

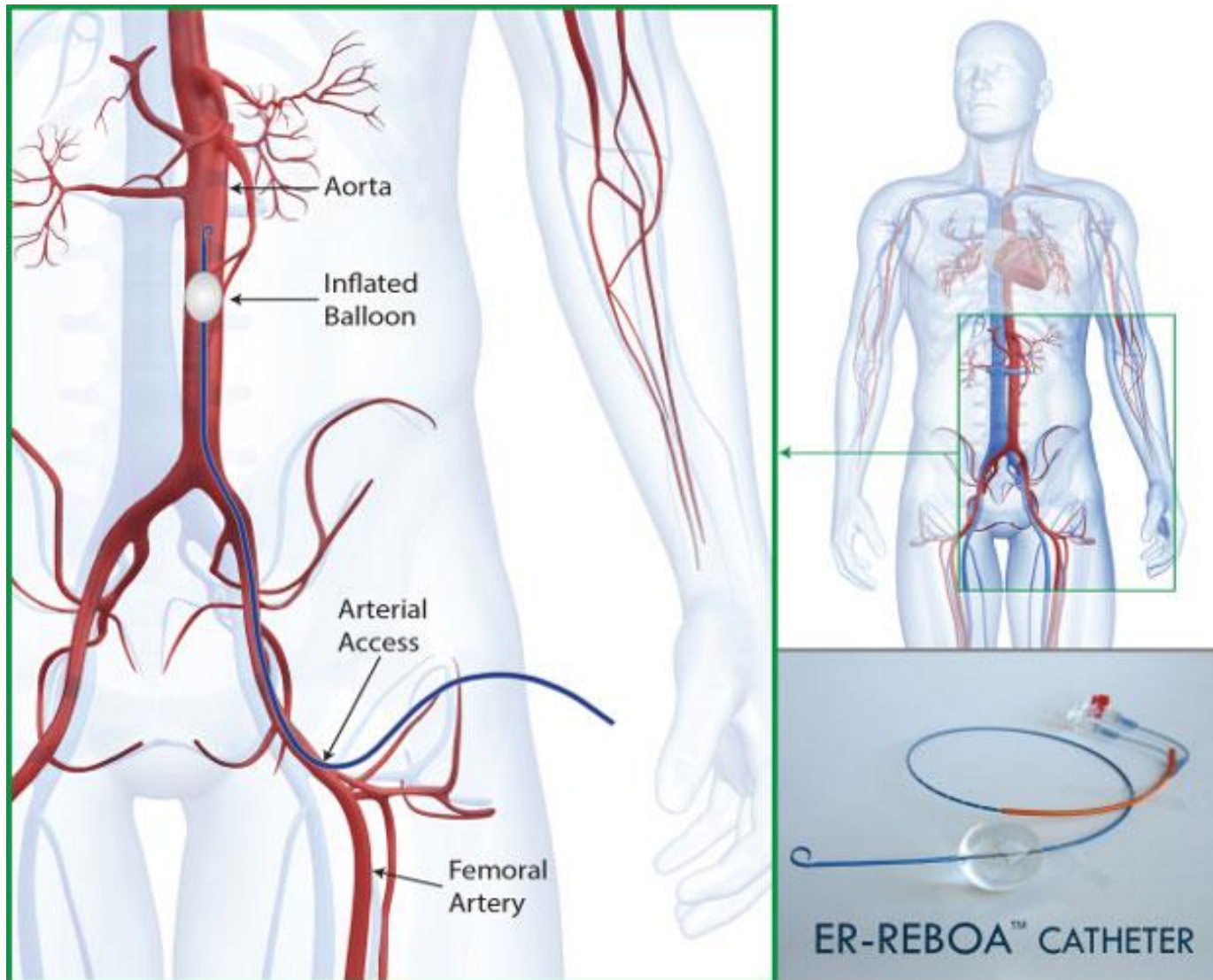


Implementing a REBOA Program at a Rural Trauma Center

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48th Denver Health Rocky Mountain Trauma and Emergency Medicine Conference

**Disclosures:
None**



Resuscitative Endovascular Balloon Occlusion of the Aorta



2017 ACS COT & ACEP Joint Statement

Joint statement from the American College of Surgeons Committee on Trauma (ACS COT) and the American College of Emergency Physicians (ACEP) regarding the clinical use of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA)

Received 15 December 2017 Megan Brenner,¹ Eileen M Bulger,² Debra G Perina,³ Sharon Henry,¹
Accepted 18 December 2017 Christopher S Kang,⁴ Michael F Rotondo,⁵ Michael C Chang,⁶ Leonard J Weireter,⁷
Michael Coburn,⁸ Robert J Winchell,⁹ Ronald M Stewart¹⁰

We can deploy a REBOA and perform DCR/DCS, now what?

