



REBOA: Where and When?

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Declarations





“When” defines the “Where”

Exsanguinating Hemorrhage

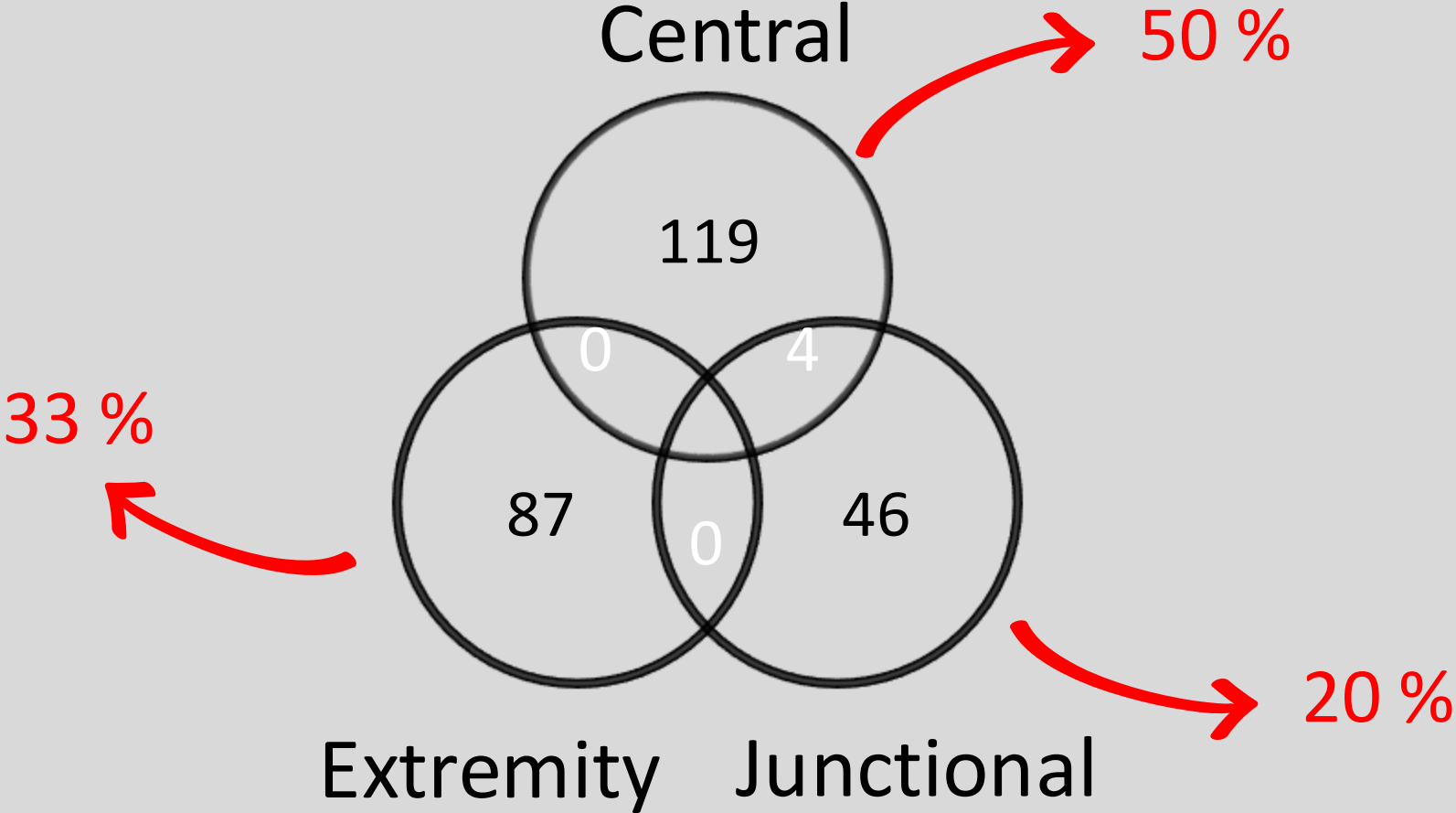
Vascular Trauma RLH: 2005 - 2010

256 Patients



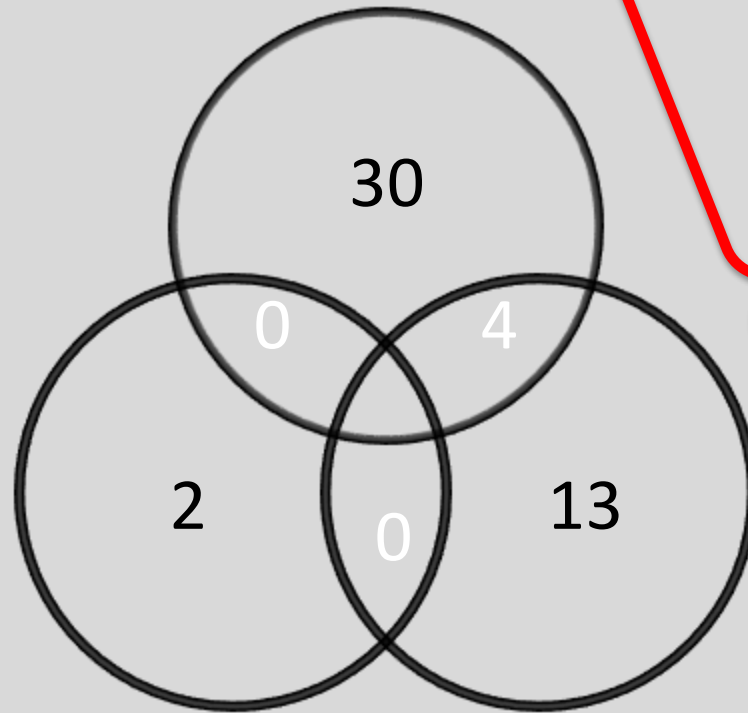
