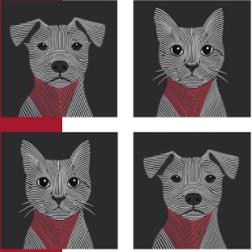


From Hunger Games to Healthy Gains: Feeding Tubes 101

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OBJECTIVES

- Identify common feeding tube types
- Understand indications and contraindications
- Perform basic nutritional calculations
- Outline proper care and monitoring
- Recognizing potential complications
- Understand troubleshooting strategies
- Education for clients



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WHY FEEDING TUBES MATTER

- Malnutrition increases morbidity
- Supports achievement of nutritional goals
- Facilitates reliable medication administration
- May decrease hospitalization stay
- Supports the overall recovery process
- Can be life-saving for certain patients!



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TYPES OF FEEDING TUBES

Gastrostomy (G-tube)	Esophagostomy (E-tube)	Naso-esophageal (NE) / Nasogastric (NG)
		

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NASOGASTRIC (NG) / NASOESOPHAGEAL (NE) - OVERVIEW

- Generally awake or mildly sedated
- Short-term (3-7 days)
- Liquid diets only
- Primarily in-hospital use

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NASOGASTRIC (NG) / NASOESOPHAGEAL (NE) - OVERVIEW

INDICATIONS	CONTRAINDICATIONS
<ul style="list-style-type: none"> • Anorexia / Prolonged hyporexia • Hepatic lipidosis (cats) • Rehydration • Facilitate gastric emptying • Initial stabilization for GDV cases • Nutrition support for vent cases 	<ul style="list-style-type: none"> • Bleeding disorders • Uncontrolled vomiting • Uncontrolled regurgitation • Significant nasal disease • Lack of gag reflex • Facial trauma • Abnormalities along path of placement

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ESOPHAGOSTOMY TUBE (E-TUBE) - OVERVIEW

- Requires general anesthesia or heavy sedation
- Liquified or blenderized diet
- Medium-long term use (weeks to months)
- Most common in small animal

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BALLOON ESOPHAGOSTOMY TUBE (BE-TUBE) - OVERVIEW

- Used for esophageal strictures
- Daily at-home dilation
- Able to use as a feeding tube, if necessary
- Reduces anesthesia events



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ESOPHAGOSTOMY TUBE (E-TUBE) - OVERVIEW

INDICATIONS	CONTRAINDICATIONS
<ul style="list-style-type: none"> • Anorexia • Prolonged hypoxemia • Hepatic lipidosis (cats) • Oral disorders • Facial trauma • Challenging to medicate PO • Laryngeal disorders 	<ul style="list-style-type: none"> • Bleeding disorders • Megaesophagus • Esophagitis • Esophageal masses • Esophageal achalasia • Esophageal strictures

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GASTROSTOMY TUBE (G-TUBE) - OVERVIEW

- Requires general anesthesia
- Long-term use (months-years)
- Requires maturity of stoma site prior to removal
- Large diameter tube
- Low-profile option – MIC-KEY



Top Photo courtesy of Kelli Krapp; Bottom Photo courtesy of Martin Fornell, DVM, DACVIM (SAIM)

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GASTROSTOMY TUBE (G-TUBE) - OVERVIEW

INDICATIONS	CONTRAINDICATIONS
<ul style="list-style-type: none"> • Anorexia • Megaesophagus • Severe esophagitis • Esophageal stricture • Long-term need 	<ul style="list-style-type: none"> • Persistent vomiting • Mechanical obstruction • Significant gastric pathology • Decreased consciousness • Severe peritonitis • Coagulopathy

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WHO NEEDS A FEEDING TUBE?

- Hepatic lipidosis (cats!)
- Pancreatitis
- CKD
- Trauma
- Oral surgery
- Neuro patients
- Cancer patients
- Prolonged anorexia

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NUTRITIONAL CALCULATIONS

★ Resting Energy Requirements (RER):

- Between 2kg - ~40kg
→ $70 + (30 \times \text{ideal body weight}) = X \text{ kcal/day}$
- < 2kg or > 40kg
→ $70 \times \text{body weight in kilograms to the } \frac{1}{2} \text{ power} = X \text{ kcal/day}$

★ Maintenance Energy Requirements (MER):
→ Life stage factor \times (RER of ideal body weight) = X kcal/day

Health Assessment Factors	Adult Life Stage Factor*	Geriatric Life Stage Factor*
Healthy adult	1.2-1.4	1.4-1.6
Healthy adult	1.4-1.6	1.6-1.8
Healthy/obese/geriatric	1.0	1.0-1.2
Highly obese	0.8	1.0
Senior	1.6-2.0	2.0 for all 7 years
Senior (based on number of offspring and weeks of lactation)	2.0-4.0	2.0-3.0
Death	1.0	0.4-1.0 0.6-1.2
Risk		Light 1.0-2.0 Medium 2.0-3.0 Heavy 3.0-5.0

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REFEEDING SYNDROME

Nutrition is rapidly reintroduced to a patient after a prolonged period of anorexia, or starvation, leading to metabolic disturbances.

