

# Compounding Drugs for Administration through Feeding Tubes

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# Disclosures

- I am a consultant with Wolter's Klear (Lexicomp/ Up to Date) for Enteral and Trissel committees
- I am a speaker for ASPEN, EuPFI, and NYSCHSP
- I am the Chairman of the NYS Board of Pharmacy
- None of my involvements have been considered a COI.

*No individuals in control of content (faculty, mentors, or planners) have any financial relationships with ineligible companies to disclose*

# Learning Objectives

- 1.) The participant will be able to analyze 5 risk issues for medications which are not appropriate for feeding tube administration.
- 2.) The participant will be able to distinguish and analyze 3 medications will present difficulties in jejunal administration
- 3.) The participant will compare, and contrast 3 specific issues associated with the high osmolarity of liquid medications
- 4.) The participant will be familiar with the recommend procedure and process to evaluate a feeding tube clog and select remedies to resolve flow.

## Developing Guidance for Feeding Tube Administration of Oral Medications

- Klang MG. Developing guidance for feeding tube administration of oral medications. J Parenteral and Enteral Nutrition. 2023;1-22. doi:10.1002/jpen.2490
- Recently published Podcast:
  - <https://soundcloud.com/user-67457490/developing-guidance-for-feeding-tube-administration-of-oral-medications-jpen>

# Errors in Enteral Drug Handling

97% confident that technique appropriate/effective

- 1-3 inappropriate techniques per respondent
- And 83% don't use available guideline/protocol

Error rates approach 60% in observational studies

Miscommunication about which patients have feeding tubes, and the issues is not limited to US soil. In a study in Japan, more than half the patients receiving care for feeding tubes, were unknown to Pharmacy

<u>Preparation</u>	<u>Administration</u>
• Mix meds together 70%	• Administer meds together 49-68%
• Crush tabs together 84%	• No flush (≥15 mL) pre-med 57-99%
• Crush mod-release meds 15-87%	• No flush (≥15 mL) post med 34%
• Don't dilute liquid meds 36-46%	• No flush between meds 62-99%
• No shaking suspension 51%	• Diluent other than water 18%
• No protective equipment 100%	

*Pediatrics*1988;81:549 / *Heart Lung* 1996;25:318 / *Gastroenterol Nurs* 1997;20:118 /  
*Am J Crit Care* 1977;6:382 / *Am J Health-Syst Pharm* 2002;59:378 / *Nutr Clin Pract* 2005;20:354 /  
*Nutr Clin Pract* 2007;22:126 / *Pharm World Sci* 2008;30:907 / *JC J Qual Patient Safety* 2008;34:285  
 / *JPEN* 2009;33:122 / *Pharm Pract News* 2014;Apr:1 / *J Intellect Disab Res* 2015;59:215  
 Muto K, Miyagawa T,, Furusawa H et al The survey on medication method for patients with feeding tube in Niigata area. *JJSPEN*  
 20(5): 1174-79 2015

## Types of Feeding tube Access

- Tubes placed through nose are longer, smaller in diameter and temporary
- The longer the tube, the more potential for clog formation. They are also more difficult to unclog as the obstruction is lower down
- Tubes placed as G and J tube are placed during surgery, or with an endoscope.
- Although tubes are larger and shorter, the EnFit connections are the same size as NGT and NJT.
- Fewer clogs, and better tolerated
- Need good muscle support,



# Do Not Crush List

- Often cited as a feeding tube reference
- The List of Oral Dosage Forms That Should Not Be Crushed (commonly referred to as the Do Not Crush List) was first posted on ISMP's website in 2006
- The list was originally compiled and updated by John Mitchell, PharmD, who passed away on June 10, 2014. The list has since been maintained and updated by Thomas Land Publishers and is available for purchase as a wall chart on ISMP's website.
- Was replaced by: Meds That Should Not Be Crushed
  - Updated frequently – 2025 version available
  - Can be found on Pharmacist's Letter website
  - Includes drugs that taste bad
    - And NIOSH list drugs



# Nutrition Formulas and impact on drug therapy

- Most commercial nutrition products for FT (including Blenderized foods) are intact proteins.
  - Intact protein diets react with acids to form gels that can clog FT. (Ensure, Osmolite)
  - Slow administration into stomach can cause retrograde clogs – less than 50 mL/min
- Elemental (developed by NASA) and peptide products do not react with acid
  - But have high osmolarity (>600 mOsm/L) (Vivonex)
  - Some question if there is a need for an elemental diet as most patient tolerate polymeric diet (peptides) well