“Transfer of patients

► Due to the inability of prehospital providers to appropriately manage and troubleshoot the devices during transport, and the lack of evidence to support safe duration of aortic occlusion, transfer of patients with REBOA is not recommended. Thus, REBOA should not be placed in Emergency Departments in institutions where the patient cannot receive definitive surgical care and hemostasis at that same institution.”

- Placement in ER with transport straight to a Level 1?
- Aeromedical critical care transport with Flight RNs/Flight Paramedics
- Ground critical-care, acts allowed, waivers?

Limitations of Our Level 3 Trauma Center

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- No dedicated OR for Trauma
- Limited surgical teams after hours/weekends/holidays
- Limited blood bank
- Limited subspecialties
- Always changing weather and road conditions
- Need for transfer to higher level of care

Hurdles

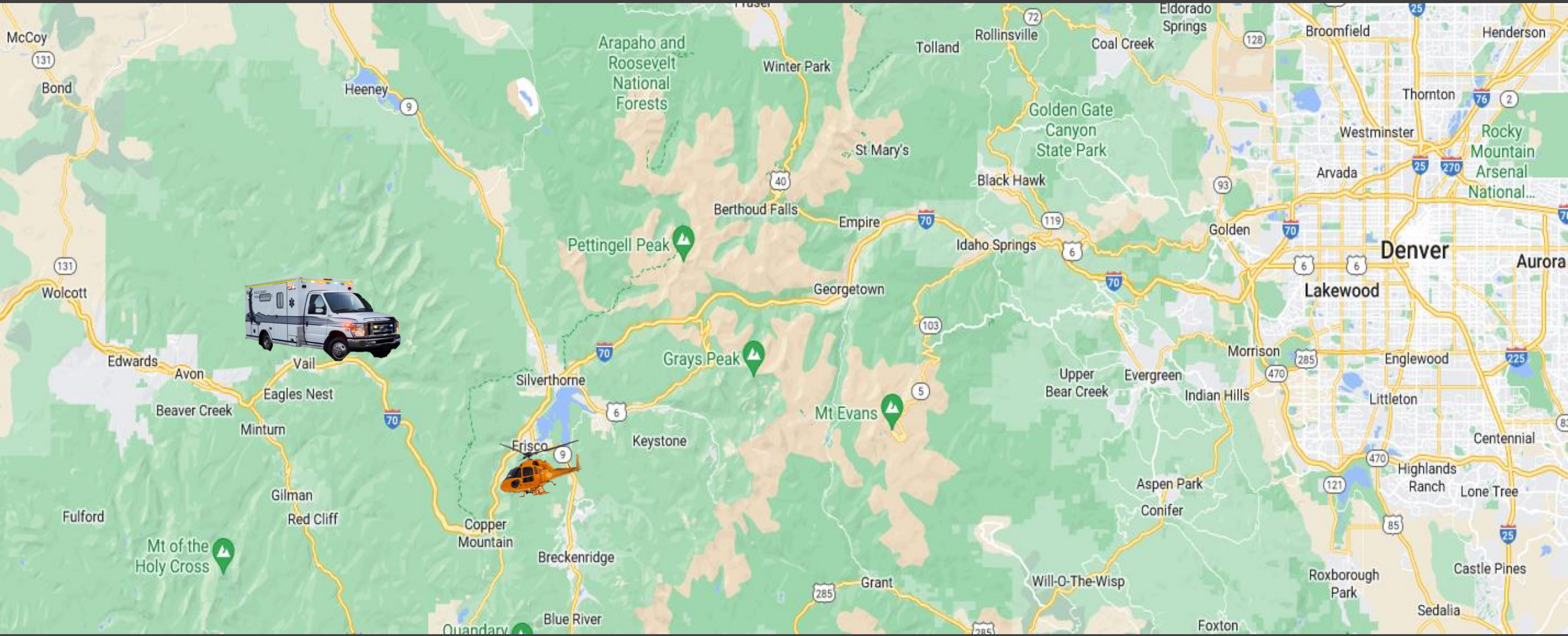
Hurdles

- Balloon occlusion times
 - Z1: 30 min
 - Z3: 1 hour
- Work with EMS for state waivers
- Transfer to tertiary care facility
 - Air vs. Ground
 - Weather and Capabilities
- Strict Policy & Protocols
- Training
- Equipment
- Rollout

Is this even possible?