45 deaths (18%)

Zone of Injury



Mortality

Central



96 % of
deaths

Extremity

Junctional

40 % of patients who died
had pre-hospital cardiac arrest



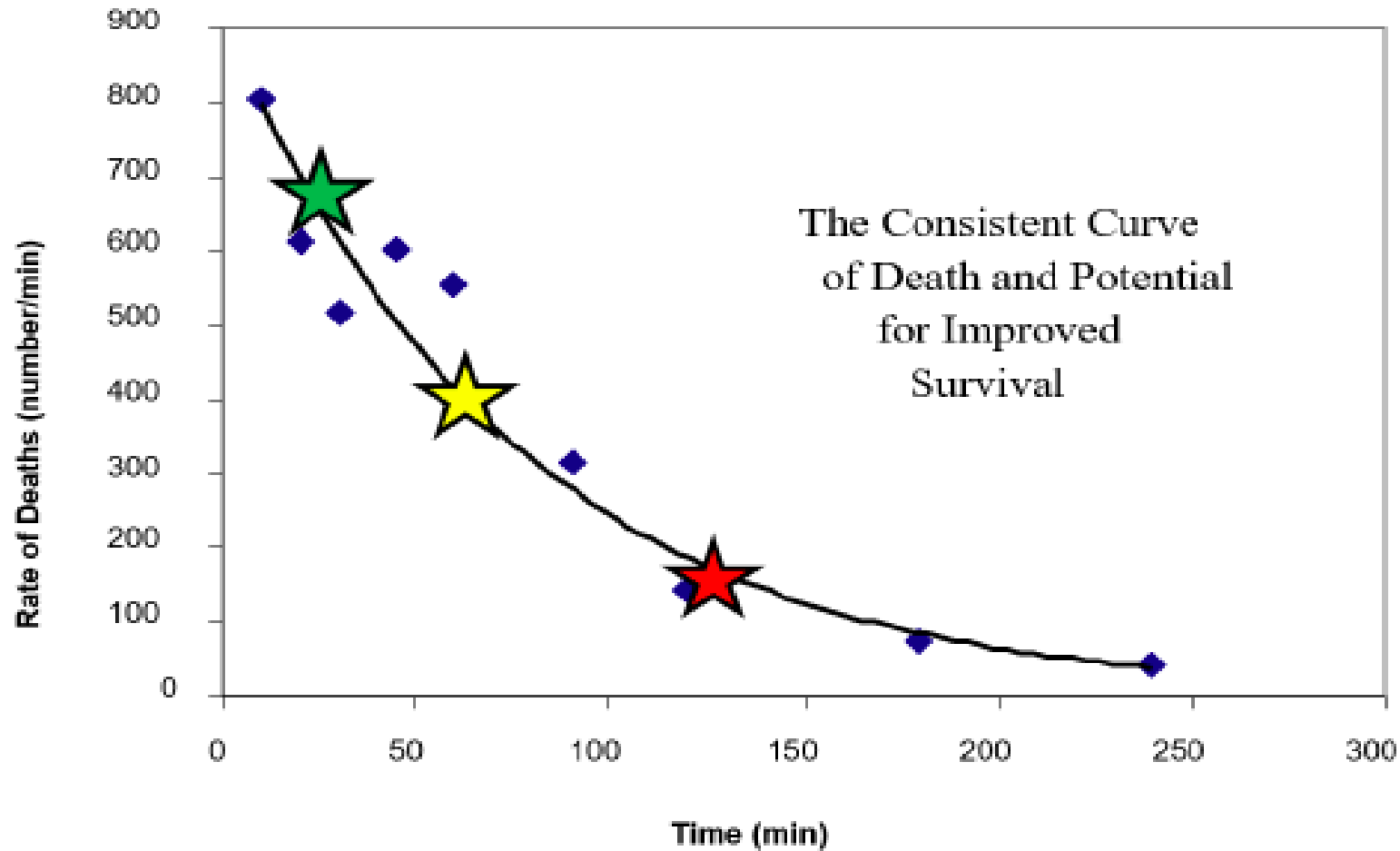
50 % of patients pelvic injury who died
had pre-hospital cardiac arrest