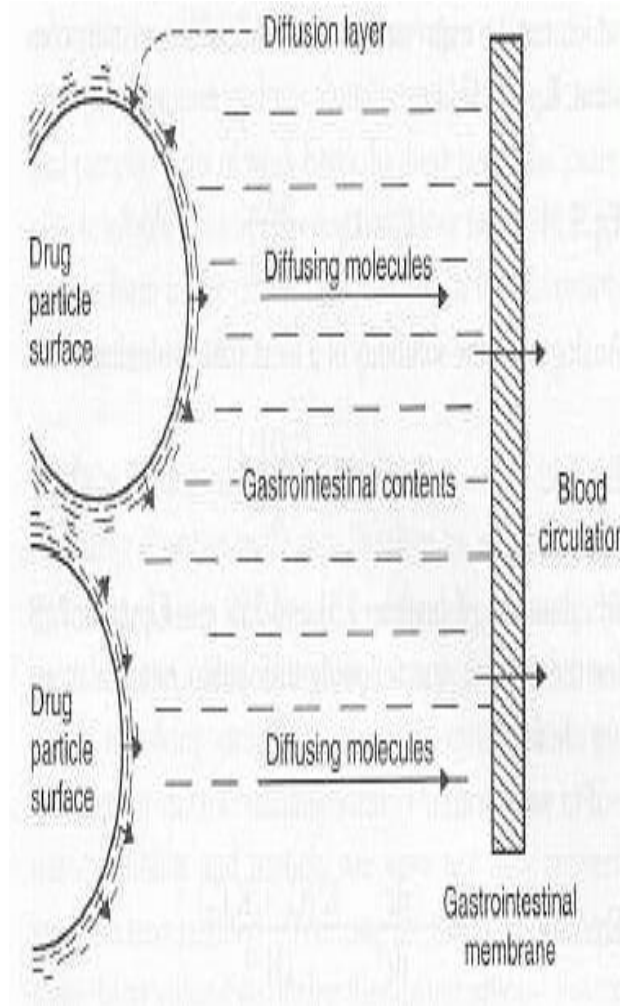
# Oral Drug Delivery

## Dissolution

- Occurs in stomach pH 1.2
- Faster when ionized (salt)
- weak-base drugs must first dissolve in stomach
- Degradation is highest in stomach acid

## Absorption

- mostly post-pyloric
- in a more basic environment
  - pH 6.8
- requires unionized state
- Large surface area of intestines – may compensate for poor transport



# Formulation Issues

## Beads in capsules

- Do you use water or juice to rinse?
  - Drug beads are often formulated with enteric coating (Tamsulosin, Lansoprazole)
  - Resistant to acid – mix with water and will clump
  - Mix with juice (apple) – will not clump.
  - Juice can be used for gastric but not post-pyloric. Higher osmolarity
  - ODT beads can be mixed with water but not for post-pyloric (are mini-enteric coated)

## Some beads have sugar core

- Emend (Aprepitant) , Sporanox (itraconazole)
- Use suspension formulation, do not compound from capsule

## Syrups / Elixirs

Besides being thick and sticky, they are acidic

- Will form clogs with Ensure, Osmolite and most formulas
- Very sweet. See if a crushed drug is available

Elixirs have alcohol

- Higher osmolarity and are acidic

## Special Excipients

- Povidone – a co-precipitate
- Must mix with water and give immediately
- Do not make a suspension

## Risk of crushing extended-release

### Crushing Extended-Release Drug Products

- Destroys Extended-Release properties
- Increased risk of side effects and toxicities
- **Audits of FT records show this being done**

Example: Pentoxifylline (Trental) Tablets

<u>Intact Tab</u>	<u>Crushed Tab</u>
$C_{max}$ : 184 ng/mL	1789 mg/mL
$t_{max}$ : 2.25 hr	0.6 hr
S.E.: none	Nausea, dizziness, vomiting

- But a suspension can be made – just administer more frequently to avoid side effects



# FDA Guidance on Drugs through FT

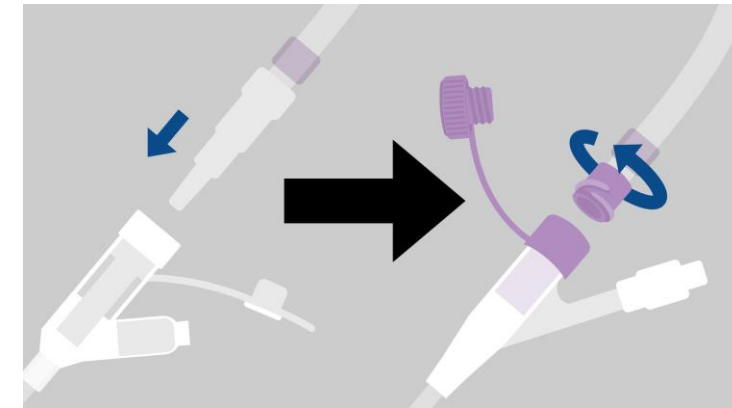
This is a major change in FDA perspective  
FDA now provide guidance on how to evaluate  
drugs for FT administration (June 2021)