Can this be prevented?
YES!
=
SLOW, GRADUAL FEEDINGS

STARVATION

- Rapid depletion of glycogen
- Fat oxidation for energy
- Protein metabolism increases
- Total body phosphorus, potassium, magnesium, thiamine (cats) deplete

FEED

- Metabolism shifts from fat to carbohydrates
- Insulin surge
- ↑ Insulin, ↓ glucagon secretion
- Phos/K/Mg translocate intracellularly
- Serum electrolytes ↓

IMPACTS

- Neurologic dysfunction
- Cardiovascular compromise
- Gastrointestinal dysmotility
- Hematological abnormalities
- Multi-organ failure
- Death

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VISUAL ASSESSMENT AND CARE OF FEEDING TUBE

Tube position and integrity

- No change to tube length
- Securely capped
- Kinks? Cracks?

Stoma & Bandage

- Redness? Swelling? Discharge? Odor?
- Comfort/Pain at the site?
- Bandaging Care:
 - Dry? Clean?
 - Site should be cleaned at **least daily**
 - Replace bandaging/gauze pad daily
 - G-tube abdominal wrap changed at least weekly
- Bandage snug, not constrictive or too loose




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FEEDING ADMINISTRATION AND MONITORING

- Feedings**
 - FIRST - offer food PO (if appropriate)
 - Correct diet, formula, volume
 - Food is at room temperature
 - Pre-flush tubing with room temperature water (~ 5mL)
 - Administer feeding → 15-20 min (longer depending on patient tolerance)
 - Administer medication slurry/liquid medication, if indicated
 - Post-flush with water (~ 10mL)
 - Secure cap
- Visual Monitoring**
 - Patient tolerance
 - Nausea? **SLOW DOWN AND CLOSELY OBSERVE**
 - Vomiting? **STOP AND ASSESS**
 - Regurgitation, coughing, respiratory changes (NG/NE tubes)? **STOP AND ASSESS**

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TROUBLESHOOTING

TUBE WON'T FLUSH?

Inspect exterior of tube to ensure there are no kinks and clamps are open
↓
Clogged tube?
↓
Massage exterior of tubing
↓
Firmly flush with 5-10 mL of warm water
↓
5-10mL of carbonated soda (coca-cola)
↓
Veterinarian assistance required.

VOMITING?

1. Feeding given too rapid?
1. Too much volume?
1. Delayed gastric emptying?
1. Migration of tube?

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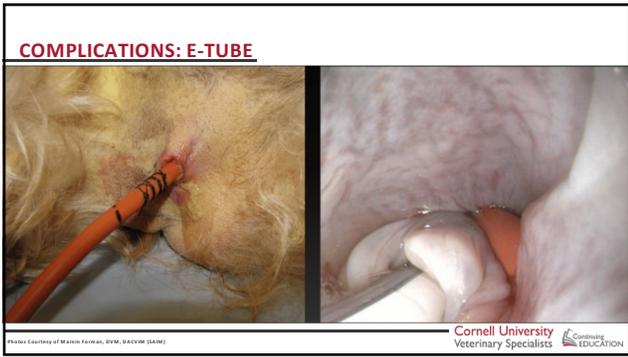
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COMPLICATIONS: E-TUBE

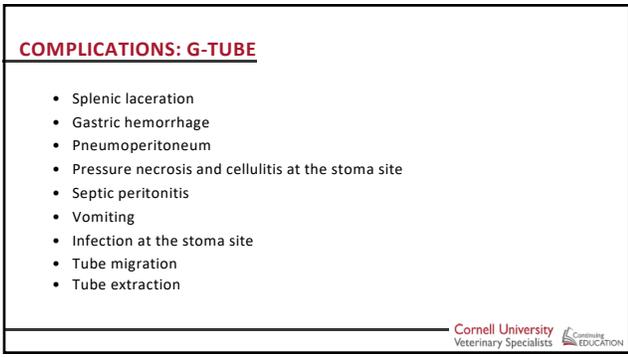
- Infection of the stoma site
- Damaging neurovascular structures
- Dislodgement of the tube
- Regurgitation of the tube resulting in the distal end of the tube exiting from the oral cavity

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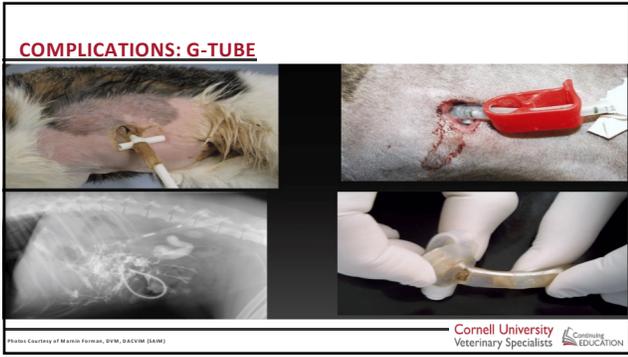
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COMPLICATIONS: NG/NE TUBES

- Malpositioning in the tracheobronchial tree
- Malpositioning in the ethmoid turbinate
- Pneumonia
- Abscessation
- Pneumothorax
- Tracheal or bronchial perforation
- Epistaxis
- Vomiting
- Subcutaneous emphysema
- Hemothorax
- Pneumomediastinum

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CLIENT EDUCATION

- 1 Monitoring
- 2 Cleanliness, complication prevention
- 3 Feeding guidelines
- 4 Medication administration
- 5 Emergency signs
- 6 Troubleshooting
- 7 Realistic expectation for timeline
- 8 Remind clients WE are here for support!

- ✓ Demonstration required
- ✓ Client resources – video, printed instructions

**Thorough
Demonstration
and Education
For The Client
= Success At
Home
= Improved QOL
For The Patient!**

YAY!

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