Time is the enemy: Mortality in trauma patients with hemorrhage from torso injury occurs long before the “golden hour”

- > 2.5 million patients
- Peak death rate 30 minutes post injury

★ Prehospital intervention; ★ ED intervention; ★ OR definitive hemostasis



Holcolmb J. Death versus time: US vehicle-related fatalities from 2003–2005. N = 55,537.

When?

Where?



ELSEVIER

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



<http://www.elsevier.com/locate/resuscitation>

Clinical paper

Pre-hospital Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) for exsanguinating pelvic haemorrhage



Robbie Lendrum^{a,b,c,*}, Zane Perkins^{a,b,d}, Manik Chana^e,
Max Marsden^{d,f}, Ross Davenport^{a,d}, Gareth Grier^{a,b,e},
Samy Sadek^{a,b}, Gareth Davies^{a,b,d}

Table 2 – Baseline and outcome characteristics of injured patients who underwent Zone III REBOA or had a failed attempt.

	REBOA (n = 13)	No REBOA (n = 6)	P-value
Baseline characteristics			
Age	33 (26-61)	33 (29-47)	0.749
Gender (male)	6 (46)	3 (50)	1.0
Initial SBP (mmHg) ^a	57 (35-67)	59 (47-81)	0.627
ISS	38 (28-48)	34 (21-40)	0.505
Outcomes			
Pre-hospital cardiac arrest ^b	0	3 (50)	0.021
Mortality (exsanguination)	0	4 (67)	0.004
Mortality (overall)	5 (38)	4 (67)	0.350
Lower limb Amputation	4 (31)	3 (50)	0.617

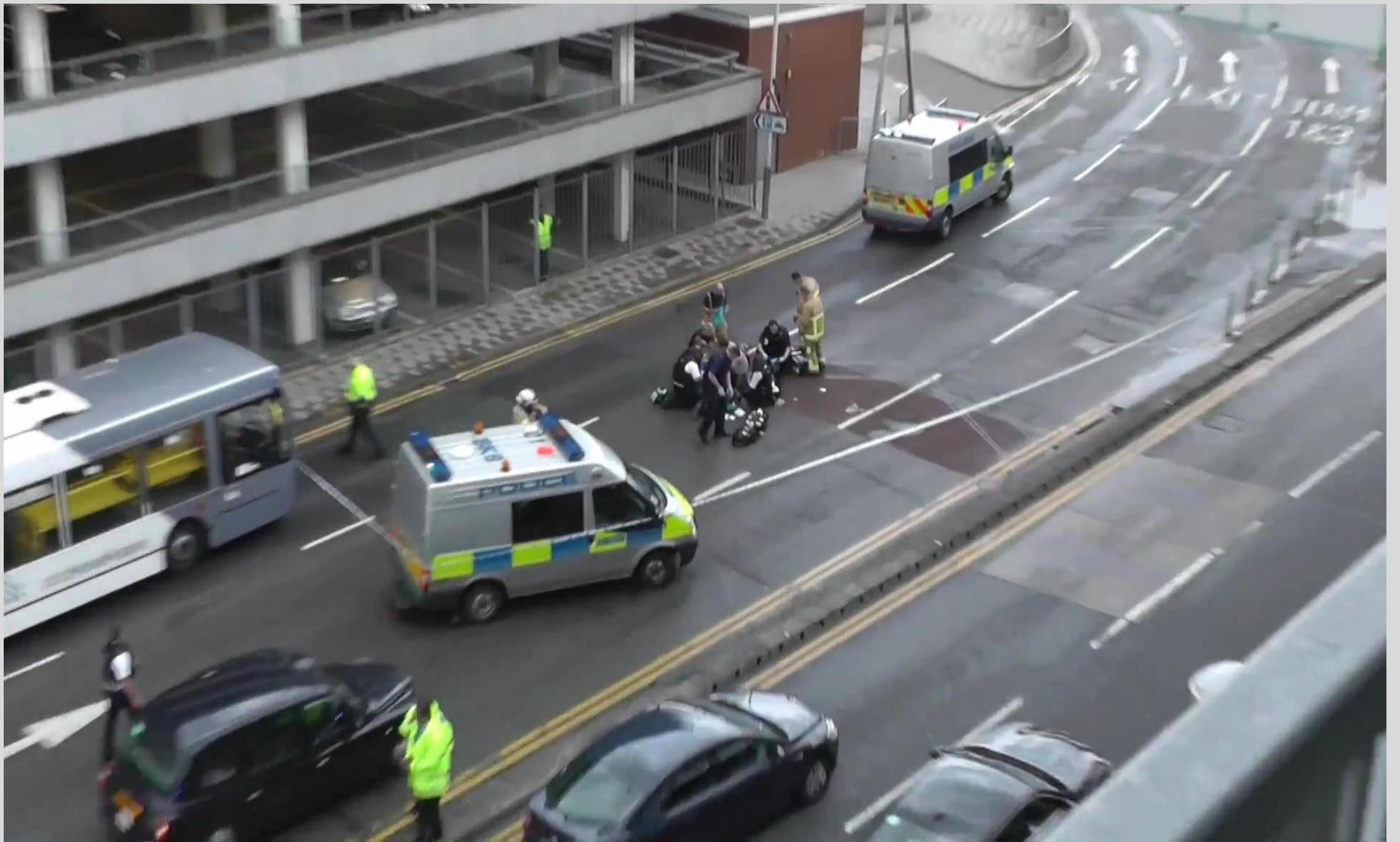
Data presented as median (inter quartile range) or frequency (percentage). SBP, systolic blood pressure; ISS, injury severity score.

