

**Management of patient receiving enteral nutrition**  
**Enteral tube feeding and care**  
**Managing patients with altered bowel elimination**  
**Enemas and stool specimens**

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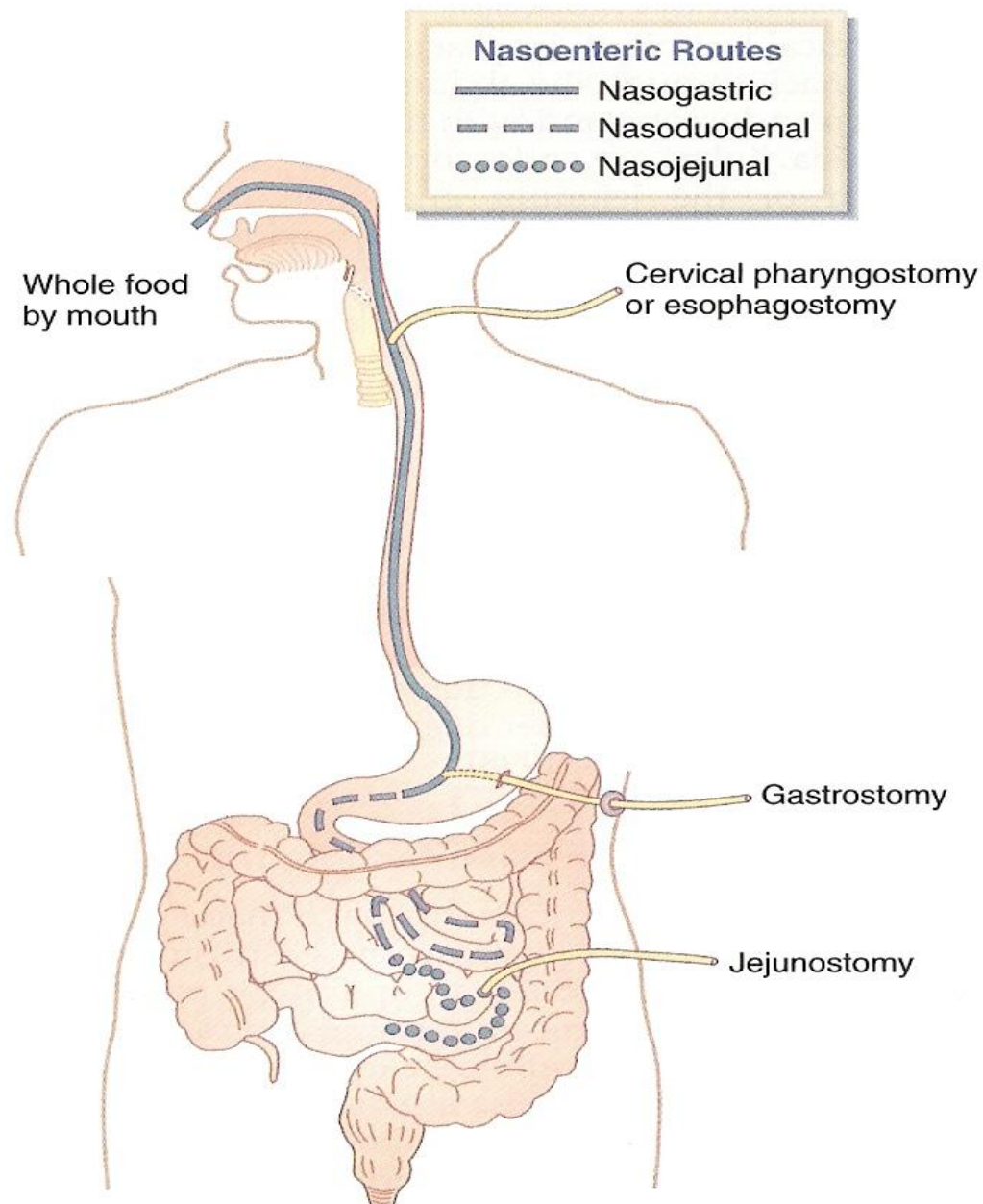
# Enteral nutrition - indications

