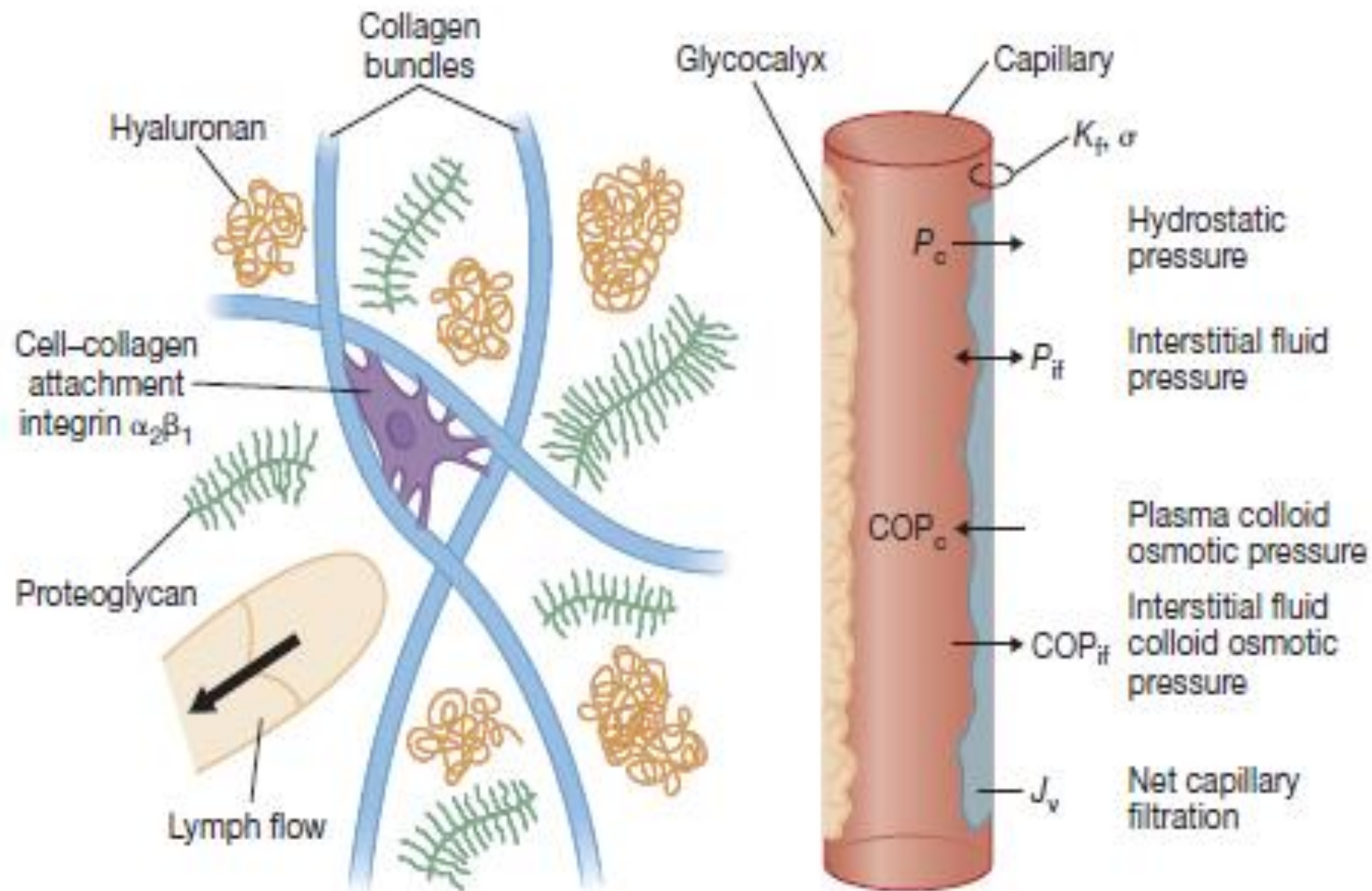


FLUID AND ELECTROLYTE MANAGEMENT OF THE BURN PATIENTS

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COMPOSITION OF BODY FLUID

154 mEq/L		154 mEq/L	
CATIONS		ANIONS	
Na ⁺	142	Cl ⁻	103
		HCO ₃ ⁻	27
		SO ₄ ²⁻	3
		PO ₄ ³⁻	
K ⁺	4	Organic acids	5
Ca ²⁺	5	Protein	16
Mg ²⁺	3		

