Calgary and Area

PHARMACY COMPOUNDING MANUAL

January 2014

Alberta Health Services
Calgary and Area

Compounded Drug Formulas
January 2014

Edited by Alberta Health Services - AHS Drug Information Pharmacist

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Purpose

Welcome to the Alberta Health Services - Calgary's (AHS) latest edition of our Pharmacy Compounding Manual.

It is a collection of the standard recipes used in one or more of the AHS - Calgary sites. Our goal was to include well referenced recipes that are easy to prepare, use ingredients readily available, have the longest expiry date possible and recognize the collective clinical and professional experience of AHS staff. In some cases, more than one strength of a recipe is included to accommodate the unique needs of different groups of patients.

This edition also includes information from the *Handbook of Pharmaceutical Excipients-5th Edition.* This reference has been included to provide the pharmacist with guidelines about excipients when providing a compounded product to a particular patient. These guidelines are not intended to replace the professional judgment of the pharmacist.

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Criteria

1. All formulations contained within the AHS - Calgary compounding manual will have stability information. This will include articles from pharmacy journals, compounding journals, books and testimonials from other hospitals. When no references are found for the stability of a formula and/or a formulation has been used within the region for many years (therefore anecdotal information is used), the formula will be reviewed and efficacy will be requested/reviewed by pharmacists and/or physicians and/or nursing.

2. Multiple strengths for a formula are provided if required for neonatal, infant and adult patients. Sugar free recipes will be included when possible. Formulations for neonates were developed with no contraindicated ingredients if possible (e.g. Benzyl Alcohol).

3. Products must be available to hospital practice as well as to community practice. For example distilled water used in place of sterile water for irrigation, as the latter product is not readily available in community practice. If a formulation contains a product unavailable to the community sector, via wholesalers, a hospital pharmacy may supply ingredients. A hospital pharmacy may not supply completed (compound) product as per policy from the Canada Food and Drug Act, Section C02 Division 1, Good Manufacturing Practice.

4. Formulations were assessed with regards to ease of preparation (for pharmacy personnel) and ease of administration for caregivers.

5. All efforts were made to provide an efficacious yet palatable product. Pharmacy personnel are reminded not to empirically change flavorings, or suspending agents, as they can affect pH, etc. of the product and result in an unstable product.

6. Reasonable costs.

7. Arbitrary dates for powders, creams and lotions have been established using expertise in the field or drug information.

    - powder papers ..... 6 months
    - ointment/creams ..... 3 months

Formulations for these preparations have not been included in this manual; Pharmacists may want to refer to Drug Information resources prior to mixing (i.e. Gentamicin compounded into ointment/cream acquires one-month stability).

8. If there is no information in regard to <u>syringes</u> specifically defined in the recipes for **anti-neoplastics**, assign 24 hour stability to the syringe. Immunosuppressants are assigned the bottle stability unless otherwise specified.

9. When no information is available, compound an oral medication with water or simple syrup, assign a stability of 24 hours. For community practice, this might necessitate dispensing a tablet and/or capsule and directing the caregiver to mix just prior to administration.

Extemporaneous Dosage Preparations

All formulations must be observed to ensure stability.

1. If the manufacturer dilutes or further concentrates the preparation, the stability cannot be ensured. If a brand name item is noted in the formula, the formula should be compounded with that item. Differing from the formulation may alter pH, temperature requirements and the type of excipients that are in the product; substitution of ingredients will reduce confidence in the stability data. Do not alter the vehicle that has been specified in the formula; altering the vehicle from that stated in the formula will change the stability and/or consistency and/or palatability of the product. AHS - Calgary zone cannot ensure an efficacious, stabile product if the vehicle is changed. Do not alter the storage conditions noted in the formula. As well, do not alter the flavoring that has been used or noted within the formula as flavorings are concentrates and changing a flavoring can actually change the pH of the compound, which affects the stability of the product.

2. Vehicles used within the compounded recipes include:

   a) Distilled Water
   Distilled water has been chosen as one of the products required for the formulation versus sterile water for irrigation. Referring to the criteria, a vehicle that would be accessible to all community pharmacies as well as hospital pharmacies was desired. Recall, when using sterile water for irrigation, once the bottle is open; the contents of the bottle must be used within one month to ensure sterility. A product that is needed for oral use does not require sterility and community practice pharmacy may have difficulty in accessing sterile water, as well, additional costs to parents and/or caregivers will be incurred by using sterile water, and therefore distilled water has been used in all formulations.

   b) Ora-Plus®/ Ora-Sweet®/ Ora-Sweet SF®/ Ora-Blend®
   This is a product that is commercially available in the United States, but is only available in Canada from the distributors mentioned in the suppliers section. These four products produce a very palatable suspension to most of the compounded preparations. Unfortunately, Ora-Sweet SF®/ Ora-Blend SF® are sweetened with saccharin and should not be used in neonates and used cautiously in pregnant women.

   c) Cherry Syrup
   The syrup used at the AHS - Calgary/ACH Pharmacy is the Bowes brand of cherry syrup. Incorporating different brands of cherry syrup may not ensure a palatable or consistent mixture, as various cherry syrups cause granulation. Pharmacies are encouraged to carry the Bowes brand of cherry syrup or prepare a product using Wild Cherry formula.

   d) The last vehicle is Simple Syrup, which is readily available to all pharmacies.

3. Some of the formulations include preservatives. Preservatives, such as sodium benzoate and citric acid, are available commercially and pharmacies should have access to these.

   Adding a preservative to a compound will ensure a longer stability. However, some adults and children may be allergic to certain preservatives.

4. Mixing of a compounded formulation and/or recipe should be as follows unless specifically directed within the recipe:

   a) Ensure that all ingredients used are within the expiry date (i.e. NOT EXPIRED).

   b) Ensure that all utensils are clean; including mortar and pestle, graduates, pill cutters, and stirring rods.

   c) Place tablet(s) within mortar and pestle to grind tablets to a fine powder. For film-coated tablets, it may be necessary to add a small amount of diluent such as water, to soften the coating prior to grinding the tablets. This will ensure that the compound will not have an eggshell appearance from the film coating floating throughout the suspension. If you are using capsules, open the capsule and empty the powder into the mortar and discard the capsule shell.

   d) Add a small amount of the vehicle specified within the formula and titrate, ensuring a homogeneous state. Formulations that call for a 1:1 dilution for the vehicle refers to the final volume composed of 50% vehicle A and 50% vehicle B, e.g. Ora-Sweet® (or Ora-Sweet SF®) to Ora-Plus® mixed 1:1, qs to 120 mL refers to 60 mL of Ora-Sweet® mixed with 60 mL of Ora-Plus®. Add the vehicle in small quantities and mix well to avoid lumps. If the formulation requires measuring the preparation to a final volume, mix most of the suspended compound within a mortar and leave out approximately 10% of the vehicle. Measure the volume of the preparation in a graduate adding (qs) the remainder of the vehicle (to the graduate) to the final volume.

   e) Once the final volume has been attained, a clean stirring rod should be used to mix the additional vehicle into the preparation. The product should then be transferred to clean amber compounding bottles (or as specified within the formulation). Ensure when transferring the suspension from the mortar to the graduate that all particles of the suspension are removed from the mortar; a clean rubber spatula or scraper can assist the manufacturer.

   f) Product should be labeled appropriately (egg. **SHAKE WELL** for all suspensions, etc.) And stored as noted within the formula.

5. If compounding a preparation using an ampoule, remember to withdraw the solution (medication) from the ampoule using a filter needle to ensure no glass particles are incorporated into the compound. Solutions will have a clearer appearance versus a compounded suspension.

6. If not specified within the formulation, all preparations should be stored in amber bottles.

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Suppliers

1. Ora-Sweet®, Ora-Sweet SF®, Ora-Plus®, Ora-Blend®, Ora-Blend SF® (Paddock Labs)
   Supplier: PCCA Corp (formerly Wiler)
   744 Third St
   London, ON N5V-5J2
   Phone 1-800-668-9453

2. Sorbitol 70% (Medisca)
   Supplier: McKesson Edmonton
   10931 – 177 Street, Edmonton AB, Canada, T5S 106
   Phone 1-800-661-9932

3. Spirit of Peppermint
   Supplier: McKesson Edmonton
   10931 – 177 Street, Edmonton AB, Canada, T5S 106
   Phone 1-800-661-9932

4. Propylene Glycol
   Supplier: PCCA Corp (formerly Wiler)
   744 Third St
   London, ON N5V-5J2
   Phone 1-800-668-9453

5. Citric Acid
   Supplier: McKesson Edmonton
   10931 – 177 Street, Edmonton AB, Canada, T5S 106;
   Phone 1-800-661-9932

6. Propyl Paraben
   Supplier: PCCA Corp (formerly Wiler)
   744 Third St
   London, ON N5V-5J2
   Phone 1-800-668-9453

7. Methyl Paraben
   Supplier: PCCA Corp (formerly Wiler)
   744 Third St
   London, ON N5V-5J2
   Phone 1-800-668-9453

8. Sodium Benzoate
   Supplier: McKesson Edmonton
   10931 – 177 Street, Edmonton AB, Canada, T5S 106
   Phone 1-800-661-9932

Suppliers, Cont.

9. Aspartame
   Supplier: PCCA Corp (formerly Wiler)
   744 Third St
   London, ON N5V-5J2
   Phone 1-800-668-9453

10. Flavorings
    Supplier: PCCA Corp (formerly Wiler)
    744 Third St
    London, ON N5V-5J2
    Phone 1-800-668-9453

11. Bowes Ready to Use Imitation Cherry Syrup
    Supplier: Sysco Foods

Physicochemical Properties of Some Oral Liquid Vehicles

Vehicle	pH	Alcohol Content (%)	Container
Official USP/NF vehicles			
Benzaldehyde compound elixir	6.0	3 - 5	TLR
Peppermint water	–	0	TC
Sorbitol solution	–	0	TC
Suspension structured vehicle	–	0	TLC
Suspension structured vehicle – SF	–	0	TLC
Xanthan gum solution	–	0	TLC

TC, tight container; TLR, light-resistant (container).

Nonofficial vehicles			
Acacia	5.0	0	TC
Cherry syrup	3.5 - 4.0	1	TLR
Citric acid syrup	–	< 1	TC
Cocoa syrup	–	0	TLC
Glycyrrhiza elixir	–	21 - 23	TC
Glycyrrhiza syrup	6.0 - 6.5	5 - 6	TC
Hydriodic acid syrup	–	0	TC
Isoalcohol elixir, low	5.0	8 - 10	TC
Isoalcohol elixir, high	5.0	73 - 78	TC
Orange flower water	–	0	TC
Orange syrup	2.5 - 3.0	2 - 5	TC
Raspberry syrup	3.0	1 - 2	TLR
Sarsaparilla compound syrup	5.0	0	
Syrup USP	6.5 - 7.0	0	TC
Tolu syrup	5.5	2 - 4	TC
Wild cherry syrup	4.5	1 - 2	TC
Commercial branded vehicles			
Coca-Cola syrup	1.6 - 1.7	0	
Ora-Sweet	4.0 - 4.5	0	TLC
Ora-Sweet SF	4.0 - 4.4	0	TLC
Ora-Blend	4.2	0	TLR
Ora-Blend SF	4.2	0	TLR

TC- tight container; TLR- light-resistant (container).

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World Health Organization (WHO) maximum daily excipient intake

Excipient	***WHO Maximum Daily Intake***
Acesulfame Potassium	up to 15 mg/kg body weight
Alitame	up to 0.1 mg/kg body weight
Alpha Tocopheral (as an antioxidant)	0.15 - 2 mg/kg body weight
Ascorbic Acid	up to 15 mg/kg body weight
Ascorbyl Palmitate	up to 1.25 mg/kg body weight
Aspartame	up to 40 mg/kg body weight
Benzoic Acid (and other benzoates)	up to 5 mg/kg body weight
Benzyl alcohol	up to 5 mg/kg body weight
Butylated Hydroxyanisole	500 mcg/kg body weight
Butylated Hydroxytoluene	up to 125 mcg/kg body weight (temporary estimated)
Calcium Alginate (as alginic acid)	up to 25 mg/kg body weight (estimated)
Calcium cyclamate (expressed as cyclamic acid)	up to 11 mg/kg body weight (estimated)
Calcium Sorbate (expressed as sorbic acid)	up to 25 mg/kg body weight (estimated)
Carnauba Wax	up to 7 mg/kg body weight
Diketopiperazine (impurity in Aspartame)	7.5 mg/kg body weight
Dimethicone	up to 1.5 mg/kg body weight (tentative estimated)
Disodium Edetate	up to 2.5 mg/kg body weight(estimated)
Edetic Acid	up to 2.5 mg/kg body weight (estimated)
Erythorbic acid	up to 5 mg/kg body weight
Ethyl Acetate	up to 2 mg/kg body weight (estimated)
Ethyl Maltol	up to 1 mg/kg body weight (for maltol)
Ethyl Vanillin	up to 3 mg/kg body weight
Ethylparaben	up to 10 mg/kg body weight (estimated)
Maltol	up to 1 mg/kg body weight
Menthol	up to 0.4 mg/kg body weight
Methylparaben	up to 10 mg/kg body weight(estimated)
Monosodium L-(+) Tartrate	up to 30 mg/kg body weight
Polyethylene Glycol	up to 10 mg/kg body weight(estimated)
Polysorbate ester (total)	up to 25 mg/kg body weight (estimated)
Potassium Benzoate (calculated as benzoic acid)	up to 5 mg/kg body weight
Potassium Metabisulfite (as SO2)	up to 0.35 mg/kg body weight
Potassium Sorbate (expressed as sorbic acid)	up to 25 mg/kg body weight (estimated)
Povidone	up to 25 mg/kg body weight (temporary)
Propyl Gallate	up to 1.4 mg/kg body weight (estimated)
Propylene Glycol	up to 25 mg/kg body weight
Propylparaben	up to 10 mg/kg body weight (estimated)

Saccharin (all salts total)	up to 2.5 mg/kg body weight (estimated)
Sodium Ascorbate	up to 15 mg/kg body weight
Sodium Benzoate (calculated as benzoic acid)	up to 5 mg/kg body weight
Sodium Cyclamate (expressed as cyclamic acid)	up to 11 mg/kg body weight (estimated)
Sodium Metabisulfite (calculated as sulfur dioxide)	up to 7 mg/kg body weight
Sodium Sorbate (expressed as sorbic acid)	up to 25 mg/kg body weight (estimated)
Sorbic Acid	up to 25 mg/kg body weight (estimated)
Sorbitan Esters (Sorbitan Fatty Acid Esters)	up to 25 mg/kg body weight (estimated)
Sorbitan Monolaurate	up to 25 mg/kg body weight (estimated)
Sorbitan Monoleate	up to 25 mg/kg body weight (estimated)
Sorbitan Monopalmitate	up to 25 mg/kg body weight (estimated)
Sorbitan Monostearate	up to 25 mg/kg body weight (estimated)
Sorbitan Tristearate	up to 25 mg/kg body weight (estimated)
Stearyl Citrate	up to 50 mg/kg body weight
Sucralose	up to 15 mg/kg body weight
Vanillin	up to 10 mg/kg body weight (estimated)
Xanthan Gum	up to 10 mg/kg body weight (estimated)

"Pharmaceutical dosage forms contain both pharmacologically active compounds and excipients added to aid the formulation and manufacture of the subsequent dosage forms form for administration to patients." "No longer can excipients be regarded simply as inert or inactive ingredients, and a detailed knowledge not only of the physical and chemical properties but also the safety of these materials is essential."

Reference: Rowe RC, Sheskey PJ, Owen SC. Handbook of Pharmaceutical Excipients, 5th ed. London: Pharmaceutical Press, 2006.

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Description: **Acetazolamide**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Acetazolamide tablets	250 mg	12 tablets
Ora-Blend®		qs to 120 mL

Directions:
1. Crush tablets in mortar to a fine powder.
2. QS to final volume with vehicle.

Notes:
- Alternate Vehicles:
  - Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 1997; 2:101.
2. **Am J of Health-Syst Pharm** 1996; 53:1944.
3. **Can J Hosp Pharm** 2000; 53(2):127.

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Description: **Acetic Acid**

Strength: 10% *******WHMIS Controlled*******

Route: topical

Form: solution

Ingredients	Strength	Quantity
Glacial acetic acid	100%	1 mL
Sterile water		9 mL

Directions:

**** All preparation should occur in a biohazard hood. Glacial acetic acid 100% solution and the 10% topical solution are corrosive. Contact could cause burns to skin, eyes and respiratory tract. Wear gloves, gown, mask, and protective eyewear at all times when handling the raw material or when preparing the finished product.****

1. Obtain the following supplies/equipment prior to preparation:
   - 1 or 2 small glass graduate cylinder/s and/or 1 bulb pipette.
   - 1 small glass bottle with a lid (i.e. 15 mL eye dropper bottle with dropper removed)
2. Measure 9 mL of sterile water accurately in a graduate and then transfer to the small glass bottle.
3. Prepare for work in the biohazard hood.
4. Place the bottle of measured water into the biohazard hood.
5. In the biohazard hood carefully measure 1 mL of glacial acetic acid with an empty glass graduated cylinder or with a bulb pipette.

   ****Never add water to acetic acid. Always add acetic acid to water.****
6. Slowly add the acetic acid into the small glass bottle containing the water and carefully mix.
7. Cap the bottle tightly.
8. **Dispense as required by WHMIS.**

Note:

- **Acetic acid is corrosive therefore avoid contact with eyes or skin. If inadvertent contact occurs, immediately flush the area with copious amounts of water with or without soap for 15 minutes. Remove contaminated clothing immediately.**

Stability: 48 hours (arbitrary)

Storage: Room Temperature
Amber **Glass** Bottle
Keep lid tightly closed

References:

1. MSDS Acetic Acid (glacial or 10%) - September 2005.
2. **Dermatol Surg** 2004; 30: 26-31.

Alberta Health Services
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Description: **Acetylcysteine**

Strength: 5% (50 mg/mL)

Route: oral

Form: solution

Ingredients	Strength	Quantity
Acetylcysteine 20% injection	200 mg/mL	2.5 mL
Sodium chloride injection or Sterile water	0.9%	7.5 mL

Directions:

1. Draw acetylcysteine into a syringe and transfer to a final container.
2. Repeat step 1 with 0.9% sodium chloride or sterile water, using a new syringe.
3. Mix well and label.

Note:

- Acetylcysteine injectable vial is stable for 4 days (96 hours) once opened.

Stability: Amber **Glass** Bottle: 14 days
Plastic Syringe: 24 hours

Storage: Refrigerate

References:

1. **MICROMEDEX** (R) Healthcare Series [database on the Internet]. Greenwood Village (COL): Thomson Healthcare. c.1974 - [cited July 8, 2004].
2. **e-CPS** online.
3. **USP** 34 NF 29, 2nd Volume 1. **Chapter 795:** Pharmaceutical compounding - Nonsterile preparations. Rockville, MD, USA: United States Pharmacopeial Convention; 2010
4. Personal communication with **Wellspring Pharmaceutical Canada** Medical Information and AHS Edmonton zone Drug Information Pharmacist. Topic: Mucomyst stability; November 6, 2003.