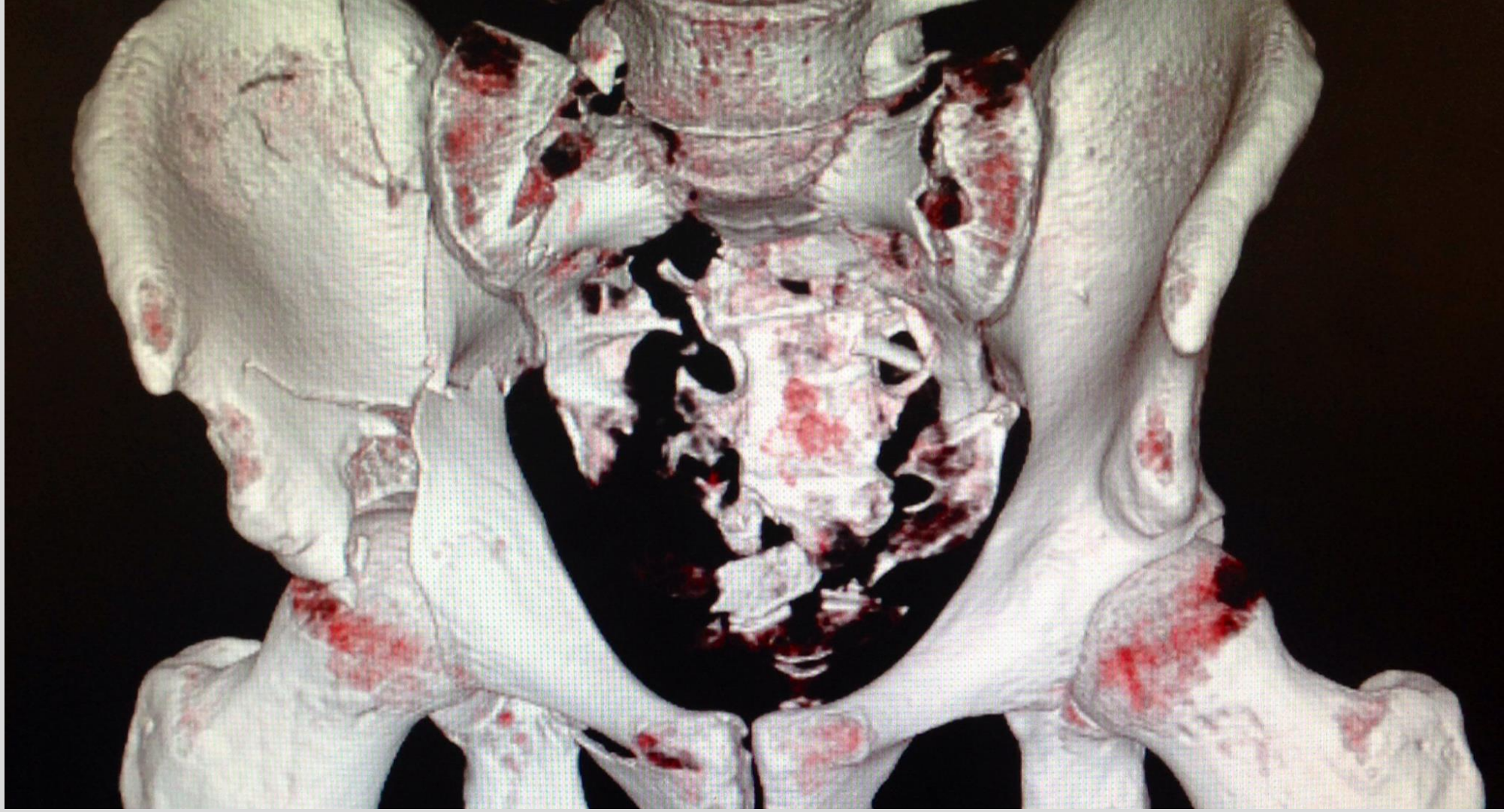
^a Unrecordable SBP estimated at 30 mmHg for calculations.