Plasma

153 mEq/L		153 mEq/L	
CATIONS		ANIONS	
Na ⁺	144	Cl ⁻	114
		HCO ₃ ⁻	30
		SO ₄ ²⁻	3
		PO ₄ ³⁻	
K ⁺	4	Organic acids	5
Ca ²⁺	3	Protein	1
Mg ²⁺	2		

Interstitial fluid

200 mEq/L		200 mEq/L	
CATIONS		ANIONS	
K ⁺	150	HPO ₄ ³⁻	} 150
		SO ₄ ²⁻	
		HCO ₃ ⁻	10
Mg ²⁺	40	Protein	40
Na ⁺	10		

Intracellular fluid

Figure
body


FLUID MANAGEMENT FOR NPO SURGICAL PATIENT

For the first 0–10 kg

Give 100 mL/kg per day

For the next 10–20 kg

Give an additional 50 mL/kg

 per day

For weight >20 kg

Give an additional 20 mL/kg

per day

For example, a 60-kg female would receive a total of 2300 mL of fluid daily: 1000 mL for the first 10 kg of body

BURN MANAGEMENT

1-Fluid

2-Electrolytes

3-Colloid and Oncotic materials

4-Amino acids

5-Vitamines

6-Micro-elements

7-Blood

NO ONE FORMULA

Benefits all patients



FLUID RESUSCITATION

Table 18.5 Fluid resuscitation formulae

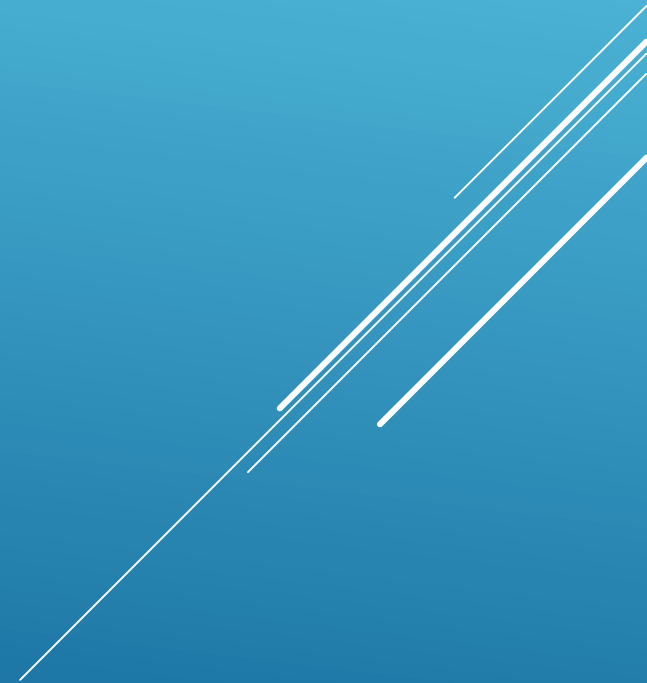
Formula	Electrolyte	Colloid	Glucose
Colloid formulae			
Brooke	Lactated Ringer's at 1.5 mL/kg/% TBSA burn	0.5 mL/kg/% TBSA burn	2 L 5% dextrose
Evans	0.9% NaCl at 1 mL/kg/% TBSA burn	1 mL/kg/% TBSA burn	2 L 5% dextrose
Slater	Lactated Ringer's 2 L/24 h	Fresh frozen plasma at 75 mL/kg/24 h	2 L 5% dextrose
Crystalloid formulae			
Modified Brooke's	Lactated Ringer's at 2 mL/kg/% TBSA burn		
Parkland	Lactated Ringer's at 4 mL/kg/% TBSA burn	20–60% estimated plasma volume	Titrated to urinary output of 30 mL/h
Hypertonic saline formulae			
Hypertonic saline solution (Monafo)	Maintain Urine output at 30 mL/h Fluid contains sodium 250 mmol/L		
Modified hypertonic (Warden)	Lactated Ringer's + 50 mmol/L NaHCO ₃ for 8 h to maintain UO at 30–50 mL/h Lactated Ringer's to maintain UO at 30–50 mL/h beginning 8 h post-burn		
Dextran formula (Demling)	Dextran 40 in saline at 2 mL/kg/h for 8 h Lactated Ringer's titrated to maintain urine output at 30 mL/h	Fresh frozen plasma at 0.5 mL/kg/h for 18 h beginning 8 h post-burn	