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Description: **Acetylsalicylic Acid (ASA)**

Strength: 16 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Acetylsalicylic acid (ASA) chewable tablets	80 mg	20 tablets
Saccharin sodium powder		100 mg
Butylated hydroxytoluene powder		100 mg
Magnesium stearate powder		2 g
Almond oil (sweet almond oil)		qs to 100 mL

Directions:

1. Weigh out powders and mix together.
2. Add a small quantity of almond oil and mix with powders to form a smooth paste.
3. Add remainder of almond oil gradually to required volume.
4. Transfer to final container and label.

Notes:

- Original reference assigned a 6 month room temperature beyond use date, but based on pharmacy experience a revised expiry date of 4 weeks refrigerated is recommended.
- A very strong vinegar smell has been noted to develop over time and may indicate oxidation and deterioration of the suspension.

Stability: 4 weeks

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Formulations: Aspirin 80 mg/5 mL oral liquid, anhydrous. **International Journal of Pharmaceutical Compounding** 2007; 11(2):154.

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Description: **Akabutus Mouthwash**

Strength:

Route: mouthwash

Form: suspension

Ingredients	Strength		Quantity
Nystatin suspension	100,000 u/mL		42 mL
Lidocaine HCl, viscous solution	2%		50 mL
Sodium chloride irrigation or injection	0.9%		qs to 200 mL
At the time of dispensing:			
Hydrocortisone tablets	10 mg		5 tablets
or		or	
Hydrocortisone powder, USP			50 mg
Glycerin liquid			4 mL

Directions:

Part A: Premixed Solution

1. Combine the viscous lidocaine and nystatin and shake well.
2. QS with normal saline.
3. Transfer 200 mL into a 250 mL amber bottle.

Part B: AT THE TIME OF DISPENSING

1. If using hydrocortisone tablets triturate into a fine powder.
2. Mix hydrocortisone powder with glycerin to form a paste.
3. Levigate with the pre-mixed Akabutus solution from Part A.

Stability:

Premixed solution: 3 months refrigerated (prior to adding hydrocortisone; arbitrary expiry by Dr. Akabutu).

Final solution: 14 days refrigerated (after addition of hydrocortisone tablets and glycerin)

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Dr. Akabutu, UAH; Dr. Yanofsky, Cross Cancer Institute - this formulation is not based on literature, but from unpublished data, historical use, or pharmacy/ physician experience.

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Description: **Allopurinol**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Allopurinol tablets	100 mg	24 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus® : Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. **International Journal of Pharmacy Compounding** 1997; 1(3):174.
2. **Am J of Health-Syst Pharm** 1996; 53(16):1944-1949.
3. **Am J of Hosp Pharm** 1983; 40:616.
4. **Can J Hosp Pharm** 2000; 53(2):127.

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Description: **Alprazolam**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Alprazolam tablets	2 mg	60 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- **Alprazolam solutions should not be stored in polyvinyl chloride (plastic) bottle or polypropylene (oral syringes) for longer than 24 hours**

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber **Glass** Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 1998 (Sept 15); 55:1915.

Alberta Health Services
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Description: **Amiloride**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Amiloride tablets	5 mg	2 tablets
Glycerin liquid		4 mL
Distilled or Sterile water		qs to 10 mL

Directions:

1. Combine a small amount of water with glycerin.
2. Triturate tablets with the glycerin and water mixture.
3. QS to final volume with water and mix thoroughly.

Note:

- This recipe is preferred in neonates less than or equal to 28 days corrected age.

Stability: 21 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Aust Journal Hospital Pharmacy** 1995; 25:19.
2. **Pediatric Drug Formulations,** 5th edition, 2004, p19.

Alberta Health Services
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Description: **Amiodarone**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Amiodarone tablets	200 mg	2.5 tablets
Methylcellulose with Parabens solution (see recipe)	1%	50 mL
Simple syrup		qs to 100 mL

Directions:

1. Crush tablets in mortar.
2. Add vehicle of simple syrup mixed with methylcellulose in small quantities until a smooth paste is formed. Add more vehicle until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Another recipe using Ora-Plus®: Ora-Sweet® (1:1) combination is available, but results in an unsatisfactory product.

Stability: Refrigerate: 90 days
Room Temperature: 42 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Annals of Pharmacotherapy** 1997 (July/August); 31:851-852.
2. **J Ped Pharmacy Practice** 1999; 4(4):186.

Alberta Health Services
Calgary and Area

Description: **Amitriptyline**

Strength: 10 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Amitriptyline tablets	25 mg	10 tablets
Distilled or Sterile water		qs to 25 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 8 weeks

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light
Shake Well

Reference:

Journal of Clinical Pharmacy 1976; p107.

Alberta Health Services
Calgary and Area

Description: **Amlodipine**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Amlodipine tablets	5 mg	5 tablets
Ora-Blend®		qs to 25 mL

Directions:

1. Soak tablets in a small amount of vehicle.
2. Crush tablets using mortar and pestle.
3. Add small quantity of Ora-Blend® and levigate to a smooth paste.
4. QS to final volume wit Ora-Blend®.

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 3 months

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Pediatric Drug Formulations** 5th edition, 2004.
2. **J Am Pharm Assoc** 1999; 39:375-377.
3. **Pediatr Nephrol** 2003; 18:675-678.

Alberta Health Services
Calgary and Area

Description: **Aprepitant**

Strength: 20 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Aprepitant capsules	125 mg	16 capsules
Ora-Blend®		qs to 100 mL

Directions:

1. Empty the powder from the capsules into a mortar.
2. Pulverize to form a uniform powder.
3. Add a small quantity of vehicle and mix to form a smooth, uniform paste.
4. Add sufficient vehicle geometrically to final volume and mix well.
5. Package and label.

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 90 days

Storage: Refrigerate
Amber **Glass** Bottle or **polyethylene terephthalate (PET) containers**
Protect from Light
Shake Well

References:

1. **International Journal of Pharmacy Compounding** 2009 (Mar/Apr); 13(2):153.
2. **Support Care Cancer** 2009; 17:701-706.

Alberta Health Services
Calgary and Area

Description: **Aqueous Iodine Solution**
Strong Iodine Solution (Lugol's solution)

Strength: provides 50 mg/mL free iodine and 100 mg/mL of potassium iodide

Route: oral

Form: solution

Ingredients	Strength	Quantity
Iodine crystals		5 g
Potassium iodide crystals		10 g
Distilled or Sterile water		qs to 100 mL

Directions:

1. Dissolve crystals in hot water.
2. Cool to about 25°C.
3. Add sufficient water to final volume.
4. Filter if necessary.

Note:

- **A commercial oral suspension is available**

Stability: 1 year

Storage: Room Temperature
Amber **Glass** Bottle

References:

1. **Martindale's: The Extra Pharmacopoeia** 31st edition, page 1809.
2. **Remington's: The Science and Practice of Pharmacy** 21st edition, p1377.

Alberta Health Services
Calgary and Area

Description: **Atenolol**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Atenolol tablets	50 mg	2 tablets
Glycerin liquid		2 mL
Ora-Sweet SF®		qs to 50 mL

Directions:

1. Grind up tablets in mortar.
2. Levigate powder with glycerin to make a smooth paste.
3. QS to final volume with Ora-Sweet SF®

Notes:

- Alternate Vehicle:
  - Simple Syrup
- Ora-Sweet SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: Ora-Sweet SF®: 90 days
Simple Syrup: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **International Journal of Pharmacy Compounding** 1997; 1(6):437.
2. **Trissel's Stability of Compounded Formulations** 3rd edition, 2005: 40-41.
3. **Pediatric Drug Formulations,** 5th edition, 2004, p31-32.

Alberta Health Services
Calgary and Area

Description: **Azathioprine LOW STRENGTH**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Azathioprine tablets	50 mg	6 tablets
HSC Vehicle (Methylcellulose 1% HSC in Simple Syrup- see recipe)		qs to 30 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
    - Biohazard hood and appropriate personnel.
    - Wear appropriate clothing when preparing (gloves, mask, and gown).
    - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Crush the tablets in mortar and triturate to a fine powder.
3. Add a small amount of HSC vehicle and levigate to form a uniform paste.
4. Add HSC vehicle in geometric proportions, mixing thoroughly after each addition.
5. Pour into a graduated cylinder.
6. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
7. QS to final volume with vehicle. Stir well.
8. Transfer to final container and label.

Stability: 60 days

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Protect from Light
Shake Well
Cytotoxic

References:

1. **Pediatric Drug Formulations**, 5th edition, 2004.
2. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Azathioprine**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Azathioprine tablets	50 mg	120 tablets
Vehicle		qs to 120 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
    - Biohazard hood and appropriate personnel.
    - Wear appropriate clothing when preparing (gloves, mask, and gown).
    - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Grind tablets in mortar to a fine powder.
3. Add about 40 mL of vehicle and mix to a uniform paste.
4. Add vehicle in geometric proportions almost to volume, mixing thoroughly after each addition.
5. Pour into a graduated cylinder.
6. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
7. QS to final volume with vehicle. Stir well.
8. Transfer to final container and label.

Notes:

- Vehicle Choices:
    - Ora-Blend® or Ora-Blend SF®
    - Ora-Plus®: Ora-Sweet® (1:1)
    - Ora-Plus®: Ora-Sweet SF® (1:1)
    - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Protect from Light
Shake Well
Cytotoxic

References:

1. **International Journal of Pharmacy Compounding** 1997; 2:102.
2. **Am J of Health-Syst Pharm** 1996; 53:1949.
3. **Pediatric Drug Formulations,** 5th edition, 2004, p33-34.

Alberta Health Services
Calgary and Area

Description: **Baclofen**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Baclofen tablets	20 mg	15 tablets
Glycerin liquid		3 mL
Simple syrup		qs to 60 mL

Directions:

1. Grind tablets to a fine powder.
2. Add glycerin to make a fine paste.
3. Gradually add 45 mL of simple syrup in three steps as follows:
   - Add about 15 mL of simple syrup to the paste, triturate well and pour into a graduated cylinder.
   - Rinse the mortar with about 15 mL of the simple syrup and transfer to graduated cylinder.
   - Repeat last step as necessary to bring the final volume to 60 mL.

Stability: 35 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1993; 50:2353-2355.
2. **Pediatric Drug Formulations**, 5th edition, 2004, p38.

Description: **Base**

Strength:

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sodium carboxymethylcellulose		1 g
Syrup		10 mL
Methyl hydroxybenzoate		150 mg
Citric acid		600 mg
Lemon spirit		0.25 mL
Distilled or Sterile water		qs to 100 mL

Directions:

1. Dissolve methyl hydroxybenzoate and citric acid in hot water.
2. Add syrup and lemon, and make up to 75 mL with water then add sodium carboxymethylcellulose and mix.
3. Allow to hydrate for about 1 hour then make up to volume.

Stability: 6 months

Storage: Refrigerate

Reference:

Formulation in Pharmacy Practice, 2nd edition, 2001.

Alberta Health Services
Calgary and Area

Description: **Beclomethasone Dipropionate**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Beclomethasone dipropionate powder, USP		100 mg
Corn oil		qs to 100 mL

Directions:

1. Weigh required amount of beclomethasone powder and place in mortar.
2. Gradually levigate corn oil into the beclomethasone powder until a liquid is formed.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with corn oil.
5. Transfer to final container and label.

Notes:

- Assign expiry date using USP 795 Guidelines, since no stability data available. USP 795 Guidelines: solids and nonaqueous liquids prepared from USP or NF substances: No more than 6 months.

Stability: 6 months

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

1. **USP** 34 – NF 29, 2nd Volume 1. Chapter **795**: Pharmaceutical compounding – Nonsterile preparations. Rockville, MD, USA: United States Pharmacopeial Convention; 2010.
2. Iyer RV, et al. Long-term use of oral beclomethasone propionate for the treatment of gastrointestinal graft-versus-host disease. **Biol Blood Marrow Transplant** 2005; 11: 587-92.
3. Miura Y, et al. Oral beclomethasone dipropionate as an initial treatment of gastrointestinal acute graft-versus-host disease after reduced-intensity cord blood transplantation. **Bone Marrow Transplantation** 2006; 38: 577-579.

Alberta Health Services
Calgary and Area

Description: **Benazepril**

Strength: 2 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Benazepril tablets	20 mg	10 tablets
Vehicle		qs to 100 mL

Directions:

1. Triturate tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Vehicle Choices:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Blend®

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

International Journal of Pharmaceutical Compounding 2007 (May/June); 11(3):242.

Alberta Health Services
Calgary and Area

Description: **Bethanechol**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Bethanechol tablets	25 mg	24 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets and triturate to a fine powder.
2. Add approximately 20 mL of vehicle.
3. Levigate the powder with vehicle to a uniform paste.
4. Add vehicle in geometric proportions.
5. Pour into a graduated cylinder.
6. Rinse mortar and qs to final volume with vehicle.
7. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet®: (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Room Temperature or Refrigerate
Amber **Glass** Bottle or **polyethylene terephthalate (PET) containers**
Shake Well

References:

1. **Pediatric Drug Formulations**, 5th edition, 2004, p39.
2. **Am J of Health-Syst Pharm** 1998; 55:1804.

Alberta Health Services
Calgary and Area

Description: **Bosentan**

Strength: 2.5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Bosentan tablet	62.5 mg	1/2 tablet
Distilled or Sterile water		12.5 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Split 1 tablet (62.5 mg) of bosentan using a commercially available pill splitter to obtain 31.25 mg.
3. Dissolve 31.25 mg (half a tablet) in 12.5 mL of water to yield a concentration of bosentan 2.5 mg/mL.
4. Store the suspension in a 20 mL syringe at room temperature.

Warning:

Pregnancy Risk Category X:
Women of childbearing potential should avoid all possible exposure to the dust.

Note:

- **Should not be mixed or dissolved in liquids with a low (acidic) pH (i.e. fruit juices) due to poor stability; the drug is most soluble in solutions with a pH greater than 8.5.**

Storage: 24 hours

Stability: Room Temperature
Cytotoxic

Reference:

Pediatric Dosage Handbook, 13th edition.

Alberta Health Services
Calgary and Area

Description: **Busulfan**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Busulfan tablets	2 mg	150 tablets
Simple syrup		qs to 150 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Crush tablets in **glass** mortar and pestle.
3. Transfer powder to amber **glass** bottle.
4. Add Simple Syrup.
5. Must be shaken well (vigorously) prior to preparing subsequent doses.

Stability: Refrigerate: 30 days
Room Temperature: 3 days

No data available on stability if dispensed in plastic syringes, therefore use an expiry of 24 hours (arbitrary).

Storage: Refrigerate or Room Temperature
Amber **Glass** Bottle
Cytotoxic

References:

1. **Glaxo-Wellcome, Inc.** 1-800-668-6051.
2. **US Pharmacist** Nov 1990; p94.

Alberta Health Services
Calgary and Area

Description: **Caffeine base**

Strength: 10 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Caffeine citrate powder, USP		2 g
Distilled or Sterile water		qs to 100 mL

Directions:

1. Dissolve powder in water.
2. Mix until completely clear.
3. QS to final volume with appropriate final vehicle.

Notes:

- Provides 10 mg/mL Caffeine base (or 20 mg/mL Caffeine citrate)
- Distilled or sterile water formulation is preferred in neonates due to absence of dyes and lower osmolarity.
- If increased palatability is required, use the following recipe:

Ingredients	Strength	Quantity
Caffeine citrate powder, USP		2 g
Distilled or Sterile Water		50 mL
Simple Syrup: Cherry Syrup	2:1	qs to 100 mL

Stability: 3 months refrigerated (for both formulations)
30 days room temperature (formulation with distilled or sterile water only)

Storage: Amber Plastic Bottle

References:

1. **Am J of Health-Syst Pharm** 1984; 41:2405.
2. Alberta Children's Hospital Pharmacy 2009 - anecdotal.

Alberta Health Services
Calgary and Area

Description: calcium elemental, suspension **(as Calcium Carbonate)**

Strength: provides 80 mg/mL of elemental calcium (200 mg/mL as Calcium Carbonate)

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Calcium carbonate powder		50 g (provides 20 g of elemental calcium)
Simple syrup		75 mL
Flavour		~1 mL
Preserved Water HSC (see recipe)	0.1%	qs to 250 mL

Directions:

1. Levigate powder with simple syrup (gradually add simple syrup).
2. QS to final quantity with preserved water HSC.

Note:

- Flavour in original recipe is banana; ACH uses peppermint.

Stability:

- References assigned a stability of 60 days at room temperature.
- However, based on pharmacy experience a 30 day room temperature expiry date is recommended, since there is a possibility of mold growth if product is used for 60 days.

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. Email communication from **The Hospital for Sick Children,** Toronto Manufacturing Pharmacist - Feb 2008.

Alberta Health Services
Calgary and Area

Description: **Captopril**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Captopril tablet	50 mg	2 tablets
Ascorbic acid	500 mg	1 tablet
Distilled or Sterile water		qs to 100 mL

Directions:

1. Measure water and transfer to amber bottle.
2. Add captopril and vitamin C tablets to water, and shake to dissolve.

Notes:

- Alternatively tablets can be crushed and triturated to a fine powder, then add powder and vitamin C tablets to water in amber bottle and shake to dissolve.
- Regular non-chewable tablets of Vitamin C can be used instead of the chewable tablets. Color of final product may differ depending upon the excipients in the tablets.

Stability: 56 days refrigerated or 30 days room temperature

Storage: Refrigerate (preferred) or Room Temperature
Shake Well

References:

1. **Pediatric Drug Formulations.** 5th edition, 2004.
2. Nahata MC. Morosco RS. Hipple TF. Stability of captopril in liquid containing ascorbic acid or sodium ascorbate. **Am J Hosp Pharm** 1994; 51:1707-1708.

Alberta Health Services
Calgary and Area

Description: **Carvedilol**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Carvedilol tablets	12.5 mg	8 tablets
Distilled or Sterile water		10 mL
Ora-Blend®		qs to 100 mL

Directions:

1. Dissolve tablets for ten minutes in water and then grind into a paste.
2. Add vehicle and levigate with paste.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 84 days

Storage: Room Temperature
Amber **Glass** Bottle
Shake Well

References:

1. **The Hospital for Sick Children Online Recipe Database** - Carvedilol 1.67 mg/mL oral suspension recipe April 2007 (modified).
2. **International Journal of Pharmaceutical Compounding** 2006; 10(3):220.
3. Written communication between Elita Ho, **GlaxoSmithKline** Medical Information Specialist and Drug Information Pharmacist, Alberta Health Services. Stability of Coreg suspensions prepared from tablets. April 20, 2004.

