IWK Health Center
Halifax, NS.

Clinical Policy and Objective Manual

Enteral Feedings (Initiation and Progression)

A. POLICY

Nutritive feeds (>20 mls/kg/d) are given to promote growth and development and are progressively increased as the infant tolerates. Premature infants have individual feeding tolerance based on gestational age, birth weight, weight for gestational age, and other co-existing medical conditions such as RDS, BPD, birth asphyxia, and abdominal surgery. These guidelines do not replace clinical expertise in assessing the infant’s tolerance to feeding, but provide a framework for initiating and progressing enteral feedings. Feedings that are advanced slowly may result in an unnecessary delay in the time to reach full enteral feedings. Rapid progression of feeding may result in feeding intolerance. The optimal rate of advancement has yet to be defined.

B. PURPOSE

To provide guidelines for the initiation and progression of enteral feeds in the neonatal population.

C. PROTOCOL OR GUIDELINES

These guidelines are applicable for bolus feeds only, and do not include minimal enteral feedings (MEN). Continuous feedings are an option when bolus feeding is not tolerated or if medically or surgically indicated. Feedings may be initiated with breast milk or formula. The following guidelines apply to clinically stable premature infants and are based on birth weight.

GUIDELINES FOR READINESS FOR ENTERAL FEEDING

A. Prior to starting feeds, infants should be assessed for the following:

1. Bowel sounds present and abdomen soft.
2. Vital signs within normal limits.
3. A respiratory rate <60-70/min and non-laboured, oxygen saturation at rest >92%.
   Lower saturations may be accepted when infant has underlying pathological conditions.
4. There should be minimal variation from the resting heart rate during feeding.
5. Use caution in neonates at risk of intestinal mucosal injury, ie. asphyxia, sepsis, indomethicin therapy, surgical bowel.
6. Infant has tolerated MEN if applicable.
7. Discuss a feeding plan with the Health Care Team during rounds and the Surgical consultant when necessary and obtain written order.

B. **Recommended volumes for progression of nutritive feeds:**

<table>
<thead>
<tr>
<th>Birth Weight</th>
<th>Initiation of Enteral Feeds (mls/kg/d)</th>
<th>Example Day 1</th>
<th>Rate of Advancement of Feeds (mls/kg/d)</th>
<th>Example Day 2</th>
<th>Frequency of Increases per Feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 750 g</td>
<td>10</td>
<td>1 ml q4</td>
<td>10</td>
<td>1 ml q2</td>
<td>1 ml q24h</td>
</tr>
<tr>
<td>750 – 1000 g</td>
<td>10 – 20</td>
<td>1 ml q2</td>
<td>20</td>
<td>2 mls q2</td>
<td>1 ml q12-24h</td>
</tr>
<tr>
<td>1001 – 1250 g</td>
<td>20</td>
<td>2 mls q2</td>
<td>20</td>
<td>3-4 mls q2</td>
<td>1 ml q 12h</td>
</tr>
<tr>
<td>1251 – 1500 g</td>
<td>20</td>
<td>2-3 mls q2</td>
<td>20</td>
<td>4-6 mls q2</td>
<td>1 ml q6-12h</td>
</tr>
<tr>
<td>1501 – 1800 g</td>
<td>20 – 40</td>
<td>5-10 mls q3</td>
<td>30-50</td>
<td>10-15 mls q3</td>
<td>2 mls q6-12h</td>
</tr>
<tr>
<td>&gt; 1800 g</td>
<td>40 – 60</td>
<td>10-15 mls q3</td>
<td>40-50</td>
<td>20-25 mls q3</td>
<td>3-5 mls q6h</td>
</tr>
</tbody>
</table>

Note: The lower rates of initiation and advancement of feeds correspond with the lower weights within the range. Higher rates of initiation and advancement may be tolerated in the IUGR infant > 33 weeks.

C. The progression of enteral feedings is based on assessment of feeding tolerance and the overall clinical assessment of the infant.
D. Feedings will be increased until full enteral feedings are reached. This is defined as a minimum of 100 – 120 kcals/kg/d or fluid intakes of 140-160 mls/kg/d. Total fluid intakes are determined by the clinical conditions of the infant and will be assessed during rounds.

**METHODS OF GAVAGE FEEDING**

The infant’s tolerance and needs should indicate the type of gavage feeding. The following should be considered:

**A. Oral Gavage Feeding Tube**

1. Does not interfere with breathing through nasal passageway
2. Is easy to pass with oral secretions as a natural lubricant.
3. Oral tube may be easily dislodged. Taping may be difficult to secure.
4. As gag reflex becomes stronger > 33 weeks GA, repeated insertion of oral tubes may cause stressful and negative stimulation.
5. Routine use should only be considered in orally intubated infants or in very premature infants.

**B. Nasal Gavage Feeding Tube**
1. May cause less gag stimulation than oral tube.
2. Can be easily secured with tape.
3. Easier for the infant to suck on pacifier during feeding.
4. A feeding tube in small nares may increase upper airway resistance.