^b Following REBOA attempt.

Indications?

SBP < 90mmHg.....









Available online at www.sciencedirect.com

Resuscitation

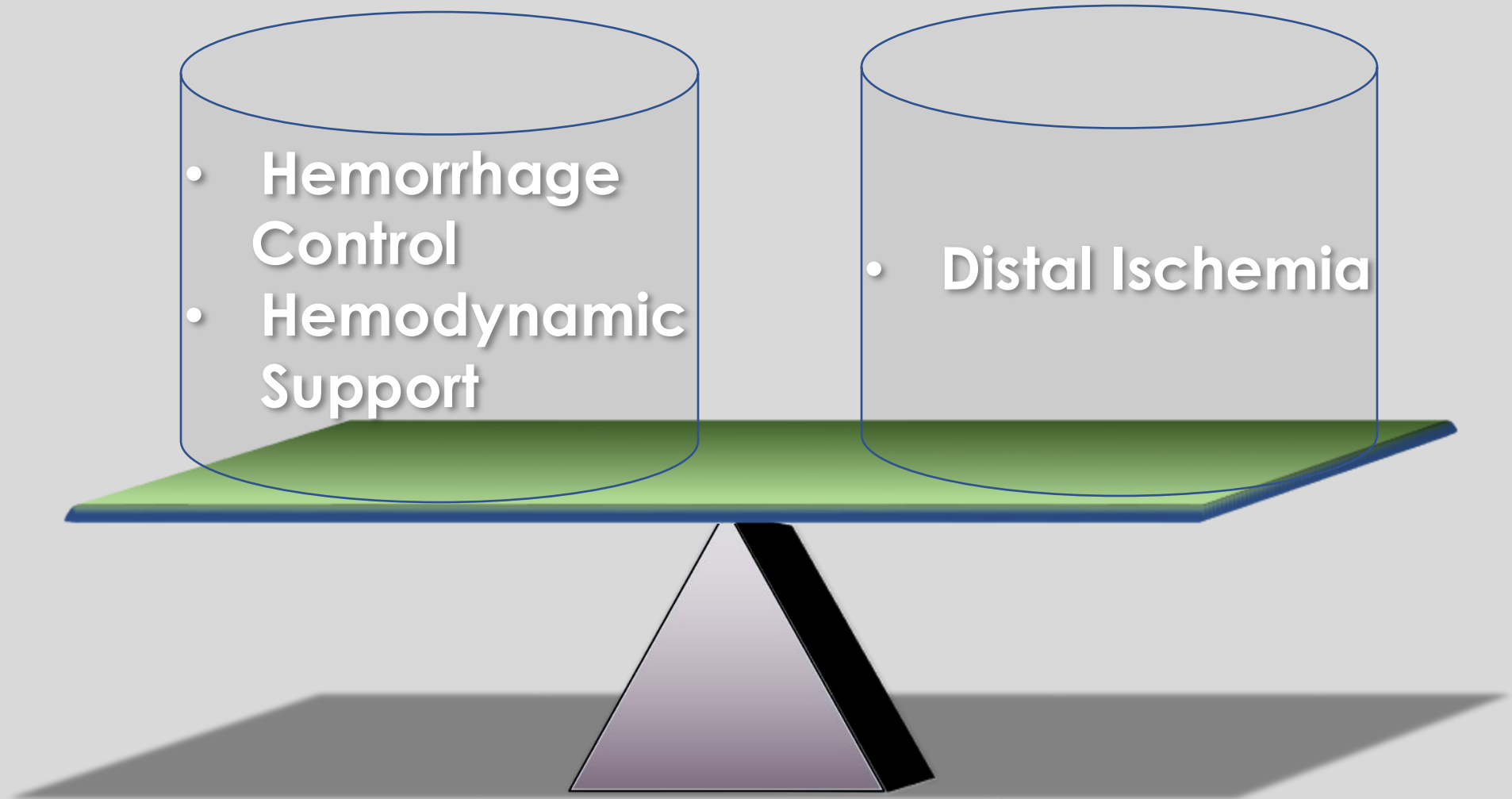
journal homepage: www.elsevier.com/locate/resuscitation



