

**WHAT HAVE YOU GOT IN
YOUR CLOSET?
MAKING THE MOST OF THE
MEDICATIONS YOU HAVE.**

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PHYSICIAN PORTAL

[Pain Prescription Ideas Template](#)[Rectal Fissures](#)[ED Fax Sheet](#)[Peyronies Topical Cream](#)[All Purpose Nipple Formulations](#)[Pediatric Psychotropic Liquid Medications](#)[Neuropathic Pain](#)[Mouthrinse Recipes](#)[Urticaria-Pruritus-template](#)

Presentations

[Tools-and-Tricks-in-Palliative-Care](#)

DISCLOSURES

I HAVE NONE

Some discussions are “off label”

OBJECTIVES

- Understand the importance of adequate anticipation and preparation for crises that can happen in palliative care
 - Medication changes will happen → can happen quickly
 - Oral route may be compromised so an alternate route needs to be used
- Know what medications may be important to have at home
- Consider alternative medications already in the home/family
- How to store these medications safely so they are used for the intended person
- See the importance of ingenuity while also understanding that practices outside of the norm require extra caution and disclosure

COMMON SYMPTOMS IS PALLIATIVE CARE

- Pain
- Dyspnea
- Nausea/vomiting
- Delirium
- Depression
- Anorexia
- Anxiety
- Constipation
- Diarrhea
- Fatigue
- Respiratory tract secretions

COMMON SYMPTOMS IS PALLIATIVE CARE

- Most common symptoms
 - Dyspnea → morphine
 - Nausea → metoclopramide
 - Anxiety → lorazepam
 - Pain → morphine
 - Delerium → haloperidol
- **What happens if you don't have medication at home prescribed for any of these conditions?**

PROACTIVE OR REACTIVE???

- **Reactive**
 - Crisis may last longer than necessary with improper medication on-hand
 - May require hospitalization to treat condition
 - Causes unnecessary stress to palliative person, family and caregivers

PROACTIVE OR REACTIVE???

- **Proactive**
 - Quicker alleviation of crisis
 - Better quality of life for final month(s) of care
 - Less distress on family/care givers
 - May need to educate caregivers

COMMON MEDICATIONS USED DURING END-OF-LIFE

- 208 patients with advanced cancer
- Palliative Care Centre in the Netherlands
- Three most prescribed medications at admission:
 - Morphine 21%, midazolam 11%, haloperidol 23%
- At day of death:
 - Morphine 87%, midazolam 58%, haloperidol 50%

“MINI-PHARMACY” AT HOME

- Need to be aware that some homes will have a “mini-pharmacy” as the amount of medications on hand will increase as conditions change
 - Not uncommon that we’ve gotten back a couple of trash bags full of medication
- With a larger amounts of medications (polypharmacy):
 - Medication may be given incorrectly i.e. 2 containers of same drug different strengths/dosing
 - Important to keep updated directions of use
 - Keep older medications stored securely and separate from current medications
 - If one runs out of current medication, one may be able to use older medication to deal with a crisis → ensure correct dose is given
 - Old dose: morphine 5mg Q4H New dose: Morphine 25mg Q4H

“MINI-PHARMACY” AT HOME

- Medications may need to be locked up that only care givers have access to prevent them from some else getting them
 - Taken by someone else in error → child visiting
 - Take for licit/illicit use
- Notify main pharmacy that person is deceased as it is not uncommon someone tries to fill medications that can be abused

COMMON SYMPTOMS IS PALLIATIVE CARE

- When diagnosed as palliative, have a basic stock of medications on hand to address common symptoms.
 - Pain → morphine
 - Dyspnea → morphine
 - Nausea → metoclopramide
 - Delerium → haloperidol
 - Anxiety → lorazepam

MINIKITS

- Morphine 50mg/ml Injection → 3x1ml
 - Dyspnea/pain
 - PO, SC, IM, IV, S/L
- Hydromorphone 10mg/ml → 3x1ml
 - Dyspnea/pain
 - PO, SC, IM, IV, S/L
- Methotrimeprazine 50mg/ml Injection → 3x1ml
 - Delirium, dyspnea, nausea
 - IV, IM
- Scopolamine 0.25mg/0.1ml in Lipoderm → 3x1ml syringes
 - Anti-nauseant
 - Transdermally to inner part of wrist or behind the ear
- Lorazepam 1mg S/L tablets → 6 tablets
 - Anxiolytic
 - PO, S/L
- BD 1ml Slip Tip syringes → 3
 - To help dissolve the lorazepam to give PO or S/L

Palliative Care Medication Mini-Kit Utilization Form

Phone: (204) 237-2400
Fax: (204) 231-3671

PATIENT NAME: _____

ADDRESS: _____

PHONE # _____ DOB _____ PHIN _____

MINI-DRUG KIT# _____

As medications are removed from the mini-drug kit, they are to be recorded by the nurse on the table below.

The family must sign for each medication as it is removed from the mini-drug kit.

Medication	Date Removed	Name of On-Call Palliative Care Physician (or Resident MD with a general prescribing license)	Nurse's Name (Printed)	Nurse's Signature	Family / Patient Signature
Hydromorphone 10mg/ ml Vial #1 – 1ml					
Hydromorphone 10mg / ml Vial #2 – 1ml					
Hydromorphone 10mg / ml Vial #3 – 1ml					
Morphine 50mg/ml Vial #1 - 1ml					
Morphine 50mg/mL Vial #2 – 1ml					
Morphine 50mg/mL Vial #3 – 1ml					
Nozinan 25mg/ml Vial #1 – 1ml					
Nozinan 25mg/ml Vial #2 – 1ml					
Nozinan 25mg/ml Vial #3 – 1ml					
Ativan S/L 1mg Vial - 6 tabs					
Scopolamine – 1ml 0.25mg / 0.1 ml syringe #1					
Scopolamine – 1ml 0.25mg/ 0.1ml syringe #2					
Scopolamine – 1ml 0.25mg/ 0.1ml syringe #3					

ORAL MEDICINES FOR PEOPLE WHO ARE UNABLE TO SWALLOW

- Someone unable to swallow and you want to give tablet/capsule. Ask the following questions:
 - Can I crush it?
 - Can I dissolve it?
 - Can I open the capsule?
 - Can I give this by another route?

