

Case Study: Using Renastart™ with an infant with Chronic Kidney Disease (CKD) stage 4-5

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Patient Details & Medical History

Age:

34 + 3 weeks corrected gestational age (CGA)

Gender:



Diagnosis:

Renal impairment CKD stage 4-5 due to hypoplastic kidneys.

Relevant Medical History:

Prematurity – Born at 30+1 weeks gestation.
Respiratory distress syndrome.



Dietetic Assessment

Day 30 of admission

Anthropometry:

- **Weight 2180 g** (10-50th centile on Fenton Charts 2013); increased by 14 g/kg/day the previous week (aiming 15-20 g/kg/day).
- **Length 41.5 cm** (2-9th centile on Fenton Charts 2013); decreased from 25-50th centile at birth.

At the time of the review, the patient was on 3 hourly oral feeds of 45ml, alternating every second feed between:

- Expressed breast milk (EBM) + 3.4% Renastart providing approximately 345 kJ/83 kcal and 1.6 g protein per 100 ml. Renastart powder is added directly to EBM. **Note:** Pre-term EBM composition calculated using 275 kJ/66 kcal and 1.3 g protein per 100 ml¹.
- 16.9% dilution Renastart providing 350 kJ/84 kcal and 1.3 g protein per 100 ml.

Provides: 360 ml (165 ml/kg/day)

1255 kJ/300 kcal (577 kJ/138 kcal/kg/day)

5.24 g protein (2.4 g/kg/day)

Plus breast contact to support transition to breastfeeding.

Biochemistry:

Sodium (mmol/l)	Potassium (mmol/l)	Chloride (mmol/l)	Phosphate (mg/dl)	Creatinine (μmol/l)	Urea (mmol/l)
137	5.9	97	1.49	190 ↑	3.8
Ref (133 -144)	Ref (3.8 - 6.4)	Ref (95 - 100)	Ref (1.42 - 2.50)	Ref (11 - 36)	Ref (1.8 - 6.4)

Ref: Hospital reference range.

Relevant medications include: Sodium bicarbonate (due to metabolic acidosis).



Dietetic Management

Aims:

- Maintain potassium levels within normal range using a dietary potassium restriction.
- Optimise nutrition for growth and development.
- Encourage normal feeding development.

Management plan:

- Increase energy and protein content of feeds from 345 kJ/82 kcal - 350 kJ/84 kcal/100 ml to 380 kJ/91 kcal/100 ml to promote adequate weight gain:
 - increased EBM fortification to 5% Renastart
 - increased full Renastart feeds to 18.4% concentration.
- Agreed with multidisciplinary team to optimise normal feeding development with a trial offer of one breastfeed per day in place of fortified EBM bottle feed with top-up feed of 30 ml EBM + 5% Renastart via bottle if required.
- Monitor biochemistry, weight, growth and tolerance of feed following implementation of updated plan.



Follow ups

Day 35 admission (5 days post intervention)

- Tolerated increased feed fortification.
- Breastfed well for at least 5-10 minutes when offered once each day.
- Net 22 g/kg/day weight gain in 5 days; returned to tracking just below 50th centile (Fenton Charts 2013).
- Biochemistry stable; potassium remained <6.0 mmol/L.

3 months post intervention

- Discharged home on approximately 3 hourly demand feeds (i.e. approximately 8 feeds per day); 4 full breastfeeds and 4 bottles of 18.4% Renastart.
- Weight continues on the 50th centile and biochemistry remains stable allowing for ongoing breastfeeding.
- Patient not yet showing signs of readiness for introduction of solid foods. Therefore plan to wait until 4 months corrected age and when showing appropriate signs of readiness for feeding.
- Ongoing challenges with administering medications orally due to taste. Therefore medications are not added to bottle feeds currently.
- Renal function is expected to decline and there will be a need for renal replacement therapy. It is likely that a gastrostomy will be inserted at time of peritoneal dialysis catheter insertion to manage anticipated nutritional challenges.



Take Home Messages

- Renastart can be used for feed fortification. The reduced potassium content of Renastart allows for less restriction of breastfeeding or expressed breast milk intake.
- Despite prematurity and medical issues, breastfeeding was successful, encouraging both oral feeding as well as mother-baby contact and connection.

Reference:

1. Boyce C, Watson M, Lazidis G et al. Preterm human milk composition: a systematic literature review. British Journal of Nutrition. 2016; 116(6):1033-45.



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Renastart is a Food for Special Medical Purposes. Must be used under strict medical supervision with regular monitoring of nutritional status and electrolyte levels. For enteral use only. Not suitable as a sole source of nutrition.

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RSCSI-0220-V3
March 2021