Alberta Health Services
Calgary and Area

Description: **Celecoxib**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Celecoxib capsules	100 mg	10 capsules
Ora-Blend®		qs to100 mL

Directions:

1. Empty capsules, completely, into mortar. Pulverize to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 3 months (93 days)

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. Donnelly RF, et al., Stability of Celecoxib Oral Suspension. **Can J Hosp Pharm** 2009 (Nov/Dec); 62(6):464-468.
2. **International Journal of Pharmaceutical Compounding** 2010 (May/June); 14(3):242.

Alberta Health Services
Calgary and Area

Description: **Cherry Syrup/ Simple Syrup**

Strength: 2:1

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Simple syrup		150 mL
Cherry syrup		75 mL

Directions:

1. Mix ingredients.
2. Combine well.
3. Transfer to final container and label.

Stability: 6 months

Storage: Refrigerate

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Chlorambucil**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Chlorambucil tablets	2 mg	60 tablets
Methylcellulose with Parabens (see recipe)	1%	30 mL
Simple syrup		qs to 60 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Grind up tablets in mortar to a fine powder.
3. Mix methylcellulose with equal volume of simple syrup (1:1 mixture) adding a small amount to powder and levigate to a uniform paste
4. Add 1:1 mixture in geometric proportions almost to final volume, mixing thoroughly after each addition.
5. Pour into a graduated cylinder
6. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
7. QS to final volume with vehicle. Stir well.
8. Transfer to final container and label.

Stability: 7 days

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light
SHAKE WELL
Cytotoxic

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004, p59.
2. **Am J of Hosp Pharm** 1983; 40:616.

Alberta Health Services
Calgary and Area

Description: **Chlorhexidine**

Strength: 0.12%

Route: topical/ oral rinse

Form: mouthwash

Ingredients	Strength	Quantity
Chlorhexidine	20%	1.5 mL
Glycerin liquid		50 mL
Spirit of peppermint		0.25 mL
Distilled or Sterile water		qs to 250 mL

Directions:

1. QS to “actual quantity” above using water

Notes:

- Although a commercial oral product is available (Peridex®), it contains alcohol and is not recommended for pediatric use.
- If peppermint oil is used reduce quantity to 0.05 mL

Stability: 1 month

Storage: Room Temperature
Protect from Light

Reference:

Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Chloroquine Diphosphate**

Strength: 15 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Chloroquine diphosphate tablets	250 mg	6 tablets
Vehicle		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Provides 9 mg/mL of chloroquine base.
- Vehicle Choices:
    - Ora-Blend® or Ora-Blend SF®
    - Ora-Plus®: Ora-Sweet® (1:1)
    - Ora-Plus®: Ora-Sweet SF® (1:1)
    - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

Reference:

Am J Health-Syst Pharm 1998 (Sep 15); 55:1915.

Alberta Health Services
Calgary and Area

Description: **Chocolate Cherry Syrup**

Strength:

Route: oral

Form: suspending agent

Ingredients	Strength	Quantity
Simple syrup		600 mL
Artificial Wild cherry flavour		1.2 mL
Chocolate syrup (Hershey's)		qs to 1000 mL

Directions:

1. Measure 600 mL of simple syrup into the 1000 mL graduated measure.
2. Measure 1.2 mL of cherry flavour into a 3 mL oral syringe.
3. Add the cherry flavour to the simple syrup in the graduated measure.
4. Make up the final volume of 1000 mL with chocolate syrup (Hershey's). Stir well.
5. Transfer the syrup into the 1000 mL glass bottle.
6. Label and affix shrink seal.

Stability: 6 months

Storage: Room Temperature
Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database** - Chocolate Cherry Syrup recipe, 2007.

Alberta Health Services
Calgary and Area

Description: **Cholesterol Suspension**

Strength: 150 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Cholesterol powder, USP		75 g
Ora-Plus®		265 mL
Cherry syrup		80 mL
Ora-Plus®		qs to 500 mL

Directions:

1. Weigh cholesterol powder.
2. Mix cherry syrup with a portion of Ora-Plus® and place into a metal bowl.
3. Using a spatula, add the cholesterol powder in aliquots to the syrup mixture.
4. Manually mix until a smooth suspension is formed. (Note: an electric mixer should not be used).
5. Pour into a graduated cylinder.
6. QS to final volume with Ora-Plus®.
7. Transfer to final container and label.

Stability: 90 days

Storage: Room Temperature
Amber **Glass** Bottle
Shake Well

References:

1. **Pediatric Drug Formulations.** 6th edition, 2011.
2. Personal communication from Dr. Chitra Prasad, Metabolic Disorders, Children's Hospital, **London Health Sciences Centre**; July, 2006.

Alberta Health Services
Calgary and Area

Description: **Cidofovir LOW STRENGTH**

Strength: 1%

Route: topical

Form: cream/ ointment

Ingredients	Strength	Quantity
Cidofovir injection	75 mg/mL	5 mL
Eucerin cream or Aquaphor		32.5 g

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Weigh the cream/ vehicle base.
3. Backload cream base into a disposable 60 mL syringe.
4. Place the syringe into a hood.
5. Withdraw the desired amount of cidofovir into another disposable 60 mL syringe.
6. Attach a luer lock-to-leur lock connector to the syringe.
7. Connect the syringe containing cream base to the connector.
8. Inject the contents of the syringes back and forth between the two syringes until the cream base is thoroughly mixed with the cidofovir solution and the mixture is smooth and consistent in texture.
9. Detach the connector and empty the syringes.
10. Transfer the mixture to a clean jar.

Notes:

- Cidofovir 75 mg/mL injection is available through Health Canada's Special Access Program.
- The syringe method of preparation is ideal when the amount compounded is usually less than 40 g.
- Velvachol, Pentravan (Gallipot), Dermovan or a propylene glycol-based jelly can be used instead of Eucerin cream

Stability: 30 days

Storage: Room Temperature
Protect from Light
Cytotoxic/ Hazardous Drug
External Use Only

References:

1. National Institute of Health Clinical Center Pharmacy Department Dr. Bethseda MD 20892 301-496-4363. (Received December 27, 2012 from Jae Kim compounding pharmacist).
2. Toro JR, et al. Topical cidofovir: a novel treatment for recalcitrant molluscum contagiosum in children infected with human immunodeficiency virus 1. **Arch Dermatol** 2000; 136(8): 983-985.
3. Velasco AA, et al. Topical cidofovir for the treatment of resistant viral infections: a case report. **EJHP Science** 2009; 15(4): 83-85.
4. McElhiney LF. Topical cidofovir: for treatment of resistant viral infections. **International Journal of Pharmaceutical Compounding** 2006 (Sept/Oct); 10(5): 324-328.

Alberta Health Services
Calgary and Area

Description: **Cidofovir**

Strength: 3%

Route: topical

Form: cream/ ointment

Ingredients	Strength	Quantity
Cidofovir injection	75 mg/mL	15 mL
Eucerin cream or Aquaphor		22.5 g

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Weigh the cream/ vehicle base.
3. Backload cream base into a disposable 60 mL syringe.
4. Place the syringe into a hood.
5. Withdraw the desired amount of cidofovir into another disposable 60 mL syringe.
6. Attach a luer lock-to-leur lock connector to the syringe.
7. Connect the syringe containing cream base to the connector.
8. Inject the contents of the syringes back and forth between the two syringes until the cream base is thoroughly mixed with the cidofovir solution and the mixture is smooth and consistent in texture.
9. Detach the connector and empty the syringes.
10. Transfer the mixture to a clean jar.

Notes:

- Cidofovir 75 mg/mL injection is available through Health Canada's Special Access Program.
- The syringe method of preparation is ideal when the amount compounded is usually less than 40 g.
- Velvachol, Pentravan (Gallipot), Dermovan or a propylene glycol-based jelly can be used instead of Eucerin cream

Stability: 30 days

Storage: Room Temperature
Protect from Light
Cytotoxic/ Hazardous Drug
External Use Only

References:

1. National Institute of Health Clinical Center Pharmacy Department Dr. Bethseda MD 20892 301-496-4363. (Received December 27, 2012 from Jae Kim compounding pharmacist).
2. Toro JR, et al. Topical cidofovir: a novel treatment for recalcitrant molluscum contagiosum in children infected with human immunodeficiency virus 1. **Arch Dermatol** 2000; 136(8): 983-985.
3. Velasco AA, et al. Topical cidofovir for the treatment of resistant viral infections: a case report. **EJHP Science** 2009; 15(4): 83-85.
4. McElhiney LF. Topical cidofovir: for treatment of resistant viral infections. **International Journal of Pharmaceutical Compounding** 2006 (Sept/Oct); 10(5): 324-328.

Alberta Health Services
Calgary and Area

Description: **Ciprofloxacin**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Ciprofloxacin tablets	750 mg	4 tablets
Ora-Plus®: Simple syrup (1:1)		qs to 60 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Mix with equal amounts of Ora-Plus®: Simple Syrup and triturate to a fine paste.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Bitter taste; mix with equal parts of chocolate syrup immediately prior to administration.
- A commercial oral product is available, but use recipe for NJ, NG or tube feeds; since the commercial product is a very thick nonaqeuous granular suspension resulting in a high risk of tube blockage.

Stability: 56 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light

Reference:

International Journal of Pharmaceutical Compounding 1998; 2(4):314.

Alberta Health Services
Calgary and Area

Description: **Cisapride**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Cisapride tablets	10 mg	10 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle until a liquid is formed.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle.
6. Transfer to final container and label.

Notes:

- Cisapride 10 mg tablets are available through Health Canada's Special Access Program.
- Vehicle Choices:
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Ora-Blend® or Ora-Blend SF®
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Pediatric Drug Formulations**, 5th edition, 2004.
2. **Am J Health-Syst Pharm** 1998; 55:1915-1920.

Alberta Health Services
Calgary and Area

Description: **Citric Acid**

Strength: 25% (0.25 g/mL)

Route: oral

Form: solution

Ingredients	Strength	Quantity
Citric acid USP powder, monohydrate		12.5 g
Sterile water		qs to 50 mL

Directions:

1. Weigh citric acid.
2. Add approximately 30 mL of sterile water. Stir well.
3. Make up to final volume of 50 mL with water into a graduated cylinder. Stir well.
4. Dispense the solution in bottles, WITHOUT RUBBER CAPS/LIDS.

Note:

- Bottle must **not** have rubber cap liners.

Stability: 2 months

Storage: Refrigerate
Amber Plastic Bottle

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database** - Citric Acid 25% oral solution recipe, 2007.

Alberta Health Services
Calgary and Area

Description: **Citric Acid/ Propylene Glycol**

Strength: 0.15%/ 1%

Route: oral

Form: solution

Ingredients	Strength	Quantity
Citric acid USP powder, monohydrate		150 mg
Propylene glycol liquid		1 mL
Distilled or Sterile water		qs to 100 mL

Directions:

1. Weigh citric acid, dissolve in minimal water.
2. Add 1 mL propylene glycol, mix well.
3. Add water to solution to final volume of 100 mL.

Stability: 7 days

Storage: Refrigerate
Amber **Glass** Bottle

Reference:

Am J of Health-Syst Pharm 1997; p2078.

Alberta Health Services
Calgary and Area

Description: **Clobazam**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Clobazam tablets	10 mg	5 tablets
Vehicle		qs to 50 mL

Directions:

1. Triturate tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Ora-Blend® or Ora-Blend SF®
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 14 days

Storage: Room Temperature: refrigeration may be suitable, but it may increase the viscosity of the suspension and make it harder to resuspend.
Amber **Glass** Bottle
Shake Well

Reference:

Woods DJ. **Formulation in Pharmacy Practice.** Dunedin, New Zealand. Available from: http://pharminfotech.co.nz/manual/Formulation/mixtures/index.htm - no formal stability testing conducted, the recipe is a suggested option.

Alberta Health Services
Calgary and Area

Description: **Clonazepam**

Strength: 0.1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Clonazepam tablets	2 mg	6 tablets
Vehicle		qs to 120 mL

Directions:

1. Grind up tablets in mortar.
2. QS to final quantity using vehicle.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- **Clonazepam solutions should not be stored in polyvinyl chloride (plastic) bottle or polypropylene (oral syringes) for longer than 24 hours.**

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber **Glass** Bottle
Shake Well

References:

1. **Pediatric Drug Formulations**, 5th edition, 2004.
2. **Am J of Health-Syst Pharm** 1996 Aug 15; 53:1944.
3. **International Journal of Pharmacy Compounding** 1997; 1:441.

Alberta Health Services
Calgary and Area

Description: **Clonidine**

Strength: 0.1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Clonidine tablets	0.2 mg	30 tablets
Distilled or Sterile water		2 mL
Simple syrup		qs to 60 mL

Directions:

1. Grind tablets in mortar to a fine powder.
2. Slowly add water and triturate to a fine paste.
3. Gradually add simple syrup
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Stability: 28 days

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

References:

1. **Trissel's Stability of Compounded Formulations**, 3rd edition, 2005, p113-115.
2. **Am J of Hospital Pharm** 1992; 49:122.

Alberta Health Services
Calgary and Area

Description: **Clopidogrel**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Clopidogrel tablets	75 mg	4 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 60 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Mix 30 mL of Ora-Plus® with 30 mL of Ora-Sweet®.
3. Add vehicle mixture in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Notes:

- Alternate Vehicle:
  - Ora-Blend®

Stability: 2 months

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Skillman KL et al., Stability of an extemporaneously prepared clopidogrel oral suspension. **Am J Health-Syst Pharm** 2010 (Apr); 67:559-561.

Alberta Health Services
Calgary and Area

Description: **Clozapine**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Clozapine tablets	100 mg	20 tablets
Ora-Plus®		50 mL
Ora-Sweet®		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Ensure formulation is prepared using the same clozapine brand the patient has been stabilized on.
- Brands are not interchangeable but patient specific.

Stability: 2 months

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 2010 (May/June); 14(3):243.
2. Walker SE, et al. Stability of clozapine stored in oral suspension vehicles at room temperature. **Can J Hosp Pharm** 2005; 58(5):279-284.

Alberta Health Services
Calgary and Area

Description: **Cocaine**

Strength: 5% (50 mg/mL)

Route: ophthalmic

Form solution

Ingredients	Strength	Quantity
Cocaine powder, USP		250 mg
Sterile water		5 mL

Directions:

Prepare in laminar flow hood using aseptic technique whenever possible.

1. Weigh required amount of cocaine powder and dissolve in sterile water.
2. Draw up the solution with a syringe and attach a 0.22-micron filter.
3. Transfer the solution through the filter into sterile ophthalmic dropper bottle.
4. Cap the ophthalmic dropper bottle aseptically and label.

Note:

- THIS FORMULATION IS NOT BASED ON LITERATURE, but from unpublished data, historical use or physician / pharmacy experience.

Stability: 72 hours

Storage: Refrigerate
Sterile Eye Dropper Bottle
Single Use (recommended)

Reference:

Reynolds LA, Closson RG. **Extemporaneous ophthalmic preparations.** Applied Therapeutics Inc: Vancouver, WA, USA; 1993.

Alberta Health Services
Calgary and Area

Description: **Cortisone Acetate**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Cortisone acetate tablet	100 mg	1 tablet
Polysorbate 80		0.5 mL
Base (see recipe)		qs to 100 mL

Directions:

1. Wet tablets with Polysorbate 80 and levigate to a fine paste
2. QS with base to final volume.

Note:

- Polysorbate 80 is used to wet the tablets. If not available, use a small amount of ethanol (ethyl alcohol).

Stability: 7 days

Storage: Refrigerate

References:

1. **Formulation in Pharmacy Practice**, 2nd edition, 2001.
2. **Guild of Hospital Pharmacists (UK)** 1978; p9.

Alberta Health Services
Calgary and Area

Description: **Cyanocobalamin** (Vitamin B12)

Strength: 1 mcg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Cyanocobalamin injection	100 mcg/mL	1 mL
Preserved Water HSC (see recipe)	0.1%	qs to 100 mL

Directions:

1. Dilute cyanocobalamin with preserved water HSC. This results in a solution of optimal pH 4 - 5.5.

Note:

- Cyanocobalamin injection may contain benzyl alcohol.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. Communication - **The Hospital for Sick Children**, Toronto, Manufacturing Pharmacist, Feb 2008.

Alberta Health Services
Calgary and Area

Description: **Cyclopentolate / Phenylephrine**

Strength: 0.2%/ 1%

Route: ophthalmic

Form: solution

Ingredients	Strength	Quantity
Cyclopentolate	1%	15 mL
Phenylephrine	2.5%	30 mL
Sodium Chloride injection	0.9%	30 mL

Directions:

1. Withdraw required amount of ingredients into individual syringes.
2. Combine the ingredients into a sterile container. Mix well.
3. Transfer desired amount into sterile eye dropper bottles.
4. Cap the eye dropper bottles aseptically and label.

Notes:

- Prepare in laminar flow hood whenever possible.
- Recipe should only be prepared when the commercial Cyclomydril 0.2%/ 1% ophthalmic solution (SAP product) is on backorder.

Stability: 1 month

Storage: Refrigerate
Protect from light
Eye Dropper Bottle (sterile)

References:

THIS FORMULATION IS NOT BASED ON LITERATURE, but is from unpublished data, historical use or physician/pharmacy experience.

Alberta Health Services
Calgary and Area

Description: **Cyclophosphamide**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Cyclophosphamide 2 gram premixed injection	20 mg/mL solution	25 mL
Simple syrup or Ora-Plus®		25 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs and CIVA best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Using appropriate equipment and devices.
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Use premixed cyclophosphamide 20 mg/mL bag available from Baxter.
3. Withdraw appropriate volume from premixed bag and mix with vehicle in 1:1 ratio in a graduated cylinder; 25 mL of cyclophosphamide solution mixed with 25 mL of Simple syrup OR Ora-Plus® for a final 50 mL volume.
4. Mix well and transfer to amber **glass** bottle.

Notes:

- Use premixed cyclophosphamide bags within 30 days to prepare oral suspension.
- Alternatively, reconstituted cyclophosphamide vials (instead of premixed bags) can be used to prepare suspension.
- Polypropylene amber oral syringe pre-pack shelf-life is 56 days refrigerated.

Stability: Refrigerate: 56 days
Room Temperature: 8 days in Simple syrup or 3 days in Ora-Plus®

Storage: REFRIGERATE (preferred)
Amber **Glass** Bottle
Shake Well
Cytotoxic

Reference:

Kennedy, R. et al, Stability of cyclophosphamide in extemporaneous oral suspensions. **Annals of Pharmacotherapy** 2010 (Feb); 44: 295-301.