THE MOST COMMON FORMULA

Parkland or Baxter

Half; first 8 hours

Half; next 16 hours



CONTINUS MONITORING

1-MAP

2-Urine Output (30 ml/hour for adult and 1-1.5 ml/kg /h for children)

PREDICTOR OF MORTALITY

Serum lactate

Base deficit



COMPLICATION

Over-resuscitation (electrolyte containing fluids; %58 of patients in one study ; opioids, inhalation burn, positive ventilation)

- 1-Abdominal compartment syn.
- 2-Extremity compartment syn.
- 3-Intraocular compartment syn.
- 4- Pleural effusion

COLLOPID REPLACEMENT

Albumin, FFP

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INDICATION OF COLLOID IN FIRST 24 HOUR ; PARKLAND

- 1- Inhalation injury
- 2-more than %50 TBSA burn
- 3-Heart failure

HIGH DOSE VITAMIN C

Increasingly used during initial burn resuscitation

Mortality?



HYPERTONIC SOLUTION

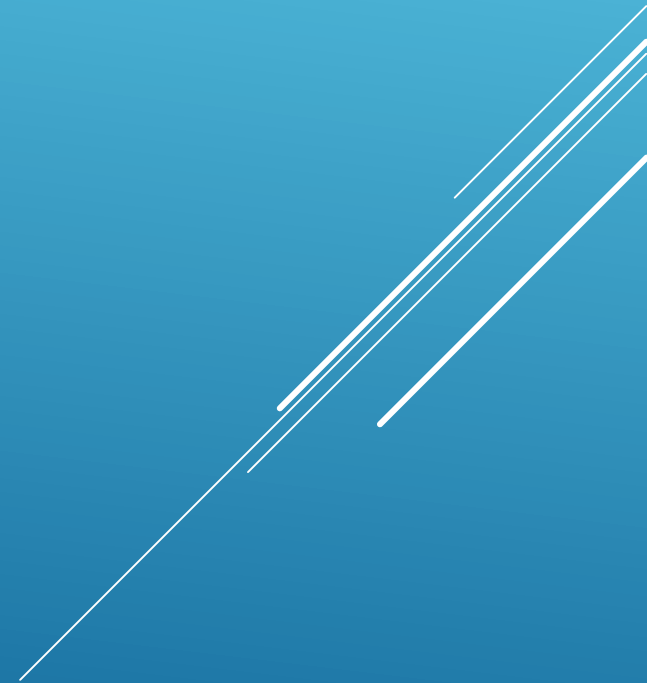
Hyper-chloremic acidosis

Modified hypertonic




BED SIDE ULTRASOUND

Rapid, Non-invasive, gross assessment of cardiac function , IVC, Pneumothorax



BLOOD TRANSFUSION

Hb < 7


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NUTRITION > 20 TBSA BURN

If possible ;start in a few hours reduce gastric ileus

Nasojejunal feeding

EARLY NUTRITION; SAFE

- 1-Reduce loss of lean body mass
 - 2-Slow the hyper-metabolic response
 - 3-More efficient protein metabolism
- 
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GLUTAMINE

Immuno-modulating

Reduce infectious complications



CALORIC NEED OF BURN PATIENT

Harris-Benedict equation

Curreri formula;

25 kcal/kg per d plus 40 kcal/%TBSA per d

BETA-BLOCKER

Children and Adults



ANABOLIC STEROID

Oxandrolone decreased mortality

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HYPERGLYCEMIA

Insulin

Oral metformin



TPN, PPN

Intralipid

Aminofusion



PRIMARY SURVEY

Large -bore peripheral IV

For >40%TBSA burn 2 large-bore IV

CVP

Severe burn patient

Evaluation of fluid management

PEDIATRIC PATIENTS

Intraosseous access in emergent situations



THANK YOU FOR YOUR ATTENTION