IV Fluids

Crystalloids

Crystalloid solutions are the bedrock of IVF.

Crystalloid solutions are the standard solutions used for fluid replacement and maintenance.

Two types:

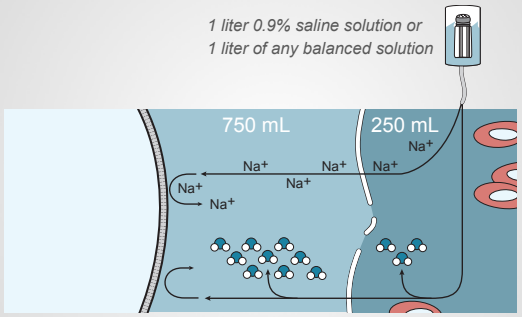
Balanced solutions:

- Ringers,
- Hartmanns,
- Plasma-lyte

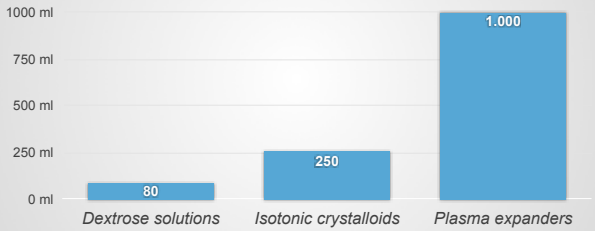
Crystalloid solutions are salt solutions.

SALINE	*BALANCED SOLUTION*
3% NS	Ringer's Lactate
0.9% NS	Hartman's Solution
0.45% NS	Plasma-lyte
0.225% NS	

1 liter 0.9% saline solution or
1 liter of any balanced solution



Volume remaining in the plasma space



Saline is the most commonly used IVF

- ➡ Volume resuscitation
- ➡ Hypotonic saline for maintenance fluids
  - ➡ often mixed with dextrose solutions
- ➡ 3% saline for hyponatremia

0.9% NaCl is 0.9g of NaCl per 100 mL

9,000 mg NaCl per liter

sodium	chlorine
11	17
Na	**Cl**
22.990	35.453

9,000 mg / 58.4 = 154 mmol of NaCl per liter

154 mmol of Na 154 mmol of Cl

WHO recommends less than 2 g (87 mmol) of dietary sodium a day

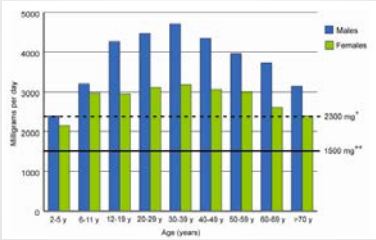
0.9% at 100 ml/hour

5:40 until WHO

at 100 ml/hour

3.7 days of WHO sodium

WHO recommends less than 2 g of dietary sodium a day



Sodium 870 mg/240 mL

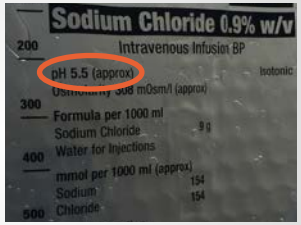
Sodium 3625 mg/L ÷ 23 mg/mmol

Sodium 157 mmol/L

Sodium in 0.9% NS is 154

0.9% NaCl pH 5.5

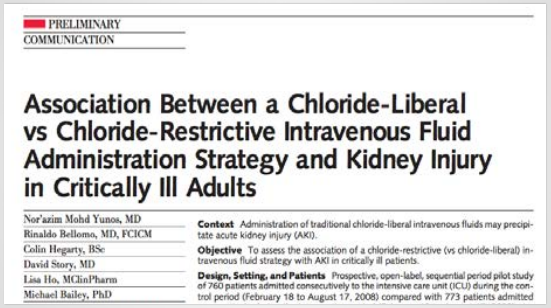
100x



non-anion gap metabolic acidosis

Balanced solutions

electrolyte	Ringers lactate	Hartmann's solution	Plasma-Lyte	Sterofundin	0.9% NaCl
sodium	130	131	140	140	154
potassium	4	5	5	4	
chloride	109	111	98	127	154
lactate	28	29			
acetate			27	24	
gluconate			23		
calcium	3	4		2.5	
magnesium			1.5	1	
pH	6.5	6.5	7.4		5.5



PRELIMINARY COMMUNICATION

Association Between a Chloride-Liberal vs Chloride-Restrictive Intravenous Fluid Administration Strategy and Kidney Injury in Critically Ill Adults

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Context Administration of traditional chloride-liberal intravenous fluids may precipitate acute kidney injury (AKI).

Objective To assess the association of a chloride-restrictive (vs chloride-liberal) intravenous fluid strategy with AKI in critically ill patients.

Design, Setting, and Patients Prospective, open-label, sequential period pilot study of 760 patients admitted consecutively to the intensive care unit (ICU) during the control period (February 18 to August 17, 2008) compared with 773 patients admitted

Feb	Feb
Mar	Mar
Apr	Apr
May	May
Jun	Jun
Jul	Jul
Aug	Aug

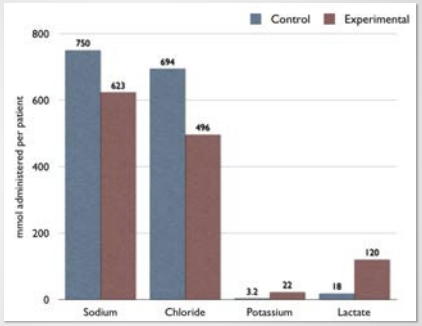


Table 3. Incidence of Acute Kidney Injury Stratified by Risk, Injury, Failure, Loss, and End-Stage (RIFLE) Serum Creatinine Criteria

	No. (%) [95% CI] of Patients[a]		
	Control Period (n = 760)	Intervention Period (n = 773)	*P* Value
RIFLE class			
Risk	71 (9.0) [7.2-11.0]	57 (7.4) [5.5-9.0]	.16
Injury	48 (6.3) [4.5-8.1]	23 (3.0) [1.8-4.2]	.002
Failure	57 (7.5) [5.6-9.0]	42 (5.4) [3.8-7.1]	.10
Injury and failure	105 (14) [11-16]	65 (8.4) [6.4-10.0]	<.001

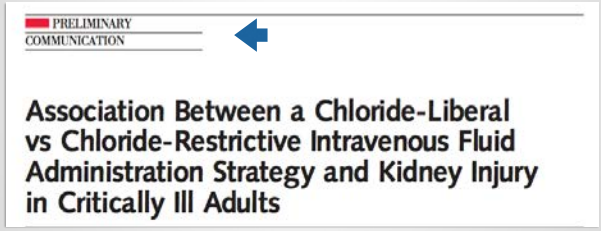
[a] The control period was from February 18 through August 17, 2008, and the intervention period was from February 18 through August 17, 2009.

Cr rises more than doubles

Need for acute dialysis:

- ➡ 78 patients during control
- ➡ 49 with the low chloride bundle (P=0.005)

More data is needed



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