NURSES’ GUIDE TO TUBE FEEDING

PRESENTED BY:

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OBJECTIVES

- Identify types of feeding tubes and accessories
- Recognize enteral devices with ENFit® connectors
- Demonstrate appropriate techniques for formula and medication administration
- Describe optimal tube site care
- Recognize and troubleshoot complications of tube feeding
- Nutrition Screening
FEEDING TUBES

Nasogastric tubes

Gastrostomy tubes

Jejunal tubes
NASOGASTRIC TUBES

- Bedside or radiology insertion
- Indicated for short term use
  - Some patients use for long term
- Contraindications
  - Aspiration risk
  - Persistent vomiting/reflux
  - Delayed gastric empty
GASTROSTOMY TUBES (G-TUBES)

- Percutaneous Endoscopic Gastrostomy (PEG)
  - Placed using endoscopic technique
  - Internal and external bolsters
- Surgical Gastrostomy tubes
JEJUNAL (J-TUBE)

- Percutaneous Endoscopic Jejunostomy (PEJ)
- Needle Catheter Jejunostomy
  - Most commonly used surgically-placed J-tube
- Percutaneous Endoscopic Gastro-Jejunostomy (PEGJ)
BALLOON TUBES

- Replacement Balloon G-tubes/J-tubes
  - Once gastrostomy tract matures
    - Approximately 3 months

- Low Profile G-tubes/J-tubes
  - Anti-reflux valve prevents leakage of gastric contents in case cap comes off
  - Requires extension tubing for use
NASOENTERIC TUBES

- Nasogastric/jejunal (NG/NJ-tube)
  - Bedside or radiology insertion
  - Placement confirmed by radiography
  - Also known as transpyloric (TP)
- Nasogastric-jejunal (NG-J)
  - Double-lumen tube
- Nasoduodenal tubes (ND)
  - More common in infants/children
ENfit ®
ENTERAL CONNECTION

• Misconnections between enteral devices and non-enteral devices (IV, respiratory, urinary, etc.) can cause patient harm and death.
• ENFit® is an FDA-approved solution from safety organizations and manufacturers.
With the ENFit® connector, enteral feeding devices will only connect with other enteral feeding devices.
Enteral feeding sets already have an ENFit® tip with a transitional stepped connector.
ENfit®
SYRINGES

- CATHETER TIP SYRINGE
- Luer Lock Syringe
- Luer Slip Syringe
- Oral Syringe
ENfit® SYRINGES

Syringes are currently available with ENFit® tip for use with or without a transitional stepped connector.
ENfit®

FEEDING TUBES AND EXTENSION SETS

Feeding tubes and extension sets are available with Enfit®.
ENTERAL BACKPACK

- Allows for ambulation
- Improves independence
- Enhances quality of life
OBJECTIVES

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✓ Recognize enteral devices with ENFit® connectors

☐ Demonstrate appropriate techniques for formula and medication administration
☐ Describe optimal tube site care
☐ Recognize and troubleshoot complications of tube feeding
VERIFYING TUBE POSITION

• Purpose
  • Tube can migrate upward from small bowel to stomach or from stomach to esophagus

• Methods used
  • Checking tube graduation marks
  • Aspirating gastric residuals
  • Air auscultation
  • X-ray confirmation
VERIFYING TUBE POSITION

- Methods used to verify tube position
  - **Checking tube graduation marks**
    - **Most effective bedside method**
  - Aspirating gastric residuals
    - Sharp increase may indicate JT displaced to the stomach
      - pH of aspirate different in gastric vs small bowel
    - Negative pressure when attempting to aspirate
      - Potentially useful to detect small bowel tube migration
VERIFYING TUBE POSITION

• Methods used to verify tube position
  • Air auscultation
    • Not effective
    • Hard to differentiate between respiratory and gastric placement

• X-ray confirmation
  • Gold standard
    • Always use if there is doubt
# Feeding Methods

<table>
<thead>
<tr>
<th>Bolus</th>
<th>Gravity</th>
<th>Pump-Assisted</th>
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<tbody>
<tr>
<td>![Bolus Image]</td>
<td>![Gravity Image]</td>
<td>![Pump-Assisted Image]</td>
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*Note: The images represent different feeding methods: Bolus, Gravity, and Pump-Assisted.*
BOLUS

- Large amount of formula administered rapidly
  - Delivered over approximately 15 minutes
  - 3-8 times daily
- Appropriate for NGT and GT
- Allows for more freedom
GRAVITY

- Requires feeding bag with roller clamp
  - Delivered over 30-60 minutes
  - 3-8 times daily
- Appropriate for NGT or GT
PUMP-ASSISTED

• Continuous or Intermittent
• Over 30-60 minutes in some pediatric patients
• Delivered up to 24 hours a day
• Appropriate for JT and GT/NGT who require slower rate
INITIATION

• Bolus/Gravity
  • 25% of goal volume in pediatric patients
  • Up to 100% of goal volume in stable adult patients
  • Divide into desired number of daily feedings