Alberta Health Services
Calgary and Area

Description: **d-Biotin** (Vitamin H)

Strength: 0.5 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
d-Biotin powder, USP		250 mg
Preserved Water HSC (see recipe)	0.1%	qs to 500 mL

Directions:

1. Heat approximately 450 mL of preserved water, just to the boiling point, in a glass beaker.
2. Wearing gloves and a mask, weigh out the d-Biotin powder. Just before adding the powder to the heated water (have the weight checked by a technician).
3. Turn the heat off.
4. Place a magnetic stir rod in the glass beaker and add the weighed out powder. Turn on the magnetic stirrer.
5. Once dissolved and cooled to room temperature, transfer the mixture to a graduated cylinder and qs to final volume with preserved water.
6. Filter into an amber **glass** bottle using a filter paper and glass funnel. Seal bottle once done.

Notes:

- **d-biotin powder is moisture sensitive.**
- The powder must be weighed and added to the heated preserved water as quickly as possible to ensure the powder does not get contaminated.
- The longer the powder is exposed to air, the more moisture it will absorb thus affecting the weight to be measured out.

Stability: 30 days

Storage: Room Temperature
Amber **Glass** Bottle

Reference:

The Hospital for Sick Children - d-Biotin 0.5 mg/mL oral liquid recipe, 2007.

Alberta Health Services
Calgary and Area

Description: **Dantrolene**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Dantrolene capsules	25 mg	20 capsules
Citric acid USP powder, monohydrate		150 mg
Sterile or Distilled water		10 mL
Simple syrup		qs to 100 mL

Directions:

1. Empty capsule contents into a mortar.
2. Gradually levigate powder with simple syrup until a liquid is formed.
3. Dissolve citric acid powder in 10 mL of water. Add to powder/ simple syrup mixture.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Stability: 30 days

Storage: Room Temperature (preferred) or Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children Online Recipe Database** - Dantrolene 5 mg/mL oral suspension recipe, April 2007.
2. **Trissel's Stability of Compounded Formulations**, 3rd edition, 2005.
3. **International Journal of Pharmaceutical Compounding** 2006 (Jan/Feb); 10(1): 60.

Alberta Health Services
Calgary and Area

Description: **Dapsone**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Dapsone tablets	100 mg	2 tablets
Vehicle		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend®
  - Ora-Plus®: Ora-Sweet® (1:1)
- Preparation may slightly darken at room temperature.

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Annals of Pharmacotherapy** 2000 (July/Aug); 34:848-850.
2. **Pediatric Drug Formulations,** 5th edition, 2004, p83.

Alberta Health Services
Calgary and Area

Description: **Dexamethasone in Normal Saline (Neonatal Use)**

Strength: 1 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Dexamethasone phosphate injection	4 mg/mL	1 mL
Bacteriostatic sodium chloride	0.9%	3 mL

Directions:

1. Add ingredients into final container.
2. Combine well.

Notes:

- This recipe is preferred in neonates less than or equal to 28 days and ketogenic diet patients.
- Provides 0.825 mg/mL of dexamethasone base.

Stability: 28 days
Amber **Glass** Bottle

Storage: Refrigerate or Room Temperature

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004, p86.
2. Lugo RA, Nahata MC. Stability of diluted dexamethasone sodium phosphate injection at two temperatures. **Annals of Pharmacotherapy** 1994; 28:1018-1019.

Alberta Health Services
Calgary and Area

Description: **Dexamethasone**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Dexamethasone phosphate injection	4 mg/mL	10 mL
Ora-Blend®		qs to 40 mL

Directions:

1. Add ingredients into final container.
2. Combine well.

Notes:

- May also use Ora-Plus®: Ora-Sweet® (1:1).
- Consider Dexamethasone in Normal Saline recipe for neonates less than or equal to 28 days.
- Provides 0.825 mg/mL of dexamethasone base.

Stability: 91 days

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Can J Hosp Pharm 2001; 54:96.

Alberta Health Services
Calgary and Area

Description: **Diazepam**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Diazepam tablets	10 mg	10 tablets
Ethanol (ethyl alcohol) injection*	95%	4.75 mL
Methylcellulose powder	1500 cps	1 g
Parabens solution (see recipe)	10%	1 mL
Glycerin liquid		20 mL
Distilled or Sterile water		qs to 100 mL

Directions:

1. Triturate tablets to a fine powder in mortar.
2. Levigate with ethanol (ethyl alcohol).
3. Add methylcellulose and parabens.
4. Incorporate into glycerin.
5. QS to final volume with water.

Notes:

- * Modified from original recipe which employed 95% ethanol (ethyl alcohol)
- **To be prepared ONLY in the event that the 1 mg/mL commercial oral product is NOT available.**
- **Diazepam solutions should not be stored in polyvinyl chloride (plastic) bottle or polypropylene (oral syringes) for longer than 24 hours.**

Stability: 30 days

Storage: Refrigerate
Amber **Glass** Bottle
Protect From Light
Shake Well

Reference:

Formulation in Pharmacy Practice, 2nd edition, 2001 (*modified).

Alberta Health Services
Calgary and Area

Description: **Diazoxide**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Diazoxide capsules	100 mg	5 capsules
Methylcellulose powder	1500 cps	0.4 g
Parabens solution (see recipe)	10%	1 mL
Ethanol (ethyl alcohol) injection*	100%	6.7 mL
Glycerin liquid		40 mL
Distilled or Sterile water		qs to 100 mL

Directions:

1. Empty contents of capsule(s) into a mortar.
2. Levigate the powder from capsule(s) with about 10 mL of glycerin.
3. Hydrate the methylcellulose with approximately 25 mL of water and add to capsule mixture. Mix well.
4. Add the parabens, ethanol and remaining glycerin and mix well.
5. Pour into a graduated cylinder.
6. Rinse mortar and qs to final volume with water.
7. Transfer to final container and label.

Note:

- * Modified from original recipe which employed 95% ethanol (ethyl alcohol).

Stability: 7 days

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. **Formulation in Pharmacy Practice,** 2nd edition, 2001 (*modified).
2. **Pediatric Drug Formulations,** 5th edition, 2004.

Alberta Health Services
Calgary and Area

Description: **Dichloroacetic Acid**

Strength: 100 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Dichloroacetic acid powder, USP		1 g
Sodium chloride injection or irrigation	0.9%	qs to 10 mL

Directions:

1. Prepare the dose in laminar air flow hood.
2. Dissolve the powder in sodium chloride. Stir well until dissolved.
3. QS to final volume in glass beaker.
4. Draw solution into syringe and filter through 0.22 micron filter into dispensing bottle.
5. Close bottle in hood.

Stability: 2 months unopened
7 days once opened or 24 hours if patient is on sterile feeds

Storage: Refrigerate; DO NOT FREEZE

References:

1. Personal communication with **TCI America**, May 13, 1999. ACH Drug Information Pharmacy.
2. **The Hospital for Sick Children,** Dichloroacetic Acid Sodium Salt 100 mg/mL oral solution recipe, faxed May 12, 2011.

Alberta Health Services
Calgary and Area

Description: **Diclofenac**

Strength: 10 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Diclofenac EC (enteric coated) tablets	50 mg	20 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to100 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle until a liquid is formed.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle.
6. Transfer to final container and label.

Notes:

- Alternate Vehicle:
  - Ora-Blend®
- Diclofenac powder can be used instead, since the enteric coating of the tablets can make it difficult to prepare the suspension.

Stability: 93 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect From Light
Shake Well

References:

1. Formulations: Diclofenac sodium 10-mg/mL oral suspension**. International Journal of Pharmaceutical Compounding** 2011 (Feb); 15(1):64.
2. Donnelly RF, et al. Stability of diclofenac sodium oral suspension packaged in amber polyvinyl chloride bottles. **Can J Hosp Pharm** 2010; 63(1):25-30.

Alberta Health Services
Calgary and Area

Description: **Digoxin**

Strength: 0.05 mg/mL (50 mcg/mL)

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Digoxin injection	0.25 mg/mL	2 mL
Sodium chloride injection	0.9%	8 mL

Directions:

1. Combine ingredients in final container.
2. Mix well

Notes:

- For use in emergency situations, if the commercial 50 mcg/mL oral elixir is not available. **ALL CLINICIANS and PATIENTS MUST BE MADE AWARE OF ANY SWITCH BETWEEN FORMULATIONS, SO THEY MAY EMPLOY A HEIGHTENED LEVEL OF VIGILANCE/SURVEILLANCE FOR EITHER THERAPEUTIC FAILURES OR ADVERSE DRUG REACTIONS.**
- Use a filter needle when drawing from glass ampoule.
- Non-medicinal ingredients: ethyl alcohol 2%, propylene glycol 8%, citric acid 0.016%, sodium phosphate 0.06%, sodium chloride 0.72%
- THIS FORMULTION IS NOT BASED ON LITERATURE, but is from unpublished data, historical use or physician/pharmacy experience. Extrapolated from indicated references which determined the stability of digoxin under varying concentrations and dilutions.

Stability: 14 days

Storage: Refrigerate
Amber **Glass** Bottle

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. Trissel's LA. **Handbook on Injectable Drugs.** 15th edition. Bethesda MD: American Society of Health-System Pharmacists Inc.; 2009.
3. **USP** 34 NF 29, 2nd Volume 1. **Chapter 795**: Pharmaceutical compounding – Nonsterile preparations. Rockville, MD, USA: United States Pharmacopeial Convention; 2010.

Alberta Health Services
Calgary and Area

Description: **Diltiazem**

Strength: 12 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Diltiazem tablets	30 mg	12 tablets
Vehicle		qs to 30 mL

Directions:

1. Wet tablets with a small volume of purified water then crush in mortar to a paste.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- DO NOT use SUSTAINED-RELEASE tablets. May substitute an appropriate quantity of higher strength diltiazem tablets to reduce tablet excipient in the suspension.
- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- **APO brand works best; DO NOT use Novo brand.**

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light
SHAKE WELL

References:

1. **International Journal of Pharmaceutical Compounding** 1997; 1(5):323.
2. **Pediatric Drug Formulations**, 5th edition, 2004, p90.
3. **Am J of Health-Syst Pharm** 1996; p2184.

Alberta Health Services
Calgary and Area

Description: **Diltiazem in PLO Gel**

Strength: 2% (20 mg/mL)

Route: topical

Form: gel

Ingredients	Strength	Quantity
Diltiazem tablets	30 mg	67 tablets
PLO gel (Lecithin Organogel Base)		qs to100 g

Directions:

1. Grind diltiazem tablets in a coffee grinder to a fine powder.
2. Gradually levigate small amounts of diltiazem powder with PLO gel (Diffusimax) until smooth.
3. Transfer to final container and label.

Notes:

- See MSDS sheet for diltiazem:
  - May cause irritation to eyes, skin, and upon inhalation.
  - The use of an approved dust mask is recommended.
  - Wear rubber gloves, safety glasses, and protect exposed skin.
- THIS FORMULATION IS NOT BASED ON LITERATURE, but is from unpublished data, historical use or physician / pharmacist experience.

Stability: 14 days

Storage: Room Temperature
Ointment Jar

References:

1. Formulations: Diltiazem 2% in Pluronic Lecithin Organogel. **International Journal of Pharmaceutical Compounding** 2004; (8)4:295.
2. Dr. Sherbaniuk's recipe from Edmonton Zone.

Alberta Health Services
Calgary and Area

Description: **Dinoprostone in Phosphate Buffered Saline** (Prostin E_2)

Strength: 50 mcg/mL (see note below)

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Dinoprostone tablet	500 mcg	1 tablet
Phosphate buffered saline solution		10 mL

Directions:

1. Provide a 50 mL oral prescription bottle with 10 mL phosphate buffered solution and label appropriately with “Shake Well, Keep Refrigerated”, “oral phosphate buffer solution” and “mixing/ expiry” times.
2. Place labeled oral phosphate buffered saline, 1 x 500 mcg dinoprostone tablet and appropriate size “take-home pack” oral dosing syringe in a sealable bag.

Note:

- The 50 mcg/mL strength was obtained by modifying the recipe strengths of the reference.

Stability: Expires 12 hours after mixing.

Storage: Must be refrigerated; not stable at room temperature.

Reference:

Can J Hosp Pharm 1983; 36(3):66 (for 10 - 20 mcg/mL concentration).

Alberta Health Services
Calgary and Area

Description: **Dipyridamole**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Dipyridamole tablets	50 mg	24 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children, Online Recipe Database -** Dipyridamole 10 mg/mL oral suspension recipe, April 2007.
2. **International Journal of Pharmacy Compounding** 1997; 1:441.
3. **Am J of Health-System Pharm** 1996; 53:2179.

Alberta Health Services
Calgary and Area

Description: **Disopyramide** (Rhythmodan®)

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Disopyramide capsules	100 mg	10 capsules
Cherry syrup		qs to 100 mL

Directions:

1. Empty capsules into glass mortar and triturate to a fine powder.
2. Wet powder with a minimal amount of vehicle and levigate to form a viscous, but smooth and uniform paste.
3. Continue adding vehicle, geometrically, mixing well after each addition.
4. Transfer to a glass conical graduate.
5. Rinse mortar with vehicle, adding rinse to graduate, until almost final volume.
6. QS with vehicle to final volume. Stir well.

Note:

- Do not use extended release capsules.

Stability: 28 days
Amber **Glass** Bottle

Storage: Room Temperature
Shake Well

References:

1. CSHP, **Extemporaneous Oral Liquid Dosage Formulations**, 1998: p14.
2. **American Journal of Hospital Pharmacy** 1982, 39;309-310.
3. **Pediatric Drug Formulations**. 2004; (5): 99.

Alberta Health Services
Calgary and Area

Description: **Dolasetron**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Dolasetron tablets	50 mg	12 tablets
Ora-Blend®		qs to 60 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 90 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health System Pharm 2003; 60(1):2242.

Alberta Health Services
Calgary and Area

Description: **Domperidone**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Domperidone tablets	10 mg	10 tablets
Ora-Blend®		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Journal of Informed Pharmacotherapy 2002; 8:100.

Alberta Health Services
Calgary and Area

Description: **Doxycycline**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Doxycycline capsules	100 mg	5 capsules
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to 100 mL

Directions:

1. Empty contents of capsules and combine with vehicle.
2. QS to required volume
3. Shake well.

Note:

- Instruct patient not to lie down for at least 30 minutes after administration (similar to oral tablet administration recommendations)

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake well

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Enalapril**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Enalapril tablets	10 mg	20 tablets
Vehicle		qs to 200 mL

Directions:

1. Triturate tablets in mortar to a fine paste.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Plus®: Ora-Sweet® (1:1) or Ora-Blend®
  - Ora-Plus®: Ora-Sweet SF® (1:1) or Ora-Blend SF®
  - Cherry Syrup: Ora-Plus® (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. **Am J of Health-System Pharm** 1998 (June 1); 55:1155.
2. **Am J of Health-System Pharm** 1998 (Sept 15); 55:1917.
3. **Pediatric Drug Formulations**, 5th edition, 2004, p101.

Alberta Health Services
Calgary and Area

Description: **Ethacrynic Acid**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Ethacrynic acid tablets	50 mg	1 tablet
Distilled or Sterile water (to soak tablets)		
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to 50 mL

Directions:

1. Place the tablet in a mortar.
2. Wet tablet with a small amount of water and soak for 5 minutes.
3. Triturate until smooth.
4. Levigate with HSC vehicle.
5. Pour into a graduated cylinder.
6. Rinse mortar and qs to volume with HSC vehicle.
7. Transfer to final container and label.

Stability: 30 days

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Foldvari M. Pharmaceutical compounding: something old, something new. **Hosp Pharm Pract** 1994 (Nov/Dec); 7.

Alberta Health Services
Calgary and Area

Description: **Famotidine**

Strength: 8 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Famotidine tablets	40 mg	12 tablets
Distilled or Sterile water		~ 5 - 10 mL
Vehicle		qs to 60 mL

Directions:

1. Use enough water to sufficiently dissolve tablets.
2. Triturate tablets in mortar to a fine paste.
3. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Notes:

- Vehicle Choice:
  - Ora-Plus®: Ora-Sweet® (1:1): 95 days at room temperature
  - Ora-Blend®: 95 days at room temperature
  - Cherry Syrup: 20 days refrigerated or 15 days at room temperature

Stability: Dependant on diluent (see Notes Section)

Storage: Refrigerate or Room Temperature
Amber **Glass** Bottle
Shake Well

References:

1. **Am J of Hosp Pharm** 1993; 50: 691.
2. **Am J of Health-Syst Pharm** 2000; 57: 1342.
3. **Pediatric Drug Formulations**, 5th edition, 2004, p111.

Alberta Health Services
Calgary and Area

Description: **Flecainide**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Flecainide acetate tablets	100 mg	24 tablets
Vehicle		qs to 120 mL

Directions:

1. Triturate tablets in mortar to a fine paste.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature.
Amber Plastic Bottle
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 1997 (March/April); 1(2):103.
2. **Pediatric Drug Formulations,** 3rd edition, 1997, p43.
3. **Am J of Health-System Pharm** 1996; 53: 2175.

Alberta Health Services
Calgary and Area

Description: **Flucytosine**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Flucytosine capsules	500 mg	6 capsules
Ora-Blend SF®		qs to 60 mL

Directions:

1. Empty contents of capsules.
2. Combine with vehicle.
3. QS to required volume.
4. Shake well.

Notes:

- Alternate Vehicles:
  - Ora- Plus®: Ora- Sweet SF® (1:1)
  - Ora-Plus®: Strawberry Syrup (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- **Flucytosine is a Special Access product**

Stability: 90 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-System Pharm** 2002; 59:1853.
2. **International Journal of Pharmacy Compounding** 2004; 8:134.

Alberta Health Services
Calgary and Area

Description: **Folic Acid LOW STRENGTH**

Strength: 50 mcg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Folic acid tablets	5 mg	1 tablet
Methylparaben powder		200 mg
Propylparaben powder		20 mg
Sodium hydroxide	0.1 N	qs to pH 8 - 8.5
Distilled or Sterile water		qs to 100 mL

Directions:

1. Weigh and/or measure each ingredient accurately.
2. Heat 90 mL of water almost to boiling.
3. Dissolve the parabens in the heated water and cool to room temperature.
4. Dissolve the folic acid in the solution.
5. Adjust the pH to the range of 8 - 8.5 (use pH paper) by adding the sodium hydroxide solution dropwise.
6. QS to final volume with water and mix well.

Notes:

- References provide a 1 mg/mL formulation; however, this recipe has been modified to provide a 50 mcg/mL strength.
- Alternatively, may use folic acid powder instead of tablets to prepare recipe.
- A preservative free preparation can be prepared (without the parabens) and assigned an expiry date of 7 days.
- If sodium hydroxide is not used, folic acid may be in suspension and mixtures should be shaken prior to administration.

Stability: 30 days

Storage: Refrigerated or Room Temperature
Amber **Glass** Bottle

References:

1. **International Journal of Pharmaceutical Compounding** May/June 2007; 11(3):244**.**
2. **Trissel's Stability of Compounded Formulations** 4th edition, 2009: 249.
3. Woods DJ. **Formulation in Pharmacy Practice**. 2nd edition, Dunedin, New Zealand.

