Guidelines of Enteral Feeding for Preterm Infants in Saudi Arabia

SAUDI NEONATOLOGY SOCIETY
Developed by

The Saudi Neonatology Society

Members of the 20092010- working group (in alphabetical order)

Saleh Al Alaiyan, MD, FRCPC
Consultant Neonatologist,
Senior Clinical Research Scientist
King Faisal Specialist Hospital & Research Centre

Khalid M. AL-Faleh, MBBS, MSc, FRCPC, FAAP
Assistant Professor, consultant neonatologist
Director, Neonatal Care College of Medicine & King Khalid University Hospital
Department of Pediatrics

Fahad Al Harbi, MD
Consultant Neonatologist
King Fahad Medical City
Fahad Al Hazzani, MD, FAAP
Consultant Neonatologist
Head, Neonatal Critical Care Section
King Faisal Specialist Hospital & Research Centre
****

Mohammed Yasir Abdulrahman Al-Hindi, MD
Consultant Neonatologist
North West Armed Forces Hospitals
Tabuk, Saudi Arabia
*****

Khalid Al Hussain, MD
Consultant Neonatologist
Security Forces Hospital
******

Nuhad Al Jishi, MD
Consultant Neonatologist
Dammam Maternity and Children’s Hospital
****
Fawaz Kashlan, MD
Consultant Neonatologist
Riyadh Armed Forces Hospital
***

Khalid ALQatari, MBBS, CABP, CJBP, SBP, MRCPCH
Consultant Neonatologist
Qatif Central Hospital
****

Mansour al Qurashi, DCH, ABP, MD
Associate Dean, Postgraduate Education & Academic Affairs
King Saud bin Abdulaziz University for Health Sciences
Section Head, Neonatal Medicine
Department of Paediatrics
King Abdulaziz Medical City – Western Region
****
Saad Al Saedi, MD
Consultant Neonatologist,
Professor of Pediatrics
Head of NICU
King Abdulaziz University and
King Faisal Specialist Hospital & Research Centre-Jeddah

Mai Abou Al Seoud, MD
Consultant Neonatologist
Head of NICU
King Fahad Military Hospital- Jeddah

Sawsan H. Daffa, MD
Consultant Neonatologist
Maternity and Children’s Hospital
Local reviewers

Ibrahim Al Hifzi, MD
Consultant Neonatologist
Head of NICU
King Fahad Armed Forces Hospital, Khamis Mushayt

Sameh Abozaid, MD
Consultant Neonatologist
King Fahad Medical City
Riyadh - Saudi Arabia

International reviewers

Michael E Imeokparia, MD
Medical Director
Pediatric Nutrition (USA)

Russell J. Merritt, MD, PhD
Senior Medical Director (USA)

Bridget Barrett Reis, PhD, RD
Senior Research Scientist (USA)
INTRODUCTION

Providing adequate nutrition to satisfy the growth needs of very low birth weight infants (VLBW, birth weight <1500 g) is one of the major challenges encountered by those responsible for their care. Of concern is the possibility that failure to provide adequate nutrition to these small infants when their organ systems are undergoing rapid cellular proliferation may result in irreversible deficits and long-term sequelae. The generally accepted goal of nutritional management of VLBW infants is to provide sufficient nutrients to achieve postnatal growth approximating that of a normal fetus of the same postmenstrual age. Unfortunately enteral feeding of VLBW infants is marked by a lack of uniformity from one neonatal intensive care unit to another within individual practices. Such heterogeneity of practice persists from the first hours following birth to post-hospital discharge. The Saudi Neonatology Society (SNS) established the following enteral feeding guidelines for VLBW infants based on a consensus on nutritional support utilizing the best available evidence.
GOALS AND OBJECTIVES

1- The goal is to minimize the differences in clinical practice of feeding VLBW infants by having standardized enteral feeding guidelines.

2- In combination with early aggressive total parenteral nutrition (TPN), the nutrition of VLBW infants should fulfill the following objectives:
   a. Provide nutrient intakes that permit the rate of postnatal growth and the composition of weight gain to approximate that of a normal fetus of the same post menstrual age.
   b. Ensure that the transition from the intrauterine to the extra uterine environment occurs with minimal disruption in nutritional support by utilizing early, aggressive parenteral and enteral nutritional strategies.
   c. Initiate trophic feedings within the first 48 hours of life if clinically stable, and advance to full feed according to the guidelines.
   d. Ensure adequate supplementation of vitamins and minerals.
When to start feeding?

