



# GASTROINTESTINAL SYMPTOMS IN ENTERALLY FED CHILDREN WITH NEUROLOGICAL CONDITIONS

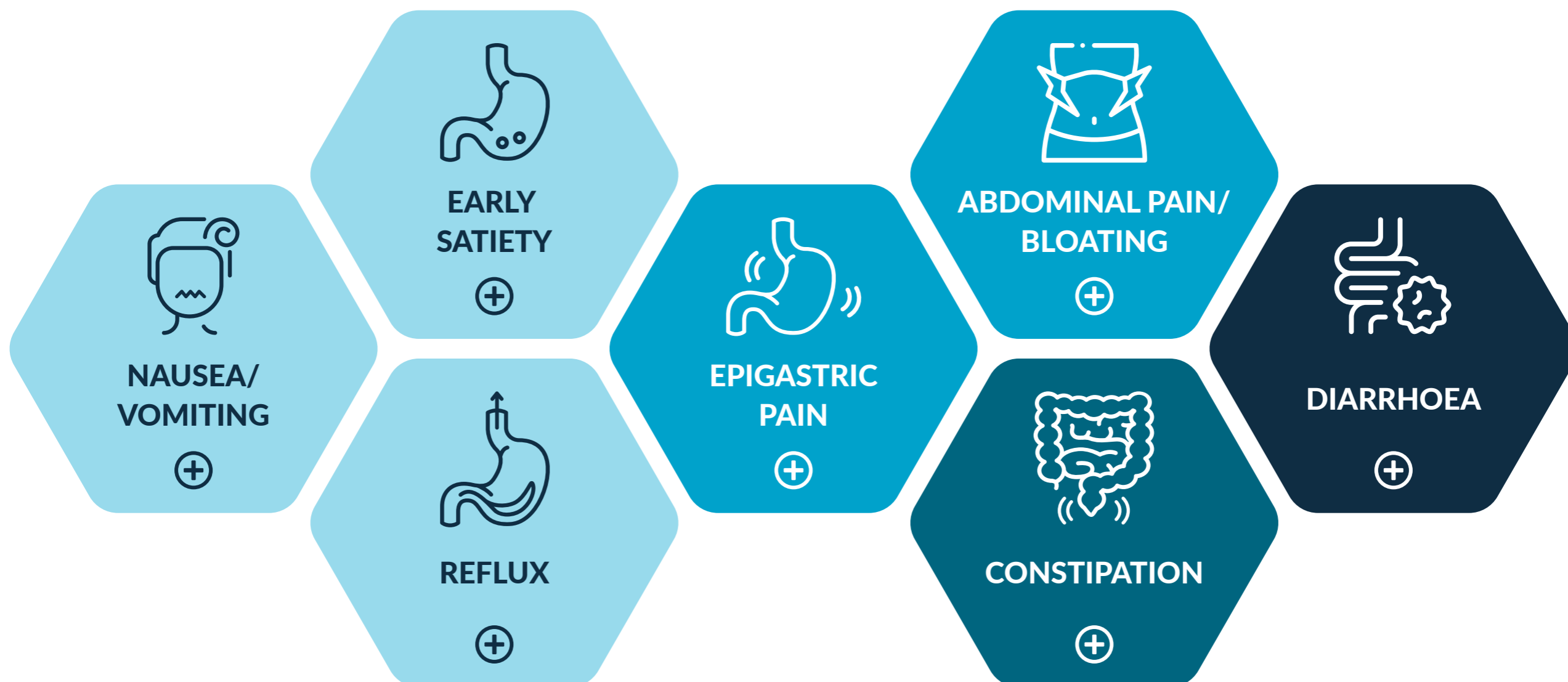
A multidisciplinary tool to aid management

This resource has been adapted from an experience-based, multidisciplinary tool and where insufficient evidence exists, recommendations are based on best practice. Each patient is an individual – this tool has been developed to support clinical practice and should be used in conjunction with clinical judgment and patient wishes.





