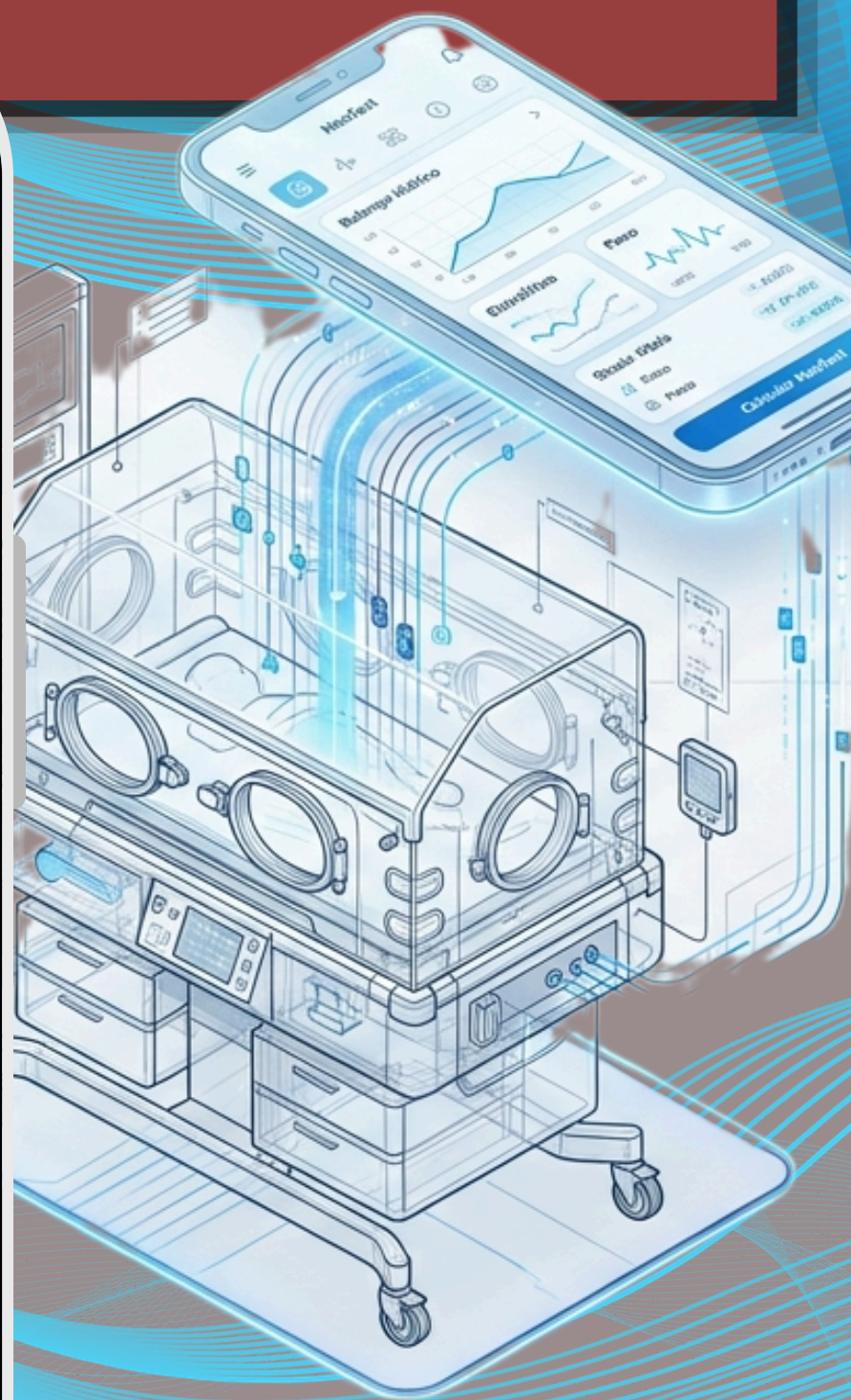
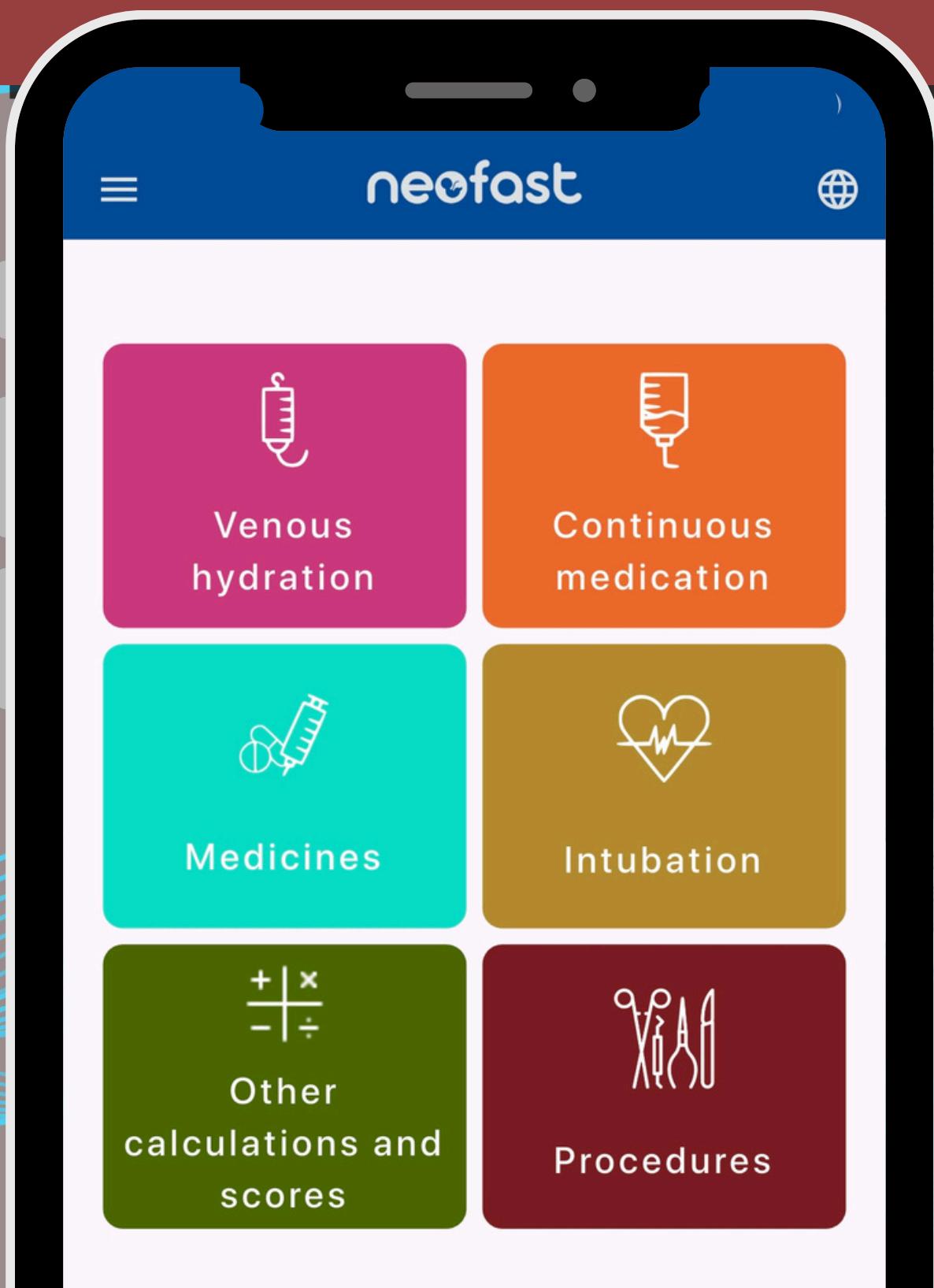