Start feeding as early as the first day when there are no contraindications such as the following:

1. Hemodynamic instability
   a. Volume expanders.
   b. High inotropic support.
   c. Significant PDA.

2. Significant hypoxic episodes.

3. Apgar score of less than 3 at 5 minutes of age with significant metabolic acidosis.

4. Abnormal GI exam/dysfunction:
   a. Suspected GI anomaly.
   b. Ileus.
   c. Grossly bloody stool.
   d. Necrotizing enterocolitis (NEC).
   e. Bilious gastric aspirate despite appropriate position of orogastric tube (OGT).

5. Exchange blood transfusion.

6. Indomethacin/Ibuprofen therapy. (Start feeding 24 hours after the last dose)
Feeding with umbilical catheters (UAC, UVC) in situ

Enteral feeding is reported to be safe with concomitant UVC and UAC in situ. However, it is recommended to remove UAC as early as possible.

How to feed?

Orogastric versus nasogastric tubes
It is preferable to use oro-gastric tubes for most infants.

Intermittent versus continuous feeds
Intermittent feeding is recommended and considered more physiological; however, continuous feeding might be an acceptable method of feeding in certain circumstances.

Push versus gravity for intermittent feeds
It is safer to use intermittent feeding by gravity as opposed to push feeding.

Trophic (minimal enteral) feeding
In clinically stable infants, we recommend to initiate trophic feedings within the first 24 hours of life to provide about 10 ml/kg/d (human milk/colostrum if available).

(Appendix I).

Advancing enteral feeding
When trophic feeding is well tolerated, advance feeding according to Appendix I.

A safe rate of advancement is up to 20 ml/kg/day.
WHAT TO FEED?

**Human milk**

In the preterm hospitalized infant, human milk decreases rates of life-threatening NEC and infections, and shortens hospital stays. It also improves the long term neurodevelopmental outcome. Additionally, administration of own mother’s colostrums during the first days of life has a positive effect on immune function of ELBW infants. The NICU staff or a lactation specialist, if available, should teach the mother about the importance of the human milk and should help her pump her milk every 2 to 3 hours during the day, and every 3 to 4 hours at night or during work. Pumped breast milk should be labeled with the date of pumping before storage. Refrigerated milk has more anti-infective properties than frozen milk. Freshly expressed breast milk should be used within 4 hours if it is left at the room temperature, 5-7 days if it is stored in the refrigerator (zero centigrade), and 3-4 months or longer if it is stored in the freezer (-19 C). Each neonatal unit should have a written policy to promote human milk use.
**Human milk substitutes**

If expressed breast milk is not available, special premature formula (24 kcal/oz) can be used as a substitute. Other forms of feeding like diluted formulas, dextrose water and oral rehydration solutions are not recommended.

**Nutritional supplement**

1. **Human Milk Fortification**

Premature infants fed human milk should be supplemented with protein, calcium, phosphorus and micronutrients. Fortifiers may be the most efficient way to do this when feeding human milk.

Fortification should begin when the infant is tolerating at least 120 ml/kg/day feeds and gradually increased to achieve 24 kcal/oz. (refer to manufacturer’s recommendation)

Fortification should continue until the infant reaches at least 2.0 kg or is established at breastfeeding. Fortification may be used for longer periods of time in nutritionally compromised infants.
2. Iron
Iron supplementation should be given to premature infants fed human milk at a dose of 24- mg/kg/day starting at 1 month.

3. Vitamin D
Vitamin D should be supplemented at a dose of 400 IU/day once the infant is on full feeds. Higher doses up to 800 IU/day might be required for high risk infants. Vitamin D and iron supplements should be continued till the infant is 9 -12 months of age.

FEEDING INTOLERANCE
Episodes of feeding intolerance are common in preterm infants with poor peristalsis. Poor esophageal sphincter tone and delayed gastric emptying increase the risk of reflux and significant gastric residuals. Additionally, immaturity of many digestive enzymes and structural immaturity of the intestine contribute to feeding intolerance. There is no consensus as to the definition of feeding intolerance. Clinical assessment and integration of several pieces of information are required to ascertain the implications and importance of clinical symptoms of intolerance.
1. **Vomiting:** A small volume of altered milk is usually benign, while significant and frequent vomiting, bile or blood stained vomitus should be assessed.