Alberta Health Services
Calgary and Area

Description: **Folic Acid**

Strength: 1 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Folic acid tablets	5 mg	20 tablets
Methylparaben powder		200 mg
Propylparaben powder		20 mg
Sodium hydroxide	0.1 N	qs to pH 8 - 8.5
Distilled or Sterile water		qs to 100 mL

Directions:

1. Weigh and/or measure each ingredient accurately.
2. Heat 90 mL of water almost to boiling.
3. Dissolve the parabens in the heated water and cool to room temperature.
4. Dissolve the folic acid in the solution.
5. Adjust the pH to the range of 8 - 8.5 (use pH paper) by adding the sodium hydroxide solution dropwise.
6. QS to final volume with water and mix well.

Notes:

- Alternatively, may use folic acid powder instead of tablets to prepare recipe.
- A preservative free preparation can be prepared (without the parabens) and assigned an expiry date of 7 days.
- If sodium hydroxide is not used, folic acid may be in suspension and mixtures should be shaken prior to administration.

Stability: 30 days

Storage: Refrigerated or Room Temperature
Amber **Glass** Bottle

References:

1. **International Journal of Pharmaceutical Compounding** May/June 2007; 11(3):244**.**
2. **Trissel's Stability of Compounded Formulations** 4th edition, 2009: 249.
3. Woods DJ. **Formulation in Pharmacy Practice**. 2nd edition, Dunedin, New Zealand.

Alberta Health Services
Calgary and Area

Description: **Gabapentin**

Strength: 100 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Gabapentin capsules	400 mg	15 capsules
Ora-Plus®: Ora-Sweet® (1:1)		qs to 60 mL

Directions:

1. Accurately calculate and/or measure each ingredient for the total amount to be prepared.
2. Empty the capsules and pulverize the contents into a fine powder in a mortar. It is extremely important to grind at least 10 minutes (longer for larger batches).
3. Add the vehicle in small portions to the powder and mix to form a smooth paste.
4. Add the vehicle in portions until final volume and mix well.
5. Package and label.

Notes:

- Alternate Vehicle:
  - Ora-Blend®
- Anecdotal Information**:**
  - Novo-brand capsules, when finely ground, lessen crystallization risk.
  - **Crystallization risk increases if coarsely ground or if refrigerated.**
  - Room temperature storage can result in a colour change from pink-white to light brownish yellow

Stability: Room Temperature: 56 days
DO NOT REFRIGERATE

Storage: Amber Plastic Bottle (package in tight, light-resistant containers)
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 2006; 10(6):456.
2. **Pediatr Neurol** 1999; 20(3):195-197.
3. **The Hospital for Sick Children Online Recipe Database -** Gabapentin 100 mg/mL oral suspension recipe, April 2007.
4. Email communication from **The Hospital for Sick Children** Compounding Pharmacist, Aug 18, 2008.

Alberta Health Services
Calgary and Area

Description: **Ganciclovir**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Ganciclovir injection	500 mg	5 vials
Sterile water		15 mL
Hydrogen peroxide topical solution	3%	1 mL
Ora-Sweet®		qs to 100 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Reconstitute each ganciclovir 500 mg vial with 3 mL of sterile water. Mix well until dissolved.
3. Withdraw the entire contents of each vial and pour into a **glass** bottle.
4. Add 50% of the total quantity of Ora-Sweet® required and mix well.
5. Add the hydrogen peroxide. Mix well.
6. QS to final volume with Ora-Sweet® and mix well.

Stability: 28 days

Storage: Room Temperature
Amber **Glass** Bottle
Shake Well
Cytotoxic

Reference:

Jew RK. Mullen RJ. Soo-Hoo W. **Extemporaneous Formulations**. The Children's Hospital of Philadelphia. Bethesda. MD. American Society of Health-System Pharmacists; 2003.

Alberta Health Services
Calgary and Area

Description: **Glycerin**

Strength: 50% v/v (or 60% w/v = 0.6 g/mL of final suspension
specific gravity of glycerin =1.21)

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Glycerin liquid		62.5 mL
Distilled or Sterile water		qs to 125 mL

Directions:

1. Combine ingredients and mix well.

Notes:

- As per RGH pharmacy, If need to calculate volume required when dose ordered as grams:
    - Usual dose of glycerin is 1g/kg as 50% solution for ophthalmology.
    - To determine mL of glycerin = dose (g) divided by 1.21 +___mL. Then make a 50% v/v solution using sterile water for injection. This gives a 60% w/v final solution.

Stability: 3 months

Storage: Refrigerate

Reference:

Foothills Hospital Pharmacy - anecdotal.

Alberta Health Services
Calgary and Area

Description: **Granisetron**

Strength: 0.2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Granisetron tablets	1 mg	12 tablets
Distilled or Sterile water		30 mL
Cherry syrup		qs to 60 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 14 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 1997; 54:1404.

Alberta Health Services
Calgary and Area

Description: **HSC Mouthwash for Pain**
(HSC = Hospital for Sick Children, Toronto)

Route: topical

Form: mouthwash solution

Ingredients	Strength	Quantity
Sugar-free Kool-Aid crystals (Cherry flavour)		4.5 g (1 package)
Distilled or Sterile water		qs to 1500 mL
Lidocaine Viscous solution	2%	2000 mL
Sugar-free Kool-Aid solution (See Directions section steps 1 and 2)		qs to 3400 mL

Directions:

1. Empty the contents of Kool-Aid powder packet into a 3000 mL graduated measure.
2. Add approximately 500 mL of water to the powder and stir well until dissolved.
3. Once dissolved, make up the final volume with water to 1500 mL and set aside.
4. Measure 2000 mL of lidocaine viscous 2% in a 5000 mL graduated measure.
5. Add enough Kool-Aid solution to the lidocaine viscous to make up to the volume of 3400 mL. Stir well until mixed.
6. Pour mouthwash into the appropriate size bottles.
7. Label and affix shrink seals.

Stability: 2 months

Storage: Room Temperature

Reference:

The Hospital for Sick Children, Online Recipe Database - SickKids Mouthwash for Pain recipe, April 2007.

Alberta Health Services
Calgary and Area

Description: **Hydralazine**

Strength: 4 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Hydralazine injection	20 mg/mL vial	20 mL
Propylene glycol liquid		8 mL
Distilled or Sterile water		qs to 100 mL

Directions:

1. Combine ingredients.
2. Mix well.

Notes:

- NOT FOR USE in neonates less than or equal to 28 days corrected age.
- For neonates greater than 28 days, check with physician regarding propylene glycol component.

Label: Contains propylene glycol

Stability: 30 days

Storage: Refrigerate

Reference:

Pediatric Drug Formulations 3rd edition, 1997, p53.

Alberta Health Services
Calgary and Area

Description: **Hydrochlorothiazide**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Hydrochlorothiazide tablets	25 mg	20 tablets
Ora-Blend®		qs to 100 mL

Directions:

1. Crush tablets in mortar to make a fine powder.
2. If needed, soak tablets is a small amount of vehicle.
3. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Notes:

- Alternate Vehicles:
    - Ora-Plus®: Ora-Sweet® (1:1)
    - Ora-Plus®: Ora-Sweet SF® (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children, Online Recipe Database** - Hydrochlorothiazide 5 mg/mL oral suspension recipe, May 2008.
2. **Am J Health-Syst Pharm** 1996; 53:2304-2309.
3. **International Journal of Pharmaceutical Compounding** 1997, 1(3):183.

Alberta Health Services
Calgary and Area

Description: **Hydrocortisone**

Strength: 1 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Hydrocortisone tablets	10 mg	10 tablets
Ora-Blend®		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicle:
  - Ora-Plus®: Ora-Sweet® (1:1)
- Alternatively, hydrocortisone powder can be used instead of hydrocortisone tablets.

Stability: 60 days

Storage: Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. **J Inform Pharmacother** 2003; 13:100-110.
2. **The Hospital for Sick Children, Online Recipe Database -** Hydrocortisone 1 mg/mL oral suspension recipe, 2007.

Alberta Health Services
Calgary and Area

Description: **Hydrocortisone 1% in Dermabase**

Strength:

Route: topical

Form cream/ ointment

Ingredients	Strength	Quantity
Hydrocortisone powder, USP		1 g
Dermatological base		qs to 100 g

Directions:

1. Levigate hydrocortisone powder with a small amount of dermatological base.
2. Gradually add the rest of the dermatological base and mix thoroughly.
3. Transfer to final container and label.

Note:

- To be prepared ONLY in the event that the commercial oral product is NOT available.

Label: For External Use Only

Stability: 6 months

Storage: Room Temperature
Ointment Jar

References:

1. **MICROMEDEX** (R) Healthcare Series [database on the Internet]. Greenwood Village (COL): Thomson Healthcare. c.1974 - [cited July 8, 2004]. Available from: www.mdx.cha.ab.ca
2. **USP** 34 NF 29, 2nd Volume 1. **Chapter 795**: Pharmaceutical Compounding - Nonsterile preparations. Rockville, MD, USA: United States Pharmacopeial Convention; 2010.

Alberta Health Services
Calgary and Area

Description: **Hydrocortisone 1%/ Nystatin Cream (1:1)**

Strength:

Route: topical

Form cream

Ingredients	Strength	Quantity
Hydrocortisone cream	1%	15 g
Nystatin cream	100, 000 units/g	15 g

Directions:

1. Mix creams thoroughly to make a smooth and homogenous mixture.
2. Transfer to final container and label.

Label: For External Use Only

Stability: 6 months

Storage: Room Temperature
Ointment Jar

References:

1. **USP** 34 NF 29, 2nd Volume 1. **Chapter 795**: Pharmaceutical Compounding - Nonsterile preparations. Rockville, MD, USA: United States Pharmacopeial Convention; 2010
2. THIS FORMULATION IS NOT BASED ON LITERATURE, but from unpublished data, historical use or physician/pharmacy experience.

Alberta Health Services
Calgary and Area

Description: **Hydroxychloroquine**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Hydroxychloroquine sulfate tablets	200 mg	15 tablets
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to120 mL

Directions:

1. Remove imprint on tablet with towel moistened with water (to prevent black floaters or flecks in suspension).
2. Crush tablets in mortar to a fine powder.
3. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Stability: 30 days

Storage: Refrigerate
Amber **Glass** Bottle
Protect from Light
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children**, Toronto - April, 1997.

Alberta Health Services
Calgary and Area

Description: **Hydroxyurea**

Strength: 100 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Hydroxyurea capsules	500 mg	20 capsules
Distilled or Sterile water	at ROOM temp	50 mL
Simple syrup		qs to 100 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
    - Biohazard hood and appropriate personnel.
    - Wear appropriate clothing when preparing (gloves, mask, and gown).
    - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Empty contents of capsules into a mortar and triturate to a fine powder.
3. Gradually levigate powder with water until a liquid is formed. Stir solution well; recommend using a magnetic stirrer.
4. Filter the solution (see notes section) and pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with simple syrup. Stir well.
6. Transfer to final container and label.

Notes:

- Filtration is recommended as per reference to remove insoluble excipients.
- The solution will crystallize if inadvertently refrigerated.

Stability: 30 days

Storage: ROOM Temperature; DO NOT Refrigerate
Amber Plastic Bottle
Shake Well
Cytotoxic

References:

1. **J Pediatr Hematol Oncol** 2004; 26(3):179-184.
2. Written communication from **Sainte Justine Hospital Pharmacy** Department to Alberta Children's Hospital Drug Information Pharmacist; December 12, 2011.
3. **Pediatric Drug Formulations**. 5th edition, 2004.

Alberta Health Services
Calgary and Area

Description: **Hyoscine**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Buscopan® injection or Buscopan® tablets	20 mg/mL 10 mg	10 mL 20 tablets
Parabens solution (see recipe)	10%	1 mL
Simple syrup		40 mL
Distilled or Sterile water		qs to 100 mL

Directions:

If using injection:

1. Using a syringe and filter needle, withdraw required amount of hyoscine from ampoules.
2. Remove filter needle and pour into a graduated cylinder.
3. Combine ingredients.
4. Mix well.

If using tablets:

1. Crush tablets in mortar to a fine powder.
2. Add simple syrup vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduate cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. Add parabens and qs to final volume with water. Stir well.
6. Transfer to final container and label.

Note:

- Injection (preferred) ***or*** tablets can be used.

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Formulation in Pharmacy Practice, 2nd edition, 2001.

Alberta Health Services
Calgary and Area

Description: **Imipramine**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Imipramine tablets	25 mg	10 tablets
Wild Cherry syrup (see notes section)		qs to 50 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Wild Cherry Syrup: prepared by adding 0.2 mL of wild cherry flavoring to simple syrup qs to 100 mL
- Alternate Vehicle:
    - Cherry Syrup

Stability: 60 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Indinavir**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Indinavir capsule	400 mg	1 capsule
Distilled or Sterile water		qs to 20 mL

Directions:
1. Empty contents of capsule.
2. Add water then triturate.
3. Heat solution until dissolved (microwave for 10 -15 seconds).

Stability: 24 hours

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:
Anecdotal reference.

Alberta Health Services
Calgary and Area

Description: **Indomethacin**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Indomethacin capsules	50 mg	10 capsules
Simple syrup		qs to 100 mL

Directions:

1. Empty contents of capsules.
2. Combine with vehicle.
3. QS to required volume.

Stability: 60 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **Pharmacy Practice** 1998; 14(2):63.

Alberta Health Services
Calgary and Area

Description: **Ketoconazole**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Ketoconazole tablets	200 mg	12 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle choice:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Sweet®: Ora-Plus® (1:1)
  - Ora-Sweet SF®: Ora-Plus® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect From Light

Reference:

Am J of Health-Syst Pharm 1996; 53:2073-2078.

Alberta Health Services
Calgary and Area

Description: **L-Arginine Base**

Strength: 100 mg/mL (provides 0.57 mmol/mL)

Route: oral

Form: liquid

Ingredients	Strength	Quantity
L-Arginine powder, USP		50 g
Citric acid powder, USP	anhydrous ***OR*** hydrous	18.15 g ***OR*** 19.85 g
Distilled or Sterile water		qs to 500 mL

Directions:

1. Combine ingredients.
2. Mix well.

Notes:

- **For ORAL use in Urea Cycle Disorders – consult Metabolic Specialist or Metabolic Protocols.** L-arginine hydrochloride recipe can be used, but for short-term ORAL use only.
- **This formulation is NOT RECOMMENDED for ORAL use in metabolic alkalosis patients and in neonates with resistant hypochloremia or necrotizing enterocolitis; L-arginine hydrochloride recipe is preferred.**
- Citric acid powder comes in anhydrous or hydrous form and will affect the amount added to the recipe.
- Although a 200 mg/mL recipe is available, the pH is too alkaline (pH of 11.49). The citric acid powder lowers the pH to an acceptable level of 7.3 - 7.5.

Stability: 1 month

Storage: Refrigerate

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. Alberta Children's Hospital Pharmacy - anecdotal.

Alberta Health Services
Calgary and Area

Description: **L-Arginine Hydrochloride**

Strength: 100 mg/mL (provides 0.475 mmol/mL of chloride)

Route: oral

Form: liquid

Ingredients	Strength	Quantity
L-Arginine hydrochloride powder, USP		10 g
Preserved Water HSC (see recipe)	0.1%	qs to 100 mL

Directions:

1. Wear gloves and a mask and weigh out the l-arginine hydrochloride powder and transfer to a graduated cylinder.
2. QS to final volume with preserved water. Stir well until dissolved (this may take about 5 to 15 minutes).
3. Transfer to final container and label.

Notes:

- 100 mg = 0.475 mmol chloride = 0.475 mEq chloride.
- **This formulation is for ORAL USE in metabolic alkalosis patients and in neonates with resistant hypochloremia, or necrotizing enterocolitis.**
- Although this recipe can be used, but for short-term ORAL use only **and is NOT recommended for ORAL use in Urea Cycle Disorders, L-arginine BASE recipe is preferred.**
- THIS FORMULATION IS NOT BASED ON LITERATURE, but is from unpublished data, historical use or physician/pharmacy experience.

Stability: 30 days

Storage: Refrigerate

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children,** Toronto - L-arginine 163 mg/mL (l-arginine HCl 100 mg/mL and l-arginine base 80 mg/mL) oral solution recipe, Faxed May 2006.
3. MSDS sheet from Galenova for l-arginine HCl powder, May 31 2010.

Alberta Health Services
Calgary and Area

Description: **L-Leucine**

Strength: 20 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
L-Leucine powder, USP		1000 mg
Preserved Water HSC (see recipe)	0.1%	qs to 50 mL

Directions:

1. Wear gloves and a mask and weigh out the l-leucine powder on the electronic balance; add directly into a graduated cylinder.
2. Add 45 mL of preserved water to the graduate. Stir well until powder is dissolved. If stirred immediately, the solution does not need to be heated.
3. L-leucine powder is difficult to dissolve; may take up to 15 minutes.
4. QS to final volume of 50 mL with preserved water. Stir well.
5. Filter the solution through the fluted filter paper directly into the amber bottle.

Stability: 60 days

Storage: Refrigerate
Amber **Glass** Bottle

Reference:

The Hospital for Sick Children, Toronto - Faxed Recipe May 2012.

Alberta Health Services
Calgary and Area

Description: **L-Isoleucine**

Strength: 10 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
L-Isoleucine powder, USP		500 mg
Preserved Water HSC (see recipe)	0.1%	qs to 50 mL

Directions:

1. Wear gloves and a mask and weigh out the l-isoleucine powder on the electronic balance; add directly into a graduated cylinder.
2. Add 45 mL of preserved water to the graduate. Stir well until powder is dissolved. If stirred immediately, the solution does not need to be heated.
3. L-isoleucine powder is difficult to dissolve; may take up to 15 minutes.
4. QS to final volume of 50 mL with preserved water. Stir well.
5. Filter the solution through the fluted filter paper directly into the amber bottle.

Stability: 6 weeks

Storage: Refrigerate
Amber **Glass** Bottle

References:

1. Saskatchewan Drug Information Service, Oct 2010.
2. **The Hospital for Sick Children,** Toronto - Faxed Recipe Oct 2010.

Alberta Health Services
Calgary and Area

Description: **L-Valine**

Strength: 10 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
L-Valine powder, USP		500 mg
Preserved Water HSC (see recipe)	0.1%	qs to 50 mL

Directions:

1. Wear gloves and a mask and weigh out the l-valine powder on the electronic balance; add directly into a graduated cylinder.
2. Add 45 mL of preserved water to the graduate. Stir well until powder is dissolved. If stirred immediately, the solution does not need to be heated.
3. L-valine powder is difficult to dissolve; may take up to 15 minutes.
4. QS to final volume of 50 mL with preserved water. Stir well.
5. Filter the solution through the fluted filter paper directly into the amber bottle.

Stability: 6 weeks

Storage: Refrigerate
Amber **Glass** Bottle

References:

1. Saskatchewan Drug Information Service, Oct 2010.
2. **The Hospital for Sick Children,** Toronto - Faxed Recipe Oct 2010.

