Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA): Initiation in the Emergency Department

Site Applicability

VGH Emergency Department

Practice Level

Emergency RNs: Specialized skill with completion of ACLS, TNCC &/OR EPICC foundations, specific department orientation to trauma team.

Policy Statement

REBOA in the Emergency Department (ED) is only initiated by an attending trauma surgeon.

The attending trauma surgeon must stay with a patient with REBOA at all times, including accompanying a patient on transport to the operating room or interventional radiology.

Need to Know

REBOA is only a temporary measure. All patients undergoing REBOA require prompt definitive surgical or interventional radiology treatment within 1 hour.

REBOA in some circumstances may be an alternative to emergency room thoracotomy and cross clamping of the aorta.

REBOA involves placing a balloon via a femoral sheath into the descending aorta. When the balloon is inflated the aorta can be temporarily occluded potentially resulting in:

- Temporary hemorrhage control distal to the balloon.
- Improved perfusion proximal to the balloon including coronary and cerebral perfusion.

REBOA should only be used to achieve definitive control of deadly bleeding; prolonged use can result in ischemia distal to the balloon including limb, visceral and spinal ischemia.

Indications for REBOA include:

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- Hypotension (systolic blood pressure below 90 mmHg) as a result of some traumatic injuries that are transiently or non-responsive to resuscitation.
- Control of potentially life threatening hemorrhage below the diaphragm such as non-compressible torso hemorrhage or severe pelvic fractures.

Use of REBOA also allows direct measurement of proximal aortic blood pressure.

The use of REBOA is time sensitive, the trauma team nurses must be aware of how to locate REBOA supplies, method for setting up REBOA, and indications for REBOA to anticipate the use of the equipment.

Quick Links

- Appendix A: Use of REBOA for PROF
- Appendix B: Aortic Zones

Equipment and Supplies

REBOA Kit Contents:

- ER REBOA catheter
- 0 silk on cutting curved needle
- Needle driver
- Pick up (toothed) 6”
- Arterial line set up
  - Vampless pressure tubing
  - 500cc NS
  - Pressure Bag
  - Pressure cable
- Single lumen catheter 16 G (femoral art line)
- 7 Fr. access sheath (introducer sheath)
- Large occlusive dressing
- Three way Stopcock
- 5 Fr. Catheter Clamp with Fastener

Procedure

REBOA kits will be checked daily as part of the trauma checklist.

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Prior to Insertion

- A Chest X-ray (CXR) and a focused assessment with sonography in Trauma (FAST) are required to assess if REBOA indicated.
- Assemble required REBOA equipment and supplies.
- Prime arterial line ensuring all air is purged from the system.
- Level and zero arterial line transducer.
- Connect arterial line to REBOA catheter and flush REBOA catheter.

During Insertion

- A Chest X-ray (CXR) or Abdominal X-Ray (ABX) may occur during placement prior to balloon inflation to verify position.
- Assist trauma surgeon as directed, this may include turning the stopcock off once the balloon is inflated.
- Transduce the arterial blood pressure via femoral line.
- Document time of balloon inflation, heart rate and blood pressure pre and post balloon inflation.
- Notify Trauma Surgeon when there is an acute increase in blood pressure during balloon inflation as this is an indication of aortic occlusion.

Post Insertion

- Apply large occlusive dressing to insertion site.
- Continuously monitor arterial blood pressure via femoral arterial line.
- Monitor insertion site for bleeding, swelling, or excessive bruising.
- Assess and document pedal pulses Q15 minutes or until REBOA removed or balloon deflated.
- Trauma Nurse Leader collaborates with Trauma Surgeon for patient destination.

Documentation

The Trauma Nurse Leader will document the following on trauma nursing assessment record.

- Insertion site
- Time of initial balloon inflation
- Balloon inflation volume
- Placement confirmation (imaging and marking on REBOA catheter)
- Time of any deflation or re-inflation of the balloon by the Trauma Surgeon

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Expected Patient/Client/Resident Outcomes

- Life threatening bleeding will be temporarily controlled.
- Patients with REBOA balloon inflated in Zone 1 with have bleeding control and balloon deflated within 60 minutes.
- Patients with REBOA balloon inflated in Zone 3 with have bleeding control and balloon down within 90 minutes.