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Oral Drug Products  
Administered Via Enteral  
Feeding Tube: In Vitro Testing  
and Labeling Recommendations  
Guidance for Industry

# FDA Guidance on Drugs through FT - 2

- There must be evaluation of drugs that bind to, or interact with the feeding tube material
- The amount placed in the tube will be compared to amount delivered
- Few drugs have issues
  - Warfarin adheres to silicone in acidic pH
  - Amiodarone may have some binding
  - One study claimed phenytoin suspension did, but it looks like the liquid was thick
- Pure liquids do not require testing. The assumption being they will not cause clogs irrespective of pH or reacting excipients
- Studies must be done with drug drawn up with catheter syringe and put in catheter-type connection of feeding tube.
  - Few feeding tubes have catheter-based connections, all are being moved to EnFit connections as per Safety recommendation from Joint Commission
- No mention of post-pyloric. The assumption is all tubes end in stomach.



# FDA Guidance applied - SYNDROS (dronabinol oral solution)

- SYNDROS (dronabinol oral solution)
- SYNDROS can be administered via enteral feeding tubes that are manufactured using silicone, size greater than or equal to 14 French, such as Naso-Gastric (NG), Gastrostomy Tube (G-tube), Percutaneous Endoscopic Gastrostomy tube (PEG-tube) and Gastro-Jejunostomy tube (GJ-tube). Do not use tubes manufactured of polyurethane.
- The capsule formulation, Marinol cannot be given through a feeding tube.
- I checked with the company – it has a special syringe that fits legacy type FT –
  - Nobody uses those anymore, All FT are EnFit.
  - Company states, cannot use with EnFit
  - Also, they cannot release osmolality data
    - This vehicle has ethanol, which has high osmolar effect
- So, the company is following FDA guidance for FT, but the drug cannot be given through FT.



# Other New Drugs for FT route

## **PERTZYE (Pancrelipase delayed-release capsules)**

- Labeled for gastrostomy tube use  $\geq 14$  Fr
  - Instructions detail how to mix capsule contents with **applesauce** and flush via tube
- Viokace has been around for a while, can be crushed, but doesn't have FT in PI

## **CARBAGLU (carglumic acid)**

- Mix each 200 mg tablet in 2.5 ml of water to yield a concentration of 80 mg/mL. (2.5)
- May be administered orally with an oral syringe or through a nasogastric tube.

## **Edaravone Oral Suspension (RADICAVA ORS)**

- Specifically formulated for enteral tube use—draw up measured dose with an enteral syringe and flush before/after administration. NG (8 Fr) & PEG (12 Fr),
    - Nasogastric (NG) tubes or percutaneous endoscopic gastrostomy (PEG) tubes made of silicone, polyvinyl chloride (PVC), or polyurethane can be used
    - Before and after administration, use a catheter-tip syringe to flush the tube with at least 1 ounce (30 mL) of water
- The supplied oral syringe doesn't fit EnFit

# Delivering Pancreatic Enzymes for FT patients

- Viokase is only product that can be crushed
  - No FDA approval for FT
  - Must be given with PPI
- Creon and Zenpep
  - Both contain enteric coated beads
  - Will form nasty clogs when mixed with water
  - Using Bicarb will remove enteric coating
  - Takes ~30 minutes when at 37°
- A dietitian at a conference recommended crushing and mixing into formula
- RELiZORB may be an alternative to deliver enzyme effect. It works to metabolize lipids
  - Company will not reveal contents and insists the product is a device and will not enter the patient



## If the Pt has a FT, why not just give the liquid?



Is there a liquid formulation?

Will it be tolerated at site of delivery  
What is Osmolality?  
Does it contain Sorbitol?



Can we crush oral tablet/  
open capsule

Is the drug immediate release?  
Will excipients dissolve?  
How much fluid needed to mix/ rinse  
Is the drug hazardous



According to 795, crushing drug is not compounding



If you add water and give within 4 hours, no issue



If you add water and don't give within 4 hours, This is compounding.

# USP 795 issues when compounding a liquid

- The BUD is set by both chemical and physical assessment to set a date beyond 14 days
- The chemical assessment must be done using a stability-indicating assay.
  - Few published studies meet this rigorous criteria
  - Potency study is not acceptable anymore
  - Must show that after forced degradation the new peaks generated do not interfere with the principal peak of the active pharmaceutical ingredient (API).
    - This usually involve HPLC and degradation using Acid, Base, Oxygen, Heat and light.
- Compounding must be done in a clean area. Gloves and other precautions are recommended.
- The preparation must be assessed for Bio-Burden (Microbial enumeration USP 61).
  - To validate this test a Bacteriostatic and Fungistasis analysis must be done to determine if the API interferes with assessment of microbial contamination.
- If the preparation is assigned a BUD beyond 14 days, it must have a preservative. Ora-sweet and Ora-plus have methylparabens which can be helpful.
  - To validate if the preservatives are effective a USP 51 is required.