- Internal policy and implementation
- Care of patient once they leave an OR
- Limitations with transfer to higher level of care

Transfer Logistics



Clinical use of resuscitative endovascular balloon occlusion of the aorta (REBOA) in civilian trauma systems in the USA, 2019: a joint statement from the American College of Surgeons Committee on Trauma, the American College of Emergency Physicians, the

National Association of Emergency Medical Services Physicians and the National Association of Emergency Medical Technicians

Received 28 August 2019
Accepted 29 August 2019

Eileen M Bulger,¹ Debra G Perina,² Zaffer Qasim,³ Brian Beldowicz,⁴ Megan Brenner,⁵ Frances Guyette,⁶ Dennis Rowe,⁷ Christopher Scott Kang,⁸ Jennifer Gurney,⁹ Joseph DuBose,¹⁰ Bellal Joseph,¹¹ Regan Lyon,¹² Krista Kaups,¹³ Vidor E Friedman,¹⁴ Brian Eastridge,¹⁵ Ronald Stewart¹⁵

“Transfer of patients

► In extremely rare circumstances in which patients with REBOA have immediate access to transportation and where the system can meet the time targets for aortic occlusion to initiation of definitive hemorrhage control (<15min for Zone 1, <30min for Zone 3) interfacility transfer may be considered.

In this situation, protocols must be developed to ensure training of transport personnel, seamless communication among centers, and direct access to hemorrhage control at the receiving facility. This should include a direct-to-OR/IR policy, bypassing the emergency department.”