Intravenous Fluid Therapy in Neonates

Guideline 2025-28 West Midlands &
Digital Bedside Execution via NeoFast.

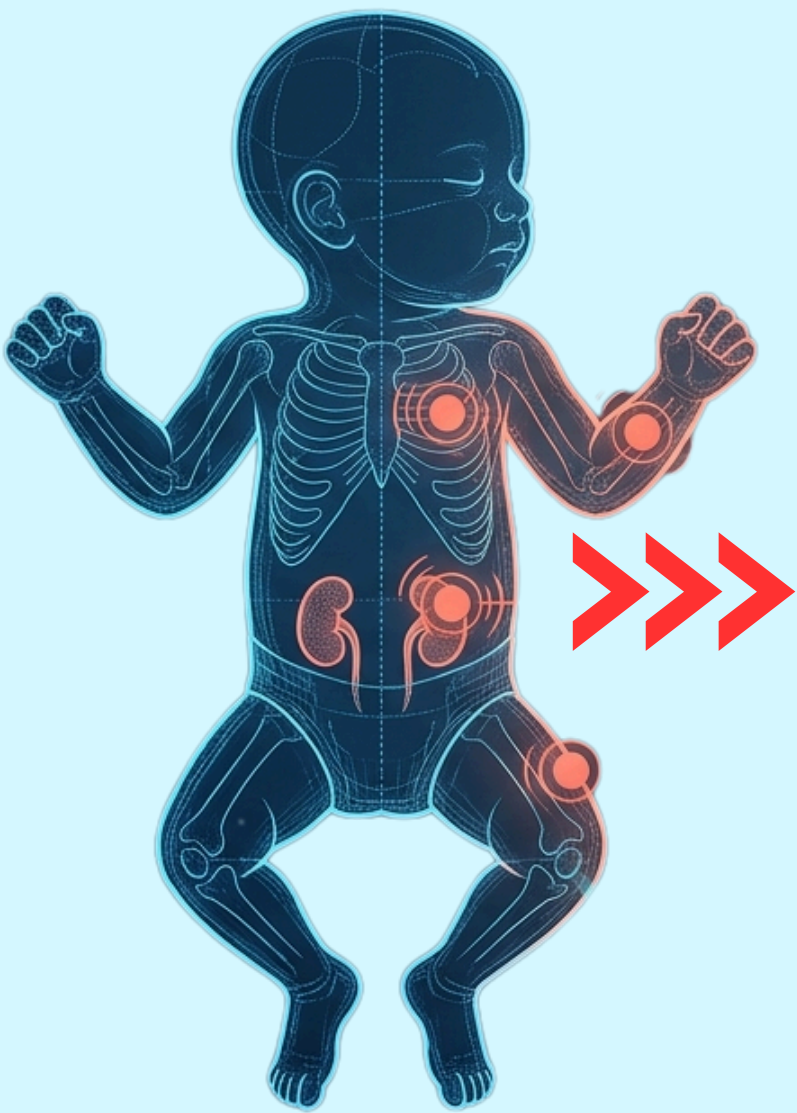


Fluid Volume Progression

	Day 1	Day 2	Day 3	Day 4+
<1000g Birth Weight	 90 mL	 120 mL	 150 mL	 150 mL
≥1000g Birth Weight	 60 mL	 90 mL	 120 mL	 150 mL

Clinical Note: Fluid volumes are a baseline guide. Adjustments must be based on serum sodium, urine output, and weight changes.

THE PHYSIOLOGICAL STAKES: FLUID DYNAMICS IN THE NEWBORN



Weight Loss

5-10% physiological weight loss is expected in the first week due to Extracellular Fluid (ECF) contraction.

Renal Immaturity

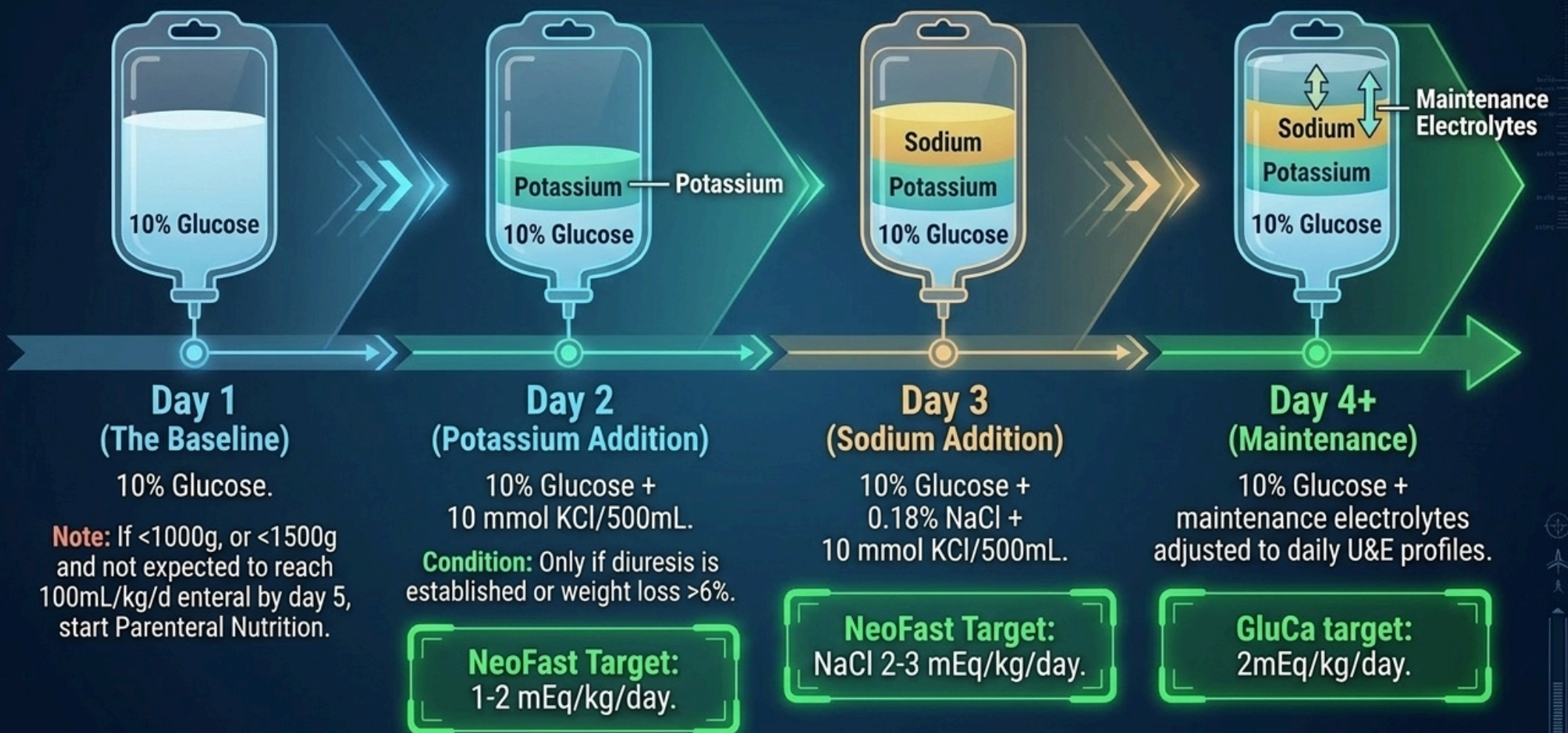
Infants <29 weeks' gestation lose **excessive sodium** through immature kidneys. Positive sodium balance is only required after initial diuresis for tissue growth.