My recommendation, don't make a liquid if the drug can be crushed and mixed with water for FT administration

# Additional 795 issues

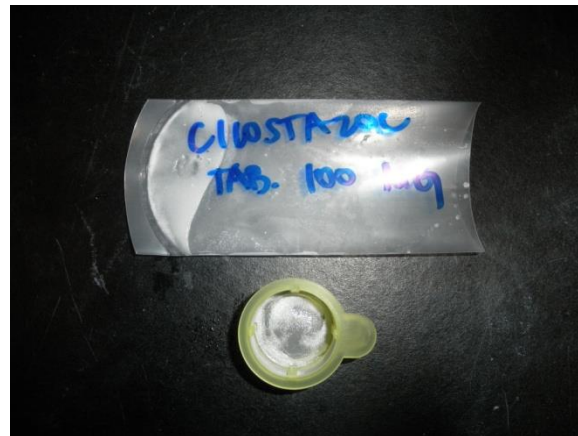
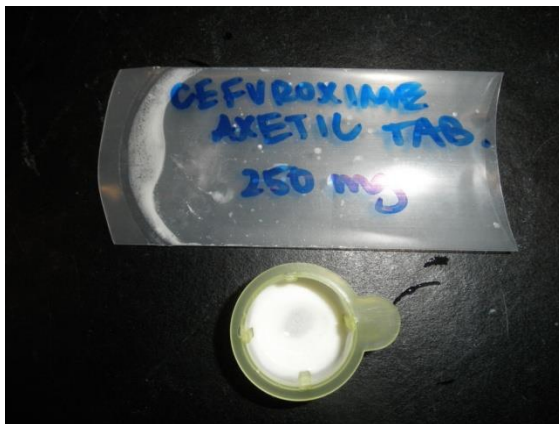
- While a feeding tube patient doesn't require flavors, USP 795 does not approve
  - Flavorings are considered a “food” and there is no uniformity or specifications of content
  - Flavors change in content and ingredients without notification
  - FlavoRx has no stability or compatibility data
  - Company insists product is “natural”
  - Walgreen announced no more flavoring will be added to medication



# Special Tablet formulations

Most tablets contain cellulose – insoluble excipient

- Look for low dosage in large tablet.
  - E.g. Lipitor, **Acyclovir**
- Requires extra fluid to make a slurry to get through tube
- Trapped on 100 micron screen, will clog FT