## **Treatment**

- trouble swallowing or inability to swallow
- oesophageal obstruction
- cancer adjuvant therapy
- altered level of consciousness
- head or neck surgery
- facial trauma

## **Prevention**

- malnutrition
- dehydration
- electrolyte imbalance



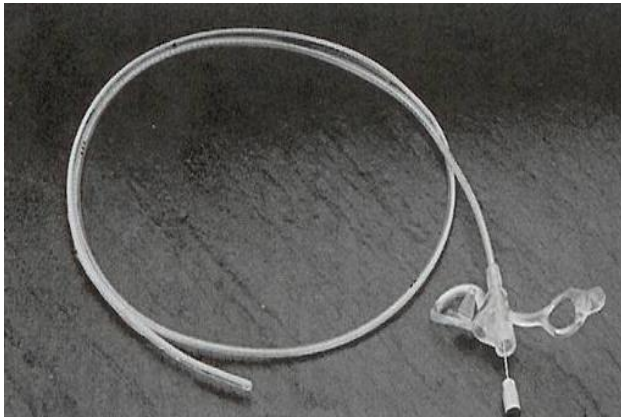
**FIGURE 23-2** • Diagram of enteral tube placement.

# Nasogastric Tubes

**Levin's tube**



**Salem sump up tube**



# Nasogastric Tubes

## Definition

- A tube inserted through the nasal passage into the stomach

## Indications:

- Short term feedings required
- Intact gag reflex
- Gastric function not compromised
- Low risk for aspiration

# Tube Size

- diameter of feeding tube is measured in French units
- feeding tube sizes differ for formula types and administration techniques
- generally smaller tubes are more comfortable and better suited to NG or NJ feedings
- may be more likely to clog with viscous formula or formula mixtures

# Nasogastric Tubes

## Advantages:

- Ease of tube placement
- Surgery not required
- Easy to check gastric residuals
- Accommodates various administration techniques

## Disadvantages:

- Increases risk of aspiration (maybe)
- Not suitable for patients with compromised gastric function
- May promote nasal necrosis and esophagitis
- Impacts patient quality of life

# Tube insertion

- **appropriate position** - depends on age, ability to cooperate. (adult in a high-Fowler's position, infant in an infant seat/ position with a rolled towel or pillow under the head and shoulders)
- **assess the patient's nares** (intactness of the tissues of the nostrils, any irritations or abrasions, check for patency (by asking patient to occlude one nostril and breathe normally through the other) - select one through which air passes more easily)
- **determine the length of the tube** (distance tip of the patient's nose - tip of earlobe - end of sternum = distance from the nares to the stomach of adults, marked with indelible pen or a note taken of the measurement marks on the tube if present)



# Correct placement

- **Aspirate the stomach contents**  
*(more readily through large-bore tubes,  
pleural fluid is straw-coloured fluid  
like gastric content)*
- **Check aspirate acidity** - an acidic pH generally indicates gastric fluid, with usual **pH 2 – 3**  
Intestinal fluids - **pH 7.5 - 8.0**.  
Pleural fluid - **pH 7.4** (vary **6-8 pH**)

*non effective for small-bore intestinal tubes*

Auscultate air insuflation (*difficult to use this method to different oesophageal, gastric, distal duodenal and proximal jejunal placement, because of the proximity*)  
Ability to speak or hum, presence of respiratory distress patterns,

- **X-ray control**



# Nasoduodenal/Jejunal

## Definition

A tube inserted through the nasal passage through the stomach into the duodenum or jejunum

## Indications:

High risk of aspiration

Gastric function compromised

## Advantages:

- Allows for initiation of early enteral feeding
- May decrease risk of aspiration
- Surgery not required