2. **Abdominal Distension:** Mild abdominal fullness with increase in girth less than 2cm especially after bolus feeds or the use of nasal CPAP is not uncommon. However, abdominal distension is considered significant if it is 2cm or more compared to previous measurement and/or is associated with bilious gastric residuals or erythema on the abdominal wall.

3. **Gastric Residuals:** Data strongly suggest that blood stained residual and to a lesser extent maximum residuals volume correlate with feeding intolerance and subsequent development of NEC, however, gastric residuals in the absence of other clinical signs and symptoms during trophic feed is not considered as a significant sign of feeding intolerance. Gastric residuals are considered significant if:
   a. Greater than 30% of the previous feed.
   b. Blood or bile stained.
   c. Associated with significant systemic manifestation.

4. **Bloody stool**

5. **Systemic Features:** including thermal instability, apnea, bradycardia, and lethargy could be considered as indicators of feeding intolerance.
Management of feeding intolerance

Following are management of four (4) different scenarios of feeding intolerance (See Appendix II):

1. Gastric residual volume is low and non-bile stained and not bloody and benign abdominal examination.
   a. Continue feeding
   b. Monitor and follow-up

2. Gastric residual volume is moderate (30 – 50%) but non-bile or blood stained and benign abdominal examination.
   a. Reduce feed volume
   b. Monitor and follow-up

3. Gastric residual is large (more than 50%) but non-bile or blood stained and benign abdominal examination.
   a. Stop 2 - 4 feeds
   b. Assess clinically and investigate if indicated
   c. Monitor and follow-up
4. Gastric residual is bile or blood stained
   a. Stop feeds
   b. Assess clinically
   c. Request laboratory investigation and abdominal x-ray
   d. Manage accordingly
   e. Follow-up

**Growth Chart**

After reviewing the literature, members of the working group recommends applying the newly updated Fenton growth chart for preterm infants (See Appendix III).

Fenton TR (2003) performed a meta-analysis of published reference studies from 1980 to 2002 to obtain more recent data to complete the pre and post-term sections of the chart. The Fenton chart is considered to be an “updated” Babson Benda chart (1976). Data from several population studies with large sample sizes were included. It supports growth monitoring of preterm infants from as early as 22 weeks gestational age to 10 weeks post term age. It allows a comparison of an infant’s growth with first the fetus and then the term infant and therefore allows an evaluation of catch up growth. The advantages of the Fenton chart include the 100-gram graph increments and the percentile curves (3, 10, 50, 90 and 97th) rather than standard deviation.
Post Discharge Feeding

Available data suggest that as a population, preterm infants are in a state of suboptimal nutrition at and beyond their discharge from the hospital. It is likely that improving their nutritional status would be beneficial both in the short-term and potentially for longer-term health and development. Post-discharge formula is generally intermediate in composition between preterm and term formulas. Compared with term formula, post-discharge formula contains an increased amount of protein with sufficient additional energy to permit utilization. It also contains extra calcium, phosphorous, and zinc.

We advise feeding the infants, who are born with birth weight of less than 1500 grams, at discharge from the hospital as follows:

1- Breast feeding with vitamins and mineral supplements.
2- When breast feeding is not possible, post discharge formula is recommended as a substitute for 9 -12 months post term.
Suggested reading

- Ben XM. Nutritional management of newborn infants: Practical guidelines. World J Gastroenterol 2008 October 28; 14(40): 61336139-
# Feeding Protocol for Preterm Infants