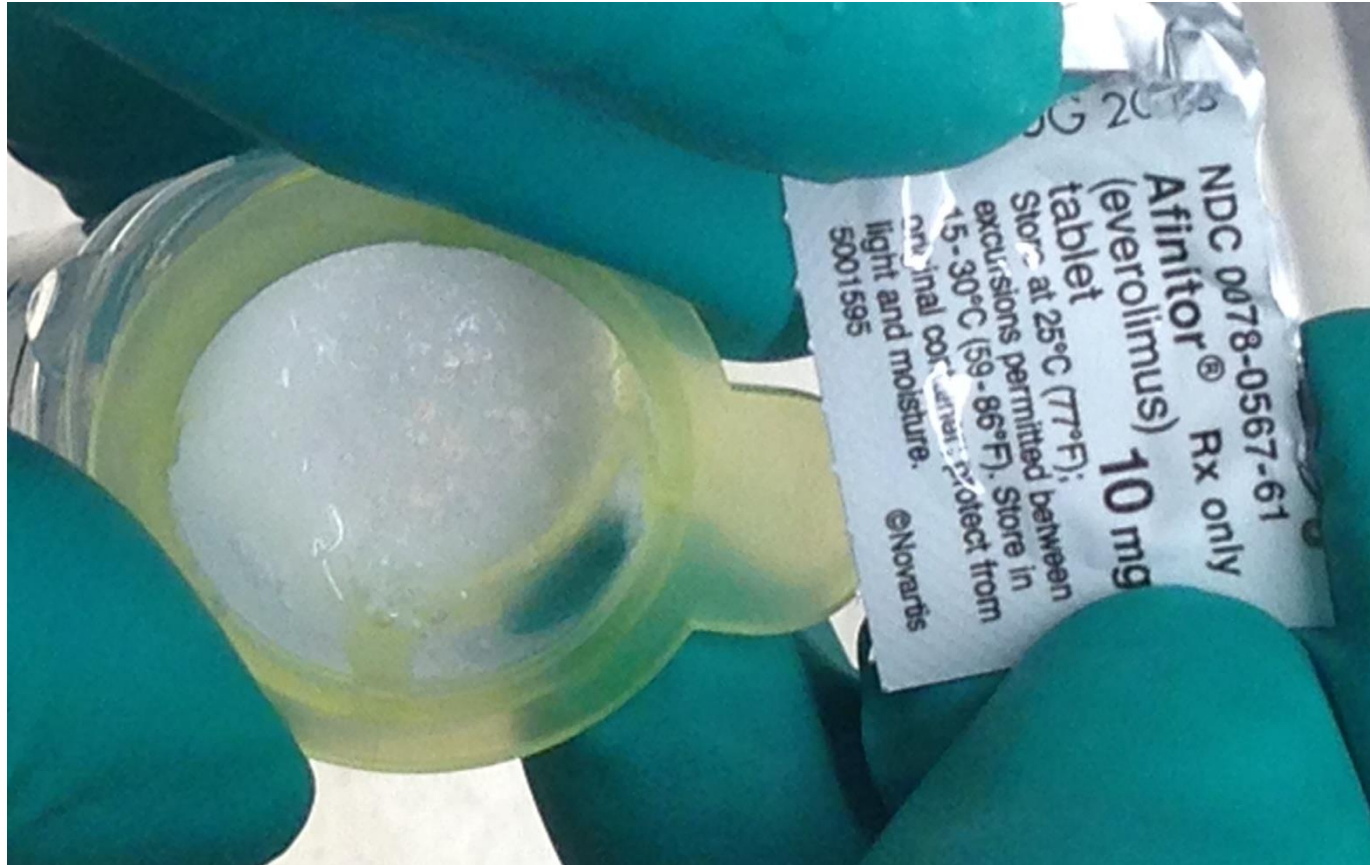
# Excipients that alert

If the drug has ingredients like povidone – a co-precipitate

- Mix in syringe, not separately in bottle.
- Poorly soluble in water.
  - When mixed before hand, drug will separate from povidone and precipitate out

Look at [rxlist.com](http://rxlist.com) for drug solubility and ingredients

# Thick as a brick



# Clogged syringe



# Capsules do not dissolve



# Crushing Tablets

- Sustained vs immediate release
  - Frequency of dosing
- Scored - If it can be cut – Sometimes -it can be crushed (not for Toprol XL and others)
- Chewable tablets crush coarsely
- Coatings form gummy solids – especially multiple tablets combined
- Shards form from coated tablets: Lipitor



# Polling Question #1

A valid remedy for a clogged nasogastric feeding tube due to an undissolved weak basic drug is to rinse with:

- 1.) mixture of Viokace with sodium bicarbonate
- 2.) solution of Creon with sodium bicarbonate
- 3) warm water
- 4) sodium hydroxide 0.1 normal
- 5) 1 M HCl

# Why do feeding tubes clog?

- Failure to rinse tube adequately
  - rinse administration with purified water (does not need to be sterile)
- Medication not crushed adequately
  - Drugs must dissolve to be absorbed
- Coagulation of intact protein by acids
  - Gastric acid, or liquids with sugars



# Pancreatic Enzyme (Viokace) to unclog tube

- Crush the drug
- Add 5 mL Na Bicarbonate 8.4% injection
- or mix with equivalent in powder – about 1 teaspoonful
- Or add 1 tablet 650 mg, crush together
- Will only dissolve protein-based clog
- There is a gummy residual
- May make clog worse

