

Peri-op Fluid Management

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Disclaimer



...I wish!

ERAS

Enhanced Recovery After Surgery

Early Release After Surgery

Objectives

- Describe and calculate perioperative physiological fluid requirements for patients of all ages
- Describe and calculate intraoperative fluid requirements for open abdominal surgery
- Describe and calculate fluid replacement for replacing blood loss

NOTICE!

The case
presentation is
fictitious.

NOTICE!

MATH

Fluid Balance

Crystalloid

6,800

Colloid

RBCs

Plasma

Platelets

O
U
T

EBL

1,000

U / O

200

GI

Total:

6,800

Total:

1,200

BALANCE:

5,600 mL



Variability in practice and factors predictive of total crystalloid administration during abdominal surgery: retrospective two-centre analysis

M. Lilot^{1,2}, J. M. Ehrenfeld³, C. Lee¹, B. Harrington¹, M. Cannesson¹ and J. Rinehart

UCI: 1327

VU: 4585

British Journal of Anaesthesia 114 (5): 767–76 (2015)

Peri-op Fluid Management

Preoperative Phase

Intraoperative Phase

Postoperative Phase



4-2-1 Rule

4-2-1 Rule

Body Weight

Hourly Fluid Requirement

0 - 10 kg

4ml/kg/h

11 - 20 kg

40ml/h + 2ml/kg/h

21 kg and up

60ml/h + 1ml/kg/h

Perianesthesia Cup



4-2-1 Rule

5 Kg Child 20 ml/h

10 Kg Child 40 ml/h

15 Kg Child 50 ml/h

20 Kg Child 60 ml/h

30 Kg Child 70 ml/h

70 Kg Adult 110 ml/h

Mrs. Jane Doe

58y.o. female

Diverticulitis

Sigmoid resection (2hrs) at
14:00

NPO since 00:00

Weight: 60 kg



Preop Phase

What is Jane's fluid deficit at 12:00hrs?

4-2-1 rule per hour X hrs NPO

$$100\text{ml/h} \times 12 = 1200\text{ml}$$

What is Jane's fluid deficit at 14:00hrs?

$$100\text{ml/h} \times 14\text{h} = 1400\text{ml}$$

Intraop Phase

- Basic Requirements (4-2-1) continue
- Evaporative losses due to open abdomen
- 10ml/kg/h

Intraop Phase

Abdomen is open for 2 hours: What is the evaporative loss?

$$10\text{ml/kg/h} \times 2\text{h}$$

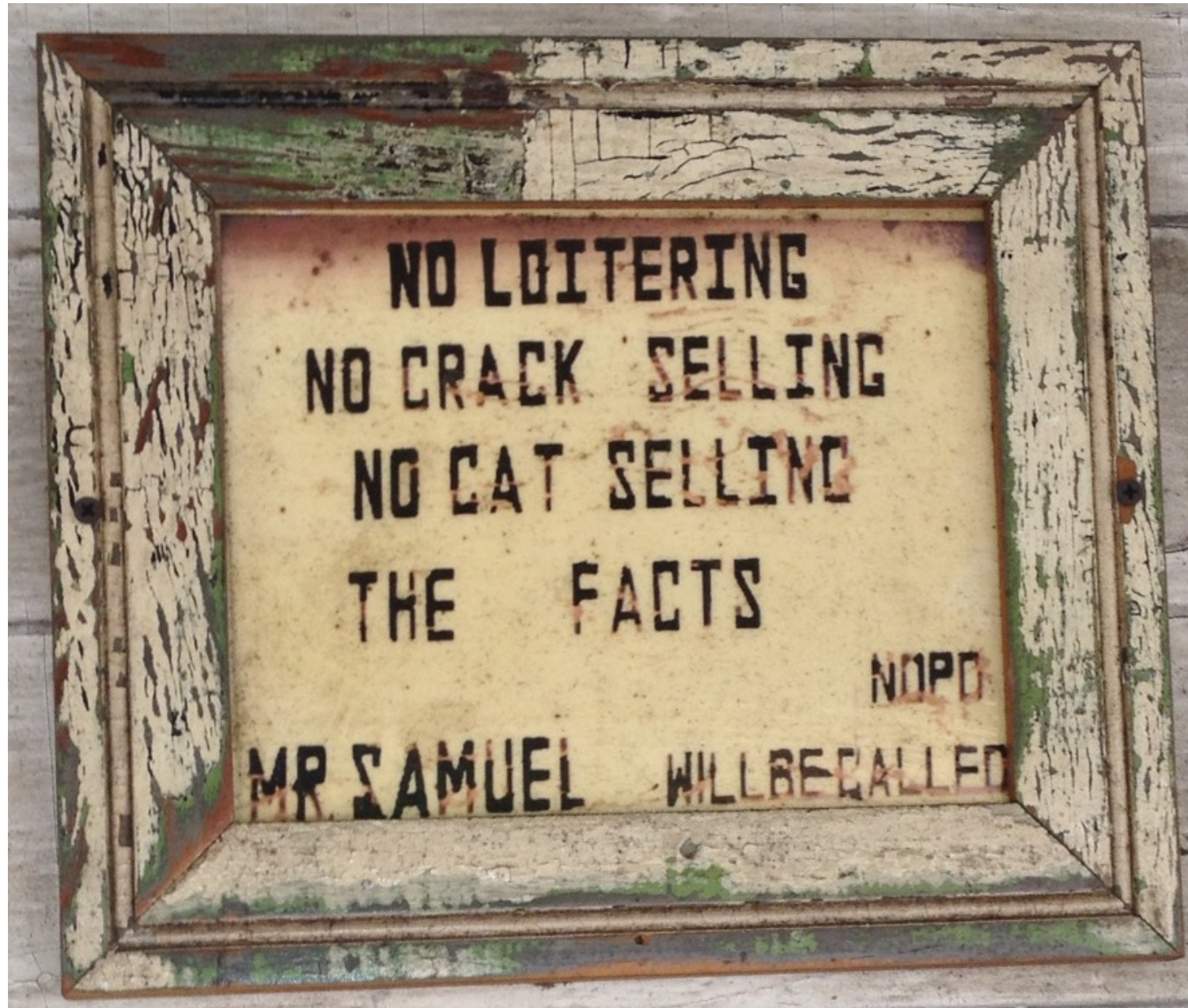
$$10 \times 60 \times 2 = 1200\text{ml}$$