CRUSHING TABLETS

- Medications forms that should not be crushed
 - Modified or sustained release → LA, CR, SR, XL, SA
 - Medication designed to be released over a longer period of time
 - Enteric coated → EN, EC
 - Coating helps protect the stomach/medication
- Do not crush list:
 - <http://www.ismp.org/tools/donotcrush.pdf>

CRUSHING TABLETS

- Crush medication(s) to speed up dissolution
- Use a mortar and pestle, pill crusher or spoons
 - Spoons
 - Place pill in 1 spoon. Use 2nd spoon → put on top and press down
 - Perhaps use tablespoon to hold pill and teaspoon to crush
 - Use a rounded end of something like a pestle to grind pill
- Let medication sit for about 5 minutes in water
- Do not crush in a plastic bag
 - Make holes the bag • Lose medication inside bag • Harder to crush medication evenly

CRUSHING TABLETS

- Pill crushers can be purchased at pharmacies
- CrushPAC specifically designed to crush pills directly in the PACMED pouch



ALTERNATE SOURCE OF MEDICATION

- “Dig deeper into the pocket”
 - Medications you may have not used for awhile → “Mini-Pharmacy”
 - Family/friends medication
 - Medication may be given with medical supervision
- Non-prescription medication
 - May help to address a crisis when nothing else is available

ALTERNATE ROUTES

- End of life, people may lose the ability to swallow
- Nausea/vomiting may prevent an PO dose from being administered
- *“Using an alternate route (unconventional/unapproved) route, the goal is admirable at relieving the patient’s pain while minimizing the risk and maximizing other benefits ie. Not stopping medication.”*

GUIDING PRINCIPLES OFF LABELED USE

- Rethinking medicines decision-making in Australian Hospitals Guiding Principles for the quality use of off-label medicines November 2013

GUIDING PRINCIPLES OFF LABELED USE

- Guiding Principle 1:
 - Consider the off-label use of a medicine only when all other options, including medicines approved by the TGA, are unavailable, exhausted, not tolerated or unsuitable

TGA = Therapeutic Goods Administration

- Paraphrased Guiding Principle 1:
 - Use commercially approved medications/routes first

GUIDING PRINCIPLES OFF LABEL USE

- Guiding Principle 2:
 - Use high-quality evidence to determine appropriateness of off-label medicine use
- Guiding Principle 3:
 - Involve the patient/caregiver in shared decision-making when recommending an off-label medicine

GUIDING PRINCIPLES OFF LABELED USE

- Guiding Principle 4:
 - Consult the Drug and Therapeutics Committee when prescribing an off-label medicine,
 - except when the use of a medicine off-label is considered routine
- Consult a person knowledge in alternate route

GUIDING PRINCIPLES OFF LABEL USE

- Guiding Principle 5:
 - Ensure appropriate information is available at all steps of the medicines management pathway
- Something we do see from time to time where this principle is not achieved
 - Most common part of the pathway is the nurse/caregiver giving the medication who has not been informed of change
 - Medication concentrate \uparrow & volume per dose \downarrow . New person comes and gives same old volume with the stronger concentrate
 - i.e. 10mg/ml give 1ml (10mg) old dose. 50mg/ml new dose 0.4ml (20mg).
Nurse/caregiver gives 1ml of 50mg/ml = 50mg instead of 20mg

GUIDING PRINCIPLES OFF LABELED USE

- Guiding Principle 6:
 - Monitor outcomes, effectiveness and adverse events
- Guiding Principle 7:
 - Consider liability and accountability when using medicines off-label

OFF-LABELED USE/ALTERNATE ROUTES

- Transmucosal
- Rectal
- Intranasal
- Topical

TRANSMUCOSAL: ANATOMIC AND PHYSIOLOGIC FACTORS

- Buccal mucosa is crisscrossed by a large network of blood and lymphatic vessels.
- Drugs administered by this route are quickly absorbed into the systemic circulation → rapid onset
- Avoidance of gastric proteases, hepatic 1st-bypass and intestinal metabolism

TRANSMUCOSAL: ANATOMIC AND PHYSIOLOGIC FACTORS

- Buccal mucosa 200cm² in size
- Promotes absorption of liposoluble drugs that are only slightly ionized by the pH of the mouth (6.0 – 7.0)
- Mucosa only allows a small amount of the drug to pass through at a time, so route of administration is more suitable for highly potent drugs
- **Drug concentration/volume of solution**

Care Beyond Cure™ www.carebeyondcure.com

TRANSMUCCOSAL: LIMITING FACTORS AND DISADVANTAGES

- Taste of formulation may be unpalatable
- Ideal volume < 0.5ml; if more than 1-2 ml is administered, then some of the solution will be swallowed
- Excessive salivation may lead too rapid dissolution & absorption of drugs unstable at gastric pH
- Route may be compromised if integrity of mucosa altered (mucositis)

TRANSMUCOSAL: REQUIRED CONDITIONS & METHOD OF ADMINISTRATION

- Unsweetened concentrated solutions ideal → injection better than oral syrup as sweetened solutions ↑ saliva production
 - Keeps volume < 0.5ml
 - Give higher concentration → 10mg/ml instead of 2mg/ml
 - Reduces chance of nausea
- Patient's mouth is dry, place a few drops of water under the tongue to hydrate & help dissolve medication
- Try not to swallow/chew for about 10 minutes (if possible) to allow complete absorption

DETAILS SPECIFIC TO ADMINISTRATION BY BUCCOGINGIVAL ROUTE

- Involves placing the medication in a small pocket between the buccal mucosa and the lower gingiva rather than under the tongue
- Better for patients who are unconscious and those who have difficulty keeping the medication under the tongue long enough to allow dissolution