TEW Loss

Babies <28 weeks suffer extreme transepidermal Water (TEW) loss and hypernatremic dehydration.

Neonates undergo a critical period of metabolic transition involving significant fluid shifts and transepidermal vulnerability.

Layering Fluid Composition & Electrolytes



The Glucose Infusion Rate (GIR) Thresholds

$$\text{GIR (mg/kg/min)} = \frac{(\text{IV Rate [mL/hr]} \times \text{Dextrose Concentration [\%]})}{(\text{Weight [kg]} \times 6)}$$



5 to 7 mg/kg/min.
Standard Target



5 to 8 mg/kg/min.
Hypoglycemia Intervention



12 mg/kg/min.
Maximum Threshold

Insight: Calculating and adjusting GIR dynamically based on changing weight and varied IV fluids requires continuous, zero-error math at the bedside.

Monitoring the Fluid Balance

Serum Creatinine



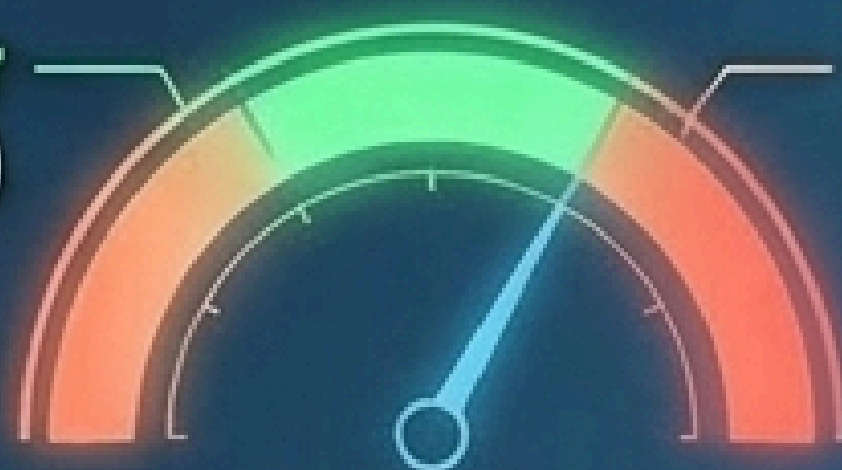
Tends to rise over the first 2-3 days, then gradually falls.



Red Flag: Absence of postnatal drop is clinically significant.

Urine Output

<1 mL/kg/hr
(Action required...)