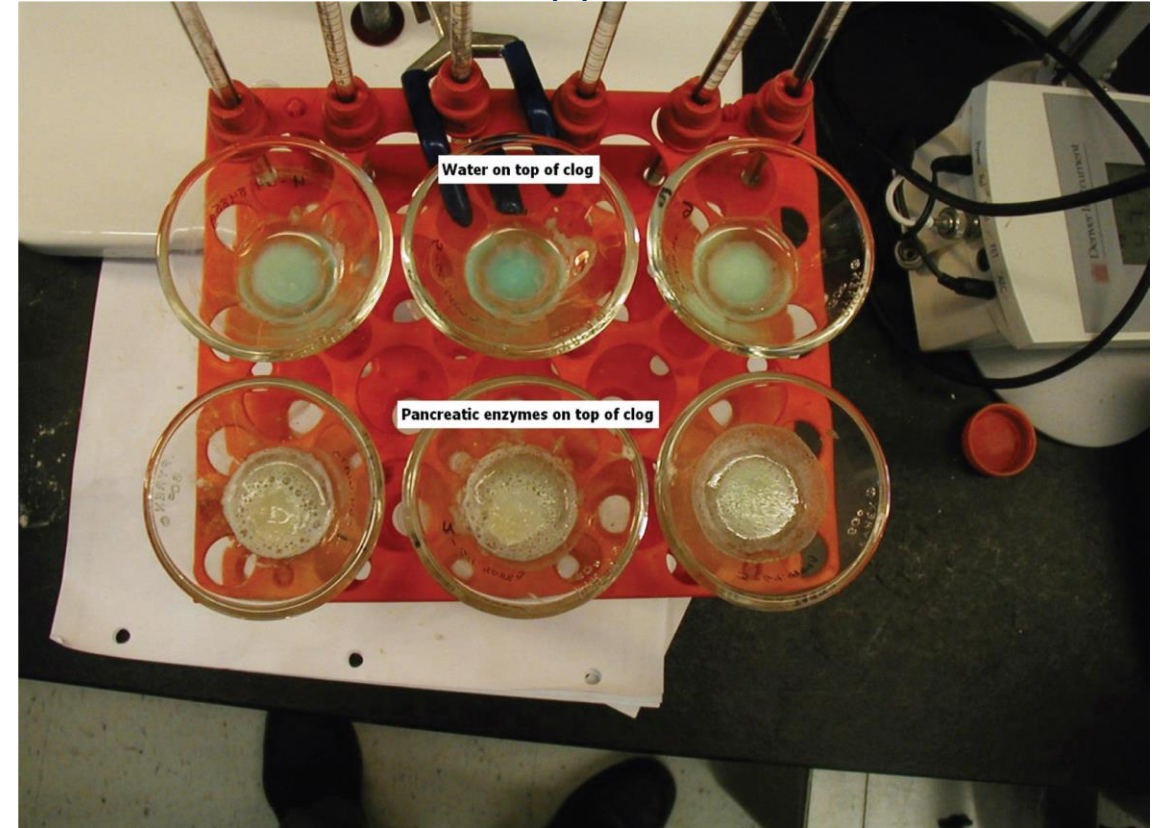


# Pancreatic Enzyme study

## Using Enteric coated enzyme

- Six glass funnels were clogged with calcium caseinate and HCl
- The clog was left to dry for 2 hours
- Zenpep (15,000 units lipase) in 5mL of NaHCO<sub>3</sub> 37°C water bath – for 3 funnels
- Warm water 5 ml for the other 3.
- Blue dye was placed as a marker of movement through the clog
- **Warm Water was best**

Arriola TA, Hatashima A, Klang MG. Evaluation of extended-release pancreatic enzyme to dissolve a clog. *Nutr Clin Pract.* Oct 2010;25(5):563-564.



# Clog Busters

- Clog-Zapper – contains Enzymes
  - Takes 30 minutes min
    - Papain: Breaks down proteins, natural papaya enzyme
    - Alpha-Amylase: Breaks down starches
    - Cellulase: breaks down cellulose (fiber)
- Tube Clear
  - Fastest, most reliable method
  - Requires special introducer
  - Different for different sizes
  - Most expensive



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# Osmolality, pH, and Compatibility of Selected Oral Liquid Medications With an Enteral Nutrition Product

Originally studied by Cutie/Altman - 1983

Evaluated liquid medications (with Dr. Susan Ng)

- Checked pH, measured Osmolality Mixed 1:1 with Ensure
- Checked for visual compatibility
  - FeSO<sub>4</sub> elixir formed a solid mass

If liquid is thick, and high reactivity

- May be easier to crush tablet and mix with water
- e.g. Furosemide, calcium salts, acyclovir



Klang M, McLymont V, Ng N. Osmolality, pH, and compatibility of selected oral liquid medications with an enteral nutrition product. JPEN J Parenter Enteral Nutr. 2013 Sep;37(5):689-94.

# Osmolality, pH, and Compatibility of Selected Oral Liquid Medications With an Enteral Nutrition Product – JPEN 2012

Drug	pH	Osmolality	I/C	
Acetaminophen Solution		4.4	4035	I
<b>Acetaminophen Suspension</b>		<b>4.7</b>	<b>6425</b>	<b>I</b>
Acyclovir Oral Suspension		5.8	4205	I
Aluminum Hydroxide Gel		7.2	1501	C
Al(OH) <sub>3</sub> , Mg(OH) <sub>2</sub> , Simethicone		7.8	990	C
Aminocaproic Acid Solution		6.2	3405	C
Atovaquone Suspension		5.9	135	I
Azithromycin Suspension		9.5	3950	I
Calcitriol Solution		7.8	NA	I
Calcium Carbonate Susp		9.2	2490	C
Carbamazepine Suspension		3.7	4225	I
Cherry Syrup		2.8	6165	I

Klang M, Ng N and McLymont V. Osmolality, pH and Compatibility of Selected Oral Liquid Medications with an Enteral Nutrition Product, *JPEN J Parenter Enteral Nutr* September 2013 37: 689-694

# Osmotic Issues

Common Side Effects associated with Enteral Nutrition?

- Edes: 40% of TF Diarrhea caused by excipients  
Diarrhea, Nausea, Vomiting, Cramping, Distention & Bloating

Is it caused by:

- The **Enteral Nutrition** ??
- The **Drug Therapy** ??
- Both ??