DETAILS SPECIFIC TO ADMINISTRATION BY BUCCOGINGIVAL ROUTE

- Mucosa should be somewhat dry for liquid formulations
- Before administering drug, remove any debris using a small sponge mounted on a handle (Toothette®)
- If mucosa is very dry, hydrate using a small mounted sponge

DIFFERENT TECHNIQUES FOR S/L USE

- Capsules quite often are made as it may be difficult to mask taste in a tablet form
 - Advantage → Pull apart and empty contents directly to liquid
- Tablets → crushing
- Injections work better than oral liquids as they do not have the sweetener/sugar concentration which can increase saliva production

SUBLINGUAL/BUCCOGINGIVAL ROUTE

Mediation	Comment	Medication	Comment
Alprazolam Bromazepam	Use PO tablets Absorption comparable to PO route	Clonazepam	Use PO tablets Positive clinical use
Dimenhydrinate	Use PO tablets Similar to PO administration	Fluoxetine	20mg/5ml liquid Therapeutic levels reached
Midazolam	Injection → BA* 75% Bitter taste mask with peppermint essence	Prochlorperazine	Use PO tablets Highly lipid soluble → onset 15 – 60 minutes
Opioids	Use concentrated solutions or IR tablets Note: injections no flavor → less chance of saliva Adverse effects: bitter taste, burning sensation (morphine>hydromorphone>fentanyl)		

SUBLINGUAL/BUCCOGINGIVAL ROUTE

- Absorption after 10 minutes
 - Fentanyl 51%
 - Hydromorphone 25%
 - Morphine 22%
 - Oxycodone 15%





DRUG STABILITY IN BOTTLE/SYRINGE

Drug	Expiry Date	Notes
Fentanyl 50mcg/ml	30 days	Stored 4°C, 21°C & 35°C
Glycopyrrolate 0.2mg/ml	90 days	Stored 4°C & 25°C
Haloperidol 5mg/ml	7 days 15 days	Stored 23°C Stored 4°C
Hydromorphone Injection	30 days	Stored 30°C
Ketamine 10mg/ml	30 days	Stored 25°C Protect from light
Metoclopramide 10mg/ml	90 days 60 days 7 days	Stored 4°C Stored 23° Stored 32°C
Midazolam 5mg/ml	36 days	Stored 25°C Protect from light
Ranitidine 75mg/ml	91 days	Stored 4°C
Trissel's Handbook on Injectable Drugs		

STABILIS

- Website will give drug stability and IV mixtures

<http://www.stabilis.org/Listes.recap.php?Forme=Injection&Type=StabSol>

RECTAL ROUTE

- Many medications can be given rectally
- An alternative way to give medication if someone is unable to take orally
- Sometimes forgotten as “dignity” may not be preserved especially if another family member is the caregiver

RECTAL ROUTE: ANATOMIC AND PHYSIOLOGIC FACTORS

- Absorption, pH & fecal content in the rectum differ from conditions in the upper GI tract
 - Alkaline pH of 7 – 8 of rectal contents
 - Absorptive area of rectal mucosa 200 – 400cm² vs. small intestine of 2×10^6 cm²

RECTAL ROUTE: LIMITING FACTORS AND DISADVANTAGES

- Drug insertion level
 - 6-8cm (lower rectum) → systemic circulation
 - 15-20cm (upper rectum) → portal vein → hepatic first-pass effect
- Solutions
 - Aqueous & alcohol solutions are generally the best and most rapidly absorbed
 - Slightly alkaline solutions also work well
- Fecal matter in rectum or diarrhea
- Potential for local irritation

RECTAL ROUTE: REQUIRED CONDITIONS & METHOD OF ADMINISTRATION

- Ensure no fecal matter is present in rectum
- Use of an irritating drug/volumes more than 80ml may trigger defecation
 - Volumes < 10ml are ideal (up to 25ml max)
- Patient dehydrated & mucosa is dry → hydrate with 5 – 10ml of lukewarm water before administering medication

RECTAL ROUTE: REQUIRED CONDITIONS & METHOD OF ADMINISTRATION

- Tablets/capsules can be administered directly into the rectum.
 - IR formulations should be lubricated or crushed and diluted in 10ml of water
 - SR formulations should be inserted as is or coated in a small amount of water-soluble gel

MEDICATIONS THAT CAN BE GIVEN RECTALLY

Medication	Comment	Medication	Comment
Bromazepam	AUC 1.7 x higher vs PO	Meclizine	Rectal dose = oral dose
Diazepam	BA* injection 81%	Ketamine Injection	Onset 7 – 10 minutes Maximum effect 25 minutes
Lorazepam	Injectable solution or tablets 80% BA* with injection Peak 1 hour; 8-24 hour duration	Clonazepam	Rapid absorption BA* unknown Very well tolerate
Methadone	Rectal dose:oral dose 1:1 10mg/ml solution or compounded capsules	Metoclopramide	Tablet and suspension Peak: 1.5 hours Duration: 8-12 hours
Morphine SR	Lubricate and insert Peak 5 hrs; duration 8-12 hrs	Midazolam	Absorption < lorazepam or diazepam 52% BA*, Peak 10 minutes