# IDENTIFYING SYMPTOMS



# IDENTIFYING SYMPTOMS



**NAUSEA/  
VOMITING**  
⊖



**EARLY  
SATIETY**  
⊕



**REFLUX**  
⊕



**EPIGASTRIC  
PAIN**  
⊕



**ABDOMINAL PAIN/  
BLOATING**  
⊕



**CONSTIPATION**  
⊕



**DIARRHOEA**  
⊕

**PATIENT HISTORY** ⊕

POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



**NAUSEA/  
VOMITING**

⊖



**EARLY  
SATIETY**

⊕



**REFLUX**

⊕



**EPIGASTRIC  
PAIN**

⊕



**ABDOMINAL PAIN/  
BLOATING**

⊕



**CONSTIPATION**

⊕



**DIARRHOEA**

⊕

## PATIENT HISTORY

initiate 'vomit diary' to record circumstances surrounding any episodes

- **Rule out constipation** (abdominal exam/X-ray/digital rectal examination). If constipation present, follow Constipation section
- **Rule out allergies** (particularly to cows' milk protein)

## POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY ⊕

POTENTIAL CAUSES ⊖

- **For vomiting:**
  - Rule out systemic infection or sepsis
  - Consult vomiting diary to identify triggers, e.g. hoisting, suctioning of secretions, tracheostomy care
  - Seek medical advice to continue or discontinue feeding
  - Monitor hydration status and provide additional fluids/rehydration treatments as appropriate
- Ensure feeding tube in correct position (nasojejunal tubes or jejunal extensions may migrate)
- Consider patient posture
- Consider whether symptoms occur with feeding or medications
- Establish if volume of fluid with medications is excessive
- Consider whether delayed gastric emptying may be causing symptoms

NUTRITIONAL CONSIDERATIONS ⊕

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



**NAUSEA/  
VOMITING**

⊖



**EARLY  
SATIETY**

⊕



**REFLUX**

⊕



**EPIGASTRIC  
PAIN**

⊕



**ABDOMINAL PAIN/  
BLOATING**

⊕



**CONSTIPATION**

⊕



**DIARRHOEA**

⊕

PATIENT HISTORY ⊕

POTENTIAL CAUSES ⊕

**NUTRITIONAL CONSIDERATIONS** ⊖

## 1st-line approaches:

- Reduce infusion rate of feed<sup>1</sup>
- Change feed timing to avoid symptom triggers
- Consider bolus vs. continuous feeding
- Reduce feed volume<sup>1</sup>
- Reduce size of water flushes<sup>2</sup>
- Consider the side effects of medications
- Ensure patient is elevated to  $\geq 45$  degrees

- Ensure feed timings do not reduce efficacy of medications, such as PPIs

## 2nd-line approaches:

- Consider trial of whey-based peptide formula to enhance gastric emptying<sup>3,4</sup>
- Consider thickened enteral formula<sup>4</sup>

## 3rd-line approaches:

- Consider jejunal feeding<sup>4</sup>

MEDICATION OPTIONS ⊕

PPI = proton pump inhibitor

# IDENTIFYING SYMPTOMS



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VOMITING

⊖



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ABDOMINAL PAIN/  
BLOATING

⊕



CONSTIPATION

⊕



DIARRHOEA

⊕

PATIENT HISTORY ⊕

POTENTIAL CAUSES ⊕

NUTRITIONAL CONSIDERATIONS ⊕

MEDICATION OPTIONS ⊖

Optimise medications,  
e.g. antiemetic

## References

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11. Braegger C, et al. *J Pediatr Gastroenterol Nutr*. 2010; 51 (1): 110–22.



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**ABDOMINAL PAIN/  
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**CONSTIPATION**

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**DIARRHOEA**

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PATIENT HISTORY ⊕

POTENTIAL CAUSES ⊕

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS



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PATIENT HISTORY ⊕

POTENTIAL CAUSES ⊕

NUTRITIONAL CONSIDERATIONS ⊕

MEDICATION OPTIONS ⊕



# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)**
- POTENTIAL CAUSES
- NUTRITIONAL CONSIDERATIONS
- MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



## PATIENT HISTORY

- Rule out constipation (abdominal exam/X-ray/digital rectal examination).  
If constipation present, follow Constipation section
- Rule out allergies (particularly to cows' milk protein)

## POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY (+)

POTENTIAL CAUSES (-)

