

Resuscitation

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Objectives

- At the end of my lecture, you will better . . .
 - Understand and recognize shock.
 - Initiate resuscitation with proper fluid selection.
 - Utilize labs as adjuncts in resuscitation.

Which of these patients needs resuscitated?

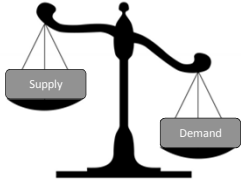
- A. 73 yo female with a broken hip after a ground level fall. Normal vitals.
- B. 44 yo male restrained driver in MVC. + EtOH. HR ↑, BP normal.
- C. 81 yo female, DM, took 2 x dose of insulin. Confused. Vitals normal.
- D. 38 yo male with knife in abdomen.

Why do we resuscitate people?

What is shock?

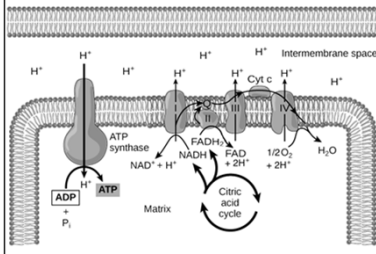
What is shock?

- Tissue Malperfusion
- Any process that interrupts oxidative phosphorylation



Types of Shock

- Metabolic
 - Diabetic/Insulin
 - Carbon Monoxide Poisoning
 - Cyanide Poisoning
- Circulatory
 - Hypovolemic
 - Hemorrhagic
 - Distributive
 - Septic
 - Anaphylaxis
 - Cardiogenic
 - Obstructive



How do we recognize shock in our patients?

How do we recognize shock in our patients?

- Vital signs
- Exam
- Imaging
- Labs
 - Lactic Acid
 - ABG
 - Which component?
- ABG
 - pH
 - pCO2
 - pO2
 - HCO3
 - BE
 - O2Hb
 - THb
 - COHb
 - MetHB

0022-5282/98/2410-1343\$02.00/0
 J Trauma, Vol. 45, No. 5, October 1998
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Base Deficit as a Guide to Volume Resuscitation

JAMES W. DAVIS, M.D., STEVEN R. SHACKFORD, M.D., F.A.C.S., ROBERT C. MACKERSIE, M.D., AND DAVID B. HOYT, M.D., F.A.C.S.

1079-6061/98/4505-0873\$03.00/0
 The Journal of Trauma, Injury, Infection, and Critical Care
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Base Deficit in the Elderly: A Marker of Severe Injury and Death

James W. Davis, MD, FACS, and Krista L. Kaups, MD, FACS

Resuscitation (2006) 77, 361-368
 available at www.sciencedirect.com
 ScienceDirect
 journal homepage: www.elsevier.com/locate/resuscitation

ELSEVIER

CLINICAL PAPER

The utility of base deficit and arterial lactate in differentiating major from minor injury in trauma patients with normal vital signs[☆]

Lorenzo Paladino^a, Richard Sinert, David Wallace, Todd Anderson, Kabir Yadav, Shahriar Zehtabchi

American Journal of Emergency Medicine 34 (2015) 626-635

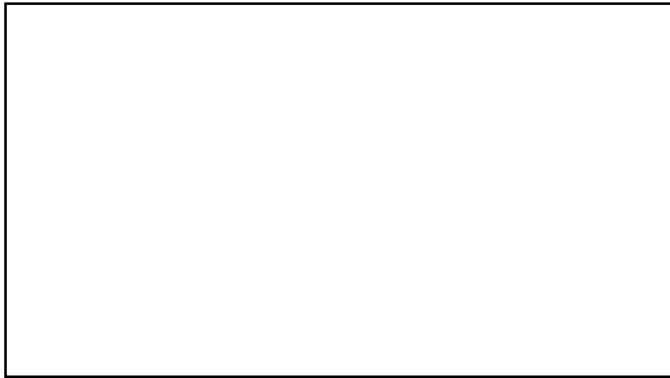
Contents lists available at ScienceDirect
 American Journal of Emergency Medicine
 journal homepage: www.elsevier.com/locate/ajem