**C. Indwelling versus Intermittent N/G**
1. Infants who require more than 2 intermittent gavage feeds per 24 hours should have an indwelling nasogastric tube placed.
2. Indwelling NG tubes allow for more rest and less invasive events per day.
3. There may be reduced chance of oral aversion if an indwelling NG tube is used.
4. Nasogastric tubes are recommended when extended gavage feeds are required. NG Tubes may remain in place for 7 days before changing. Alternate nares with each tube change and document which nare is used.
5. A #5 or #6 French feeding tube is recommended for all babies < 2000 grams. A #8 French feeding tube will be used for larger babies.

**GUIDELINES FOR READINESS FOR ORAL FEEDING**

**A. Evidence of Neurodevelopmental Maturity/Physiological Stability**
1. The infant demonstrates rhythmic non-nutritive suck (ie pacifier or finger). Non-nutritive sucking is associated with accelerated maturation of sucking response, and may result in earlier breast or bottle feeding and better weight gain.
2. The infant is able to maintain a quiet alert or active alert state.
3. The infant demonstrates hunger and feeding cues such as sucking and rooting movements and hand-to-mouth activity.
4. Oral motor reflexes are present: rooting, suck-swallow-breathe, gag, cough.
5. The infant demonstrates jaw and tongue stability.
6. The infant shows endurance and sufficient energy to expend on nutritive sucking without compromising homeostasis.
7. Coordinated suck-swallow-breathe may be present at 32 – 34 weeks gestational age (GA). It is more likely at 34 – 35 weeks GA.
B. **Assessment of Oral Feedings**

Feeding evaluations will be performed during each feed.
1. Assess the infant’s condition of suck/swallow/breathing during the feeding. There may be a need for the infant to rest and recover between short episodes of sucking.
2. Pace the feeding according to the infant’s cues. Disengagement cues may include periods of choking, coughing, gulping, turning head away, milk dripping out of infant’s mouth, irritability, arms flailing, sleepiness, back arching, cessation of sucking, not opening mouth for nipple, nasal flaring, and difficulty breathing. Premature infants are at risk for periods of apnea and/or bradycardia (heart rate <90 BPSM) with feeding.
3. Infants may not be able to nipple/breast feed an entire feeding volume and may require the remaining volume by gavage or “topping-up.” If an indwelling gastric tube is not already in place, wait 20-30 minutes before inserting gastric tube. The following cues may indicate the need for gavage feeding:
   - a. Infants who clearly exhibit disengagement cues with feeding
   - b. Un-coordination of suck-swallow-breathing
   - c. Fatigue with feeding
   - d. Feedings that last longer than 30 minutes.
4. Feedings will be advanced according to infant tolerance and feeding guidelines in conjunction with the Health Care team.
5. The standard nipple (brown) is recommended for all feedings. The premature (red) nipple is softer and has a faster flow. Some infants are not able to coordinate suck-swallow-breath for the faster flow. This can lead to distress, increased risk of aspiration and negative feeding experiences. Emphasis should be on the **quality** of the feeding rather than the **quantity** of milk consumed.
6. In preparation for discharge, families are encouraged to bring in and trial run the bottles and nipples that they plan to use at home.

D. **SUPPLEMENTAL REFERENCES**


A.S.P.E.N. Board of directors and the Clinical Task Force (2002). Guidelines for the use of parenteral and enteral nutrition in adult and pediatric patients. JPEN 26(1) Supplement.

Benchmarking Regarding Indwelling Versus Intermittent NG Tubes and Tube Size & Shape. (April, 2002):
Health Science Centre (Formerly Dr. Charles A. Janeway), Saint Johns, Newfoundland
Moncton Hospital, Moncton, New Brunswick
St. John Regional Hospital, St. John, New Brunswick
Hospital for Sick Children, Toronto, Ontario
Ottawa General Hospital, Ottawa, Ontario
Sunnybrook & Women’s Hospital, Toronto
Children’s Hospital of Eastern Ontario (CHEO), Ottawa, Ontario
Foothills Provincial General Hospital, Calgary, Alberta
Royal Alexandra Hospital, Edmonton, Alberta


**E. AUTHORS/CONSULTANTS/REVIEWERS**

Joyce Ledwidge Dietitian, NICU
Elise Ladouceur Clinical Leader, NICU
Debbie Magee RN, NICU
Darlene Inglis Nurse Clinician NICU
Della Morrison NNP, NICU
Laura Chisholm RN, NICU
Julie MacLean Quality Improvement Coordinator
Sharon Hogg RN, NICU
Dept. of Neonatology

<table>
<thead>
<tr>
<th>Responsibility Of:</th>
<th>Women’s and Newborn Health program</th>
<th>Effective Date:</th>
<th>Feb. 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross References:</td>
<td>Gavage Feeding via Naso-oral gastric feeding tube #8555 Clinical Assessment of Feeding intolerance #8531</td>
<td>Policy Number:</td>
<td>8551</td>
</tr>
<tr>
<td>Target Audience:</td>
<td>Registered Nurses, and Physicians in NICU</td>
<td>Policy (ies) Replaced:</td>
<td>N/A</td>
</tr>
<tr>
<td>Pages:</td>
<td>6</td>
<td>Approved By:</td>
<td>Neonatal Care Team</td>
</tr>
</tbody>
</table>