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NUTRITIONAL CONSIDERATIONS (+)

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY (+)

POTENTIAL CAUSES (+)

**NUTRITIONAL CONSIDERATIONS (-)**

**1st-line approaches:**

- Reduce infusion rate of feed<sup>1</sup>
- Change feed timing to avoid symptom triggers
- Consider bolus vs. continuous feeding
- Reduce feed volume<sup>1</sup>
- Reduce size of water flushes<sup>2</sup>
- Consider the side effects of medications
- Ensure patient is elevated to  $\geq 45$  degrees

**2nd-line approaches:**

- Ensure feed timings do not reduce efficacy of medications, such as PPIs
- Consider trial of whey-based peptide formula to enhance gastric emptying<sup>3,4</sup>
- Consider thickened enteral formula<sup>4</sup>

**3rd-line approaches:**

- Consider jejunal feeding<sup>4</sup>

MEDICATION OPTIONS (+)

PPI = proton pump inhibitor

# IDENTIFYING SYMPTOMS



PATIENT HISTORY (+)

POTENTIAL CAUSES (+)

NUTRITIONAL CONSIDERATIONS (+)

**MEDICATION OPTIONS (-)**

**Consider prokinetic**



# IDENTIFYING SYMPTOMS



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+



ABDOMINAL PAIN/  
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CONSTIPATION

+



DIARRHOEA

+

PATIENT HISTORY +

POTENTIAL CAUSES +

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS





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CONSTIPATION

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PATIENT HISTORY +

POTENTIAL CAUSES +

NUTRITIONAL CONSIDERATIONS +

MEDICATION OPTIONS





# IDENTIFYING SYMPTOMS

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**EARLY  
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REFLUX  
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PAIN  
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ABDOMINAL PAIN/  
BLOATING  
+

CONSTIPATION  
+

DIARRHOEA  
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PATIENT HISTORY (+)

POTENTIAL CAUSES (+)

NUTRITIONAL CONSIDERATIONS (+)

MEDICATION OPTIONS (+)



# IDENTIFYING SYMPTOMS




NAUSEA/  
VOMITING

+



EARLY  
SATIETY

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CONSTIPATION

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DIARRHOEA

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PATIENT HISTORY +

POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



## PATIENT HISTORY

- Rule out constipation (abdominal exam/X-ray/digital rectal examination). If constipation present, follow Constipation section
- Rule out allergies (particularly to cows' milk protein)

## POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (-)**

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- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY (+)

POTENTIAL CAUSES (+)

**NUTRITIONAL CONSIDERATIONS (-)**

## 1st-line approaches:

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- Consider trial of whey-based peptide formula to enhance gastric emptying<sup>3,4</sup>
- Consider thickened enteral formula<sup>4</sup>

## 3rd-line approaches:

- Consider jejunal feeding<sup>4</sup>

MEDICATION OPTIONS (+)

PPI = proton pump inhibitor

# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS (-)**

- Consider optimising PPI dose, use of antacids and H2 antagonists



# IDENTIFYING SYMPTOMS

NAUSEA/  
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PAIN  
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ABDOMINAL PAIN/  
BLOATING  
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CONSTIPATION  
+

DIARRHOEA  
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PATIENT HISTORY +

POTENTIAL CAUSES +

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS




NAUSEA/  
VOMITING

+



EARLY  
SATIETY

+



REFLUX

-



EPIGASTRIC  
PAIN

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ABDOMINAL PAIN/  
BLOATING

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CONSTIPATION

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DIARRHOEA

+

- PATIENT HISTORY
- POTENTIAL CAUSES
- NUTRITIONAL CONSIDERATIONS
- MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS

NAUSEA/  
VOMITING  
+

EARLY  
SATIETY  
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REFLUX  
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EPIGASTRIC  
PAIN  
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ABDOMINAL PAIN/  
BLOATING  
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CONSTIPATION  
+

DIARRHOEA  
+

PATIENT HISTORY



POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS





# IDENTIFYING SYMPTOMS



## PATIENT HISTORY



- Rule out constipation (abdominal exam/X-ray/digital rectal examination)
- Rule out allergies (particularly to cows' milk protein)

