



Whole Blood Administration During Inflation of a Zone I Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA); A 30 vs. 60 Minutes Comparison

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Background

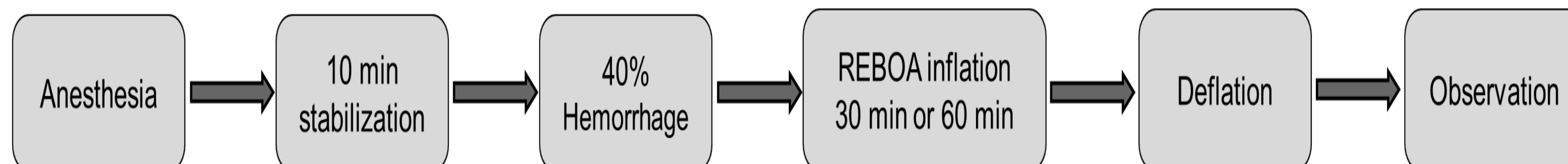
- Traumatic hemorrhage is the leading cause of death in civilian and military environments
- Little is known about the cardiovascular effects of simultaneous whole blood (WB) administration and REBOA following hemorrhagic shock
- Information about the feasibility of this resuscitation strategy would be invaluable in en route scenarios

Aims

1. To determine most successful time parameters for balloon inflation: 30 minutes vs. 60 minutes
2. To determine if the administration of WB during REBOA will maintain a normal blood pressure and increase survival after balloon deflation