- **Appropriate time course (rapid evolution of shocked state).**
- **The following clinical signs (“Hateful Eight”)**
 - 1 **Pale**
 - 2 **Clammy**
 - 3 **“Air-hunger”**
 - 4 **Venous collapse**
 - 5 **Hypotension (low volume or absent peripheral pulses)**
 - 6 **Low/falling ETCO₂**
 - 7 **Tachy or bradycardia**
 - 8 **Altered mentation**



Challenges/Limitations



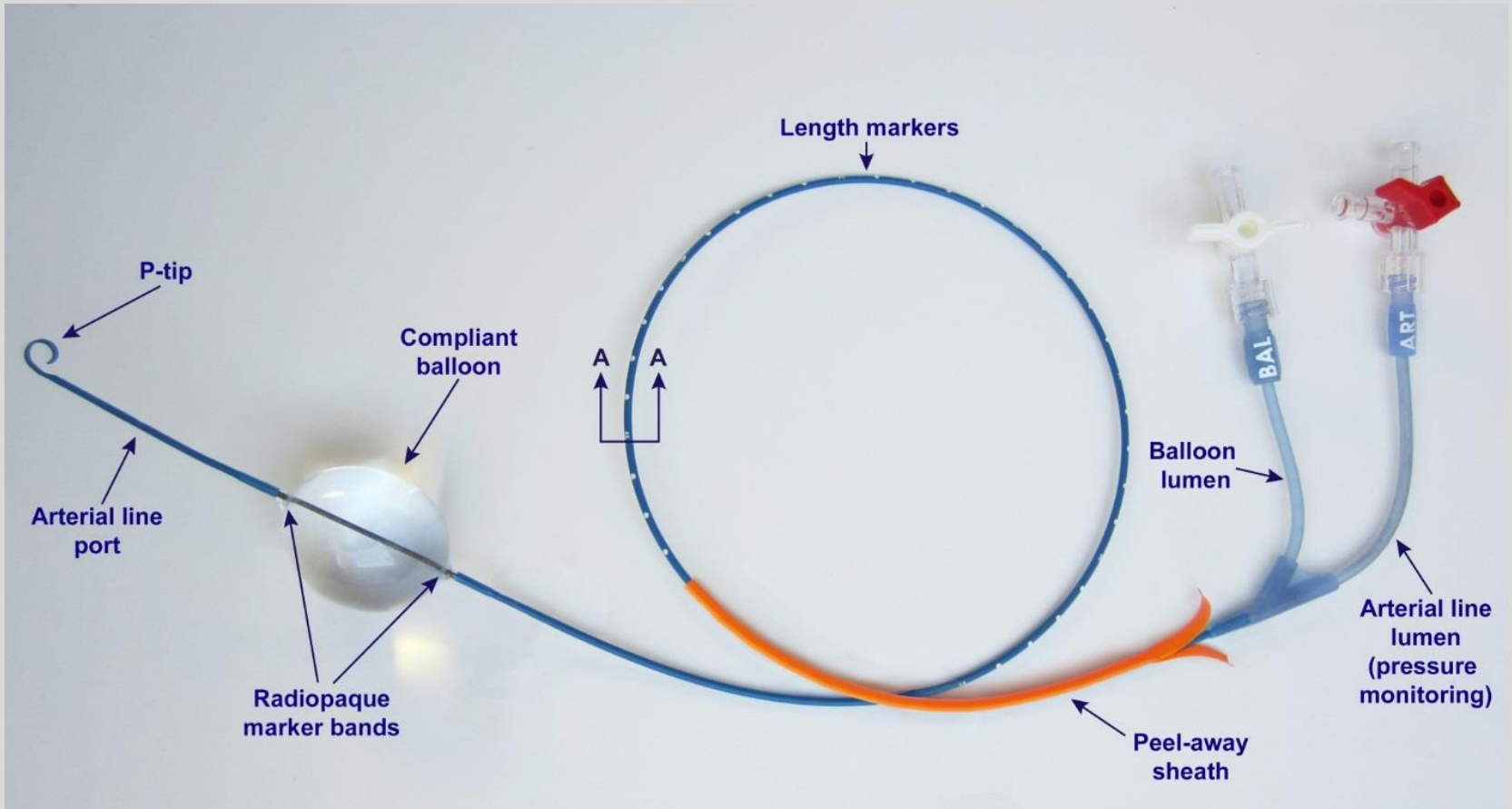
Prolonged Zone 1



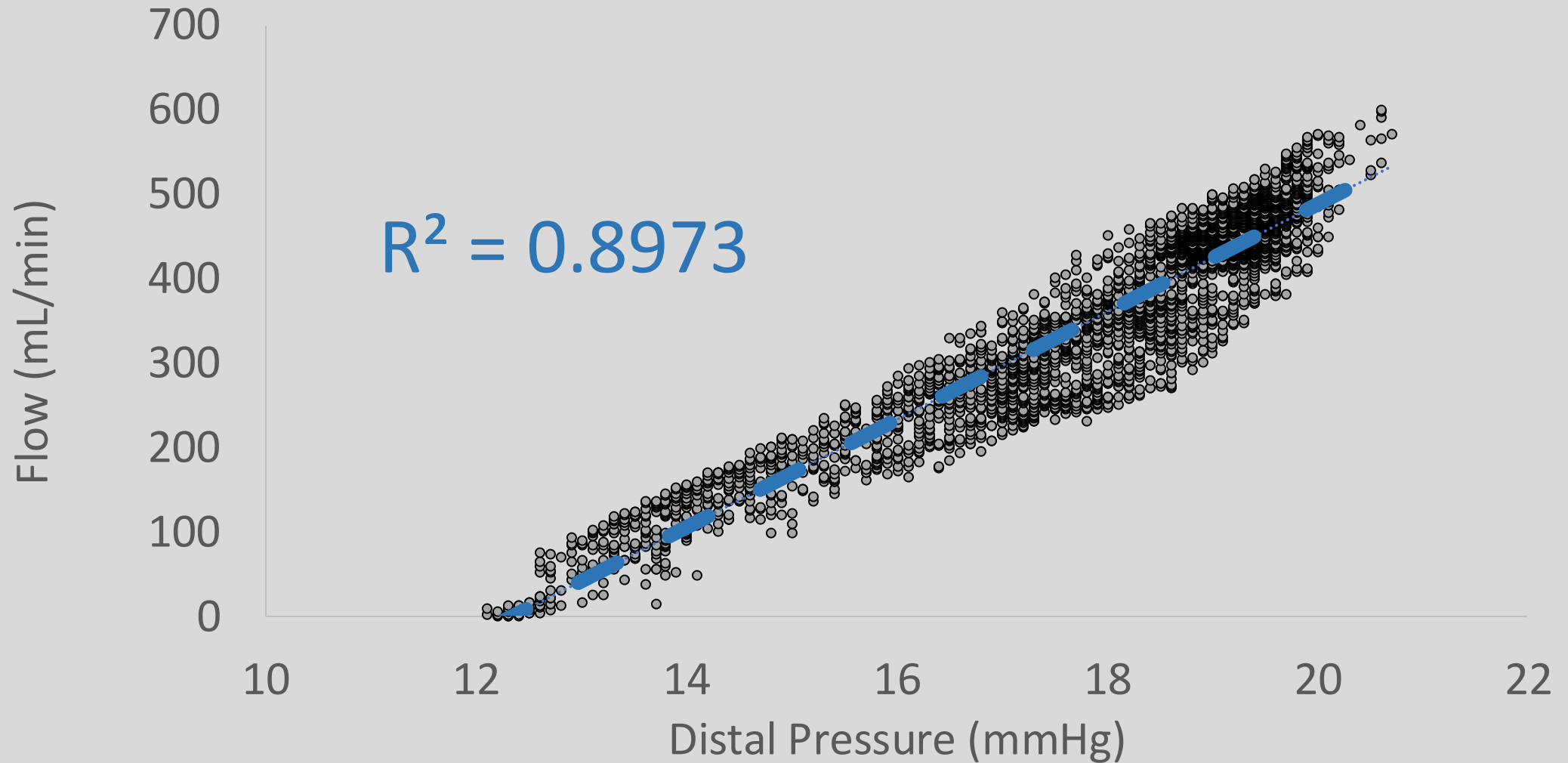
The diagram illustrates the Partial REBOA (P-REBOA) technique in three stages. It shows three vertical red vessels, likely the aorta, with a yellow catheter inserted into each. The catheter has a blue balloon at its tip. In the first stage (left), the balloon is deflated and the catheter is positioned within the vessel. In the second stage (middle), the balloon is inflated, partially occluding the vessel. In the third stage (right), the balloon is fully inflated, completely occluding the vessel. A white text box is overlaid on the middle and right stages.

Partial REBOA (P-REBOA)