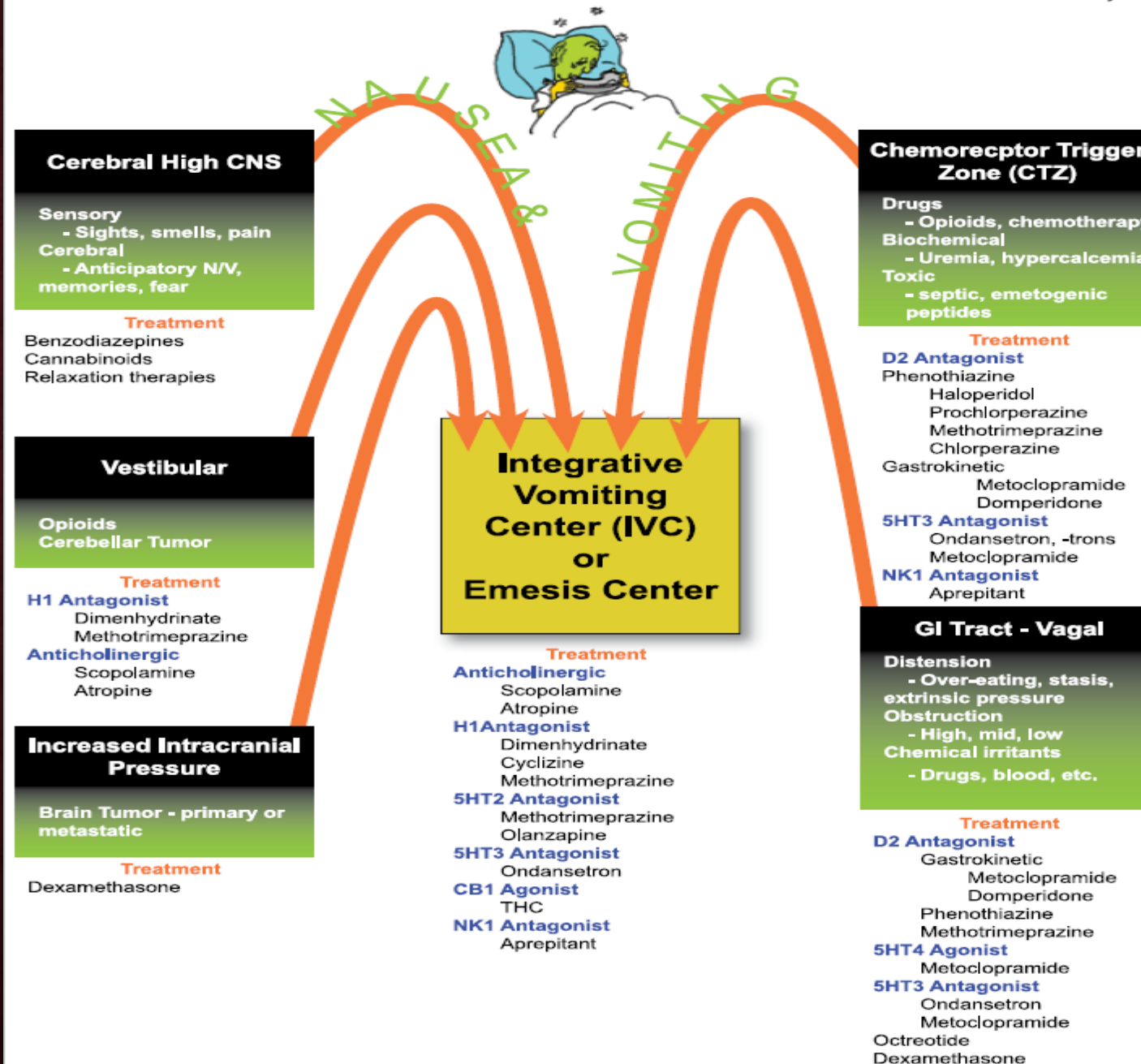
BA* - bioavailability

RECTAL ROUTE

- Greg's rule of thumb:
 - The medication will either need to be given at a higher dose or an extra interval due to poorer absorption
 - Start with a 1:1 PO-PR dose
 - Use Guiding Principle #6 → Monitor outcomes/effectiveness
 - Drug XXX PO – BID → PR – TID
 - Drug 250mg PO – BID → Drug 375mg PR – BID
 - Keep in mind ideal volume < 10mls to reduce chance of expulsion

Nausea and Vomiting

For Reference Only



SUPPOSITORY COMBINATIONS

- Dimenhydrinate 75mg (VES/IVC), metoclopramide 15mg (CTZ/GI) and prochlorperazine 10mg (CTZ)
 - Most popular combination
- Dexamethasone (CER/High CNS) substituted for prochlorperazine when nausea is still not responding well
 - Use either 2 or 4mg
- Dexamethasone 2mg, dimenhydrinate 25mg, metoclopramide 10mg, olanzapine 5mg (IVC)

INTRANASAL: ADVANTAGES

- IN medications absorption rates and plasma concentrations are comparable to IV administration and typically are better than SC or IM routes. Easy, convenient and safe to use
- Essentially painless and does not require a sterile technique & is immediately & readily available for all patients

INTRANASAL: ADVANTAGES

- Nasal mucosa is near the brain, CSF drug concentrations can exceed plasma concentrations. IN administration may rapidly achieve therapeutic brain & CNS drug concentrations

IN medication delivery is simply another option or method to deliver medication

INTRANASAL: LIMITING FACTORS & DISADVANTAGES

- Limited medications that can be delivered
- Many medications are not adequately **concentrated** to achieve ideal dosing volumes
- Mucosal health impacts absorption
 - Bloody nose or large volumes of mucous production will wash medication ↓ contact with mucosa
 - Destroyed mucosa will have ↓ blood flow → ↓ absorption i.e. topical use of vasoconstrictors

INTRANASAL:

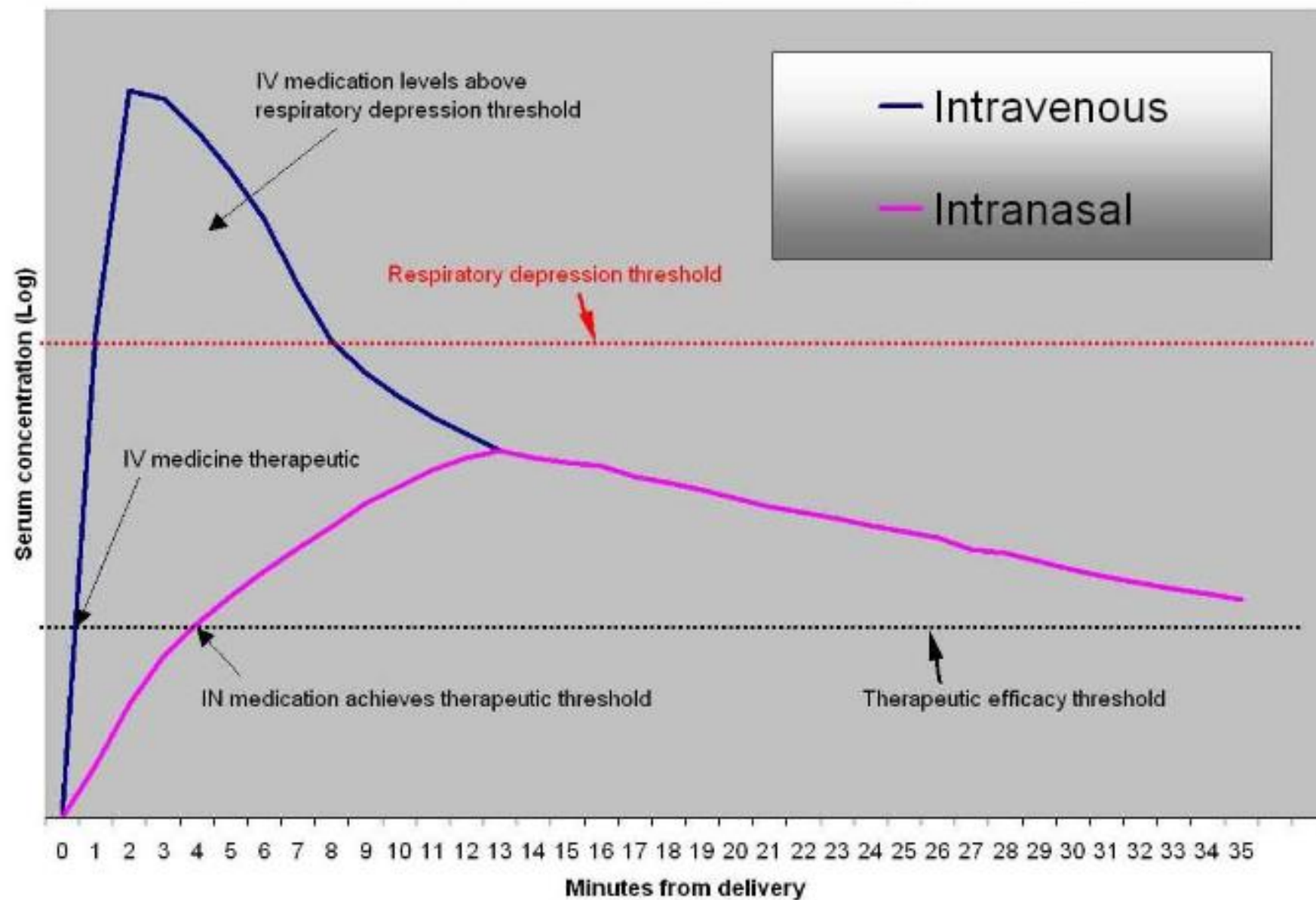
REQUIRED CONDITIONS & METHOD OF ADMINISTRATION

- Ideal volume per nostril is 0.2 – 0.3ml
 - Some clinicians use as much as 1ml per nostril & accept runoff and drug loss at this higher volume
 - Greg → 0.5ml max volume/use in both nostrils
- The larger the nasal mucosa surface area that is covered, the more medication that can be absorbed
- Ideal drug dose is divided in $\frac{1}{2}$ and each nostril receive the $\frac{1}{2}$ dose
 - Dose larger than 1ml split dose & deliver @ 10-15 minute intervals

INTRANASAL: DOSING

- Therapeutic effect is achieved in 3-5 minutes & peaking at 10-15 minutes
- Doses are usually less than PO meds but higher than IV
- Due to delayed rising of drug levels, respiratory depression will rarely happen
 - Exception sufentanil due to high potency

IV vs IN serum drug levels - theoretical example of an opiate



INTRANASAL: MAD DEVICE (**M**UCOSAL **A**TOMIZING **D**EVICE)



Use a luer lock syringe
Works in any position
Semipermeable soft plus absorbs runoff
Dead space 0.09ml

INTRANASAL

- Fentanyl 250mcg/ml → 0.1 – 0.2ml (25 – 50mcg)
- Fentanyl 500mcg/ml → 0.1-0.2ml (50- 100mcg)
- Naloxone 2mg/0.1ml → 0.2ml (4mg)

INTRANASAL DRUGS & DOSING

Drugs used and dosing go to:

Therapeutic Intranasal Drug Delivery: Needleless
treatment options for medical problems

<http://intranasal.net/Home/default.htm>

REASONS FOR TOPICAL ROUTE

- Oral route not desirable
- More localized action
 - Transdermal can provide up to 30 fold higher drug concentration than PO at application site
 - Can use 3 – 5 drugs at once for a synergistic effect vs 1 drug PO
- Avoids the GI tract and hepatic first-pass metabolism