## Disadvantages:

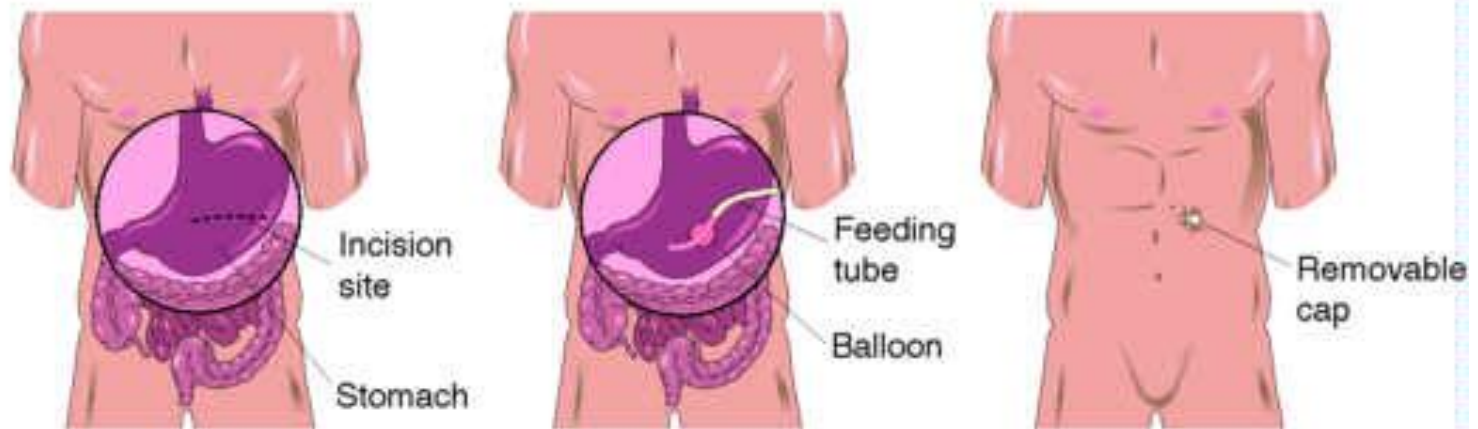
- Transpyloric tube placement may be difficult
- Limited to continuous infusion
- May promote nasal necrosis and esophagitis
- Impacts patient quality of life

# Orogastric tube

- Tube is placed through mouth and into stomach
- Not suitable for adults – facial trauma
- Often used in premature and small infants as they are nasal breathers
- Not tolerated by alert patients; tubes may be damaged by teeth

# Enterostomy Placement

- Gastrostomy
- Jejunostomy



# Gastrostomy

## Definition

- A feeding tube that passes into the stomach through the abdominal wall. May be placed surgically or endoscopically.