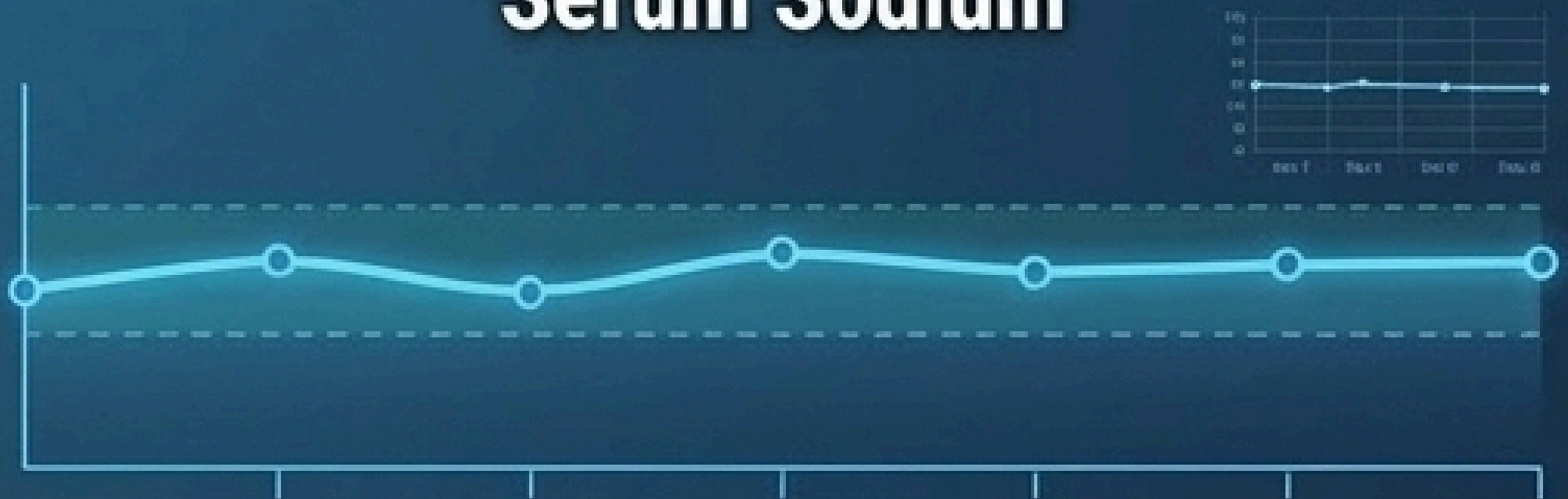
>6-7 mL/kg/hr
(Excess fluid...)



Normal is **2-4 mL/kg/hr**. Action required if **<1 mL/kg/hr** (except in first 24 first 24 hours). **>6-7 mL/kg/hr** indicates excess fluid or impaired concentration.