## POTENTIAL CAUSES



NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS





# IDENTIFYING SYMPTOMS



PATIENT HISTORY



POTENTIAL CAUSES



NO CONSTIPATION



CONSTIPATION PRESENT



NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (-)
- NO CONSTIPATION (-)**

**Consider:**

- **Functional causes**, e.g. gastric emptying delay, chronic intestinal pseudo-obstruction
- **Organic causes**, e.g. small intestinal bacterial overgrowth, hiatus hernia, peptic ulcer disease, pancreatitis

- CONSTIPATION PRESENT (→)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (-)**

## 1st-line approaches:

- Reduce infusion rate of feed<sup>1</sup>
- Change feed timing to avoid symptom triggers
- Consider bolus vs. continuous feeding
- Reduce feed volume<sup>1</sup>
- Reduce size of water flushes<sup>2</sup>
- Consider the side effects of medications
- Ensure patient is elevated to  $\geq 45$  degrees

- Ensure feed timings do not reduce efficacy of medications, such as PPIs

## 2nd-line approaches:

- Consider trial of whey-based peptide formula to enhance gastric emptying<sup>3,4</sup>
- Consider thickened enteral formula<sup>4</sup>

## 3rd-line approaches:

- Consider jejunal feeding<sup>4</sup>

- MEDICATION OPTIONS (+)

PPI = proton pump inhibitor

# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS (-)**

- Consider optimising PPI dose, use of antacids and H2 antagonists
- For bloating, consider venting of air from gastrostomy if in-situ<sup>1</sup>, and avoid lactulose<sup>5</sup>



# IDENTIFYING SYMPTOMS



NAUSEA/  
VOMITING

+



EARLY  
SATIETY

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REFLUX

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EPIGASTRIC  
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ABDOMINAL PAIN/  
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DIARRHOEA

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PATIENT HISTORY



POTENTIAL CAUSES



NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS





# IDENTIFYING SYMPTOMS

NAUSEA/  
VOMITING  
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EARLY  
SATIETY  
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REFLUX  
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EPIGASTRIC  
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ABDOMINAL PAIN/  
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CONSTIPATION  
+

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+

- PATIENT HISTORY +
- POTENTIAL CAUSES +
- NUTRITIONAL CONSIDERATIONS +
- MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



NAUSEA/  
VOMITING

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EARLY  
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EPIGASTRIC  
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ABDOMINAL PAIN/  
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CONSTIPATION

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DIARRHOEA

+

- PATIENT HISTORY +
- POTENTIAL CAUSES +
- NUTRITIONAL CONSIDERATIONS +
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# IDENTIFYING SYMPTOMS



NAUSEA/  
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EARLY  
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ABDOMINAL PAIN/  
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CONSTIPATION

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DIARRHOEA

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PATIENT HISTORY +

POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



## PATIENT HISTORY (-)

- Rule out constipation (abdominal exam/X-ray/digital rectal examination)
- Rule out allergies (particularly to cows' milk protein)

## POTENTIAL CAUSES (+)

## NUTRITIONAL CONSIDERATIONS

## MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS

NAUSEA/  
VOMITING

+

EARLY  
SATIETY

+

REFLUX

+

EPIGASTRIC  
PAIN

+

ABDOMINAL PAIN/  
BLOATING

-

CONSTIPATION

+

DIARRHOEA

+

PATIENT HISTORY +

**POTENTIAL CAUSES** -

NO CONSTIPATION +

CONSTIPATION PRESENT →

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (-)
- NO CONSTIPATION (-)

**Consider:**

- **Functional causes**, e.g. gastric emptying delay, chronic intestinal pseudo-obstruction
- **Organic causes**, e.g. small intestinal bacterial overgrowth, hiatus hernia, peptic ulcer disease, pancreatitis

- CONSTIPATION PRESENT (→)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY



POTENTIAL CAUSES



NUTRITIONAL CONSIDERATIONS



- Trial fibre-containing vs. fibre-free formulas<sup>6</sup>
- Consider additional fibre supplements if required
- Consider whey-based peptide feed if pre-morbid/persistent constipation<sup>7</sup>