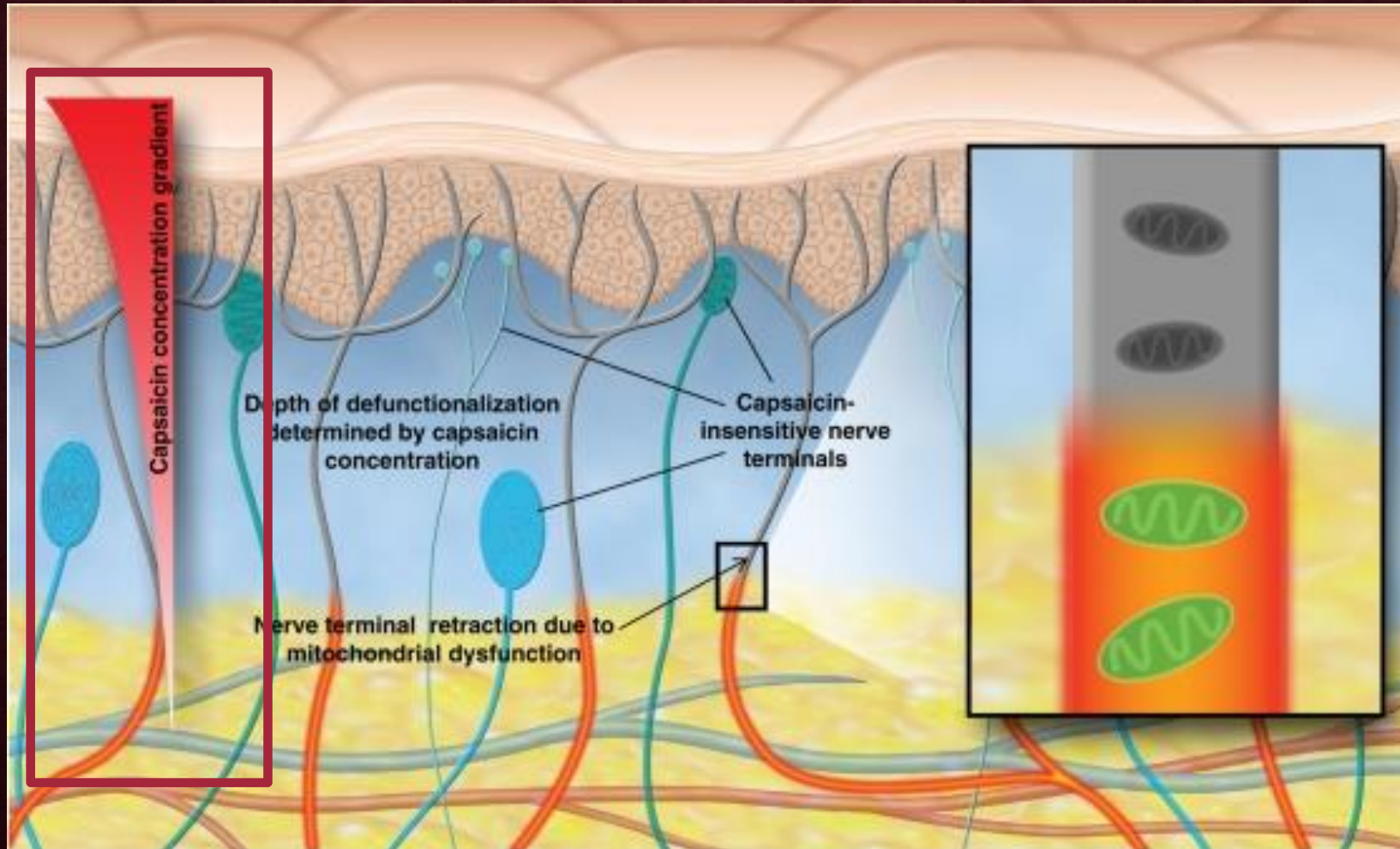
REASONS FOR TOPICAL ROUTE

- Can reduce systemic side effects as different sites have different systemic absorption
 - Apply to knee → < 5% systemic absorption
 - Apply to thigh, mid-section & upper arms → about 10-20% systemic absorption
 - Oxybutynin 10% Transdermal: 100mg applies OD vs PO 5mg IR tablets TID
 - 100mg≈15mg → 15% of drug enters systemic system
 - Apply to inner wrist or behind ear → systemic levels similar to SC levels → **scopolamine 0.25mg/0.1ml in Lipoderm**
 - Apply 0.1-0.2ml

TRANSDERMAL

- Greg's 5 R's
 - Right volume
 - Need to saturate area → 1ml to knee (4"X4")
 - We provide Topi-pumps that deliver 0.5ml doses
 - Right concentration
 - Right penetration depth
 - Can add penetration enhancer like DMSO 2.5 – 20% to allow drug(s) to reach site of action
 - Right length of time to rub product into area
 - 60 seconds and not aggressively
 - Do not get wet for 1 hour
 - Right combination

Drug will diffuse as it penetrates the skin. So need higher drug concentration and correct volume to be applied



**1ml
Application
Will cover a
4"x 4" area**

**Rub in well
for 1 minute**

SITE PERMEABILITY

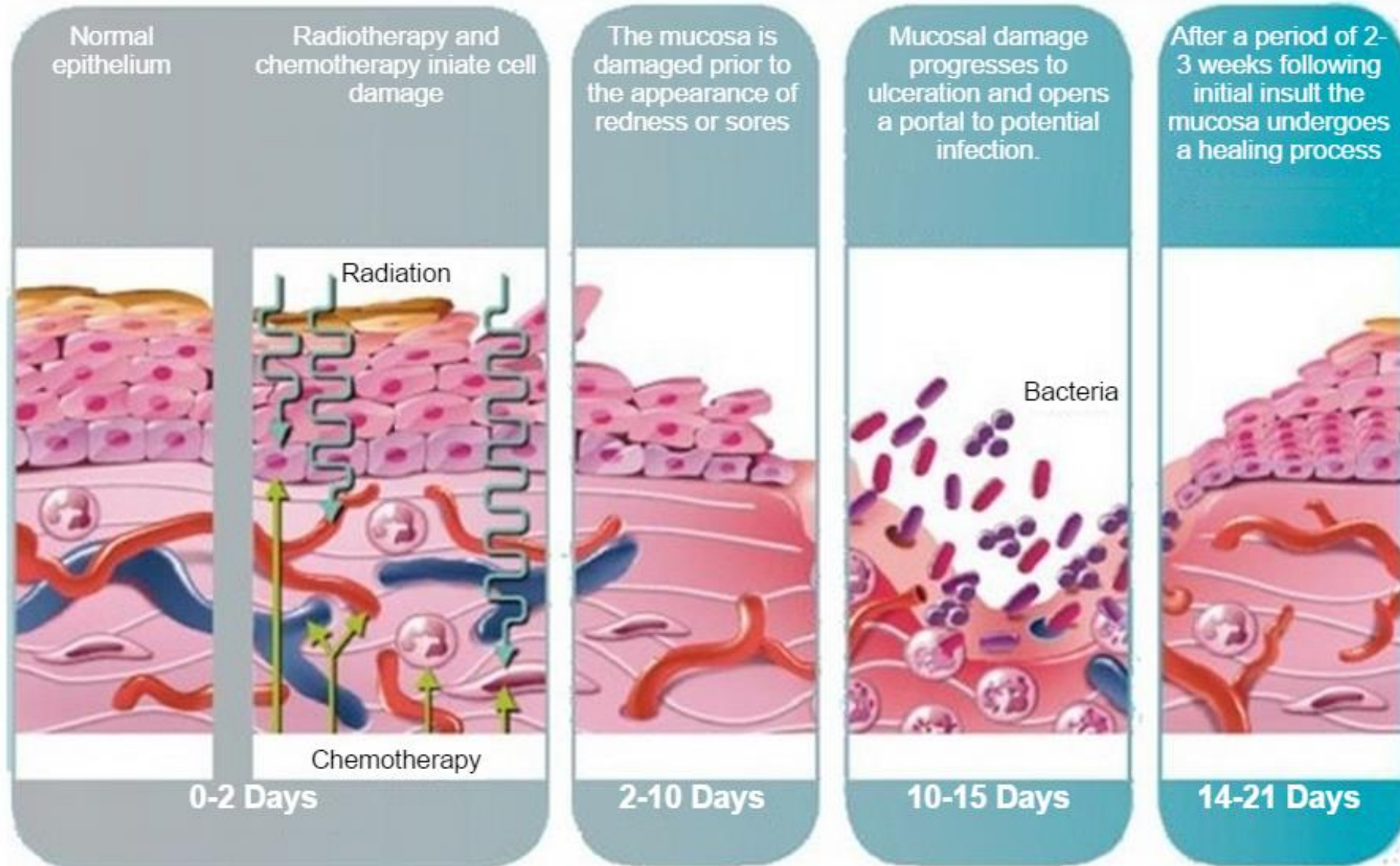
- Generalized rank order of site permeabilities:
 - genitals > head/neck > trunk > arm > leg
 - Preterm infant > term infant > young adult > elderly