Alberta Health Services
Calgary and Area

Description: **L.A.T.**

Route: topical

Form: gel

Ingredients	Strength	Quantity
Lidocaine HCl powder		16.04 g
Tetracaine HCl powder		2004 mg
Sodium benzoate powder		400 mg
Sodium metabisulfite powder		400 mg
Epinephrine bitartrate		200 mg
Methylcellulose 2% powder		24.04 g
Sterile water		

Directions:

1. Gather ingredients and supplies.
2. Rinse mortar, pestle, graduate cylinder and Pyrex container with alcohol to sterilize
3. Weigh powders outside the laminar flow hood. After weighing powders, each weigh boat should be covered with another weigh boat to prevent powders being dislodged or foreign material falling into the weigh boats. Note: See the addendum following this recipe for instructions on weighing out the epinephrine powder.
4. Outside the hood heat 400 mL of sterile water for irrigation in a sterile beaker on pharmacy hot plate. Water should come to a boil. When you are ready for it, ask for a co-worker to carefully bring the beaker to laminar flow hood window for you.
5. In laminar flow hood assemble ingredients.
6. Dissolve each of the powders with a minimal amount of sterile water for irrigation. Add solution directly to the weigh boat. Recall the final amount is 100 mL including epi solution, (10cc) therefore be careful with amount of fluid used! Tetracaine may require more fluid than the other powders; use previously dissolved powder to aid (i.e. tip weigh boat with dissolved NA Benzoate, etc. into Tetracaine weigh boat).
7. Once all powders are dissolved draw into 2 sterile 60 mL syringes. **AVOID ANY SPILLAGE – IF YOU SPILL – START ENTIRE PROCEDURE AGAIN.**
8. Add 10 mL of the epinephrine solution to the solution in the 60 Ml syringe. (Add 5 mL into each 60 mL syringe.
9. Using graduates on the syringes qs to 50 mL with sterile water for irrigation. **Recall: total volume of both syringes should be 100 mL.** This will include the 10 mL from epinephrine.
10. Set the 2 to 60 mL syringes and epinephrine syringe (total of 100 mL of solution) inside a brown bag and set aside. Re-clean hood.

LAT topical gel continued

11. Set up in the hood the methylcellulose 2% powder, large mortar, pestle, and your 7 empty 60 mL syringes. In the hood, proceed with dissolving the methylcellulose 2% powder with the boiled water using the large mortar and pestle. Use alcoholized graduate to measure 300 mL boiling water. Begin with approximately 50 mL of water and mix well with the pestle. Add the remaining 250 mL of boiling water and mix thoroughly. Total volume of methylcellulose solution will be approximately 300 mL.
12. Allow the methylcellulose solution to cool to warm, but do not wait too long, this gels very quickly.
13. When the methylcellulose is warm, **BUT NOT HOT**, add the 100 mL of solution from the former 2 - 60 mL syringes If mixture is hot, it will destroy epinephrine component. Mix until uniform (total volume is 400 mL).
14. Pour or draw-up gel into 7 tip capped- 60 mL syringes.

To make 1.5 mL LAT Syringes:

15. Transfer 1.5 mL of gel into each 3 mL amber syringe using the white transfer device provided. Tip cap. (Be sure that there are no large air pockets left in doses.).
16. Place 10 syringes into clear zip lock bag and label with directions. Also label with “Keep in the refrigerator” auxiliary label. Do not individually bag each syringe.

Addendum:

Epinephrine bitartrate 200 mg per 10 mL sterile water

1 Retrieve epinephrine bitartrate from fridge
2 Proceed with weigh boat, sterile water for injection 10 mL, sterile 10 mL syringe needle, label, gloves and mask to analytical scale.
3 Glove and Mask
4 Weigh 200 mg on the analytical scale; dissolve with 10-mL sterile water for injection.
5. Draw the solution into a 10 mL sterile syringe and label. Put into brown bag.
6. Replace epinephrine bitartrate within the fridge.

Stability: 60 days

Alberta Health Services
Calgary and Area

Description: **Labetalol**

Strength: 40 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Labetalol tablets	200 mg	24 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature.
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1996; 53: p2306.
2. **International Journal of Pharmaceutical Compounding** 1997; 1(3):179.
3. **Pediatric Drug Formulations,** 5th edition, 2004, p156.

Alberta Health Services
Calgary and Area

Description: **Lacman Solution**

Strength:

Route: oral

Form: syrup

Ingredients	Strength	Quantity
Mannitol powder		40 g
Lactulose syrup		150 mL
Distilled or Sterile water		qs to 400 mL

Directions:

1. Weigh mannitol powder.
2. Measure 150 mL of lactulose syrup.
3. In a 500 mL volumetric flask mix together the mannitol powder and the lactulose syrup.
4. QS to 400 mL with water.
5. Pour 20 mL of the final solution into 25 mL amber bottles.

Stability: 30 days

Storage: Refrigerate

Reference:

Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Lactose**

Strength: 0.2 g/mL (20%)

Route: oral

Form: solution

Ingredients	Strength	Quantity
Lactose powder		50 g
Distilled or Sterile water		qs to 250 mL

Directions:

1. Use a pyrex container.
2. On low heat, dissolve lactose in 200 mL of water.
3. QS to 250 mL.

Stability: 7 days (arbitrary)

Storage: Refrigerate

Reference:

Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Lactose TOLERANCE TEST**

Strength: 0.25 g/mL (25%)

Route: oral

Form: solution

Ingredients	Strength	Quantity
Lactose powder		50 g
Reconstituted lemon juice		10 mL
Distilled or Sterile water		qs to 200 mL

Directions:

1. Boil water.
2. Add lactose while stirring.
3. Add lemon juice.
4. QS to 200 mL with water.
5. Filter if required.

Stability: 1 day (stability reduced from 7 days when lemon juice is added)

Storage: Refrigerate

Reference:

Foothills Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Lactulose Syrup**

Strength: 0.2 g/mL (20%)

Route: oral

Form: syrup

Ingredients	Strength	Quantity
Lactulose syrup	66.7%	75 mL
Distilled or Sterile water		qs to 250 mL

Directions:

1. Combine ingredients.
2. Mix well.

Stability: 48 hours (arbitrary)

Storage: Room Temperature; Avoid freezing
Protect from light and heat

Reference:

Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Lamotrigine**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Lamotrigine tablet	100 mg	1 tablet
Vehicle		qs to100 mL

Directions:

1. Crush tablet in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices and Stability:
  - Ora-Blend® or Ora-Blend SF® 91 days
  - Ora-Plus®: Ora-Sweet® (1:1) 91 days
  - Ora-Plus®: Ora-Sweet SF® (1:1) 91 days
  - Cherry Syrup 4 weeks
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: See vehicle choices in Notes Section

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 1999; 56(3):240.

Alberta Health Services

Calgary and Area

Description: **Lansoprazole**

Strength: 3 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Lansoprazole delayed release capsules	30 mg	10 capsules
Sodium bicarbonate injection	8.4% (1 mEq/mL)	qs to 100 mL

Directions:

1. Empty contents of capsules into mortar.
2. Add sodium bicarbonate to mortar and allow beads to dissolve. Stir for 30 minutes.
   or
   Add sodium bicarbonate to mortar and allow beads to soak for 3 - 4 minutes. Triturate mixture until uniform.
3. Pour into a graduated cylinder.
4. QS to final volume with sodium bicarbonate.
5. Transfer to final container and label.

Note:

- Lansoprazole capsules may also be opened and the beads placed in a teaspoon/ tablespoon of apple sauce, or placed in apple juice, prior to administration with no effect to bioavailability.

Stability: Refrigerated: 14 days
Room Temperature: 8 hours

Storage: Amber Plastic Bottles or Oral Plastic Syringes
Shake Well

References:

1. **CPJ** 2006 (Sept/Oct); 119 (5):53-54.
2. **Annals of Pharmacotherapy** 2000; 34:600-605.
3. **Extemporaneous Formulations.** The Children's Hospital of Philadelphia 2003.

Alberta Health Services
Calgary and Area

Description: **Levamisole**

Strength: 25 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Levamisole HCl powder, USP		2.5 g
Sterile water		qs to 100 mL

Directions:

1. Weigh required amount of levamisole powder.
2. In a mortar, gradually levigate powder with water until a liquid is formed.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with water.
5. Transfer to final container and label.

Notes:

- A flavoring agent, approximately 0.5 - 1 mL, can be added to mask the bitter taste of the solution.

Stability: 30 days

Storage: Refrigerate
Amber Glass Bottle

References:

1. Chiadmi F, et al. Stability of levamisole oral solutions prepared from tablets and powder. **J Pharm Pharmaceut Sci** 2005; 8(2): 322-325.
2. Formulations: Levamisole 25 mg/mL oral solution. **International Journal of Pharmaceutical Compounding** 2011 (Mar/Apr); 15(2):161.
3. **Trissels Stability of Compounded Formulations**, 4th edition, 2009.

Alberta Health Services
Calgary and Area

Description: **Levetiracetam**

Strength: 50 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Levetiracetam tablets	500 mg	10 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle until a liquid is formed. Stir after each addition.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle. Mix thoroughly.
6. Transfer to final container and label.

Note:

- Ora-Blend® can be used instead of Ora-Plus®: Ora-Sweet® (1:1).

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect From Light
Shake Well

Reference:

Ensom MHH, et al. Stability of levetiracetam in extemporaneously compounded suspensions. **Can J Hosp Pharm** 2011; 64(3):207-211.

Alberta Health Services
Calgary and Area

Description: **Levodopa**

Strength: 250 mg

Route: oral

Form: powder

Ingredients	Strength	Quantity
Levodopa powder		2.5 g
Lactose powder		2.5 g

Directions:

1. Mix powders together.
2. Weigh individual packets of 500 mg. (Scale must be able to weigh 500 mg accurately.)
3. Each 500 mg packet = 250 mg Levodopa.

Note:

- If patient is lactose intolerant consider cornstarch.

Stability: 6 months (arbitrary)

Storage: Room Temperature

Reference:

Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Levodopa**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Levodopa powder		1 g
Simple syrup		qs to 50 mL

Directions:
1. Combine ingredients.
2. Mix well.

Notes:
- Keep well closed and protect from light.
- If using beyond 24 hour stability, consider levodopa powder papers (see recipe).

Stability: 24 hours

Storage: Refrigerate

Reference:
McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Levodopa/ Carbidopa**

Strength: 5 mg/1.25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sinemet® tablets	100 mg / 25 mg	10 tablets
Ora-Blend®		qs to 200 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)
- Suspension stored at room temperature can change to darker yellow in colour.

Stability: 35 days

Storage: Refrigerate (better stability data in fridge)
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children**, **Online Recipe Database** - Levodopa 5 mg/ Carbidopa 1.25 mg per mL oral suspension recipe, 2007.
2. **Pediatric Drug Formulations**, 5th edition, 2004, p160.
3. **Journal of Pediatrics Ophthalmology and Strabismus** 2000 (Nov); 37:333.

Alberta Health Services
Calgary and Area

Description: **Levofloxacin**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Levofloxacin tablets	500 mg	6 tablets
Ora-Plus®		30 mL
Cherry syrup		30 mL
Distilled or Sterile water (to soak tablets)		

Directions:

1. Place tablets in mortar and soak tablets in a small amount of water.
2. Once sufficiently softened, grind tablets into a smooth paste.
3. Mix Ora-Plus® and Cherry Syrup together (1:1 mixture) and levigate with paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Note:

- Study in reference used strawberry syrup instead of cherry syrup.

Stability: 57 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health-Syst Pharmacy 1999; 56:2316 (modified).

Alberta Health Services
Calgary and Area

Description: **Levothyroxine**

Strength: 25 mcg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Levothyroxine tablets	0.1 mg	10 tablets
Glycerin liquid		16 mL
Distilled or Sterile water		qs to 40 mL

Directions:

1. Crush tablets.
2. Add glycerin.
3. QS to final volume with water.
4. Shake well.

Stability: 8 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1996; 53:1157.
2. **International Journal of Pharmaceutical Compounding** 1997 (Jan); 1(1):60.

Alberta Health Services
Calgary and Area

Description: **Lidocaine Viscous 2% / Antacid Liquid (Magnesium and Aluminum Hydroxides)**
Pink Lady

Strength:

Route: mouthrinse

Form: suspension

Ingredients	Strength	Quantity
Lidocaine Viscous solution	2%	50 mL
Diovol® (Almagel®)		50 mL

Directions:
1. Measure the required ingredients.
2. Combine ingredients. Mix well.
3. Transfer to final container and label.

Stability: 14 days

Storage: Refrigerate
Shake Well

References:

1. Welling LR, Watson WA. The emergency department treatment of dyspepsia with antacids and oral lidocaine. **Ann Emerg Med** 1990 (July); 19:785-788.
2. Email communication from **BC Cancer Agency**, April 20, 2011.
3. **USP** 34 - NF 29, 2nd Volume 1. **Chapter 795:** Pharmaceutical compounding - Nonsterile preparations. Rockville, MD, USA: United States Pharmacopeial Convention; 2010

Alberta Health Services
Calgary and Area

Description: **Lisinopril**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Lisinopril tablets	10 mg	10 tablets
Ora-Blend®		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 90 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Pediatric Drug Formulations, 5th edition, 2004, p165.

Alberta Health Services
Calgary and Area

Description: **Loperamide**

Strength: 0.2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Loperamide tablets	2 mg	10 tablets
Ora-Sweet®		qs to 100 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Gradually levigate powder with Ora-Sweet®.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with vehicle.
5. Transfer to final container and label.

Notes:

- Alternate Vehicle
    - Ora-Sweet SF®
- **A commercial oral product is available.**

Stability: 2 weeks

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Allen LV Jr. Compounding for gastrointestinal disorders [Newsletter on Internet]. **Secundum Artem,** 13 (2). Accessed June 8, 2011 from: http://www.paddocklabs.com/html/resource/pdf/Sec%20Artem%2013.2.pdf

Alberta Health Services
Calgary and Area

Description: **Lorazepam**

Strength: 0.4 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Lorazepam tablets	2 mg	15 tablets
Simple syrup		qs to 75 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- **Lorazepam solutions should not be stored in polyvinyl chloride (plastic) bottle or polypropylene (oral syringes) for longer than 24 hours.**

Stability: 1 month

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

References:

1. **Trissel's Handbook on Injectable Drugs**, 13th edition.
2. **Bing's Extended Stability for Parenteral Drug** 4th edition
3. Wyeth-Ayerst Canada, Inc. Medical Services Department Communication - May 20, 1999.

Alberta Health Services
Calgary and Area

Description: **Losartan**

Strength: 2.5 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Losartan tablets	50 mg	5 tablets
Distilled or Sterile water		5 mL
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. Place tablets in mortar and soak with a small amount of water.
2. Crush and levigate tablets in mortar to a make a smooth paste.
3. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
4. Gradually levigate vehicle with paste until a liquid is formed.
5. Pour into a graduated cylinder.
6. Rinse mortar and qs to final volume with vehicle.
7. Transfer to final container and label.

Stability: 28 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004.
2. **The Hospital for Sick Children, Online Recipe Database** - Losartan 2.5 mg/mL oral suspension, April 2007.
3. **International Journal of Pharmaceutical Compounding** 2007; 11(3):248.

Alberta Health Services
Calgary and Area

Description: **Melatonin**

Strength: 0.6 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Melatonin capsules	3 mg	30 capsules
Stevia powder		0.5 g
Ora-Plus®: Ora-Sweet® (1:1)		qs to 150 mL

Directions:

1. Empty powder from capsules into a mortar and add stevia powder. Triturate into a fine powder mixture.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle until a liquid is formed.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle.
6. Transfer to final container and label.

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Wynn T. Rawlings K. Sleepless in America: Compounding with Melatonin. **International Journal of Pharmaceutical Compounding** 2010; 14(1):10-13.

Alberta Health Services

Calgary and Area

Description: **Mercaptopurine**

Strength: 50 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Mercaptopurine tablets	50 mg	250 tablets
Ascorbic acid tablet	500 mg	1/2 tablet
Sterile water	to wet tablets	42 mL
Simple syrup		83 mL
Cherry syrup (pH 2.5 - 3.5)		qs to 250 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
    - Biohazard hood and appropriate personnel.
    - Wear appropriate clothing when preparing (gloves, mask, and gown).
    - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Wet tablets with water and grind up tablets in mortar to a smooth paste.
3. Levigate paste with simple syrup. Add simple syrup in geometric proportions, mixing thoroughly after each addition.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with cherry syrup. Stir well.
7. Transfer to final container and label.

Stability: 11 weeks

Storage: Room Temperature; DO NOT Refrigerate
Amber Plastic Bottle
Shake Well
Cytotoxic

References:

1. **Am J of Health-Syst Pharm** Mar 2008; 65: 441.
2. Edmonton zone - Mercaptopurine 50 mg/mL oral suspension recipe, Feb 2011.

Alberta Health Services
Calgary and Area

Description: **Methadone SL**

Strength: 40 mg/mL

Route: sublingual

Form: solution

Ingredients	Strength	Quantity
Methadone powder, USP		1 g
Distilled or Sterile water		qs to 25 mL

Directions:

1. Combine ingredients in final container.
2. Mix well.

Note:

- **CAUTION: should be reserved for use by Adult Palliative Care Service.**

Stability: 7 days

Storage: Refrigerate
Protect from Light
Amber Plastic Bottle

References:

1. Hagen N. et al., Sublingual methadone for the management of cancer related breakthrough pain: A Pilot Study. **J. Palliative Medicine** 2007; 10(2):331-337.
2. E-mail communications, J. Herrick, T. Ellis, Dr. Hagen, June 2010.

Alberta Health Services
Calgary and Area

Description: **Methimazole**

Strength: 3 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Methimazole tablets	5 mg	24 tablets
Simple syrup		20 mL
Distilled or Sterile water		20 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Mix simple syrup and sterile water to make vehicle. Stir well.
3. Gradually levigate powder with vehicle.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle. Mix thoroughly.
6. Transfer to final container and label.

Stability 30 days

Storage Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Rappaport PL. Extemporaneous dosage preparations for pediatrics. **Can J Hosp Pharm** 1983; 3:66-74.

Alberta Health Services
Calgary and Area

Description: **Methotrexate**

Strength: 2 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Methotrexate injection (preservative-free)	25 mg/mL	2.4 mL
Sodium bicarbonate injection	8.4% (1 mEq/mL)	14.9 mL
Cherry syrup		12.7 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Place sodium bicarbonate and cherry syrup in a 50 mL amber glass prescription bottle. Shake well.
3. Add methotrexate and shake well.
4. Label and cap with original lid. Provide oral syringe and dispensing cap.

Note:

- 1 g $NaHCO_3$ = 12 mmol sodium therefore final product has 0.5 mmol sodium/mL

Labels: Give on empty stomach.
Caution: Chemotherapy; Cytotoxic

Stability: 30 days

Storage: Refrigerate (preferred) or Room Temperature
Amber **Glass** Bottle

References:

1. **Journal of Rheumatology** 1993; 20(11):1845.
2. **St. Louis Children's Hospital** - ACH DI files.