- Be aware of the type of fibre used; FODMAP-containing formulas may worsen symptoms of bloating or diarrhoea in sensitive patients<sup>8</sup>
- Ensure fluid requirements are met

FODMAP = fermentable oligosaccharides, disaccharides, monosaccharides and polyols

MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS (-)**

- For bloating, consider venting of air from gastrostomy if *in-situ*<sup>1</sup>, and avoid lactulose<sup>5</sup>



# IDENTIFYING SYMPTOMS



NAUSEA/  
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PATIENT HISTORY +

POTENTIAL CAUSES +

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MEDICATION OPTIONS





# IDENTIFYING SYMPTOMS

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- PATIENT HISTORY +
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- MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



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- PATIENT HISTORY +
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PATIENT HISTORY



POTENTIAL CAUSES

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



**PATIENT HISTORY** 

- Patient history; consult King’s Stool Chart<sup>9,10</sup> (or Bristol Stool Chart)
- Check whether current stool type and frequency has changed or is unusual for the child

POTENTIAL CAUSES 

NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY 

POTENTIAL CAUSES 

**Rule out:**

- Rectal evacuation difficulties
- Slow transit
- Both

- Consider posture when toileting and psychosocial issues
- Ensure adequate hydration and consider 'free' water content of enteral formula

NUTRITIONAL CONSIDERATIONS 

MEDICATION OPTIONS

# IDENTIFYING SYMPTOMS



PATIENT HISTORY +

POTENTIAL CAUSES +

**NUTRITIONAL CONSIDERATIONS** -

- Trial fibre-containing vs. fibre-free formulas<sup>6</sup>
- Consider additional fibre supplements if required
- Consider whey-based peptide feed if pre-morbid/persistent constipation<sup>7</sup>
- Be aware of the type of fibre used; FODMAP-containing formulas may worsen symptoms of bloating or diarrhoea in sensitive patients<sup>8</sup>
- Ensure fluid requirements are met

FODMAP = fermentable oligosaccharides, disaccharides, monosaccharides and polyols

MEDICATION OPTIONS +

# IDENTIFYING SYMPTOMS



- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS (-)**

Discuss use of stool softeners, laxatives or prokinetics with medical team

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PATIENT HISTORY +

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# IDENTIFYING SYMPTOMS



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- Patient history; consult King’s Stool Chart<sup>9,10</sup> (or Bristol Stool Chart)
- Check whether current stool type and frequency has changed or is unusual for the child

## POTENTIAL CAUSES

## NUTRITIONAL CONSIDERATIONS

## MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



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PATIENT HISTORY



POTENTIAL CAUSES



## Rule out:

- Allergies (particularly to cows' milk protein)
- Lactose intolerance
- Infection/overflow diarrhoea<sup>2</sup>
- Medication, e.g. antibiotics, sorbitol-containing liquids
- Organic cause, e.g. IBD
- Functional cause, e.g. IBS
- Faecal incontinence
- Rectal prolapse (*Acute cases require referral*)

IBD = inflammatory bowel disease; IBS = irritable bowel syndrome

NUTRITIONAL CONSIDERATIONS



MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



PATIENT HISTORY 

POTENTIAL CAUSES 

**NUTRITIONAL CONSIDERATIONS** 

- Trial fibre-containing vs. fibre-free formulas<sup>6</sup>
- Consider additional fibre supplements if required
- Consider whey-based peptide feed if pre-morbid/persistent constipation<sup>7</sup>
- Be aware of the type of fibre used; FODMAP-containing formulas may worsen symptoms of bloating or diarrhoea in sensitive patients<sup>8</sup>
- Ensure fluid requirements are met

- Trial reduction in feed rate or time on feed (e.g. using a lower volume formula)
- Trial peptide feed and/or lower osmolarity formula for diarrhoea<sup>11</sup>
- Monitor hydration status and provide additional fluids/rehydration treatments as appropriate

FODMAP = fermentable oligosaccharides, disaccharides, monosaccharides and polyols

MEDICATION OPTIONS 

# IDENTIFYING SYMPTOMS

NAUSEA/  
VOMITING (+)

EARLY  
SATIETY (+)

REFLUX (+)

EPIGASTRIC  
PAIN (+)

ABDOMINAL PAIN/  
BLOATING (+)