Klein & colleagues,. Transdermal Clonidine Therapy in Elderly Mild Hypertensives;
Hypertension Suppl 1985;3;581-584





The American Cancer Society proposes a progression in five stages: ^{12,13}



Ref: adapted from Sonis

MUCOSITIS

- Product can be used as either swish/swallow or swish/spit
- Swish/swallow:
 - Will result in greater systemic concentrations which may be desirable
 - Dosing interval is longer i.e. Q4-6H
- Swish/spit:
 - Reduced systemic concentrations
 - Dosing interval is shorter i.e. Q2-3H

MUCOSITIS

- Questions I usually ask:
 - Is there a bacterial/fungal infection possibility of one?
 - Tetracycline → bacterial
 - Nystatin or clotrimazole → antifungal
 - Is there significant pain?
 - Ketamine \pm morphine → severe pain 6-10/10
 - Lidocaine, tetracaine, diphenhydramine
 - Do you need an anti-inflammatory agent?
 - Hydrocortisone or dexamethasone
 - Sucralfate or misoprostol have a protective effect

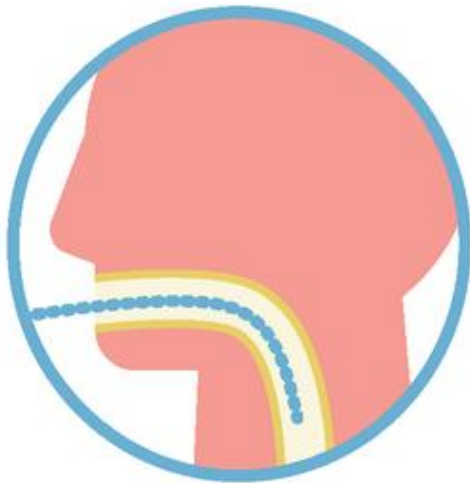
MUCOSITIS POPULAR COMBINATIONS

- **Magic Mouthwash**
 - Diphenhydramine 0.075%, HC 0.125%, nystatin 7500u/ml, lidocaine 0.4%
- **Super Magic Mouthwash**
 - Diphenhydramine 0.125%, dexamethasone 0.00033%, tetracycline 1.25%, lidocaine 1%
- Tetracaine 0.5%, HC 1%, clotrimazole 2%, sucralfate 15.6%
- Ketamine 0.03%, tetracaine 0.5%, sucralfate 15.6% \pm morphine 1%

Here's How MucoLox Works

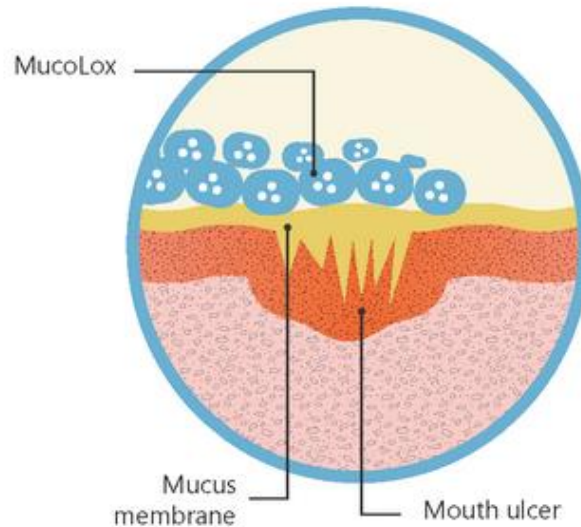
Oral Application

Swish and spit for oral or swallow for esophageal.



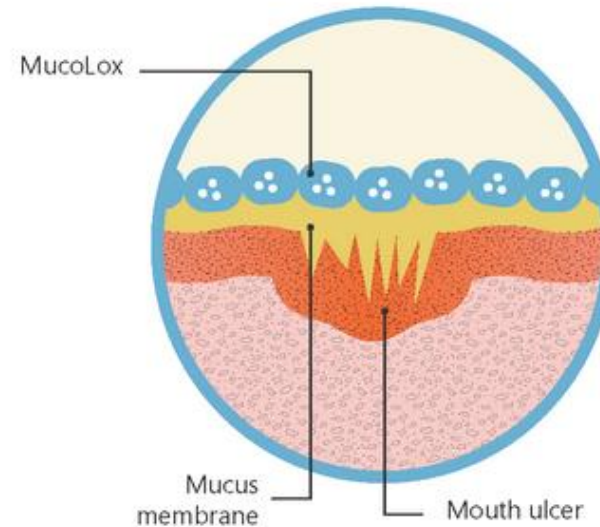
Better Coverage

Thicker consistency coats, covers and protects as it is applied.