Monitoring the Fluid Balance

Serum Sodium



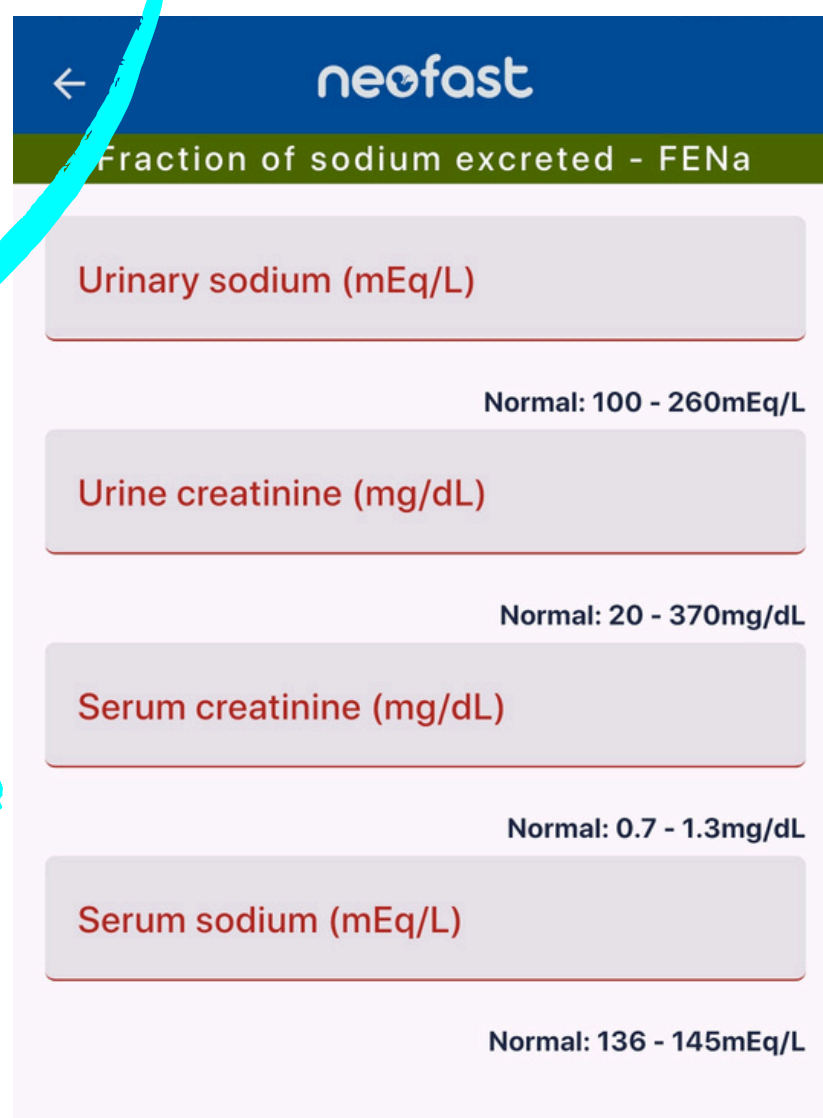
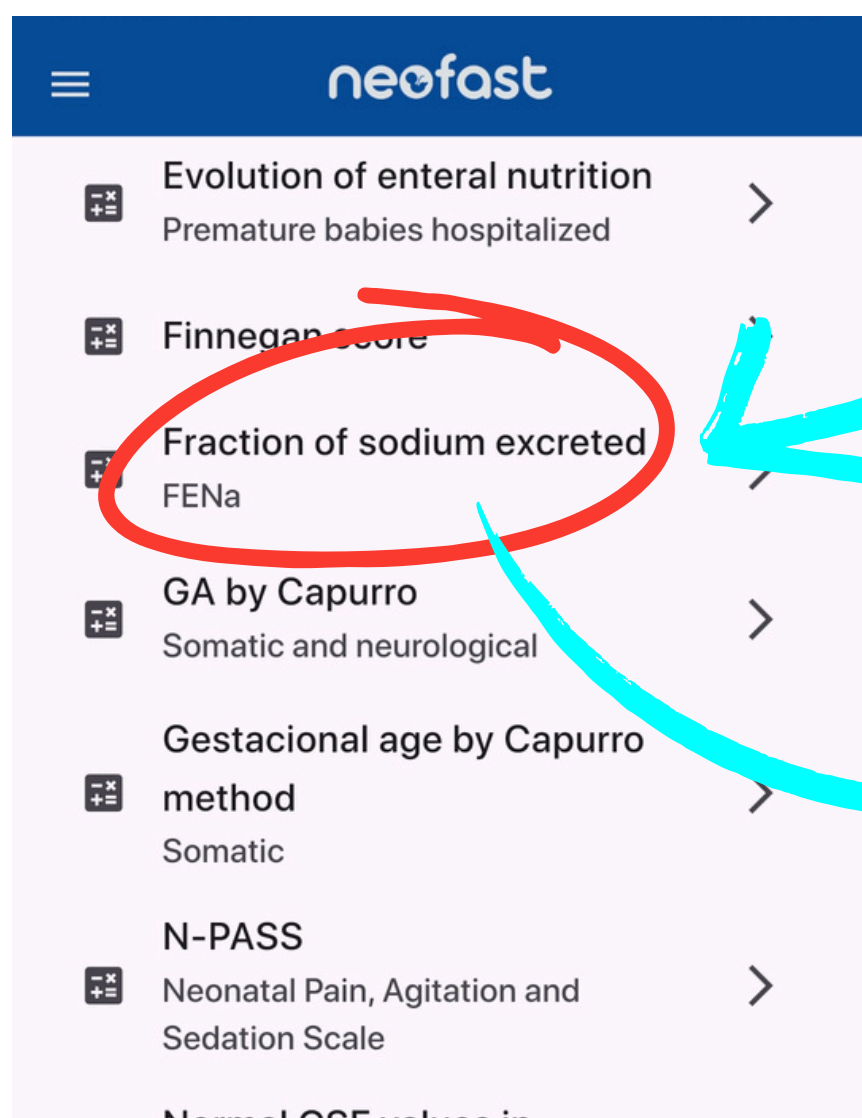