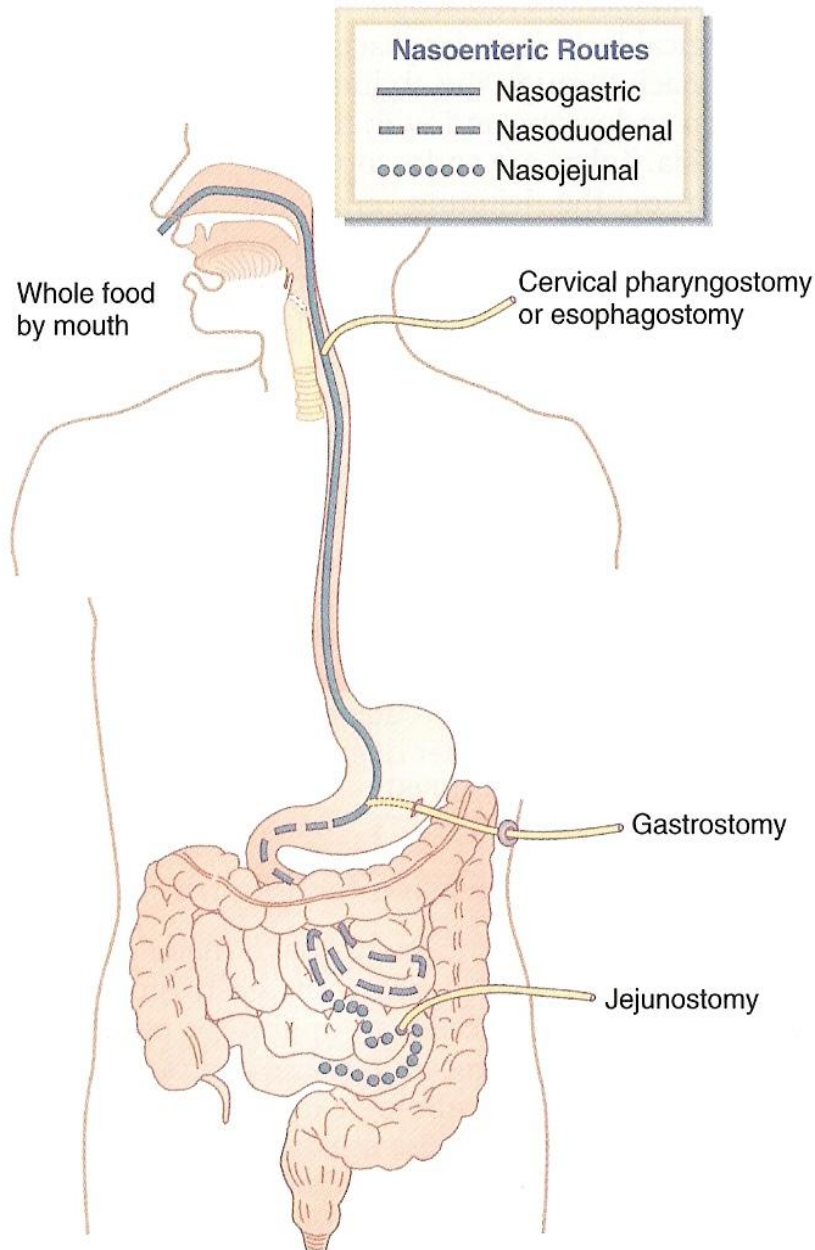
## Indications:

- Long-term support planned
- Gastric function not compromised
- Intact gag reflex present

## Disadvantages:

- May require surgery
- Stoma care required
- Potential problems for leakage or tube dislodgment

# Gastrostomy



**FIGURE 23-2** • Diagram of enteral tube placement.



**Gastrostomy**

<http://www.youtube.com/watch?v=hSv4FOwZ9kQ>  
<http://www.youtube.com/watch?v=atQGkK0zW2s>

# Jejunostomy

## Definition

- A feeding tube that passes into the jejunum through the abdominal wall. May be placed by endoscope or surgically

## Indications:

- Long-term feeding option for patients at high risk for aspiration or with compromised gastric function

# Jejunostomy

## Advantages:

- Post-op feedings may be initiated immediately
- Decreased risk of aspiration
- Suitable option for patients with compromised gastric function
- Stable patients can tolerate intermittent feedings

## Disadvantages:

- Requires stoma care
- Potential problems related to leakage or tube dislodgement/clogging may arise
- May restrict ambulation
- Bolus feedings inappropriate (stable patients may tolerate intermittent feedings)



# Determining Method of Administration

- Feeding site
- Clinical status of patient
- Type of formula used
- Availability of pump
- Mobility of patient

## **Initiation of Enteral Feedings**

- Dilution of enteral formulas not generally recommended
- Initiate at full strength at slow rate and steadily advance
- Allows achievement of goal rates more quickly; less manipulation of formula

# Administration

- Bolus
- Intermittent
- Continuous
- Cyclic



# Bolus Feedings

## Definition

- Infusion of up to 500 ml of enteral formula into the stomach over 5 to 20 minutes, usually by gravity or with a large-bore syringe

## Indications:

- Recommended for gastric feedings
- Requires intact gag reflex
- Normal gastric function



# Bolus Feedings

## Advantages:

- More physiologic
- Enteral pump not required
- Inexpensive and easy administration
- Limits feeding time so patient is free to ambulate, participate in rehabilitation, or live a more normal life in the home
- Makes it more likely patient will receive full amount of formula

## Disadvantages:

- Increases risk for aspiration
- Hypertonic, high fat, or high fiber formulas may delay gastric emptying or result in osmotic diarrhea

# Initiation of Bolus Feedings

- **Adults:** Initiate with full strength formula 3-8 times per day with increases of 60-120 ml q 8-12 hours as tolerated up to goal volume; does not require dilution unless necessary to meet fluid requirements.
- **Children:** Initiate with 25% of goal volume divided into the desired number of daily feedings; increase by 25% each day divided among all feedings until goal volume is reached.