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Review

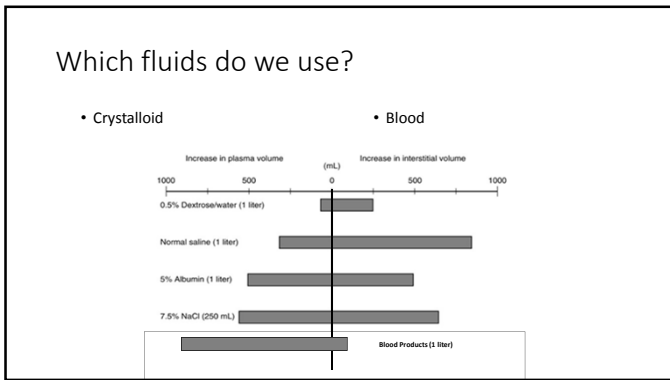
Is arterial base deficit still a useful prognostic marker in trauma? A systematic review^{☆,☆☆}

L. Ibrahim^{a,b,c}, W.P. Chor^{a,b}, K.M. Chue^c, C.S. Tan^d, H.L. Tan^e, F.J. Siddiqui^{a,f}, M. Hartman^{b,d}



How do we resuscitate patients in shock?

- Metabolic
 - Diabetic/Insulin -----> Sugar and insulin
 - Carbon Monoxide Poisoning -----> Elevate pO2
 - Cyanide Poisoning -----> Vit. B12
- Circulatory
 - Hypovolemic } -----> Restore intravascular volume
 - Hemorrhagic } -----> Restore intravascular volume
 - Distributive } -----> Restore intravascular volume
 - Septic
 - Anaphylaxis
 - Cardiogenic -----> Stimulate and off-load myocardium
 - Obstructive -----> Relieve the obstruction

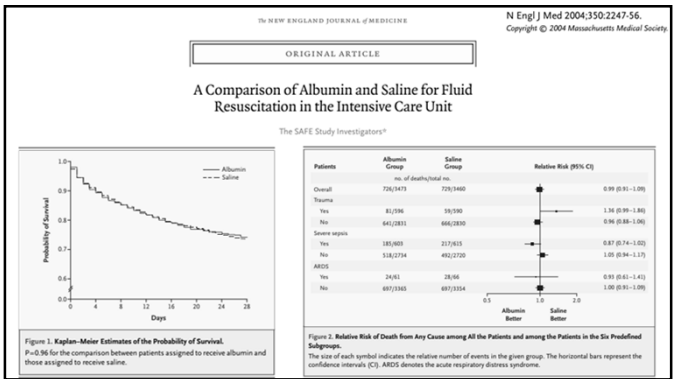


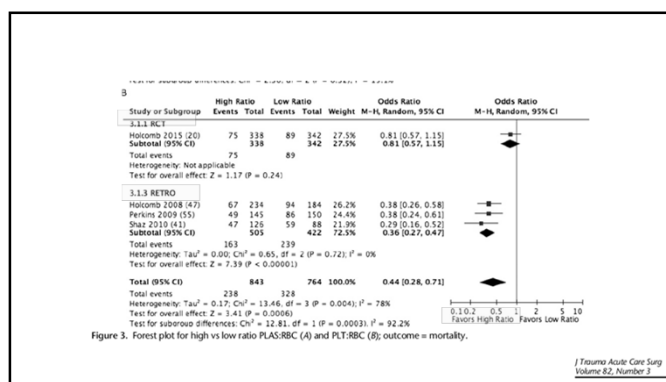
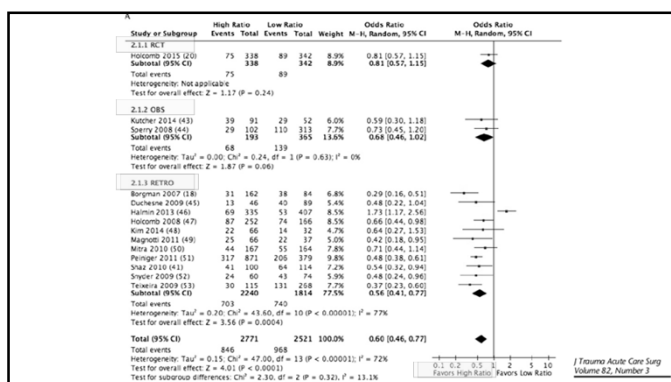
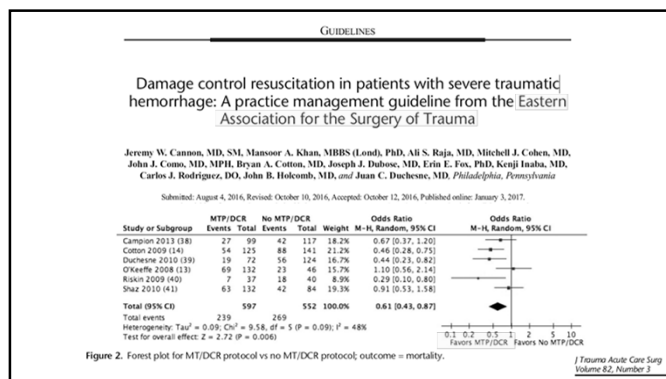
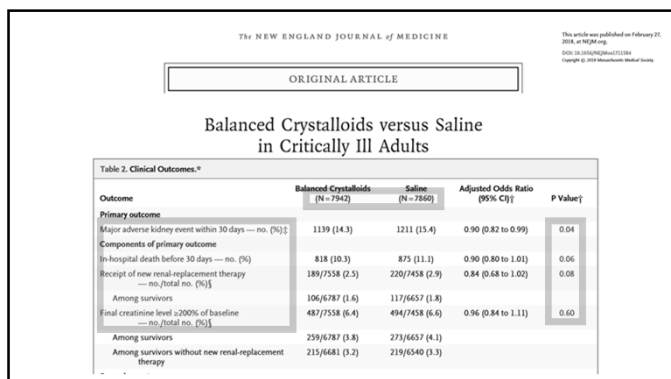
American College of Surgeons Classes of Acute Hemorrhage