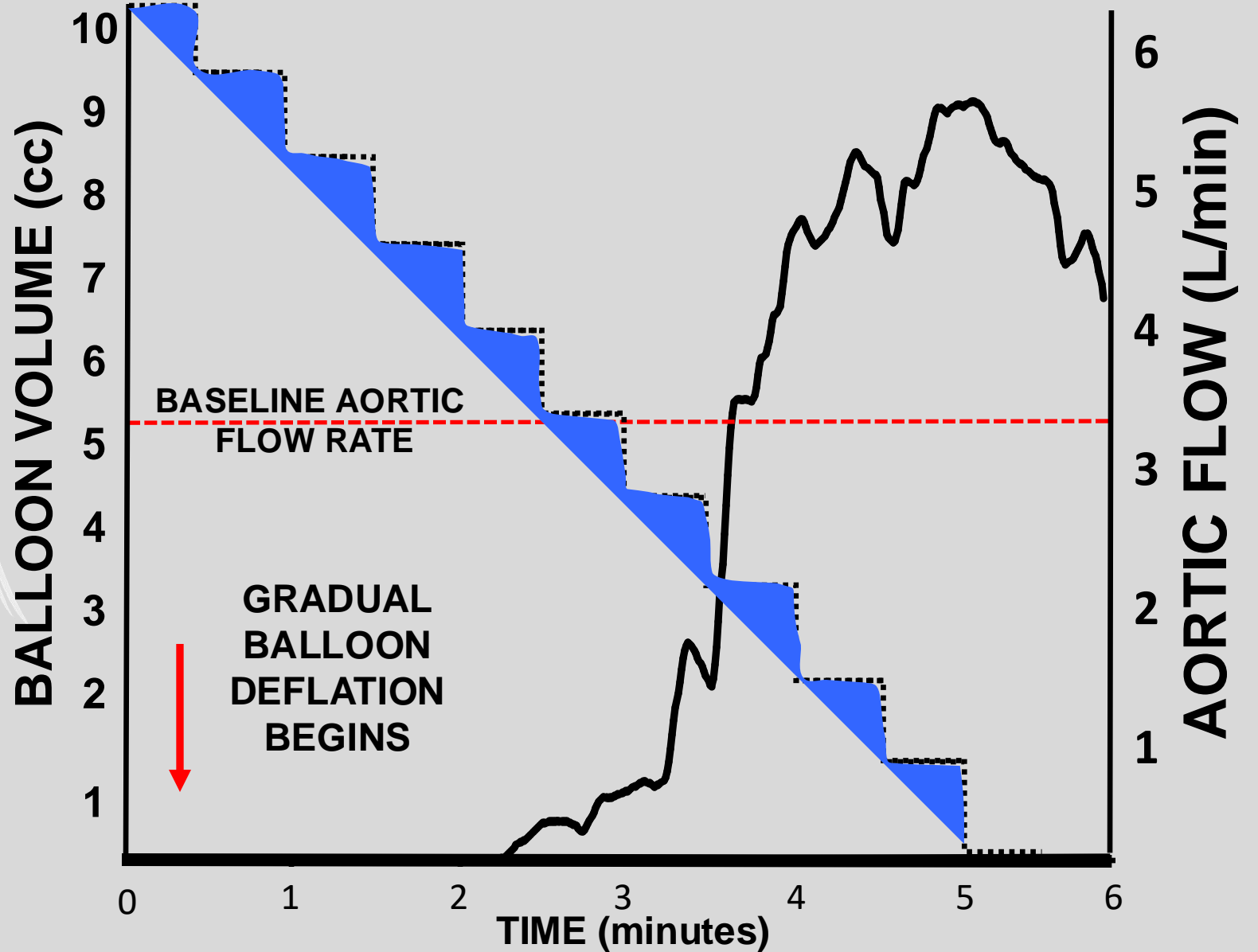
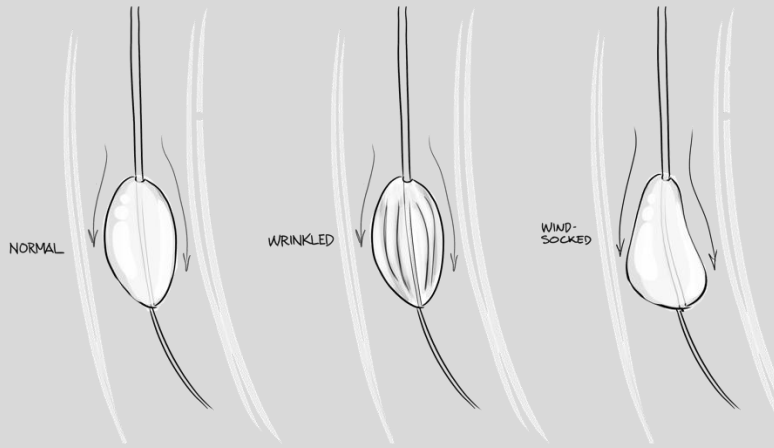
SAIBADIN



Identifying A Surrogate Marker for Flow



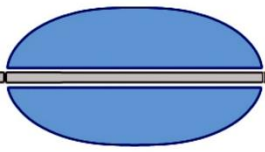
The Difficulty of Controlled Flow



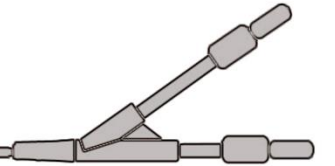
Efficacy



UK
UK



REBOA TRIAL
REBOA TRIAL



RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA FOR TRAUMA