# Continuous Feedings

## Indications:

- Initiation of feedings in acutely ill patients
- Promote tolerance
- Compromised gastric function
- Feeding into small bowel
- Intolerance to other feeding techniques

# Continuous Feedings

## Definition

Enteral formula administration into the gastrointestinal tract via pump or gravity, usually over 8 to 24 hours per day

## Advantages:

- May improve tolerance
- May reduce risk of aspiration
- Increased time for nutrient absorption

## Disadvantages:

- May reduce 24-hour infusion
- May restrict ambulation
- More expensive for home support
- Pumps are more accurate; useful for small-bore tubes and viscous feedings, but many payers have strict criteria for approval of pumps for home or LTC use

# Initiation of Continuous Feedings

- **Adults:** Initiate at full strength at 10-40 mL/hour and advance to goal rate in increments of 10 to 20 mL/hour q 8-12 hours as tolerated.  
Can be used with isotonic or hyperosmolar formulas.
- **Children:** Isotonic formula full strength at 1-2 mL/kg/hour and advanced by .5-1 mL/kg/hour q 6-24 hours until goal rate is achieved.



# Intermittent Feedings

## Definition

- Enteral formula administered at specified times throughout the day; generally in smaller volume and at slower rate than a bolus feeding but in larger volume and faster rate than continuous drip feeding
- Typically 200-300 ml is given over 30-60 minutes q 4-6 hours
- Precede and follow with 30-ml flush of tap water

## Indications:

- Intolerance to bolus administration
- Initiation of support without pump
- Preparation of patient for rehab services or discharge to home or LTC facility

# Intermittent Feedings

## Advantages:

- May enhance quality of life
  - Allows greater mobility between feedings
  - More physiologic
  - May be better tolerated than bolus

## Disadvantages:

- Increased risk for aspiration
- Gastric distention
- Delayed gastric emptying

# Cyclic Feedings

## Definition

- Administration of enteral formula via continuous drip over a defined period of 8 to 12 hours, usually nocturnally

## Indications:

- Ensure optimal nutrient intake when:
  - Transitioning from enteral support to oral nutrition (enhance appetite during the day)
  - Supplement inadequate oral intake
  - Free patient from enteral feedings during the day

# Cyclic Feedings

## Advantages:

- Achieve nutrient goals with supplementation
- Facilitates transition of support to oral diet
- Allows daytime ambulation
- Encourages patient to eat normal meals and snacks

## Disadvantages:

- May require high infusion rates—may promote intolerance

# Enteral Feeding Tubes

- Types: pediatric vs adult; gastric vs small bowel
- Sizes: smaller sizes (5-8 Fr) for commercial products delivered via pump; larger sizes for viscous, blenderized, fiber-containing formulas, gravity and bolus feedings
- Weighted vs. unweighted: it was once thought that weighted tubes facilitated transpyloric passage; now dictated by personal preference
- Stylet vs. no stylet: stylet facilitates tube placement beyond the pylorus for small, flexible tubes
- Composition: silicone and polyurethane most comfortable

# Enteral Feeding Containers

- May be rigid or flexible
- Sterile or non-sterile
- Unbreakable, leakproof, and disposable
  - ◆ Easy to fill, close and hang
  - ◆ Easy to read calibrations and directions
  - ◆ Appropriate size
  - ◆ Adaptable tubing port
  - ◆ Compatible with pump
  - ◆ Requires minimal storage space