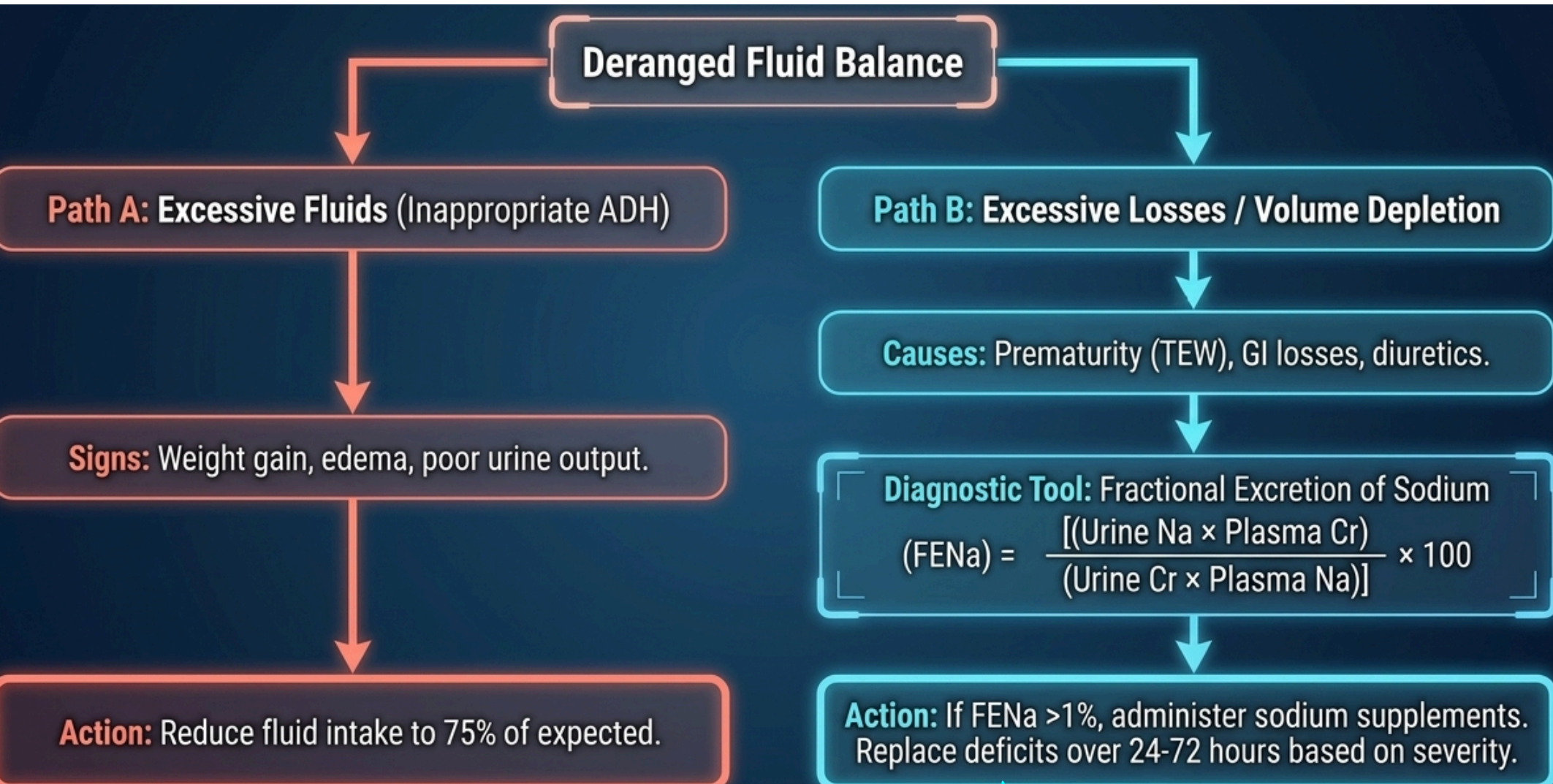
Monitor daily. Avoid dropping >0.5 mmol/L/hr during corrections to prevent cerebral edema.