Intraop Phase

What is the total fluid requirement at the end of the case?

Preop maintenance	1400ml
+	+
Intraop maintenance	200ml
+	+
Evaporative losses	1200ml
 Total Requirement	 2800ml

But Wait!



There's More



Replacing Intraoperative Blood Loss

A) Allowable Blood Loss

Transfusion Trigger

Initial HgB

Estimated Blood Volume

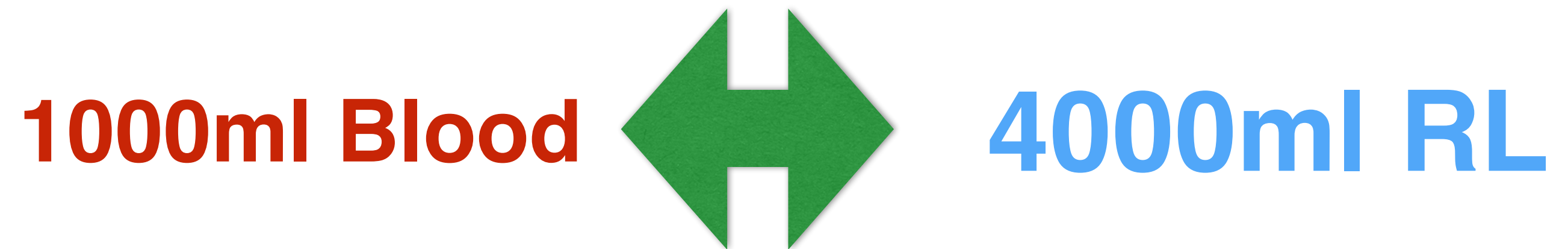
B) 4:1 Rule

4 mls of RL are needed to replace 1 ml of blood

Allowable Blood Loss

Starting HgB	130	
Transfusion Trigger	70	1938ml
EBV	4200ml	

Replacing Intraoperative Blood Loss



Intraop Phase

What is the total fluid requirement at the end of the case?

Preop maintenance	1400ml
+	+
Intraop maintenance	200ml
+	+
Evaporative losses	1200ml
 Total Requirement	 2800ml

Fluid Balance

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Total:

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Total:

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BALANCE:

5,600

mL

A large, light gray speech bubble with a thin gray outline. It has a rounded, oval-like body and a small, pointed tail extending from the bottom left. The text "Good Job, Doc!" is centered within the bubble in a black, sans-serif font.

Good Job, Doc!

Postop Phase

- Continue Fluid Resuscitation
- CBC?
- PT/PTT?
- Electrolytes?