# Closed Systems



# Enteral Feeding Pumps



- Simple to use (intuitive)
- Alarm system
- Lightweight
- Long battery life
- Portable
- Volume infused indicator
- Dose function
- Flow rate accurate to within 10%
- Approved for age range in which it will be used
- Permanently attached cord



# Enteral Feeding Complications

- mechanical (e. g. feeding tube obstruction; feeding tube dislodged; nasal irritation; skin irritation)
- gastrointestinal (e. g. diarrhea, constipation, gastric distention, vomiting)
- metabolic
- infectious (e. g. formula contamination, unsanitary equipment)

# **Managing patients with altered bowel elimination**

## **Enemas and stool specimens**

# Bowel elimination

- the waste products of digestion from the body is essential for normal body functioning,
- the common problems that are related to bowel elimination are **constipation, diarrhoea, bowel incontinence and flatulence,**
- is a sensitive issue which is why providing effective care and management of problems associated with it can be problematic.

# An enema

- is a solution introduced into the rectum and large intestine,
- the action of an enema is to distend the intestine and sometimes to irritate the intestinal mucosa, thereby increasing peristalsis and the excretion of stools and flatus,
- four groups: **cleansing**, **carminative**, **retention** and **return-flow** enemas.

# Indications and contraindications

## Indications

- prevent the escape of stool during surgery (or invasive procedure),
- prepare the intestine for certain diagnostic tests such as x-ray or visualization tests (e.g. colonoscopy),
- remove stool in instances of constipation or impaction.

## Contraindications

- presence of increased intracranial pressure,
- glaucoma,
- recent rectal or prostate surgery.

# Cleansing enemas

◆ are intended to remove stools and may also be described as **high** or

**low**

- **high enema** is given to cleanse as much of the colon as possible,
- patient changes from the left lateral position to the dorsal recumbent position and then to the right lateral position during administration so that the solution can follow the large intestine.
- **low enema** is used to clean the rectum and sigmoid colon only,
- the patient maintains a left lateral position during administration.

# Carminative enema

- is given primarily **to expel the flatus**,
- the solution instilled into the rectum releases gas, which in turn distends the rectum and colon, thus stimulating the peristalsis,
- for an adult, 60 to 80 ml of fluid is instilled.

# Retention enema

- introduces oil or medication into the rectum and sigmoid colon,
- the liquid is retained for a relatively long period (e.g. 1 to 3 hr).



# Retention enema

- **oil** retention enema acts to soften the stool and to lubricate the rectum and anal canal thus facilitating passage of the stool
- **antibiotic enemas** are used to treat infections locally
- **antihelmintic enemas** to kill helminthes such as worms and intestinal parasites
- **nutritive enemas** to administer fluids and nutrients to the rectum

# Return-flow enema

- is used occasionally **to expel the flatus**
- a alternating flow of 100 to 200ml of fluid into and out of the rectum and sigmoid colon stimulates peristalsis → this process is repeated five or six times until the flatus is expelled and abdominal distension is relieved

# Types of enema solutions

<b>Solution</b>	<b>Action</b>
<b>Hypertonic</b>	draws water into the colon irritates local tissue
<b>Hypotonic</b>	distends colon stimulates peristalsis softens stool
<b>Isotonic</b>	distends colon stimulates peristalsis softens stool
<b>Soapsuds</b>	irritates mucosa distends colon moistens stool
<b>Oil</b>	lubricates and softens the stool and the colonic mucosa