Factors	I	II	III	IV
Blood loss	<15% (<750ml)	15-30% (750-1500ml)	30-40% (1500-2000ml)	>40% (>2000ml)
Pulse	>100	>100	>120	>140
B.P.	Normal	Normal	↓	↓↓
Pulse pressure	N or ↓	↓	↓↓	↓↓
Capillary refill	<2s	2-3s	3-4s	>5s
Resp. rate	14-20	20-30	30-40	>40
Urine output ml/hr	30 or more	20-30	5-10	Negligible
Mental status	Slightly anxious	Mildly anxious	Anxious & confused	Confused Lethargic

Which fluids do we use?

- Crystalloid
 - Side-effects
 - Compartment syndrome
 - ARDS/ALI
 - Dilutional Anemia
 - Coagulopathy
 - Hypothermia
- Blood
 - Side-effects
 - TACO
 - TRALI
 - Immunosuppression
 - Infections (HCV, HIV)
 - When?
 - Stage III/IV shock
 - What?
 - pRBC's
 - Plasma
 - Whole Blood?

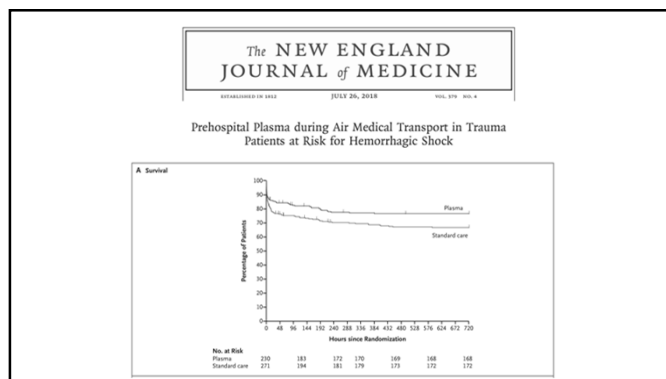


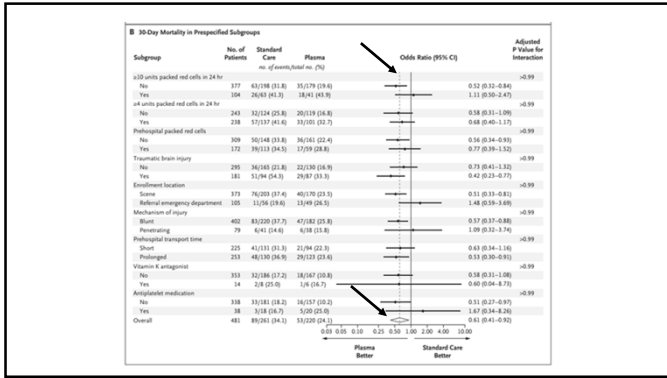


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Lancet 2018 July 28; 392(10144): 283–291. doi:10.1016/S0140-6736(18)31553-8.

Plasma-first resuscitation to treat haemorrhagic shock during emergency ground transportation in an urban area: a randomised trial

No benefit.





How much and how quickly do we give?