Related Documents

Trauma Team Activation *(Pending Link)*

References

1. Joint Trauma System Clinical Practice Guideline (JTS CPG). (2017 August). Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) for Hemorrhagic Shock (CPG ID: 38). Retrieved from http://prytimemedical.com/wp-content/uploads/2017/07/REBOA_-CPG_FINAL.pdf
2. Prytime Medical, Inc. (2017). ER-REBOA™ Catheter Instructions for Use. Retrieved from http://prytimemedical.com/product/er-reboa/

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Owners: *(optional)*	VCH
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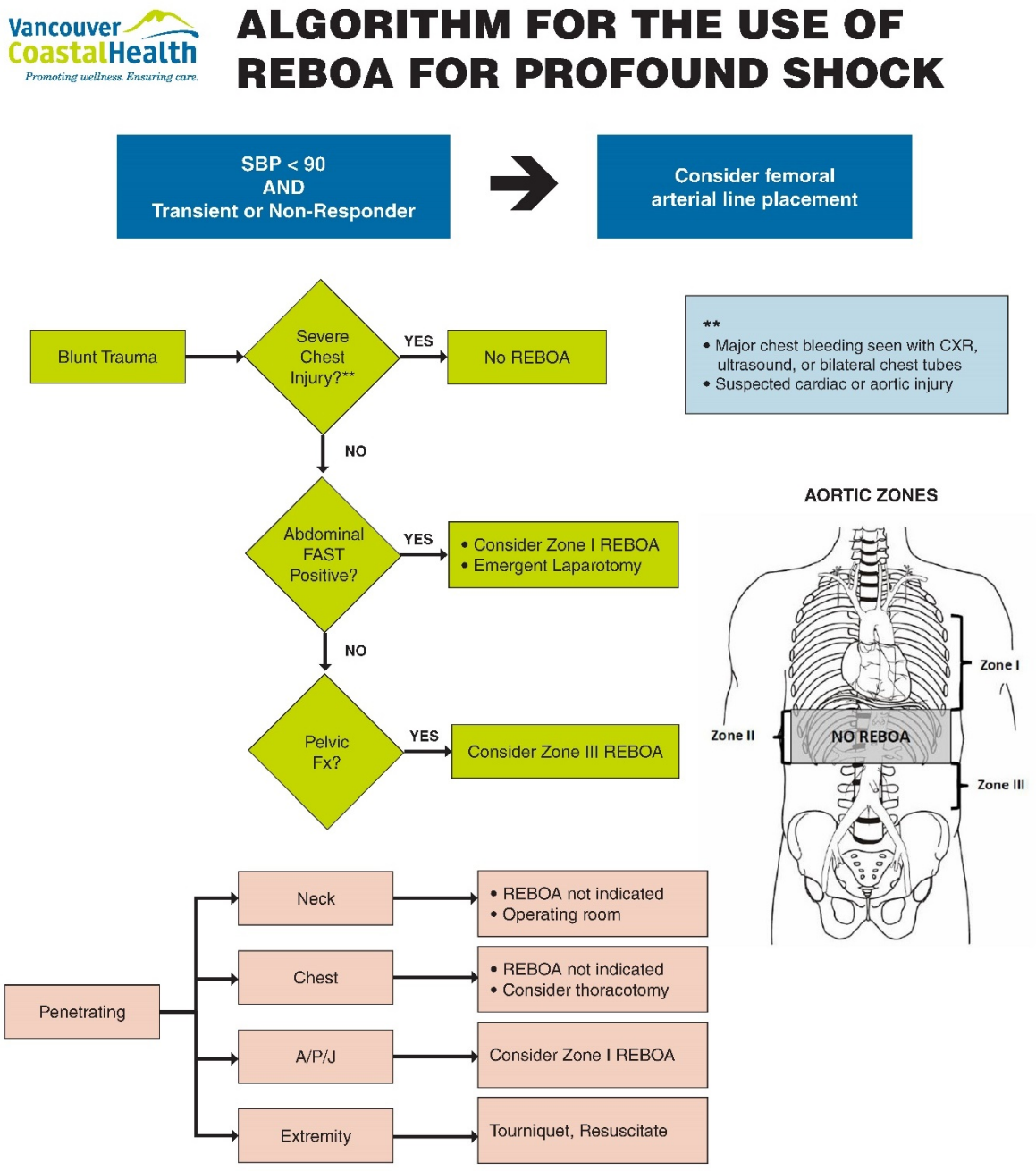
Appendix A: Algorithm for the Use of REBOA for PROFOUND SHOCK



REBOA: Resuscitative Endovascular Balloon Occlusion of the Aorta; ATLS: advanced Trauma Life Support; ROSC: Return of Spontaneous Circulation; CXR: Chest X-Ray; EFAST: Extended Focused Assessment with Sonography for Trauma; FAST: Focused Assessment with Sonography for Trauma; A/P/J: Abdomen/Pelvis/Junctional Lower Extremity.

