
PPU calls dispatch 402-559-5555 to activate rAAA group page
PPU collects patient demographic/ pertinent clinical information from referring facility

Improving Outcomes with Collaboration

Referring Center Opportunities:

- Placement of large-bore, 16 or 18 gauge, peripheral IV catheters (2 ideal)
- Prompt imaging (CT best)
- Maintain permissive hypotension (systolic BP between 80-100)
- Call Patient Placement Unit (PPU)
- Be prepared with imaging report, patient clinical info, and labs
- Arrange immediate transfer

What to expect from Nebraska Medicine:

- Electronic feedback form within 1 week of patient referral

Nebraska Medicine

Ruptured AAA Feedback

MRN xxxxx
Transfer from OSF
(Facility Name)
Date

Brief Summary:

NMC Arrival:
VS: HR BP RESP MAP

Imaging:

rAAA Page Activated:

Open vs Endo Repair:

Door to Intervention Times: SVS Guidelines Goal <90
OSF Arrival to Decision to Transfer: min (Goal <30 min)
Transfer from OSF to Arrival to NMC: min (Goal <30 min)
NMC CT Confirmation to Incision Time: min (Goal <30 min)

Disposition/Outcome:

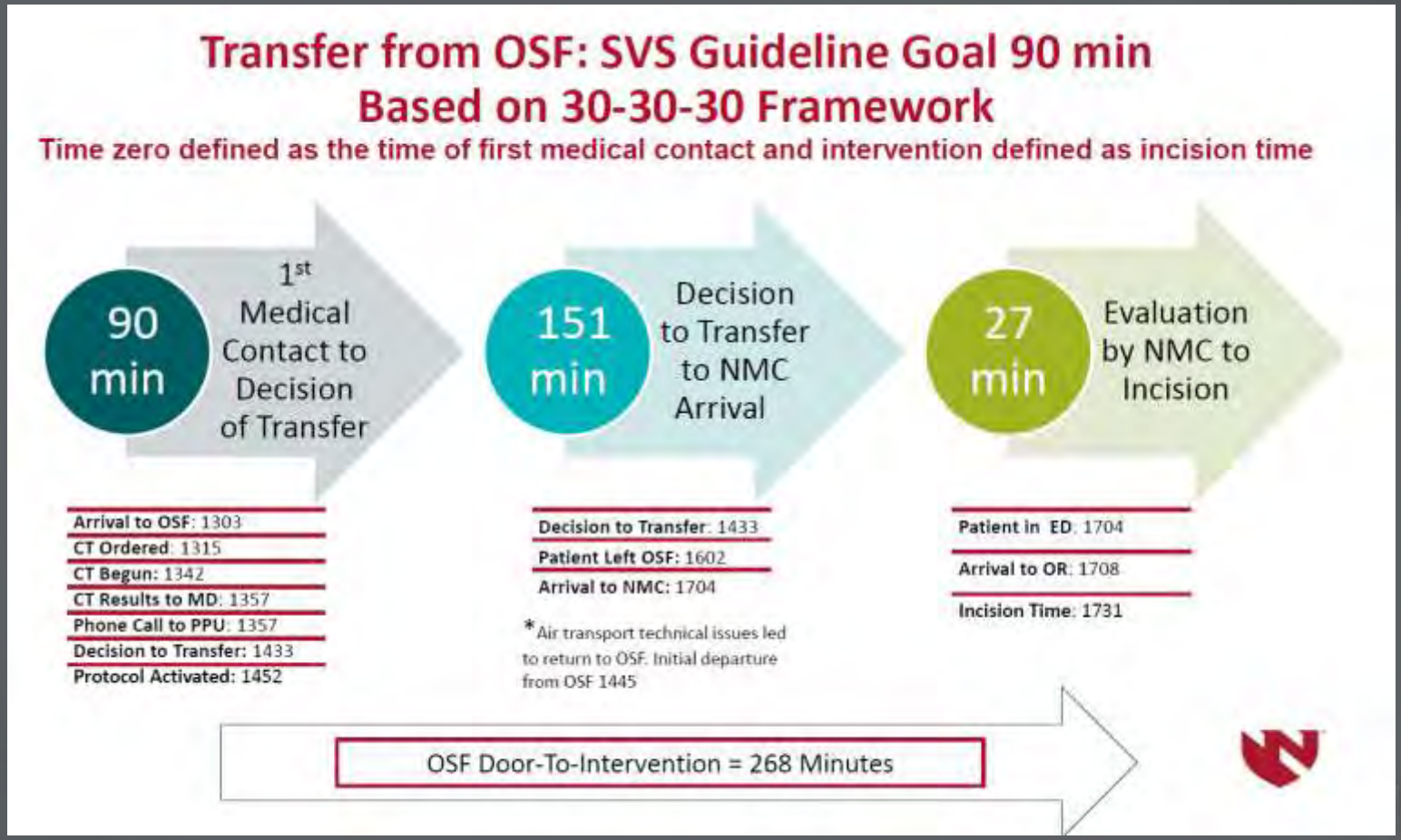
Successes

- Followed the rAAA protocol process map accurately
- Group page activated promptly after CT confirmation
- Good communication and collaboration between departments

Opportunities

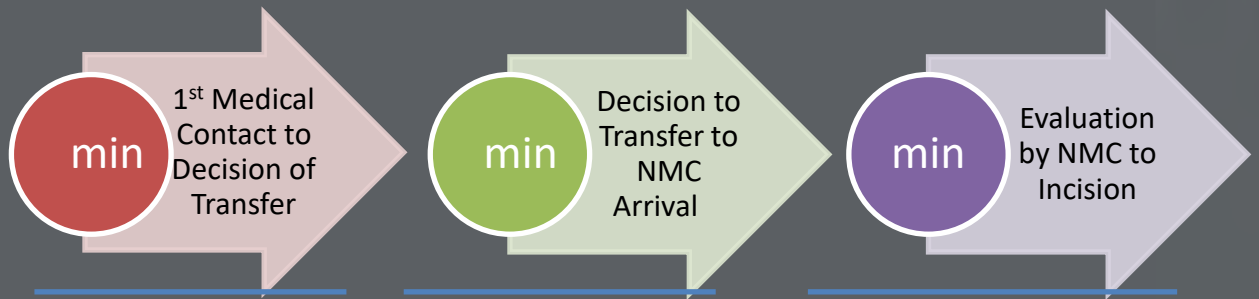
- Expedite time from CT confirmation of rupture to incision time in the OR

Ruptured AAA Feedback



Transfer from OSF: SVS Guideline Goal 90 min Based on 30-30-30 Framework

Time zero defined as the time of first medical contact and intervention defined as incision time



Arrival to OSF:
Phone Call to PPU:
Decision to Transfer:
CT Ordered:

Decision to Transfer:
Patient Left OSF:
Arrival to NMC:

Patient in ED:
CT Begun:
Protocol Activated:
CT Results to MD:
Arrival to OR:
Anesthesia Start:
Incision Time:

Pre-Protocol

Outside Hospital Transfers UNMC Door-To-Intervention = 103 Minutes

Post-Protocol

Outside Hospital Transfers UNMC Door-To-Intervention = 54 Minutes

Ruptured AAA Transfers

1. Ruptured AAA patient identified/suspected
2. Call Nebraska Medicine Patient Placement Unit (PPU) **402.559.2337**
3. Operator will gather clinical information *Be prepared with imaging report result and image transfer
4. Operator will connect a priority call with Vascular Surgeon
5. Consult with Vascular Surgeon for acceptance
6. Vascular surgeon will give verbal authorization to activate rAAA protocol

For more information regarding the rAAA transfer process, please contact:
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Heart and Vascular Emergent Protocols

QUICK GUIDE

Nebraska Medicine

STEMI transfer process:

- Call STEMI Hotline: **402.552.3444**
- Transfer center will connect directly to interventional cardiologist on call
- Activate EMS immediately upon transfer acceptance for transport

Ruptured abdominal aortic aneurysm (rAAA) transfer process:

- Call Nebraska Medicine Patient Placement Unit (PPU): **402.559.BEDS** or **402.559.2337**
- Be prepared with imaging report result/ image transfer while the operator connects a priority call with a vascular surgeon

Cardiogenic shock transfer process:

- Call Nebraska Medicine Patient Placement Unit (PPU): **402.559.BEDS** or **402.559.2337**
- If warranted, the operator will connect a priority conference call with our multispecialty Cardiogenic Shock team. Be prepared to report patient background and diagnostics related to shock

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