



## 22. LACTATED RINGER'S

### a) Pharmacology

- (1) Isotonic crystalloid solution
- (2) Lactated Ringer's (LR) contains:

(a) Sodium (Na <sup>+</sup> )	130 mEq/liter
(b) Potassium (K <sup>+</sup> )	4 mEq/liter
(c) Calcium (Ca <sup>++</sup> )	3 mEq/liter
(d) Chloride (Cl <sup>-</sup> )	109 mEq/liter
(e) Lactate	28 mEq/liter

### b) Pharmacokinetics

Lactated Ringer's is a water and electrolyte replacement.

### c) Indications

- (1) Hypovolemia (limitation in multiple/severe trauma without head injury)
- (2) Keep vein open
- (3) Fluid boluses

### d) Contraindications

Fluid overload states

### e) Adverse Effects

Rare in therapeutic doses

### f) Precautions

- (1) Patients receiving Lactated Ringer's should be monitored to prevent circulatory overload.
- (2) Lactated Ringer's should be used with caution in patients with congestive heart failure or renal failure.

### g) Dosage (NEW '20)


- (1) Adult:
  - (i) For patients with multiple/severe trauma but **without head injury**: Administer small boluses of LR (maximum single bolus of 250 mL prior to additional blood pressure check) to achieve and maintain a systolic blood pressure of greater than or equal to 90 mmHg.
  - (ii) For multiple/severe trauma **with head injury**: Administer small boluses of LR (maximum single bolus of 250 mL prior to additional blood pressure check) to achieve and maintain a systolic blood pressure greater than or equal to 110 mmHg.
  - (iii) For all other patients: Titrate to a systolic pressure of 90 mmHg.



Maximum dose 2,000 mL without medical consultation.



(2) Pediatric:

- (a) KVO
- (b) If age-related vital signs and patient's condition indicate hypoperfusion, administer initial fluid bolus of 20 mL/kg LR IV/IO. Fluid boluses for neonates and volume-sensitive children are 10 mL/kg.
- (c) If patient's condition does not improve, administer the second fluid bolus of 20 mL/kg LR IV/IO.
- (d)  Third and subsequent fluid boluses at 20 mL/kg LR IV/IO with medical consultation.