# Administering enema to child

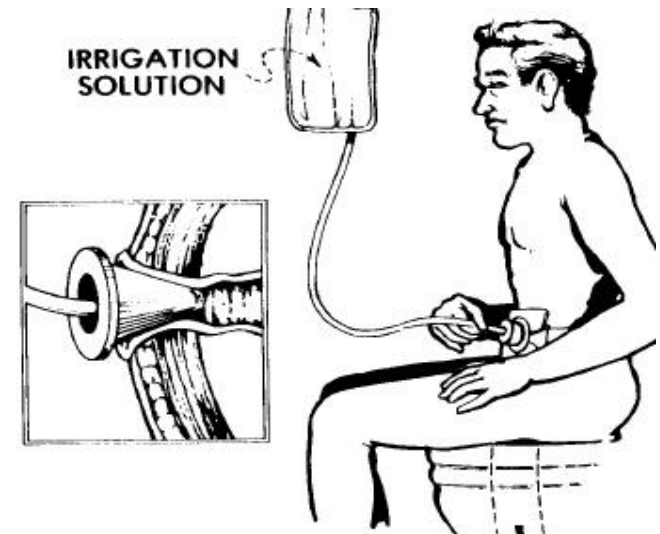
- the procedure for giving an enema to an infant or child does not **differ** essentially from that for an adult, except for the **type** and **amount of fluid** administered and the **distance for inserting** the tube into the rectum

# Administering enema to child

- an **isotonic solution** is used (plain water is not used because, being hypotonic, it can cause rapid fluid shift and fluid overload)
- young children are unable to retain the solution after it is administered → the buttocks must be held together

# Colostomy irrigation patient with a colostomy

- **similar to an enema**
  - is a **form of stoma management** used only for patients who have a sigmoid or descending colostomy
  - small amount of fluid (300 to 500 mL) stimulates evacuation
  - the purpose → to distend the bowel sufficiently to stimulate peristalsis and evacuation  
*(when a regular evacuation pattern is achieved, the wearing of a colostomy pouch is unnecessary)*
  - a colostomy has **no sphincter** and the fluid tends to return as it is instilled
- this problem is reduced **by the use of a cone** on the irrigating catheter  
*(the cone helps to hold the fluid within the bowel during the irrigation)*

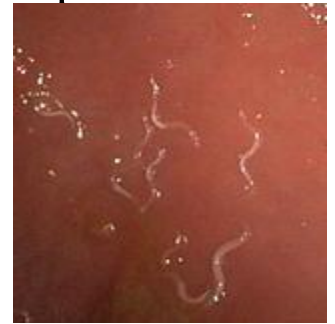


# Digital removal of stool

- breaking up the faecal mass digitally and removing it in portions,
- can be very uncomfortable and embarrassing for the patient,
- in some institutions only physicians perform this procedure,
- **complication** → this procedure may cause irritation to the mucosa, bleeding and stimulation of the vagus nerve, which can cause a reflex slowing of the heart rate.

# Stool specimens

- to **analyze for dietary products and digestive secretions** (e.g. an excessive amount of fat in the stool or) → to collect and send small sample,
- to detect **the presence of ova/eggs and parasites** → usually three stool specimens over a period of days... to confirm the presence of and to identify the organism; it is important that the sample is transported immediately to the lab. (not so reliable)
- *Ascaris lumbricoides*
- *Enterobius vermicularis*
- *Trichuris trichiura*



**Enterobius verm.**

- perianal imprint on transparent tape acc. Graham and Brumpt



# Stool specimens

- to detect **the presence of bacteria or viruses** → only a small amount of stool is required because the specimen will be cultured (collection containers must be sterile; stools need to be sent immediately to the lab; note if the patient is receiving any antibiotics).
- to determine the presence of **occult blood**. Bleeding can occur as a result of ulcers, inflammatory disease or tumours. A commonly used test product to measure occult blood is the haemoccult test, which uses a chemical reagent. This reagent detects the presence of the enzyme.

# Occult Blood Test

- <http://www.youtube.com/watch?v=kujUJcrAd4w&feature=related>

# Stool specimens from children

- to identify parasites and other organisms that cause diarrhea,
- to assess gastrointestinal function,
- to check for occult (hidden) blood.
- ideally, stool should be collected **without contamination with urine**, but in children wearing diapers, this is difficult unless a urine bag is applied,
- children who are toilet trained should urinate first, flush the toilet, and then defecate into the toilet or bedpan or a commercial „potty hat“
- **nursing tip** - to obtain a stool specimen, place plastic wrap over the toilet bowl to collect the stool. Use a tongue depressor or disposable spoon to collect the stool.

**Thank you for your attention....**

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