CONSTIPATION (+)

**DIARRHOEA (-)**

- PATIENT HISTORY (+)
- POTENTIAL CAUSES (+)
- NUTRITIONAL CONSIDERATIONS (+)
- MEDICATION OPTIONS (-)**

**Discuss the use of anti-diarrhoeal medications with medical team**



# IDENTIFYING SYMPTOMS



NAUSEA/  
VOMITING

+



EARLY  
SATIETY

+



REFLUX

+



EPIGASTRIC  
PAIN

+



ABDOMINAL PAIN/  
BLOATING

+



CONSTIPATION

+



DIARRHOEA

-

PATIENT HISTORY



POTENTIAL CAUSES



NUTRITIONAL CONSIDERATIONS

MEDICATION OPTIONS





# IDENTIFYING SYMPTOMS



NAUSEA/  
VOMITING

+



EARLY  
SATIETY

+



REFLUX

+



EPIGASTRIC  
PAIN

+



ABDOMINAL PAIN/  
BLOATING

+



CONSTIPATION

+



DIARRHOEA

-

PATIENT HISTORY



POTENTIAL CAUSES



NUTRITIONAL CONSIDERATIONS



MEDICATION OPTIONS



# IDENTIFYING SYMPTOMS



NAUSEA/  
VOMITING

+



EARLY  
SATIETY

+



REFLUX

+



EPIGASTRIC  
PAIN

+



ABDOMINAL PAIN/  
BLOATING

+



CONSTIPATION

+



DIARRHOEA

-

PATIENT HISTORY +

POTENTIAL CAUSES +

NUTRITIONAL CONSIDERATIONS +

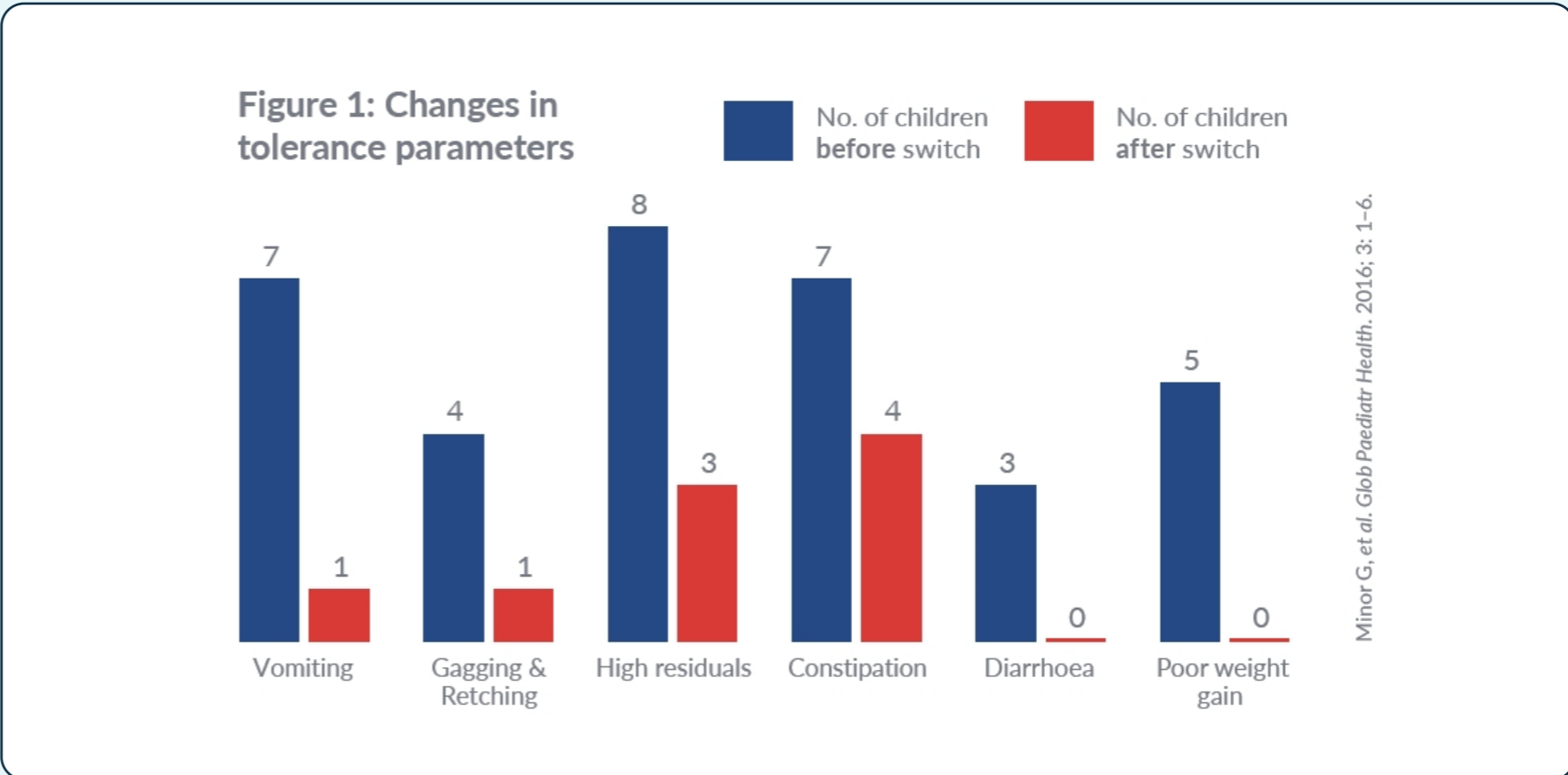
MEDICATION OPTIONS +

# WHEY PEPTIDE FORMULAS: SUPPORTING EVIDENCE

FORMULA SWITCH LEADS TO ENTERAL FEEDING TOLERANCE IMPROVEMENTS IN CHILDREN WITH DEVELOPMENTAL DELAYS

THE 4-YEAR JOURNEY OF FEEDING INTOLERANCE OF AN ENTERALLY-FED CHILD FROM 9 MONTHS OF AGE

- BACKGROUND (+)
- DESIGN (+)
- OBJECTIVES (+)
- PATIENTS (+)
- METHOD (+)
- OUTCOMES MEASURED (+)
- RESULTS (+)



## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

Minor G, et al. Glob Paediatr Health. 2016; 3: 1-6.

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**BACKGROUND** 

DESIGN 

OBJECTIVES 

PATIENTS 

METHOD 

OUTCOMES MEASURED 

RESULTS 

Children with developmental delay commonly experience poor tolerance to enteral feeding, often due to gastrointestinal dysmotility. Intolerance to enteral feeding may prevent nutritional goals from being met and may impact negatively on a child’s growth and development.

**CONCLUSION:**

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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OUTCOMES MEASURED 

RESULTS 

Retrospective chart review.

## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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**OBJECTIVES** 

PATIENTS 

METHOD 

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RESULTS 