• Pump
  • Start at 10-40 mL/hr
ADVANCEMENT

• Bolus/Gravity
  • Increase volume by 25% per day until goal reached

• Pump
  • Increase by 10-20 mL/hr every 8-12 hours as tolerated until goal rate reached
ASPIRATION PREVENTION

• Proper tube position
• Head of the bed at 30-45 degrees during and 1 hour after
• Check for signs of intolerance
  • Emesis
  • Abdominal distention
  • Constipation
• Gastric Residual Volume (GRV)
GASTRIC RESIDUAL VOLUME (GRV)

• Checking
  • Q 4 hours for the first 48 hrs
  • Q 6-8 hours once goal reached in non-critical patients

• Interpreting
  • GRV > 250ml x2 may require gastric motility agent
  • GRV > 500mL hold TF and reassess
  • GRV consistently > 500mL consider jejunal feedings
DISADVANTAGES TO CHECKING GRV

• Accuracy questionable
• Relationship to aspiration questionable
• Potential for clogging tube
• Potential for underfeeding
  • when feedings repeatedly held
RECOMMENDED FORMULA

HANG TIMES

0 hours → 4
Sterile Formula In an Open System (Neonate)

8
Sterile Formula In an Open System

12
Sterile Formula In an Open System (at home)

24 → 36 → 48
Sterile Formula In a Closed System *

Non-Sterile Powder Formula

Enteral Nutrition Practice Recommendations/Bankhead et al
ADULT FORMULA
SELECTION

• Standard Adult
  • 1.0-2.0 Kcal/mL
  • With and without fiber
• Specialty Adult
  • Disease-specific
    • Diabetes, Renal, Hepatic
  • Hydrolyzed
    • Peptamen
  • Amino acid-based
    • Vivonex
INFANT FORMULA
SELECTION

- Standard Term Infant
  - Cow milk-based
  - 20 Kcal/oz
  - Similac Advance, Enfamil Premium, Gerber Good Start

- Lactose-reduced
  - Similac Sensitive, Gentlease
INFANT FORMULA

SELECTION

- Premature
  - More protein, calcium phosphorus
  - and vitamin D for bones
  - 22 Kcal/oz standard dilution
  - Enfacare, Neosure
  - Can be safely used until 12 months
- Hydrolyzed-hypoallergenic
  - Alimentum, Nutramigen, Pregestimil
- Amino acid-based-elemental
  - Elecare, Neocate Infant
- *Reconstitute powdered formulas with sterile water
PEDIATRIC FORMULA

SELECTION

• Standard Pediatric
  • 1.0-1.5 Kcal/mL
  • With and without fiber
    • Pediasure
    • Boost Kid Essentials
• Hydrolyzed/Peptide-based
  • Pediasure Peptide, Peptamen Jr
• Amino acid-based
  • Neocate Jr, Elecare Jr, Vivonex Pediatric
MEDICATION ADMINISTRATION

• Stop the feeding and flush tube with at least 15 mL water

• Deliver each medication separately
  • From other medications
  • From formula
    • Avoid adding medication directly to formula

• Flush tube with water before and after each medication
MEDICATION ADMINISTRATION

- Crush only those meds which are immediate-release
- Use liquid forms when available
- Dilute liquid medications to prevent clogging and diarrhea
- Use 30-60 mL oral/enteral syringes
OBJECTIVES

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☑ Describe optimal tube site care
☑ Recognize and troubleshoot complications of tube feeding
TUBE AND SITE CARE

• Daily
  • Check tube position
  • Check for pain, redness, irritation, leakage around exit site
  • Clean nares or exit site with water, including underneath external bolster
  • Rotate external bolster ¼ turn
  • Check external bolster height
    • Both sitting and supine position
TUBE AND SITE CARE

- Flush the tube with water*
  - Before and after each use
  - Routinely for jejunal tubes:
    - 30mL every 4 hours
  - After residual check in adult patients
  - To prevent clogged tube

*Other liquids, especially acidic ones, can increase clogging risk
TUBE AND SITE CARE

- Weekly and before use
  - Check balloon volume and test for leaks
    - Deflate balloon by withdrawing water, noting amount
      - If >5 mL has been lost, notify physician
    - Re-inflate with recommended amount of sterile water
      - Do not use air: can seep out and deflate balloon
      - Do not use saline: can clog access port
WASH YOUR HANDS

ROTATE THE TUBE ¼ TURN (EXCEPT FOR J- TUBES)

CHECK EXTERNAL BOLSTER HEIGHT

SECURE THE TUBE

KEEP IT CLEAN AND DRY

DAILY SKIN CARE TIPS
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EXCESS LEAKAGE

- Check external bolster height
  - Leakage can often be corrected by adjusting properly
- Check balloon volume
- Short term dressing to absorb drainage
- Tube replacement if stoma enlarged
DISLODGED FEEDING TUBE