Alberta Health Services
Calgary and Area

Description: **1% Methylcellulose HSC in Simple Syrup**
(HSC Vehicle)
(HSC = Hospital for Sick Children, Toronto)

Route: oral

Form: suspending agent

Ingredients	Strength	Quantity
Methylcellulose HSC (with sodium benzoate - see recipe)	1%	700 mL
Simple syrup		300 mL

Directions:

1. Add Methylcellulose to Simple Syrup.
2. Stir well using a rod or blender if available.
3. Transfer to a 1 L bottle.
4. Mix by rolling gently.
5. Let stand for a minimum of 4 hours at room temperature.
6. Shake well before use.

Stability: 6 months
Discard 30 days after opening

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database -** Suspending Vehicle SickKids Formulation, April 2007

Alberta Health Services
Calgary and Area

Description: **Methylcellulose with Parabens**

Strength: 1% (0.01 g/mL)

Route: oral

Form: suspending agent

Ingredients	Strength	Quantity
Methylcellulose powder	4000 cps	10 g
Methylparaben powder		200 mg
Propylparaben powder		100 mg
Sterile water		qs to 1000 mL

Directions:

1. Heat 300 mL (approximately one-third) of purified water to boiling.
2. Add the parabens and mix well.
3. Reduce heat and add the methylcellulose powder to the boiling mixture.
4. Stir well to completely wet the powder, and then remove from heat.
5. QS with ice cold water while mixing well with a magnetic stirrer or hand blender.

Note:

- If required to enhance clarity and viscosity, may place 1 to greater than 4 hours in the fridge with frequent stirring/agitation.

Stability: 6 months

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Pediatric Drug Formulations**, 6rd edition, 2011.
2. **A Practical Guide to Contemporary Pharmacy Practice,** 3rd edition, 2009, p236.

Alberta Health Services
Calgary and Area

Description: **Methylcellulose 1% HSC (with Sodium Benzoate)**

Strength: 1% (0.01 g/mL)

Route: oral

Form: suspending agent

Ingredients	Strength	Quantity
Methylcellulose powder	1500 cps	10 g
Sodium benzoate powder		2 g
Sterile water		qs to 1000 mL

Directions:

1. Dissolve sodium benzoate in 200 mL of boiling water.
2. Add methylcellulose powder and stir well for 2 - 3 minutes (use blender if available). Ensure mixture is sufficiently HEATED so powders are completely dissolved.
3. Add 800 mL of ice cold water (carefully but quickly) and stir or blend well for 10 minutes.
4. Transfer to a 1 litre bottle.
5. Place on side and refrigerate overnight (minimum 4 hours) until liquid coverts to gel.

Note:

- Mixture is initially cloudy, becoming crystal clear with adequate cooling/ refrigeration and time.

Stability: 6 months
Discard 30 days after opening

Storage: Room Temperature
Amber **Glass** (preferred) or Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database** - 1% Methylcellulose SickKids recipe, April 2007.

Alberta Health Services
Calgary and Area

Description: **Methyldopa**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Methyldopa tablets	250 mg	2 tablets
Simple syrup		qs to 10 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 14 days

Storage: Refrigerate or Room Temperature
Amber **Glass** Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **Am J of Hosp Pharm** 1975; 32:817.

Alberta Health Services

Calgary and Area

Description: **Methylene Blue**

Strength: 1%

Route: oral

Form: solution

Ingredients	Strength	Quantity
Methylene blue powder		5 g
Sterile water		qs to 500 mL

Directions:

1. Weigh powder.
2. Dissolve powder in water.

Stability: 365 days

Storage: Refrigerate or Room Temperature.

References:

1. Alberta Children's Hospital Pharmacy – anecdotal.
2. Martindale's 32nd edition.

Alberta Health Services
Calgary and Area

Description: **Methylphenidate**

Strength: 5 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Methylphenidate (Ritalin®) tablets	10 mg	50 tablets
Citric acid powder, monohydrate		480 mg
Sodium citrate powder		72 mg
Simple syrup		50 mL
Sorbitol 70%		qs to 100 mL

Directions:

1. Crush the tablets and triturate to a fine powder.
2. Levigate the powder with a small amount of simple syrup to make a uniform paste.
3. Add the remaining simple syrup and mix well.
4. Dissolve citric acid and sodium citrate in approximately 5 mL of sorbitol.
5. Add the citric acid solution to the mortar and mix well.
6. Pour into a graduated cylinder.
7. Rinse the mortar with sorbitol and add to graduate.
8. QS to final volume with vehicle. Mix well.
9. Transfer to final container and label.

Notes:

- Ingredient alternatives (original recipe ingredients preferred).
- Citric acid monohydrate 480 mg = Citric acid anhydrous 439 mg.

Stability: 28 days

Storage: Room Temperature
Shake Well

Reference:

Trissel's Stability of Compounded Formulations, 3rd edition, 2005, p281.

Alberta Health Services
Calgary and Area

Description: **Metoclopramide**

Strength: 1 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Metoclopramide tablets	10 mg	10 tablets
Ora-Sweet® or Ora-Sweet SF®		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light
Shake Well

Reference:

Compounding for Gastrointestinal Disorders **Secundum Artem**; 13(2):4.

Alberta Health Services
Calgary and Area

Description: **Metolazone**

Strength: 0.25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Metolazone tablets	2.5 mg	5 tablets
Methylcellulose with Parabens solution (see recipe)	1%	
Simple syrup		qs to 50 mL

Directions:

1. Add a small amount of water to soak tablets; add simple syrup first, completely mix and qs slowly with methylcellulose.
2. Methylcellulose 1% to Simple syrup should be 1:1.
3. QS to 50 mL.

Stability: Refrigerate: 3 months
Room Temperature: 1 week

Storage: Amber **Glass or Plastic** Bottle

References:

1. **Hospital Pharmacy** 1997; 32(5):691.
2. **American Druggist** 1996 (March); p49.

Alberta Health Services

Calgary and Area

Description: **Metoprolol**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Metoprolol tablets	100 mg	12 tablets
Vehicle		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004, p185.
2. **Am J of Health-Syst Pharm** 1996; 53(19):2304-2309.

Alberta Health Services
Calgary and Area

Description: **Metronidazole**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Metronidazole tablets	250 mg	50 tablets
Distilled or Sterile water		60 mL
Vehicle		qs to 250 mL

Directions:

1. Soak film coating of tablets with 50 mL water. Use only enough water to soak from coating.
2. Shake well.

Notes:

- Vehicle Choices:
  - Ora-Blend® or Ora-Blend SF®
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- For oral use, consider ***Metronidazole Benzoate*** preparation as it is tasteless.
- To avoid use of water, consider APO brand of Metronidazole which has no film coating.

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well
Protect from Light

Reference:

Am J of Health-Syst Pharm 1996; 53(17):2073-2078.

Alberta Health Services
Calgary and Area

Description: **Metronidazole Benzoate**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Metronidazole benzoate powder		6 g
Ora-Blend® or Ora-Blend SF®		qs to 120 mL

Directions:

1. Combine powder with vehicle.
2. Blend well.

Notes:

- Alternate Vehicle:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Sweet SF®
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- Metronidazole benzoate powder has a bland taste and is more palatable than metronidazole base.
- Metronidazole benzoate is not equivalent to metronidazole base on dose basis:
  conversion = 0.625
  (i.e. 200 mg metronidazole benzoate = 125 mg metronidazole base)

Stability: 60 days

Storage: Refrigerate (preferred) or Room Temperature
Amber Plastic Bottle
Shake Well
Protect from Light

Reference:

Am J of Health-Syst Pharm 1996 (Sept); 53:2073.

Alberta Health Services
Calgary and Area

Description: **Mexiletine**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Mexiletine HCl capsules	200 mg	5 capsules
Vehicle		qs to 100 mL

Directions:

1. Empty contents of capsules into mortar.
2. QS to final volume with vehicle and combine well.

Note:

- Vehicle Choices and Stability:
  - Distilled Water: 70 days at room temperature
    91 days refrigerated
  - Sorbitol 70%: 14 days at room temperature
    28 days refrigerated

Stability: See Notes section

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004, page 192.
2. **Trissel's Stability of Compounded Formulations**, 3rd edition, 2005; p291.

Alberta Health Services
Calgary and Area

Description: **Midazolam**

Strength: 2 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Midazolam injection	5 mg/mL	48 mL
Simple syrup		qs to 120 mL

Directions:

1. Measure Midazolam.
2. QS to final quantity with simple syrup.

Notes:

- Undiluted injection can be administered orally.
- Midazolam injection may contain benzyl alcohol.

Stability: 56 days

Storage: Room Temperature or Refrigerate
Amber **Glass** Bottle

Reference:

Pediatric Drug Formulations, 3rd edition, 1997, p78.

Alberta Health Services
Calgary and Area

Description: **Moxifloxacin**

Strength: 20 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Moxofloxacin tablets	400 mg	5 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle until a liquid is formed.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle.
6. Transfer to final container and label.

Notes:

- Alternate Vehicles:
  - Ora-Plus® / Ora-Sweet SF® (1:1) Ora-Blend®
  - Ora-Blend SF®
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 90 days

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Hutchinson DJ, Johnson CE, Klein KC. Stability of extemporaneously prepared moxifloxacin oral suspensions. **Am J Health-Syst Pharm** 2009; 66:665-667.

Alberta Health Services
Calgary and Area

Description: **Mycophenolate Mofetil**

Strength: 100 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Mycophenolate mofetil capsules	250 mg	40 capsules
Distilled or Sterile water		~ 5-10 mL
Cherry syrup		qs to 100 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Empty contents of capsules into a mortar.
3. Add water to powder just to wet, and make paste
4. QS to final volume with cherry syrup and combine well.

Stability: 120 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1998; 55:926.
2. **Trissel's Stability of Compounded Formulations,** 2nd edition, 2000, p265.

Alberta Health Services
Calgary and Area

Description: **Nabilone**

Strength: 0.1 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Nabilone capsules	1 mg	10 capsules
Simple syrup		100 mL

Directions:

1. Measure the total quantity of simple syrup in a graduated cylinder.
2. Transfer approximately one half of the simple syrup into the amber **glass** bottle.
3. Open the nabilone capsules (delicately, one at a time) and transfer the complete capsule contents into the bottle.
4. Shake the bottle contents vigorously for approximately 2 minutes.
5. Transfer the remainder of the simple syrup into the bottle, and shake vigorously for approximately 2 minutes.

Note:

- THIS FORMULATION IS NOT BASED ON LITERATURE, but from unpublished data, historical use, or physician/pharmacy experience.

Stability: 30 days

Storage: Room Temperature
Amber **Glass** Bottle
Shake Well

Reference:

Faxed communication from Madeleine Brucher, **Valeant Canada**, to Edmonton zone Regional Drug Information Centre. Topic: Instructions on how to prepare a suspension with nabilone. April 18, 2006.

Alberta Health Services
Calgary and Area

Description: **Nadolol**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Nadolol tablets	40 mg	5 tablets
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup - see recipe)		qs to 20 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children**, **Online Recipe Database** - Nadolol 10 mg/mL oral suspension recipe, April 2007.

Alberta Health Services
Calgary and Area

Description: **Naltrexone**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Naltrexone tablet	50 mg	1 tablet
Ascorbic acid tablet	500 mg	1/2 tablet
Sodium benzoate powder		50 mg
Glycerin liquid		10 mL
Distilled or Sterile water		qs to 50 mL

Directions:

1. Soak tablets in a small amount of water.
2. Triturate the crushed tablets with ascorbic acid and sodium benzoate.
3. Add glycerin to form a paste.
4. QS to final volume with water.

Stability: Room Temperature: 30 days
Refrigerate: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Trissel's Stability of Compounded Formulations,** 4th edition, 2009.
2. **Annals of Pharmacotherapy** 1997; 31:1291-1295.

Alberta Health Services

Calgary and Area

Description: **Nifedipine** (Adalat® or AAP Pharma brand)

Strength: 10 mg/capsule

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Nifedipine capsules **(Adalat and AAP Pharma brands only)**	10 mg	depends on dosage

Directions: Stepwise Procedure for Needle and Syringe, One-Hole Method

1. Calculate the liquid volume required for the prescribed dose based on an average nifedipine concentration of 31.8 mg/mL in the 10 mg capsules.
2. Place 23-gauge needle on 1 mL syringe. Save the syringe orifice cap.
3. Hold the nifedipine capsule vertically (may place capsule in a 3 mL or syringe to stabilize) and gently push the needle through the center of the lower tip of the capsule using a side-to-side twisting motion.
4. Slowly move the needle and syringe upward until the needle is positioned near the upper inside tip of the capsule.
5. Slowly draw back the syringe plunger with one hand while squeezing the capsule gently between the thumb and index finger of the other hand to remove liquid from the capsule.
6. When no more liquid enters the syringe barrel, reduce finger pressure on the capsule and slowly push the syringe plunger into the barrel to expel the air from the syringe into the capsule.
7. Slowly move the needle and syringe downward until the needle tip is positioned near the inside middle of the capsule.
8. Repeat step 4 to withdraw the remainder of the calculated liquid volume from the capsule.
9. If the prescribed nifedipine dose requires a liquid volume greater than the amount obtained from one 10 mg capsule, repeat steps 2-6 with a second capsule.
10. Remove needle and replace syringe orifice cap or use an oral syringe tip cap.
11. Wrap syringe in aluminum foil, label, and administer dose to the patient immediately. Do not dilute the nifedipine liquid before administration.
12. Wash thoroughly with soap and water to remove any nifedipine liquid from the fingers and hands.

Stability: Administer immediately. Do not dilute nifedipine liquid before administration

Storage: Protect from Light

Reference:

Am J of Hospital Pharm 1989; 46:2313.

Alberta Health Services
Calgary and Area

Description: **Nitrazepam**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Nitrazepam tablets	5 mg	50 tablets
Distilled or Sterile water		5 mL
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to 250 mL

Directions:

1. Place nitrazepam tablets and water in mortar. Let sit for a few minutes to soften.
2. Levigate tablets and water to a smooth paste. Add small quantities of vehicle until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional HSC vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with HSC vehicle. Stir well.
6. Transfer to final container and label.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children**, **Online Recipe Database** - Nitrazepam 1 mg/mL oral suspension recipe, April 2007.
2. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Nitrofurantoin**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Nitrofurantion tablets	50 mg	10 tablets
Ora-Blend®		qs to 50 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Can J Hosp Pharm 2006; 59(29):33.

Alberta Health Services
Calgary and Area

Description: **Norfloxacin**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Norfloxacin tablets	400 mg	3 tablets
Ora-Plus®: Cherry Syrup (1:1)		qs to 60 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Ora-Plus® and Cherry Syrup prepare as 1:1 combination prior to mixing.

Stability: 56 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 2001; 58:577.

Alberta Health Services
Calgary and Area

Description: **Nystatin *Sugar-Free***

Strength: 100,000 U/ mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Nystatin powder for oral use	5,000 u/mg	2400 mg
Methylparaben powder		216 mg
Propylparaben powder		24 mg
Distilled or Sterile water		qs to 120 mL

Directions:

1. Weigh and combine powders.
2. QS with water.

Notes:

- Suspension may cake on bottom or bottle. Must shake well.
- Strength of nystatin powder changes with each batch. Recalculate quantity of powder.
- Powder for oral use must not have less than 5,000 U/mg.
- Nystatin powder should be packaged in tight, light-resistant containers and stored in fridge. After opening, potency can be guaranteed for 90 days after which it should be discarded. Brown discoloration indicates chemical decomposition, it is not a surface phenomenon, but occurs throughout the product. If this occurs discard powder.
- Nystatin powder has different strengths; therefore each batch should be evaluated before mixing.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **Trissel's Stability of Compounded Formulations**, 3rd edition, 2005; p317-319.

Alberta Health Services
Calgary and Area

Description: **Nystatin**

Strength: 500,000 U/15 mL

Route: oral

Form: popsicles

Ingredients	Strength	Quantity
Nystatin suspension	100,000 U/mL	5 mL
Distilled or Sterile water		qs to 15 mL

Directions:

1. Dilute commercial nystatin suspension with water to fill one medicine cup.
2. Place a candy sucker stick in cup and freeze. (Dram vials may be substituted for medicine cup and stirring stick for candy/sucker stick.)

Note:

- A sugar free preparation is also available (see recipe ***Nystatin Sugar-Free***).

Stability: 90 days

Storage: In freezer, in sealed plastic bags

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services

Calgary and Area

Description: **Omeprazole**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Omeprazole capsules or tablets	20 mg	5
Sodium bicarbonate injection	8.4% (1 mEq/mL)	qs to 50 mL

Directions:

Capsules

1. Empty contents of capsules in mortar and cover with sodium bicarbonate.
2. Stir mixture to form slurry.
3. Add more sodium bicarbonate to form a liquid, and pour into a graduated cylinder.
4. Rinse mortar and qs to final volume.

Tablets - May substitute with omeprazole tablets (Astra Zeneca Losec brand only)

1. Place tablets in mortar and soak tablets in sodium bicarbonate for 20 minutes.
2. The letters from the tablets do not dissolve in the suspension; this is not harmful to the patient but does make this preparation less visually pleasing. The letters can be removed by wiping with towel dampened with Ethanol (ethyl alcohol).
3. Once the coating has dissolved, crush tablets to form a slurry and continue with rest of directions from steps 3 and 4 above.

Stability: Refrigerate: 30 days
Room Temperature: 14 days

Storage: Refrigerate (preferred)
Amber **Plastic or Glass** Bottle
Shake Well

References:

1. **Am J Health-Syst Pharm** 1997 (Aug 15); 54:1833
2. **Am J Health-Syst Pharm** 2001 (Apr 15) 2001; 58:689-694
3. **Annals of Pharmacotherapy** 2000 (May); 34:600-605.
4. **Pediatric Drug Formulations,** 5th edition, 2004, p209.
5. **International Journal of Pharmaceutical Compounding** 2003 (Mar/Apr); 7(2):142.

Alberta Health Services
Calgary and Area

Description: **Ondansetron**

Strength: 0.8 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Ondansetron tablets	8 mg	10 tablets
Ora-Blend® or Ora-Blend SF®		qs to 100 mL

Directions:

1. Crush tablets in mortar and triturate to a fine powder.
2. Add vehicle 5 mL at a time, mixing thoroughly between additions.
3. Pour the mixture into final container.
4. QS to final volume. Shake well.

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Cherry Syrup (1:1)
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- **A commercial oral formulation is available.**

Stability: 42 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1994; 51:809.
2. **International Journal of Pharmaceutical Compounding** 2007; 11:158.