## Revision 1

<table>
<thead>
<tr>
<th>Trophic Feeding</th>
<th>&lt; 750 grams</th>
<th>750-999 g</th>
<th>1000-1249 g</th>
<th>1250-1499 g</th>
<th>1500-1749 g</th>
<th>1750-2000 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding Initiation</td>
<td>As Per Protocol</td>
<td>As Per Protocol</td>
<td>----</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Trophic Feeding Amount:</td>
<td>1 cc q 4 hr x 3d</td>
<td>1 cc q 4 hr x 3d</td>
<td>---</td>
<td>----</td>
<td>-----</td>
<td>---</td>
</tr>
<tr>
<td>Feeding Amount / Frequency:</td>
<td>1 cc q 2 hr</td>
<td>1 cc q 2 hr</td>
<td>1 cc q 2 hr</td>
<td>1 cc q 3 hr</td>
<td>2 cc q 3 hr</td>
<td>2 cc q 3 hr</td>
</tr>
<tr>
<td>Increment:</td>
<td>0.5 cc q 12 hr</td>
<td>1 cc q 24 hr x 2d then 1 cc q 12 h</td>
<td>1 cc q 24 hr x 1 d then 1 cc q 12 h</td>
<td>1 cc q 6 hr</td>
<td>1 cc q 6 hr</td>
<td>2 cc q 6 hr</td>
</tr>
</tbody>
</table>
### Feeding Protocol for infant < 750 gram

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q4 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/ Preterm Milk Formula</td>
<td>1</td>
<td>1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/ Preterm Milk Formula</td>
<td>2</td>
<td>1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/ Preterm Milk Formula</td>
<td>3</td>
<td>1 1 1 1 1 1 1 1</td>
</tr>
</tbody>
</table>

Minimal Enteral Feeding (MEF)
<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q2 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>4</td>
<td>1 1 1 1 1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>5</td>
<td>1.5 1.5 1.5 1.5 1.5 1.5 2 2 2 2 2 2</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>6</td>
<td>2.5 2.5 2.5 2.5 2.5 2.5 3 3 3 3 3 3</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>7</td>
<td>3.5 3.5 3.5 3.5 3.5 3.5 4 4 4 4 4 4</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>8</td>
<td>4.5 4.5 4.5 4.5 4.5 4.5 5 5 5 5 5 5</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>9</td>
<td>5.5 5.5 5.5 5.5 5.5 5.5 6 6 6 6 6 6</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>10</td>
<td>6.5 6.5 6.5 6.5 6.5 6.5 7 7 7 7 7 7</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>11</td>
<td>7.5 7.5 7.5 7.5 7.5 7.5 8 8 8 8 8 8</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>12</td>
<td>8.5 8.5 8.5 8.5 8.5 8.5 9 9 9 9 9 9</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>13</td>
<td>9.5 9.5 9.5 9.5 9.5 9.5 10 10 10 10 10 10</td>
</tr>
</tbody>
</table>
Feeding Protocol for infant 750-999 gram

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q4 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>1</td>
<td>1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>2</td>
<td>1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>3</td>
<td>1 1 1 1 1 1 1 1</td>
</tr>
</tbody>
</table>

Minimal Enteral Feeding (MEF)
<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q2 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>4</td>
<td>1 1 1 1 1 1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>5</td>
<td>2 2 2 2 2 2 2 2 2 2 2 2 2</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>6</td>
<td>3 3 3 3 3 3 4 4 4 4 4 4 4</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>7</td>
<td>5 5 5 5 5 6 6 6 6 6 6 6 6</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>8</td>
<td>7 7 7 7 7 8 8 8 8 8 8 8 8</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>9</td>
<td>9 9 9 9 9 10 10 10 10 10 10 10 10</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>10</td>
<td>11 11 11 11 11 12 12 12 12 12 12 12 12</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>11</td>
<td>13 13 13 13 13 14 14 14 14 14 14 14 14</td>
</tr>
</tbody>
</table>

SAUDI NEONATOLOGY SOCIETY
# Feeding Protocol for infant 1000-1249 gram

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q2 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>1</td>
<td>1 1 1 1 1 1 1 1 1 1 1 1</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>2</td>
<td>2 2 2 2 2 2 3 3 3 3 3 3</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>3</td>
<td>4 4 4 4 4 4 5 5 5 5 5 5</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>4</td>
<td>6 6 6 6 6 6 7 7 7 7 7 7</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>5</td>
<td>8 8 8 8 8 8 9 9 9 9 9 9</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>6</td>
<td>10 10 10 10 10 10 11 11 11 11 11 11</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>7</td>
<td>12 12 12 12 12 12 13 13 13 13 13 13</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>8</td>
<td>14 14 14 14 14 14 15 15 15 15 15 15</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>9</td>
<td>16 16 16 16 16 16 17 17 17 17 17 17</td>
</tr>
</tbody>
</table>
# Feeding Protocol for infant 1250 - 1499 gram