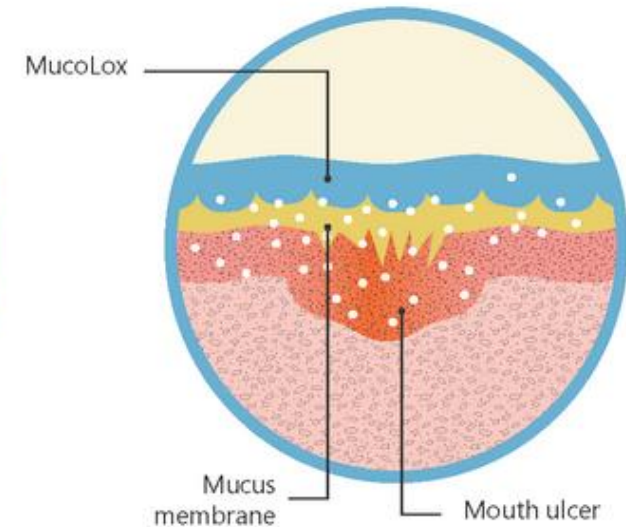
Stronger Adhesion

Polymer network bonds to mucus membrane for increased contact time.



Better API Dispersal

Increased contact time delivers more medicine to affected areas.



MUCOLOX

- Regular Magic Mouthwash → 5- 10ml Q2-3H
 - Don't drink or eat anything for 20 – 30 minutes
- Mucolox Magic Mouthwash → 1-2ml Q4-6H

RADIATION BURNS

- Skin has greater absorption so use lower concentrations
- Ketamine 2.5-5%, morphine 0.5-2%, lidocaine 2-5%, \pm gabapentin 6% or amitriptyline 2-5%
- Don't need DMSO due to possible irritation effects and with greater permeability of skin penetration enhancer not necessary

RESPIRATORY CONGESTION

“DEATH RATTLE”

- End-stage wet respirations occur when secretions build up in the throat and airway
- At end of life, a person may become too weak to clear their throat and swallow secretions
- One study showed this was stressful to:
 - Family 100%
 - Nurse 79%
 - Patient 13%
- Scopolamine 0.25mg/ml in Lipoderm → 0.1-0.2ml Q4-6H inner part of wrist of behind the ear

TRANSMUCOSAL VAGINAL

- 58 year old lady with cancer of the bowels which affected her vaginal tract. When she urinated, her pain was 9-10/10. Used PO hydromorphone and pain was lowered to 6-7/10 and this made her quite disorientated.
- Morphine 1%, lidocaine 5%, sucralfate 8% in Emmolient cream → Applied QID with vaginal applicator.
 - Pain dropped to 1 – 2/10

TRANSMUCOSAL PAIN - RECTAL

- Patient had transmucosal pain in his lower bowels. Used PO opioids which brought pain to 4-5/10 → constipation which made it worse.
 - Ketamine 10mg, hydromorphone 10mg, bupivacaine 50mg sucralfate 20mg MBK suppository
 - Pain dropped to 2 – 3/10
- MBK does not have the stimulant action that a PEG based suppository would

CUTANEOUS ULCERS/OPEN WOUNDS IF BLEEDING

- Aminocaproic acid powder dusted on to the wound
- Aminocaproic acid 20% in IntraSite Gel
- Tranexamic acid 10% cream or in IntraSite Gel
- Tranexamic acid 5-10% in Poloxamer Gel (nosebleeds, for example)
- Tranexamic acid 10% or aminocaproic acid 20% mouth rinse or in Orabase
- These medications can also be incorporated into solutions for soaking gauze with and then placed on the wound
- Sucralfate 20% paste may also work

CUTANEOUS ULCERS/OPEN WOUNDS WITHOUT INFECTION

- Ketoprofen 2%, lidocaine 2%, misoprostol 0.0024%, phenytoin 2%, aloe vera 0.2% in Spira-Wash Gel or Spira-Wash™ Gel
- Collagenase 250 U/Gm Spira-Wash™ Gel
- Phenytoin Sodium 2%/Nifedipine 5%/Tranilast 1%/Misoprostol 0.0024% Topical Gel (PracaSil™-Plus) Combines Spirawash and Pracasil together
- Phenytoin 2%/Misoprostol 0.0024%/Lidocaine 2%/Bupivacaine HCl 0.2%/Diphenhydramine HCl 1%/Aloe Vera 0.2% Polyox Bandage
- Morphine 1%, Lidocaine 2% in Intrasisite gel

CUTANEOUS ULCERS/OPEN WOUNDS WITH INFECTION

- Metronidazole 4%/Hydrocortisone 1%/Zinc Sulfate 2%/Silver Sulfadiazine 1% Spira-Wash™ Gel
- Levofloxacin 2%/Mupirocin 4%/Itraconazole 1% Spira-Wash™ Gel
- Misoprostol 0.0024%/Metronidazole 2%/Lidocaine HCl 2% Spira-Wash™ Gel
- Hydromorphone 1%, metronidazole 1% in Intrasisite Gel

CUTANEOUS ULCERS/OPEN WOUNDS

- Zinc sulphate 3mg/ml (elemental zinc)
 - Required for collagen and protein synthesis, cell proliferation, and immune **function**, all of which are essential for tissue regeneration and repair
 - All proliferating cells, including inflammatory cells, epithelial cells, and fibroblasts, require **zinc**
 - Give 5ml BID. Swish for 30 seconds and if product tastes like water, then you are zinc deficient. Continue using BID until the tastes is horrible and the will indicate your zinc levels are normal.

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