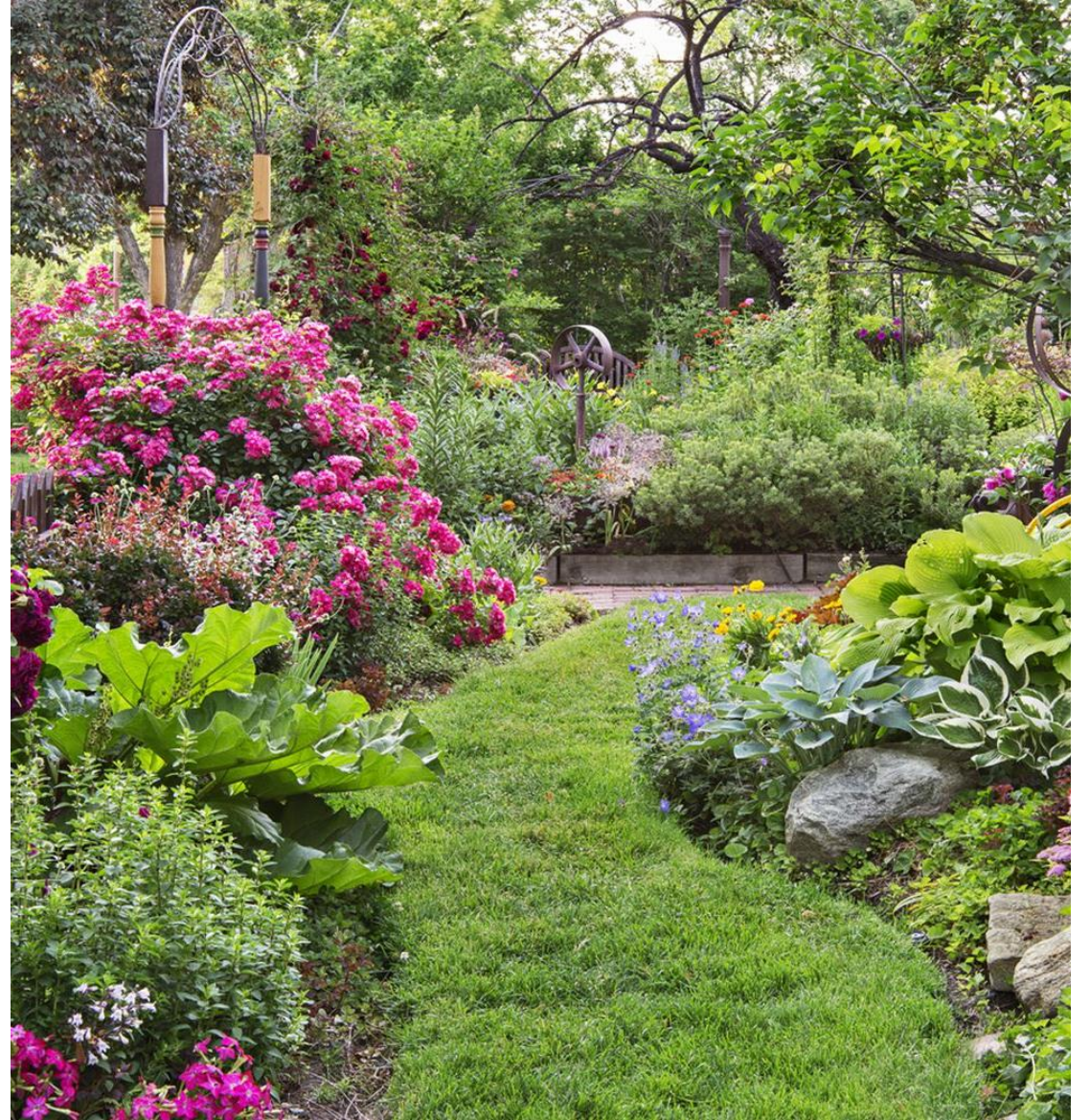


Policy and Procedure

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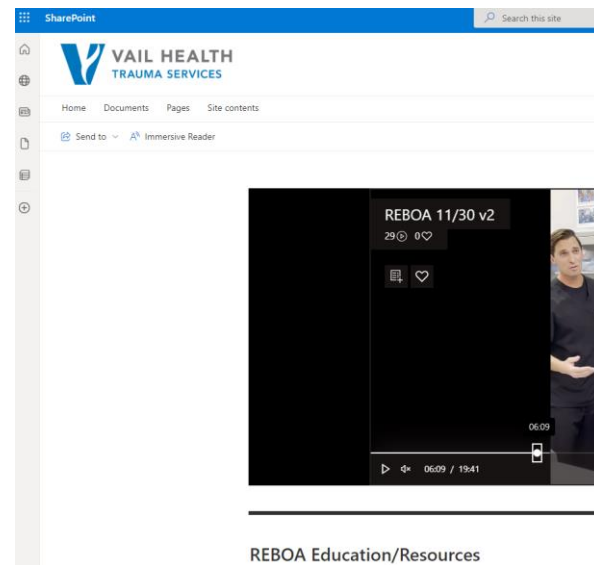
- Who can place a REBOA?
 - Acute care surgeon trained in REBOA
 - ED Physician may assist with placement, gain access to CFA
- Zone I should only be performed if the anticipated time to start of operation is less than 15 minutes, ideally deflated within 30 minutes from time of placement, but no longer than 60 minutes.
- Zone III may be tolerated for longer periods of time. Clinical guidelines have not been established to define a safe duration of balloon inflation. Current evidence suggests that 1-2 hours of duration is tolerable.
- Transfer of patients with Zone III REBOA placement may be considered if there is a reasonable expectation that definitive control can be accomplished within the guidelines for duration of inflation.
- All cases of REBOA placement shall be reviewed as part of the ongoing Trauma Services Committee Performance Improvement Process.

**Training, training, and more
training**



Training

- High Acuity, Low Occurrence events
- Didactic
- Case reviews & grand rounds
- Simulator
- Multidisciplinary and multidepartmental
 - ED
 - Anesthesia
 - OR
 - ICU, PRE-OP, PACU
 - OBGYN
 - Imaging, respiratory, lab, pharmacy
- Debriefs