- Cover with gauze and notify physician
- If cannot be replace within 2-4 hours place temporary catheter or tape tube in place to prevent stoma closure
  - Do not use temporary catheter for feeding
CLOGGED FEEDING TUBE

Push warm water into the tube with a 60 mL syringe

Gently push and pull the plunger to loosen the clog

NOTE: Avoid pulling back on the plunger if you have a J-tube

Clamp the tube and let the water “soak” for 15 minutes

Try gently massaging the tubing with your fingertips
STUBBORN CLOGGED FEEDING TUBE

• Enzyme
  • Viokace® (Allergan) + Sodium Bicarbonate + water
  • Clog Zapper™ kit (Halyard Health)

• Mechanical devices
  • TubeClear ® (Actuated Medical)
  • PEG Cleaning Brush (Bard)
  • Enteral Feeding Tube DeClogger ® (Bionix)

• Recurring clogs:
  – Evaluate medication forms and administration methods, review flushing protocol
NAUSEA/VOMITING

- Potential causes
  - High administration rate
  - High formula concentration
  - Formula contamination
  - GI dysfunction
    - Small bowel bacterial overgrowth
    - Impaction
  - Medication side effects
    - Antibiotics
    - Liquid forms containing sugar alcohols
DIARRHEA

- Potential causes
  - High administration rate
  - High formula concentration
  - Formula contamination
  - GI dysfunction
    - Small bowel bacterial overgrowth
    - Impaction
  - Medication side effects
    - Antibiotics
    - Liquid forms containing sugar alcohols
CONSTIPATION

• Potential causes
  − Inadequate fiber or fluid intake
  − Medication side effects
• Especially narcotics
  − Inactivity
  − GI dysmotility
  − Bowel obstruction
WHO PERFORMS NUTRITION SCREEN?

- Nurses
- Registered Dietitians (RD)
- Dietetic Technicians, Registered (DTR)
- Physicians
PURPOSE OF NUTRITION SCREENING

• Identify patients at risk for malnutrition
• Refer at-risk patients to RD for further intervention
  • Nutrition assessment > Nutrition plan
• Comply with government regulations
  • The Joint Commission (TJC)
    • Home health organizations should have a system to identify patients at nutritional risk.
PROCESS FOR NUTRITION SCREENING

- Identify patients needing to be screened
  - Determined by individual organization
- Review medical information
- Identify signs and symptoms
- Identify psychosocial and economic factors
IDENTIFYING PATIENTS WHO NEED NUTRITION SCREENING

- Conditions with nutritional impact including:
  - COPD
  - Cancer
  - Renal disease
  - Gastrointestinal disorders
  - Dysphagia
- Restrictive diet
- Nutrition support: tube feeding or TPN
- Medications that may influence appetite and GI symptoms
• Review medical information
  • Diagnosis
  • History and Physical
  • Medications
  • Food allergies
  • Weight history
UNINTENDED WEIGHT LOSS

- Significant weight loss based on UBW
  - 2% x 1 week
  - 5% x 1 month
  - 7.5% x 3 months
  - 10% or 10 lbs x 6 months
- Any weight loss in children should be investigated
UNDERWEIGHT OR OBESE

- Ideal body weight
  - <80% or >130%

- Growth chart
  - Weight or weight-for-height
    - < 3<sup>rd</sup> percentile or >95<sup>th</sup> percentile
OTHER ANTHROPOMETRIC MEASUREMENTS

- Height/length
- Head circumference
- BMI
- Body fat/lean body mass
- Triceps Skinfold (TSF)
  - Measures thickness of subcutaneous adipose tissue
- Midarm Muscle Circumference (MAMC)
  - Measures underlying muscle tissue
ORAL SYMPTOMS

- Chewing difficulty
  - Poor dental status
  - Ill-fitting dentures
- Swallowing difficulty
- Mouth pain/sores
- Poor suck and swallow reflex in infants
OTHER SIGNS AND SYMPTOMS

- Gastrointestinal problems
  - Nausea, vomiting, diarrhea, constipation
- Pressure ulcers
- Dehydration
  - Decreased urine output
  - Decreased skin turgor
  - Dry mucus membranes
  - Thick saliva
  - Increased pulse
  - Decreased blood pressure
VALIDATED SCREENING TOOLS

• DETERMINE
• Disease
• Eating poorly
• Tooth loss/mouth pain
• Economic hardship
• Reduced social contact/interaction
• Multiple medications
• Involuntary weight loss/gain
• Need for assistance with self care
• Elder at an advanced age
VALIDATED SCREENING TOOLS

• Subjective Global Assessment (SGA)
  • History
    • Weight change
    • Dietary intake
    • GI symptoms lasting > 2 weeks
    • Functional capacity
    • Disease
  • Physical
    • Muscle and fat loss
    • Ankle or sacral edema, ascites
  • SGA rating
    • A, B or C (normal, mild-moderate, severe)


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