Zone I REBOA: placement of aortic balloon in the thoracic aorta (insert catheter to 46 cm or measure the balloon to mid sternum/p-tip to sternal notch)

Zone III REBOA: placement of aortic balloon directly above the aortic bifurcation (insert catheter to 27 cm or measure to the level of the umbilicus).

Guideline Only/Not a Substitute for Clinical Judgment

1. Pasley J, Cannon J, Glaser J, Polk T, Morrison J, Brooker J, Mitchell B, Manley J, Becker T, Dubose J, Rasmussen T, Shackelford S, Stockinger Z. Joint Trauma System Clinical Practice Guidelines (JTS CPG). Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) for Hemorrhagic Shock (CPG ID: 38). 09 June 2017.

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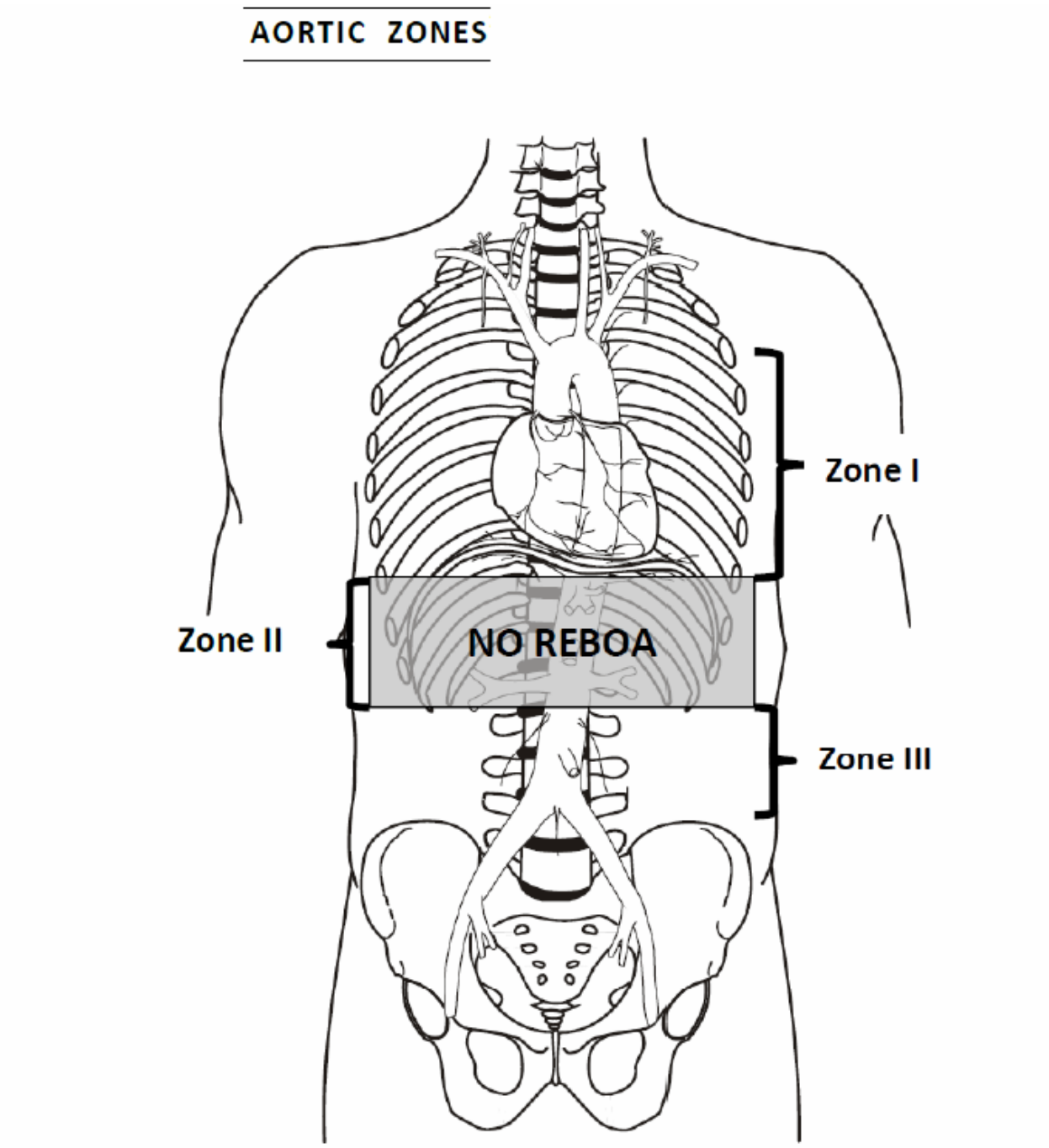
Appendix B: Aortic Zones



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