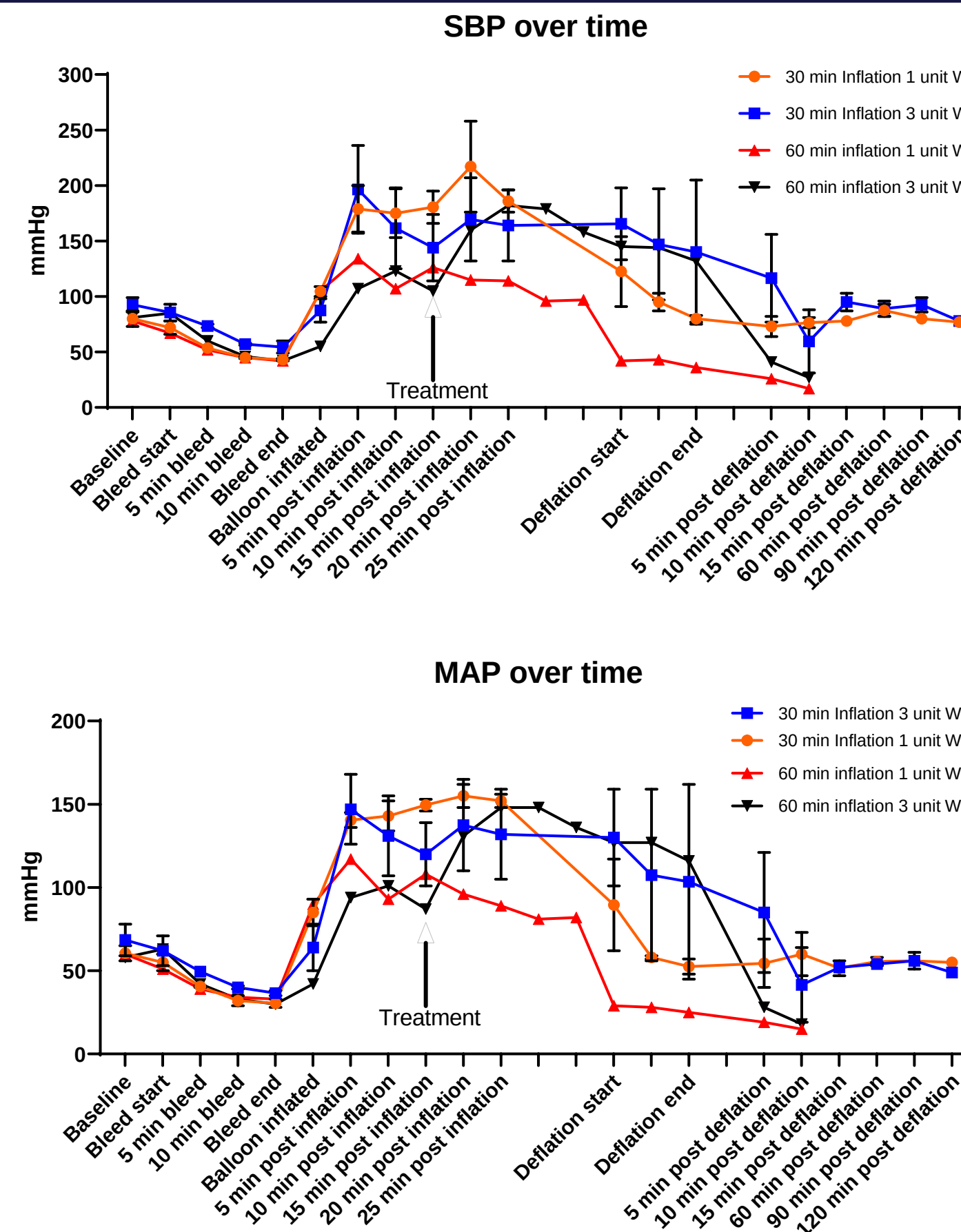
Methods

- Six swine (*Sus scrofa*) weighing 65kg – 85kg
- 40% controlled hemorrhage
- Randomized to Zone I REBOA balloon inflated for either 30 minutes or 60 minutes
- Balloon placement confirmed by fluoroscopy
- Fifteen minutes after balloon inflation, subjects received either one or three units of WB (5 minutes per unit), therefore resuscitation occurred simultaneously with inflated balloon.
- Subjects were observed for 120 minutes following balloon deflation or until death criteria was met
- Physiological parameters, blood gas analysis and chemistries were collected



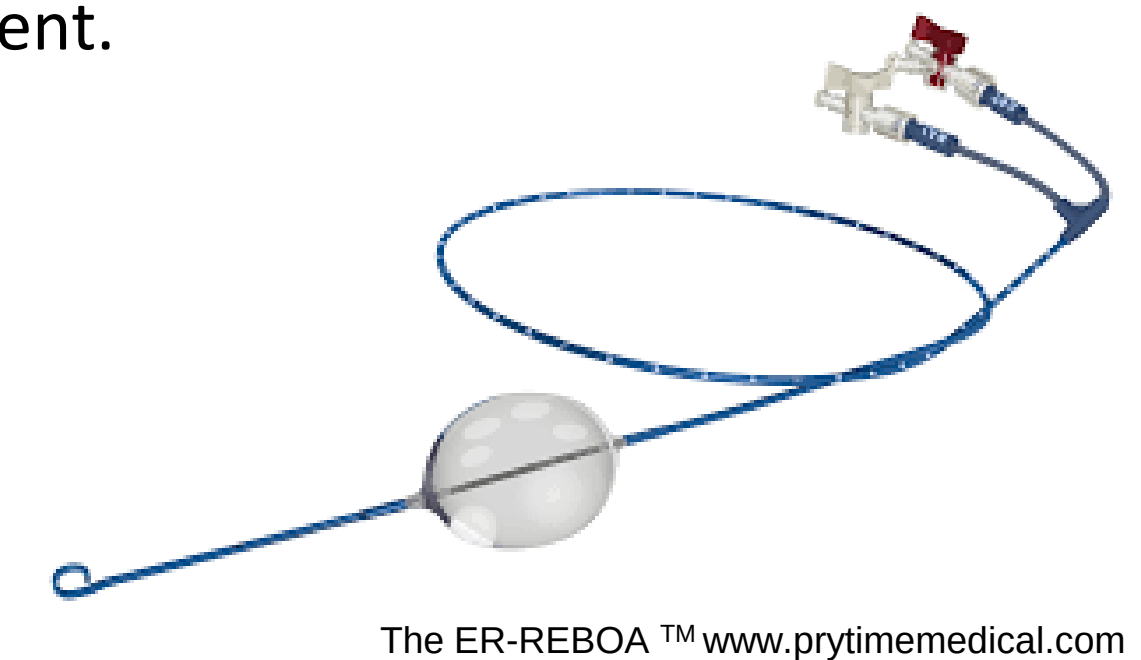
This study was conducted under a protocol reviewed and approved by the 59th Medical Wing Institutional Review Board and IACUC and in accordance with the approved protocol. The opinions or assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the Department of the Army, the Department of the Air Force, or Department of Defense

Results



	30 min 1 unit (mins)	30 min 3 units (mins)	60 min 1 unit (mins)	60 min 3 units (mins)
Average Time to death post deflation	0:90:00	0:90:00	0:06:00	0:03:00

- 4/4 subjects in the 30-minute cohort survived the entire observation period (2hrs) post-deflation.
- 2/2 subjects in the 60-minute cohort died at an average of 3 minutes post-deflation regardless of treatment.



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Limitations

- Animal model
- Preliminary data from a larger study
- Low n number (n=6)

Conclusions

Simultaneous administration of WB during 30-minute REBOA is a viable resuscitation approach. However, simultaneous administration of WB during 60-minute REBOA does not prevent death after balloon deflation.

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