Weight Trends



Weigh daily for ICU babies; twice daily if fluid balance is problematic. Stable weight despite IV fluids indicates over-hydration (aim for 1% daily loss initially).

Troubleshooting Fluid Derangements



The Bedside Friction Point

The Problem

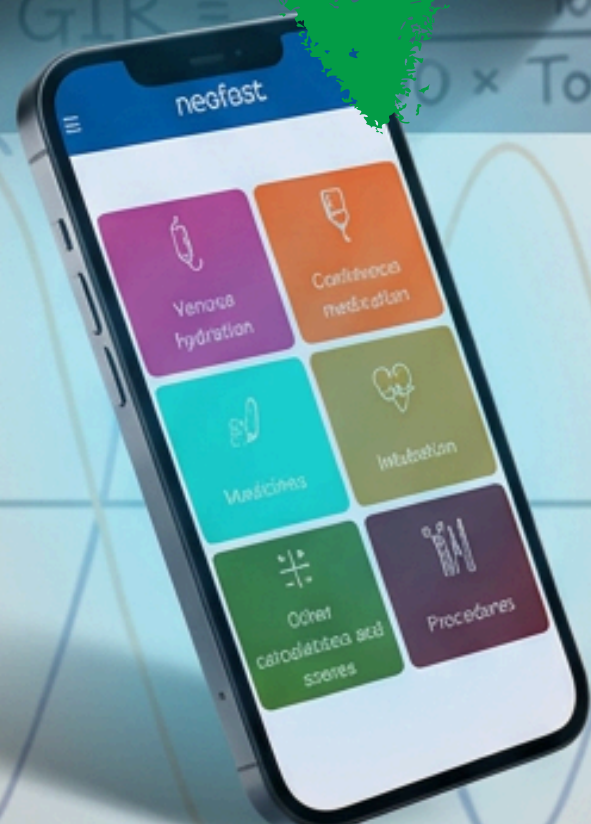
Neonatal fluid management relies on dynamic, interconnected variables: daily weight changes, precise GIR targets, and micro-dosed electrolytes.