The study aimed to evaluate changes in tolerance parameters when enterally fed children with developmental delay were switched from an intact protein formula to a 100% whey peptide formula.

## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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RESULTS 

13 children with developmental delay, aged 8.4 +/- 4.6 years

## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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PATIENTS 

**METHOD** 

OUTCOMES MEASURED 

RESULTS 

Children were switched to one of the following 100% whey peptide formulas from an intact protein formula.

- Peptamen<sup>®</sup> Junior (n=6)
- Peptamen<sup>®</sup> Junior 1.5 (n=6)
- Peptamen<sup>®</sup> Junior Prebio (n=1)

## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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PATIENTS 

METHOD 

**OUTCOMES MEASURED** 

RESULTS 

- Vomiting
- Gagging and retching
- High gastric residual volumes
- Constipation
- Diarrhoea
- Poor weight gain
- Use of medications to manage feeding intolerance (e.g. prokinetics)

## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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RESULTS 

- 92% of children (12/13 patients) showed improvement in feeding tolerance attributed to switching to a 100% whey peptide formula
- Of these, 75% (9/12 patients) reported that improvements occurred within 1 week of the formula change
- Improvements in vomiting (86%), gagging and retching (75%), high gastric residual volumes (63%), constipation (43%) and diarrhoea (100%) were noted in those who had specific intolerance symptoms
- Of those patients who were receiving medications to manage feeding intolerance, 81.8% either reduced their dosage or stopped medications completely following a switch to a 100% whey peptide formula
- 71% of subjects were able to tolerate an increase in feed volume
- All subjects who had experienced poor weight gain showed an increase in weight following the formula change

## CONCLUSION:

In children with developmental delay, switching to a 100% whey peptide formula from an intact protein formula improved symptoms of feeding intolerance. The change in formula was associated with improved growth and a reduction in the use of medications to manage feeding intolerance.