Edes TE, Walk BE. Nosocomial diarrhea: beware the medicinal elixir. *South Med J*. Dec 1989;82(12):1497-1500.

Slide borrowed from Marty Kochevar

# Osmolality

Osmolarity of crushed medications is generally low (<50 mOsm/L)

All liquids are high (>1000 mOsm/L)

Some crushed medications mixed in 10-15 mL water have high osmolarity (>900 mOsm/L)

- Mesna, Metformin, Calcium Acetate
- Add extra water

## Polling Question #2

Dr Bauer showed that phenytoin levels were very low for patients who received the suspension formulation through a feeding tube.. He advised that nutrition formula should be held for 2 hours before and after drug administration to avoid this interaction. He explained that phenytoin is strongly bound to protein in enteral nutrition and patients who get enteral nutrition are prone to diarrhea. What was the mistake in Dr Bauer's explanation?

- 1.) Phenytoin does not bind to enteral nutrition protein.
- 2.) Should only hold 1 hour before and after nutrition.
- 3.) Enteral nutrition patients do not commonly get diarrhea.
- 4.) He did not recognize the high sorbitol content of the phenytoin suspension.

# Withholding Nutrition for Drug Administration

- Numerous studies and textbooks advise withholding tube-feeding for Warfarin, Phenytoin, Fluoroquinolones, Thyroid and Levodopa
- These studies were faulty, with exception of Levodopa
- Studies claim protein binding will cause an interaction.
  - It does but does not reduce absorption
- Phenytoin suspension is thick, dilute with water and avoid issues
  - Yes, it binds to proteins in nutrition, but nutrition gets absorbed.
- Warfarin adheres to feeding tube
  - Yes, it also binds to proteins in nutrition, but nutrition gets absorbed
- Ciprofloxacin suspension should not be given via FT
- No issue with :Levofloxacin
- Thyroid medications are problematic.
  - Small changes can alter amount delivered

# Osmotic Issues

## Inadequate dilution of electrolytes

- 60 mEq KCl requires 6-8 oz of water per 20 mEq

## Sorbitol –GRAS- More potent than Lactulose

- Causes diarrhea, amount present unknown

## Most Pharmacy compounded liquids have high sorbitol

- Most have osmolarities > 1000 mOsm/L
- GI tract fluid ~300 mOsm/L –
- in stomach residual fluid dilutes allows tolerance to 600 mOsm/L
- Jejunum is acutely sensitive – no diluting capacity

## Important FDA rule

- A generic formulation cannot use same vehicle as brand
- Sorbitol may be present in generic, when not present in brand.



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# PPI's and feeding tubes (Lansoprazole, Omeprazole)

## PPI are absorbed in intestinal, EC to protect from acid

Pick one:

- Open capsule, mix with juice, rinse well 60 ml - gastric
- Mix capsule with sodium bicarbonate – gastric/jejunum
- Use Orally Disintegrating Tablet (ODT) – mix with water 5-15 ml –gastric only
  - Teva version forms clogs

### **Avoid**

- ODT to get “under-the-tongue” absorption Needs an intact GI tract to get drug to site of absorption
- Mixing oral capsule content with water – mixes better with acidic juice (apple juice is best)

# Proton Pump Inhibitors

- Frequent cause of clogged FT
  - Capsules contain enteric coated beads
    - Require mixing with acidic juice for gastric administration to maintain extended release
    - For jejunal administration mix with Sodium Bicarbonate to remove enteric coating
    - Mixing the capsule formulation with water will result in a clog
  - ODT version disintegrates in mouth and can be mixed with 5 mL water but requires gastric administration for absorption.
    - ODT which compatible with water are still enteric coated
    - Teva lansoprazole ODT formed clogs
  - Tablet formulations cannot be crushed as they are extended release

# Post-Pyloric Administration



Reduce aspiration?

Sensitive to osmolality

- Dilute liquid medications

Smaller tubes used – more clogs in jejunum tubes

Bypass Stomach - Binders do not release drug

- Require acid exposure to activate release:
  - Enalapril is a prodrug. Need acid exposure for absorption
- Amines are weak bases – will have poor absorption JT
  - Diphenhydramine, epinephrine, doxycycline

Some drugs degrade in stomach – but dissolve better at that stage

- Erythromycin, penicillin, ciprofloxacin

## **Are there drugs which should not be given into jejunum, but could be given gastric?**

Some require exposure to acidic content of stomach to activate prodrug

- e.g., Olmesartan, Oseltamivir,

Some require dissolution in acid to be absorbed in jejunum.

- E.g., Ketoconazole, Lamotrigine, Lithium, Misoprostol, Pravastatin, Repaglinide

Some drugs – like antacids are only active in stomach

- e.g., Sucralfate, simethicone

The recommendation is not to administer directly into jejunum.