The Risk

Manually calculating total fluid rates, mEq/kg to mL conversions, and GIR at 3 AM carries a high cognitive load and introduces the risk of critical human error.

The Pivot

Clinical guidelines are only as effective as their execution at the bedside.



The Digital Solution: Instant Precision with NeoFast

2025-28 Guidelines, executed in seconds.

Zero-Error Calculations

Eliminates manual math

for

fluids, GIR, and electrolytes.

Total Bedside Confidence

Secure, instant readouts tailored to exact patient weight.

The image shows a smartphone screen displaying the NeoFast app interface. The app is titled "neofast" and has a blue header. Below the header, there is a pink bar with the text "Venous hydration". The interface contains several input fields and recommendations:

- Weight (kg)**: Input field.
- GIR (kg/min)**: Input field. Below it, text reads: "Glucose infusion rate. Recommendation: 5-7 mg/kg/min and in cases of hypoglycemia 5-8 mg/kg/min (max. 12mg/kg/min)." A green dot is placed on the input field.
- Total fluid rate (mL/kg)**: Input field. Below it, text reads: "Recommendation: 1st day 60-80 mL/kg/day for FTNB and increase by 10-20 mL/kg daily up to 120-160 mL/kg. For PTNB see additional information ⓘ." A green dot is placed on the input field.
- NaCl 20% (mEq/kg)**: Input field. Below it, text reads: "Fill in value greater than or equal to zero. Recommendation: from the 2nd day of life 2-3 mEq/kg/day." A green dot is placed on the input field.
- GluCa10% (mEq/kg)**: Input field. Below it, text reads: "Fill in value greater than or equal to zero. Recommendation: 2mEq/kg/day." A green dot is placed on the input field.
- KCl 10% (mEq/kg)**: Input field. Below it, text reads: "Fill in value greater than or equal to zero. Recommendation: from the 2nd day of life, 1-2 mEq/kg/day if diuresis is well established." A green dot is placed on the input field.

Evidence-Based Guardrails

Embedded directly with the latest target thresholds (e.g., GIR 5-7 mg/kg/min).

App Integration: Weight, Fluids & GIR

NeoFast Execution

Input Weight (kg), GIR and total fluid rate.

Guideline Constraint

Standard target GIR is 5-7 mg/kg/min.

Baseline FTNB fluids are 60-80 mL/kg/day.

23:03 5G

neefast

Venous hydration

Weight (kg)

GIR (kg/min)

Glucose infusion rate.
Recommendation: 5-7 mg/kg/min and in cases of hypoglycemia 5-8 mg/kg/min (max. 12mg/kg/min).

Total fluid rate (mL/kg)

Recommendation: 1st day 60-80 mL/kg/day for FTNB and increase by 10-20 mL/kg daily up to 120-160 mL/kg. For PTNB see additional information ⓘ

APP INTEGRATION: PRECISION ELECTROLYTES & NUTRITION

Day 2+ Guidelines

From Day 2: Introduce NaCl 2-3 mEq/kg/day and KCl 1-2 mEq/kg/day. Maintain GluCa at 2 mEq/kg/day.

NeoFast Execution

- Translates complex mEq/kg/day requirements into exact compounding volumes instantly.
- Dedicated inputs for NaCl 20%, GluCa 10%, and KCl (with exact concentration selections: 10%, 15%, 19.1%, 20%).
- Seamless integration of Amino Acid titration via single-tap percentage selectors.

NaCl 20% (mEq/kg)

Fill in value greater than or equal to zero.
Recommendation: from the 2nd day of life 2-3 mEq/kg/

GluCa10% (mEq/kg)

KCl 10% (mEq/kg)

KCl 10%

KCl 15%

KCl 19.1%

KCl 20%

No amine acid

Amine Acid 4%

Amino Acid 5.3%

Amino Acid 8%

Amino Acid 10%

SDH = ?

mEq/kg to mL

kg = 55.2 mL

3 ml

The Triad of Neonatal Fluid Therapy

Understand the Physiology

Anticipate 5-10% weight loss, TEW in extreme preterms, and shifting renal sodium clearance.

Follow the Protocol

Adhere strictly to the 2025-28 West Midlands Neonatal volume and composition progression matrices.

Execute with NeoFast

Remove bedside friction. Translate complex parameters into exact, secure, and instantaneous IV fluid prescriptions.

Precision medicine requires precision tools. NeoFast bridges the gap between clinical theory and bedside reality for optimal patient outcomes.



neofast