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## BACKGROUND

## OBJECTIVES

## NUTRITIONAL PROBLEMS

## NUTRITIONAL INTERVENTIONS

Child M: born premature at 33 weeks and 4 days with a complex secondary diagnosis that included gastro-oesophageal reflux disease, failure to thrive, intrauterine growth restriction, vitamin D resistant rickets, abnormal vocal cords and chronic lung disease.

## CONCLUSION:

Child M is now 5 years of age, tolerating 4 feeds a day and her weight is now between the 25th–50th centile. Her mum reported that she saw the first normal ‘poo’ after many years of struggling. Her quality of life has improved and she is able to partake in more school activities.

Case study: Emma Liesl Silbernagl, data on file: PEP047 Dec 16.



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BACKGROUND 

OBJECTIVES 

NUTRITIONAL PROBLEMS 

NUTRITIONAL INTERVENTIONS 

- Ensure catch-up growth and subsequent healthy weight gain achieved (tracking on 25th centile, in line with length)
- Feeding tolerance and moving towards safe oral intake
- To meet nutritional requirements 120–130 kcal/kg/day and 120 ml/kg/day to achieve catch-up growth and maintain hydration status

## CONCLUSION:

Child M is now 5 years of age, tolerating 4 feeds a day and her weight is now between the 25th–50th centile. Her mum reported that she saw the first normal 'poo' after many years of struggling. Her quality of life has improved and she is able to partake in more school activities.

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BACKGROUND 

OBJECTIVES 

**NUTRITIONAL PROBLEMS** 

NUTRITIONAL INTERVENTIONS 

- Poor tolerance to oral feeds
- Frequent watery stools (non-infected)

## CONCLUSION:

Child M is now 5 years of age, tolerating 4 feeds a day and her weight is now between the 25th–50th centile. Her mum reported that she saw the first normal ‘poo’ after many years of struggling. Her quality of life has improved and she is able to partake in more school activities.

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BACKGROUND 

OBJECTIVES 

NUTRITIONAL PROBLEMS 

NUTRITIONAL INTERVENTIONS 

**9 months:** Gastrostomy placed. Prescribed high calorie infant formula on contract → loose stools >10 times daily, continuing for 1 year. Centile: <0.4th.

**1 year:** Developed distension, vomiting and reflux. Centile: 0.4th–2nd.

**18 months:** Changed to a standard 1 kcal/ml formula with no change in symptoms. Centile: 9th–25th.

**2 years:** Changed to a 1 kcal/ml semi-elemental formula. Loose stools reduced from 7 episodes to 4 episodes daily. A NISSEN procedure was carried out and reflux resolved. One month later, extreme loose stools recurred. Investigations showed no abnormal results. Feed frequently changed by parents (including 1.5 kcal/ml and fibre-containing formulas). Centile: <25th.

**3.5–4 years:** Recurrence of vomiting, reflux and watery stools. It was then decided to trial 2 x 150 ml of Peptamen® Junior Liquid and 2 x 100 ml of Peptamen® Junior Advance. These feeds are known to be isotonic (closer in osmolality to the bodily fluids). In addition, whey-based feeds may help with gastric emptying.

Feed tolerance improved within 1 month with a marked improvement in stool consistency. Due to the larger volumes of feed given for weight gain, Child M experienced an episode of vomiting. It was then decided to change the feed to 4 x 100 ml of Peptamen® Junior Advance to avoid any unnecessary increases in volume of feed. Centile: 25th.

## CONCLUSION:

Child M is now 5 years of age, tolerating 4 feeds a day and her weight is now between the 25th–50th centile. Her mum reported that she saw the first normal ‘poo’ after many years of struggling. Her quality of life has improved and she is able to partake in more school activities.

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