# Crushing Disintegration Procedure

1. Place tablets/capsules into Rx Crush™ ENFit® Pill Pouch and seal.
2. Fill ENFit® 60 ml syringe with required amount of clean water.
3. Connect water filled syringe to nozzle on ENFit® pill pouch. Do not inject water yet.
4. Position pill pouch zip seal under Rx Crush™ roller. Roll over the zip seal to ensure closure.
5. Hold syringe to the side and use the crush plate to crush pills by moving handle up and down. Nibbling at the pills is effective at breaking large or hard pills, or many pills at once.



# Syringe Disintegration Procedure

1. Remove plunger from ENFit<sup>®</sup> Syringe
2. Drop required tablets to prepare single dose in barrel
3. Put plunger back and push to expel air from syringe
4. Withdraw the amount of sterile water as directed on the ORAL CHEMO COMPOUNDING TABLE into syringe from a sterile water irrigation bottle
5. Attach the ENFit<sup>®</sup> Cap Tip to syringe
6. Let sit until dissolved- rotate syringe if needed
7. Label Syringe with SRx Patient specific label for Oral/Tube feeding route and apply auxiliary labels for “**Chemo**” and “**High Alert**”.
8. Dispense Syringe with purple ENFIT<sup>®</sup> Cap Tip.



# General Feeding Tube Considerations

## General FT Consideration

Avoid clogging the tube.

- Using a liquid formulation, seems obvious remedy.
- Few drugs are available in liquid
- Not all liquid are ideal for feeding tube
- The better the palatability, the less appropriate for FT

For a drug to be absorbed, it must dissolve.

- Putting a drug in a feeding tube limits dissolution
- Delivery at different GI sites will alter amount absorbed
- adheres to plastic, to protein, and to fiber and chelate to metals
- Some drugs require specific GI sites, enzymes or lipid involvement.

# Preparing oral meds for FT

**Plain Tablets: Crush & Flush**

**Hard powder-filled Capsules: Open, Mix, & Flush.**

**Soft Gelatin Capsules :**

-Create pinhole and extract into syringe or squeeze into feeding tube. (adheres to tube) – Nifedipine

- Does not work for liquid filled capsules where the contents are thick – or shell is tough



# Review Drug Delivery issues

For a drug to be absorbed, it first must dissolve

- Magnesium Oxide has high magnesium content
- Worthless as it does not dissolve

Many drugs have poor dissolution and poor rate of absorption.

- Excipients are added to enhance dissolution
- Excipients often are insoluble in water e.g. cellulose

While a liquid formulation might seem ideal for a feeding tube, No liquids are designed for feeding tube administration.

- Liquid meds are for pediatrics – thick and sweet.
- Dissolution ↓ as viscosity ↑

# References

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# Questions?



# Self Assessment Question #1

In the new FDA guidance for evaluating drugs administered through feeding tubes. The instructions require studying if the drug bind to the plastic of the feeding tube. What drug do we already know binds to the plastic of feeding tube?

- A. Ciprofloxacin
- B. Famotidine
- C. Warfarin
- D. Acyclovir

# Self Assessment Question #1 (Answer)

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## Self Assessment Question #2

Which of the following suspending agents have the highest Osmolality?

- A. Ora Plus
- B. Ora Sweet
- C. Syr-Spend
- D. Water

## Self Assessment Question #2 (Answer)

Which of the following suspending agents have the highest Osmolality?

A. Ora Plus

**B. Ora Sweet**

C. Syr-Spend

D. Water

## Self Assessment Question #3

Cyclosporin requires gallbladder enzymes for absorption.  
Which route would have poorer absorption if given to a patient having:

- A.PEG
- B.PEJ
- C.NGT
- D.Foley

## Self Assessment Question #3 (Answer)

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- B. PEJ**
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## Self Assessment Question #4

Many drugs have poor water solubility and contain excipients to improve dissolution. When preparing these medications for feeding tube use

- A. crush to fine powder
- B. Mix inside a syringe
- C. Add suspending agent
- D. Add juice to make acidic

## Self Assessment Question #4 (Answer)

Many drugs have poor water solubility and contain excipients to improve dissolution. When preparing these medications for feeding tube use

- A. crush to fine powder
- B. Mix inside a syringe
- C. Add suspending agent
- D. Add juice to make acidic

## Self Assessment Question #5

You have been called to consult on a patient placed on a new investigational drug to be placed in his PEG feeding tube. The drug, Poligilalstat is given as 5 mg tid. The drug contains magnesium stearate, carboxymethylcellulose, povidone and simethicone. You consider the following issues for administration through feeding tube

- A. based on povidone you assume the drug has poor water solubility
- B. based on magnesium stearate, this drug is a weak base
- C. Based on the carboxymethylcellulose, this drug should be given with minimal fluid
- D. Based on location of tube, this drug should be mixed with acidic liquid

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