Lessons learned

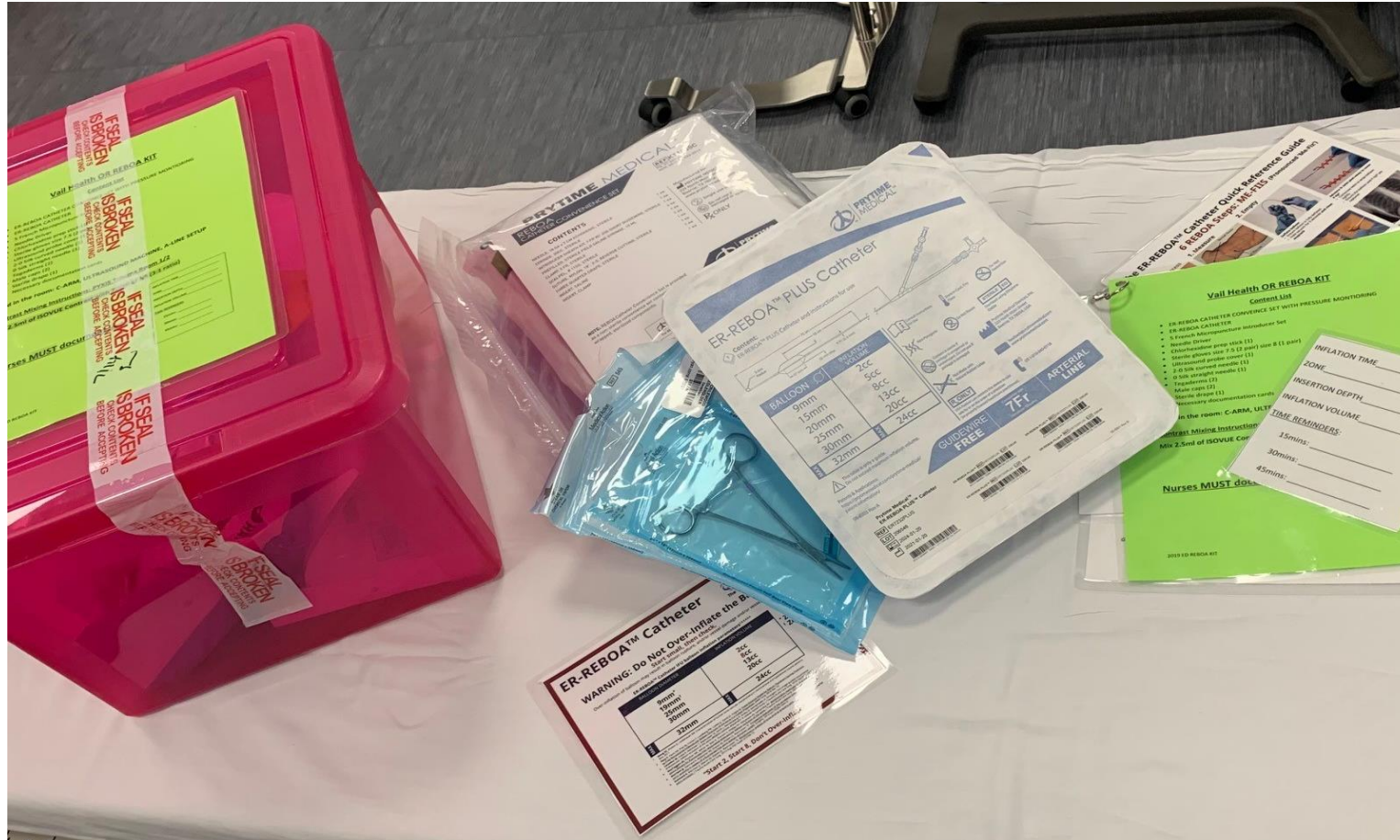
- **Communication on balloon status throughout the room**
- **Do NOT draw ABGs through the arterial line**
- **Repetition is key**
- **Realistic simulation training works**





REBOA Kits

REBOA Kits



REBOA Cases

REBOA Cases

1. GSW Left posterior flank
2. Skier-Skier collision on Plavix
3. Abdominal aortic injury at bifurcation
4. Aortic laceration at level of L2
5. MVC I-70 rollover ejection

Shift of Focus

Shift of Focus

- Bridge to our own operating room
 - Rapid placement to conserve blood products and hemorrhage control at our facility,
 - Determining need for transfer for higher level of care
 - Giving transport team the ability to inflate balloon en route
- Value of realistic training and demonstration of competence of team with large multidisciplinary simulations
- Shifting focus of placement and transfer to placement, damage control, resuscitation, and transfer once stabilized

Is partial REBOA the Future?



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