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q3 hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>1</td>
<td>1  1  1  1  1  1  1  1  1</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>2</td>
<td>2  2  3  3  4  4  5  5</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>3</td>
<td>6  6  7  7  8  8  9  9</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>4</td>
<td>10 10 11 11 12 12 13 13</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>5</td>
<td>14 14 15 15 16 16 17 18</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>6</td>
<td>19 19 20 20 21 21 22 22</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>7</td>
<td>23 23 24 24 25 25 26 26</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>8</td>
<td>27 27 28 28 29 29 30 30</td>
</tr>
</tbody>
</table>
# Feeding Protocol for infant 1500 - 1749 gram

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q3 hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>1</td>
<td>2  2  2  2  2  2  2  2</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3  3  4  4  5  5  6  6</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7  7  8  8  9  9 10 10</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>11 11 12 12 13 13 14 14</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>15 15 16 16 17 17 18 18</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>19 19 20 20 21 21 22 22</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>23 23 24 24 25 25 26 26</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>27 27 28 28 29 29 30 30</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>31 31 32 32 33 33 34 34</td>
</tr>
</tbody>
</table>
Feeding Protocol for infant 1750 - 2000 gram

<table>
<thead>
<tr>
<th>Type of Formula</th>
<th>Day of Feeding</th>
<th>Feeding Volume (Q3 hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>1</td>
<td>2 2 2 2 2 2 2 2 2 2 2 2</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>2</td>
<td>4 4 6 6 8 8 10 10</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>3</td>
<td>12 12 14 14 16 16 18 18</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>4</td>
<td>20 20 22 22 24 24 26 26</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>5</td>
<td>28 28 30 30 32 32 34 34</td>
</tr>
<tr>
<td>EBM/Preterm Milk Formula</td>
<td>6</td>
<td>36 36 38 38 40 40 42 42</td>
</tr>
</tbody>
</table>
Feeding Intolerance Risk Assessment

- **Large volume gastric residuals (G.R.)**
  - More Serious
  - More Concerning
  - Higher risk of subsequent NEC

- **Bloody/ Blood Stained (G.R.)**
  - Less serious
  - Less concerning
  - Lower risk of subsequent NEC

- **Greenish (persistent)**
  - Less serious
  - Less concerning
  - Lower risk of subsequent NEC

- **Abdominal distension**

- **Abnormal abdominal examination**

- **Systemic manifestations**

- **Small volume gastric residual**

- **Clear/ digested/ semi digested**

- **Not bloody or Bile stained**

- **Benign abdominal examination**

- **No systemic manifestations**
Initial Approach to Suspected Feeding Intolerance

Suspected Feeding Intolerance

- Increase in abdominal girth > 2 cms
- And/or vomiting

Aspirate the stomach and assess the nature, volume of gastric residuals.

Clear/ Digested/Semi digested

- Non-bile or blood Stained

Assess Volume

- Less than 30% of fed volume
  - Assess clinically and if reassuring
  - Continue Feeds
  - Monitor abdominal girth/ gastric residuals/ clinical status

- 30 – 50% of fed volume
  - Assess clinically and if reassuring
  - Reduce feed volume
  - Monitor abdominal girth/ gastric residuals/ clinical status

- More than 50% of fed volume
  - Assess clinically and if reassuring
  - Stop 2 - 4 feeds and investigate if indicated
  - Monitor abdominal girth/ gastric residuals/ clinical status

Bilious/Blood Stained or if clinical status is not reassuring with residuals

- Assess clinically
- Evaluate for systemic/local causes
- Stop feeds
- Investigate (septic workup/imaging) based on clinical evaluation
  - Stop 2 - 4 feeds and investigate if indicated
  - Monitor abdominal girth/ gastric residuals/ clinical status

Follow-up

Manage accordingly
Tanis Fenton PhD, RD gave the SNS a permission to use the Fenton WHO Preterm Growth Chart. We are aware that this growth chart is not the final version (March 26, 2010)
SAUDI NEONATOLOGY SOCIETY
SAUDI NEONATOLOGY SOCIETY