Alberta Health Services
Calgary and Area

Description: **Oseltamivir**

Strength: **6** mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Oseltamivir capsules	75 mg	8 capsules
Sterile water		7 mL
Simple syrup		qs to 100 mL

Directions:

1. Empty contents of capsules into a GLASS mortar and triturate to a fine powder.
2. Gradually levigate the powder with water and some of the simple syrup.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with simple syrup.
5. Transfer to final container and label.

Notes:

- To be prepared ONLY in the event that the **6 mg/mL** commercial product is NOT available.
- Refrigerated storage preferred.
- Alternate Vehicles and Stability:
    - Ora-Sweet SF®: 35 days **Refrigerated** or 5 days at **ROOM** Temperature.
    - Cherry Syrup (ready-to-use NOT concentrate, pH 3 - 5):
      35 days **Refrigerated** or 5 days at **ROOM** Temperature
    - Preserved Water with Sodium Benzoate 0.05%:
      49 days **Refrigerated** or 10 days at **ROOM** Temperature.

Stability: 35 days **Refrigerated** or 5 days at **ROOM** Temperature.

Storage: Room Temperature or Refrigerate
Amber **Glass** Bottle
Shake Well

References:

Tamiflu Product Monograph, Roche Canada. June 12, 2012.

Alberta Health Services
Calgary and Area

Description: **Pantoprazole**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Pantoprazole sodium tablets	20 mg	10 tablets
Distilled or Sterile water (to soak tablets		
Sodium bicarbonate powder		8.4 g
Distilled or Sterile water		qs to 100 mL

Directions:

1. Remove imprint on tablet with towel dampened with water (to prevent black floaters or flecks in suspension).
2. Triturate tablets.
3. Transfer to container with 50 mL water; place on stirrer.
4. With stirring add sodium bicarbonate powder. Stir until tablets disintegrate.
5. Bring total volume to 100 mL with water.

Notes:

- Original recipe tested using Pantoprazole SODIUM versus Pantoprazole MAGNESIUM, and as such should not be interchanged since compatibility/stability data is unknown. HOWEVER, both salt forms are THERAPEUTICALLY INTERCHANGEABLE.
- May substitute 20 mg tablets with 5 tablets of 40 mg Pantoprazole SODIUM to reduce excipient sludge.

Stability: 62 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 2002; 56:953.

Alberta Health Services
Calgary and Area

Description: **Parabens Solution**

Strength: 10% w/v

Route: oral

Form: solution

Ingredients	Strength	Quantity
Methylparaben powder		8 g
Propylparaben powder		2 g
Propylene glycol liquid		qs to 100 mL

Directions:

1. Weigh required powders.
2. QS to final quantity using propylene glycol.

Notes:

- Use for compounding solutions that require a parabens preservative
- 1 mL in a 100 mL solution = 0.1%

Stability: 1 year

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light

References:

1. **Formulation in Pharmacy Practice,** 2nd edition, 2001.
2. **Pediatric Drug Formulations,** 6th edition, 2011.

Alberta Health Services
Calgary and Area

Description: **Penicillamine**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Penicillamine capsules	250 mg	20 capsules
Carboxymethylcellulose powder		1 g
Sucrose powder		50 g
Citric acid USP powder, monohydrate		100 mg
Methylparaben powder		120 mg
Propylparaben powder		20 mg
Distilled or Sterile water		qs to 100 mL

Directions:

1. Mix powders together.
2. Add water slowly and qs to final volume.

Stability: 35 days

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004, page 214-215.
2. **Trissel's Stability of Compounded Formulation,** 3rd edition, 2005, p329-330.

Alberta Health Services
Calgary and Area

Description: **Pentoxifylline**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Pentoxifylline XL tables	400 mg	12 tablets
Distilled or Sterile water		qs to 240 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternatively, to improve the consistency of the final product, soak tablets in some water for 2 - 3 hours, then stir to make a paste, QS to final volume and let stand for approximately 24 hours at room temperature before dispensing.
- Pentoxifylline SR tablets can be used instead of XL tablets to prepare the suspension.

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Abdel-Rahman S, Nahata MC. Stability of pentoxifylline in an extemporaneously prepared oral suspension**. Am J Health Syst Pharm** 1997 (Jun 1); 54(11):1301-1303.

Pentoxifylline 400 mg extended release tablets crushed and mixed with water:

- Stored in glass and plastic prescription bottles.
- Stable for 91 days at room temperature or refrigerated.

Alberta Health Services
Calgary and Area

Description: **Perphenazine**

Strength: 0.5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Perphenazine powder		50 mg
Glycerin liquid		5 mL
Ora-Sweet® or Ora-Sweet SF®		qs to 100 mL

Directions:

1. Weigh perphenazine powder.
2. Mix the perphenazine with glycerin.
3. Incorporate into the Ora-Sweet® and mix well.

Notes:

- Perphenazine 8 mg tablets can be used instead of powder.
- Ora-Sweet SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 6 months

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

International Journal of Pharmacy Compounding 2003 (Nov/Dec); 7(6):473.

Alberta Health Services
Calgary and Area

Description: **Phenoxybenzamine**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Phenoxybenzamine capsules	10 mg	20 capsules
Citric acid 0.15%/ Propylene glycol 1% oral solution (see recipe)		qs to 100 mL

Directions:

1. Empty phenoxybenzamine capsules into mortar and triturate to a fine powder.
2. Triturate the powder with a little of the vehicle until well mixed.
3. Pour into a graduated cylinder and qs to final volume.
4. Transfer the mixture to an amber **glass** bottle and label.

Note:

- **Phenoxybenzamine is a Special Access Drug.**

Stability: 7 days

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 1997; 54:2073.

Alberta Health Services
Calgary and Area

Description: **Phenylalanine**

Strength: 20 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Phenylalanine powder		700 mg
Distilled or Sterile water		qs to 35 mL

OR

Ingredients	Strength	Quantity
Phenylalanine powder		2000 mg
Distilled or Sterile water		qs to 100 mL

Directions:

1. Mix powder with water.
2. Allow powder to dissolve.

Stability: 30 days

Storage: Refrigerate

Reference:

Alberta Children's Hospital Pharmacy **-** anecdotal.

Alberta Health Services

Calgary and Area

Description: **Phenylbutyrate Sodium**

Strength: 100 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Sodium phenylbutyrate powder, USP		53 g (see Notes section)
Sterile water		qs to 500 mL

Equipment:

1. funnel
2. paper filter
3. vacuum filter beaker with hose
4. black cork
5. magnetic stirrer

Directions:

Step A:

1. Add 400 mL of sterile water to the powder and stir immediately with a magnetic stirrer if available.
2. Stir for a minimum of 30 minutes or soak overnight.
3. QS to volume and stir.
4. Filter solution through a vacuum filtration system (see Step B).

Step B: Set up vacuum filtration system

1. Hook up the hose from the vacuum filter beaker to the tap system (water tap system).
2. Place the black cork on top of the vacuum filter beaker.
3. Push the funnel down through the top of the black cork.
4. Place one paper filter on the top portion of the funnel.
5. Next, turn the tap system on to the warm water setting. Let the warm water run through the vacuum filtration system.

Step C:

1. Pour a bit of the solution from Step A onto the middle of the filter paper to moisten.
2. Then pour the solution slowly into the funnel.
3. When the paper filter is totally covered with the solution pour the remaining solution at once. Ensure that the solution doesn't slip on the sides of the filter paper.
4. The solution should come out clear at the bottom end of the funnel.

Phenylbutyrate Sodium 100 mg/mL oral liquid continued

Notes:

- Sodium phenylbutyrate powder is available from Health Canada's Special Access Drug Program and is manufactured by Ucyclyd.
- 3 grams of sodium phenylbutyrate in 3.2 grams of powder.
- Refer to the manufacturer's administration instructions for comparison.
- For hospital use, we have historically filtered the product and continue to do so as a service to our patients.

Stability and Storage:

56 days Room Temperature
7 days Refrigerated
Amber **Plastic** Bottle
Shake Well

References:

1. **Ucyclyd Company/John Hopkins**, May 2002
2. **ACH in-house chemical stability testing**, 2003
3. Buphenyl Med Info Letter and Package Insert on file, 2013

Alberta Health Services
Calgary and Area

Description: **Phenylephrine**

Strength: 0.25%

Route: nose drops

Form: liquid

Ingredients	Strength	Quantity
Phenylephrine	2.5%	2.5 mL
Sodium chloride injection	0.9%	qs to 25 mL

Directions:

1. Pour components into glass dropper bottle.

Notes:

- Phenylephrine may be prepacked into plastic containers.
- However, since this drug is subject to oxidation on exposure to air, it is important that the final produce is prepackaged into the smallest container possible.

Stability: 30 days

Storage: DO NOT refrigerate

Reference:

Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Phosphate, Anhydrous (Joulie's) Solution**
phosphate oral solution

Strength: 48.3 mg (1.55 mmol) phosphate/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Disodium hydrogen orthophosphate powder (sodium phosphate dibasic anhydrous powder)		49 g
Phosphoric acid solution	85%	13 mL
Sterile or Distilled water		qs to 360 mL

Directions:

1. Place magnetic stirrer in calibrated beaker.
2. Add approximately 90% of the final volume of water.
3. Place beaker on hot plate. Turn on stirrer. Do not use heat.
4. Create a vortex with the water and gradually add the anhydrous disodium phosphate into the vortex.
5. Add phosphoric acid 85%.
6. QS to final volume with water. Stir well.
7. Transfer to an amber container and label.
8. After 48 hours, Joulie's solution may be filtered through a 0.22 micron filter to increase stability to 6 months.

Note:

- Other commercial products available and can be considered are:
  - Fleet Phospho-Soda®
  - Phosphate Novartis®

Stability: 30 days

Storage: Room Temperature; crystallizes in the fridge
Amber Plastic Bottle

References:

1. Martindale's**,** 28th edition, 1982, p642 (modified).
2. **IWK Compounding Formulas** (online recipes). Halifax, NS: IWK Health Center. Anhydrous Phosphate (Joulie's) Oral Solution 45 mg/mL - October 14, 2009.

Alberta Health Services
Calgary and Area

Description: **Phosphate Buffered Saline Solution**

Strength: 10 mmol/200 mL phosphate buffer

Route: oral

Form: solution

Ingredients	Strength	Quantity
Phosphate buffered saline tablet		1 tablet
Distilled or Sterile water		qs to 200 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- The 200 mL oral solution provides: 137 mmol of sodium chloride, 2.7 mmol of potassium chloride and 10 mmol of phosphate buffer.
- pH 7.4 at 25°C

Stability: 6 months - Discard if turbidity develops

Storage: Refrigerate

Reference:

Sigma Chemical Co. 1999.

Alberta Health Services

Calgary and Area

Description: **Phytonadione** (Vitamin K_1)

Strength: 1 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Phytonadione injection (SANDOZ Brand)	10 mg/mL	1 mL
Distilled or Sterile water		qs to 10 mL

Directions:

1. Using a filter needle, withdraw the required amount of vitamin K1 and transfer to an amber **glass** bottle.
2. Add water to bottle and mix well.

Notes:

- Alternative vehicle, if increased palatability is required use simple syrup.
- Distilled or Sterile water formulation is preferred in neonates due to absence of dyes and lower osmolarity.
- Filter phytonadione solution only once while withdrawing from the vial.
- Stability data is valid for SANDOZ (formerly SABEX) phytonadione ONLY.

Stability: Sterile Water (preferred vehicle): 104 days
Simple Syrup: 111 days

Storage: Room Temperature or Refrigerate
Amber **Glass** Bottle
Shake Well

Reference:

Sabex Inc, in house stability studies (1993). Stability and compatibility studies on vitamin K1 injection. Stability of diluted vitamin K1 injection (1 mg/mL) in water for injection USP or simple syrup. Faxed Oct 16, 1996.

Alberta Health Services
Calgary and Area

Description: **Potassium Iodide**

Strength: 16 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Potassium iodide powder		1.6 g
Raspberry flavor		2 or 3 drops
Preserved Water with Parabens (see recipe)		45 mL
Simple syrup		qs to 100 mL

Directions:

1. Dissolve potassium iodide in preserved water with parabens.
2. Add flavoring and mix well.
3. QS to required volume with simple syrup.

Note:

- **A commercial oral liquid is available.**

Stability: 6 months

Storage: Room Temperature
Amber **Glass** Bottle
Protect from Light

Reference:

International Journal of Pharmaceutical Compounding 2003 (Jan/Feb); 7(1):61.

Alberta Health Services
Calgary and Area

Description: **Potassium Perchlorate**

Strength: 10 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Potassium perchlorate crystals		10 g
Sodium benzoate powder		1 g
Distilled or Sterile water		250 mL
Simple syrup		qs to 1000 mL

Directions:

1. Dissolve the potassium perchlorate crystals and sodium benzoate in warm water.
2. QS with syrup.

Notes:

- Do not use metal spatulas or stirring rods.
- Do not use any type of metal container to measure this solution.

Stability: 6 months

Storage: Refrigerate

Reference:

Pediatric Drug Formulations, 5th edition, 2004, p222-223.

Alberta Health Services
Calgary and Area

Description: **Pravastatin**

Strength: 1 mg/mL

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Pravastatin tablets	20 mg	5 tablets
Vehicle		qs to 100 mL

Directions:

1. Triturate tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Note:

- Vehicle Choices:
  - Ora-Plus® : Ora-Sweet® (1:1)
  - Ora-Blend®
  - Methylcellulose 1%: Simple Syrup (1:10)

Stability: 7 days

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Nahata MC, et al. Stability of pravastatin in two extemporaneously prepared oral dosage forms stored under refrigeration and at room temperature, **ASHP Midyear** Clinical Meeting 2005; 40:101E.

Alberta Health Services
Calgary and Area

Description: **Prazosin**

Strength: 100 mcg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Prazosin tablets	1 mg	6 tablets
Ora-Blend SF®		qs to 60 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 14 days

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

Reference:

Princess Margaret Hospital for Children, Perth, West Australia, 2004.

Alberta Health Services
Calgary and Area

Description: **Prednisone**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength		Quantity
Prednisone tablets	5 mg	**OR**	250 tablets
	50 mg		25 tablets
Distilled or Sterile water (to soak tablets)			10 mL
Tutti-frutti flavouring			3.5 mL
Simple syrup			qs to 250 mL

Directions:

1. Soak tablets in water, and then add tutti-frutti flavouring.
2. Crush until smooth.
3. Add syrup and qs to 250 mL.
4. Shake well.

Stability: 2 months

Storage: Refrigerate
Amber Plastic Bottle
Protect from Light
Shake

References:

1. **Micromedex Inc.**, Aug 24th, 2000.
2. **Can J of Hosp Pharm** 1990 (June); 43(3):101-105.

Alberta Health Services
Calgary and Area

Description: **Preserved Water HSC**
(HSC = Hospital for Sick Children, Toronto)

Strength: (Preserved Water with Sodium Benzoate 0.1%)

Route: oral

Form: solution

Ingredients	Strength	Quantity
Sodium benzoate powder		1 g
Sterile water		qs to 1000 mL

Directions:
1. Stir sodium benzoate powder into water until dissolved.

Stability: 6 months
Once opened discard after 30 days

Storage: Room Temperature
Amber **Glass** Bottle

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database -** Preserved Water with Sodium Benzoate, October 2007.

Alberta Health Services
Calgary and Area

Description: **Preserved Water with Parabens**

Strength:

Route: oral

Form: solution

Ingredients	Strength	Quantity
Methylparaben powder		500 mg
Propylparaben powder		250 mg
Sterile water		qs to 1000 mL

Directions:

1. Stir powder into water until dissolved.
2. May heat slightly to dissolve.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle

Reference:

International Journal of Pharmaceutical Compounding 2003 (Jan/Feb); 7(1):61.

Alberta Health Services
Calgary and Area

Description: **Primaquine Phosphate**

Strength: 3 mg base /mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Primaquine phosphate tablets	15 mg (base)	20 tablets
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup- see recipe)		qs to 100 mL

Directions:

1. Crush the tablets in a mortar and mix with small amounts of the vehicle until a smooth paste results.
2. Transfer to a graduated cylinder.
3. QS to final volume with HSC vehicle.
4. Combine well.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Primidone**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Primidone tablets	250 mg	20 tablets
Distilled or Sterile water		2 mL
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to 100 mL

Directions:

1. Soften tablets with water to dissolve coating.
2. Triturate tablets in mortar.
3. QS to final volume with HSC vehicle.

Stability: 60 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Propranolol**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Propranolol tablets	40 mg	6 tablets
Distilled or Sterile water (wetting agent)		4.8 mL
Citric acid solution (see recipe)	25%	1 mL
Simple syrup		qs to 240 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Levigate the powder with distilled water until smooth.
3. Add a small amount of simple syrup to form a smooth paste. Add more syrup until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional simple syrup to rinse the remaining drug from the mortar.
6. Add citric acid to the suspension in the graduate. Mix well.
7. QS to final volume with simple syrup.
8. Transfer to final container and label.

Stability: 45 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database** - Propranolol 1 mg/mL oral suspension, April 2007.

Alberta Health Services
Calgary and Area

Description: **Propylthiouracil**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Propylthiouracil tablets	50 mg	20 tablets
Ora-Blend®		qs to 200 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Note:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Methylcellulose 1% with parabens: Simple Syrup (1:1)

Stability: Refrigerate: 90 days
Room Temperature: 70 days

Storage: Refrigerate (preferred)
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 2000; 57:1141.
2. **Pediatric Drug Formulations,** 5th edition, 2004, p234.

Alberta Health Services
Calgary and Area

Description: **Pyrazinamide**

Strength: 100 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Pyrazinamide tablets	500 mg	200 tablets
Simple syrup		qs to 1000 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Stability: 2 months

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Am J of Health-Syst Pharm 1995; 52:1558.

Alberta Health Services
Calgary and Area

Description: **Pyridostigmine**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Pyridostigmine tablets	60 mg	5 tablets
Simple syrup		qs to 30 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicle:
    - Sterile Water
- Drug itself is very water soluble, but excipients may not be. Filter if necessary to remove excipients. Drug will not be removed.
- May take 10 -15 minutes for tablets to dissolve.

Stability: 7 days (arbitrary)

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. Alberta Children's Hospital Pharmacy – anecdotal.
2. **ICN Canada Ltd.**, Montreal, P.Q. Personal Communication: June 1, 1998.

Alberta Health Services
Calgary and Area

Description: **Pyridoxine** (Vitamin B6)

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Pyridoxine injection	100 mg/mL	1 mL
Simple syrup		qs to 100 mL

Directions:

1. Withdraw the pyridoxine solution from a vial with a syringe and add to 99 mL of syrup.
2. Combine well.
3. Dispense in an amber **glass** bottle.

Note:

- Pyridoxine injection may contain benzyl alcohol.

Stability: 30 days

Storage: Refrigerate
Amber **Glass** Bottle
Protect from Light
Shake Well

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **Trissel's Stability of Compounded Formulations**, 2000, p331.
3. **Pediatric Drug Formulations,** 5th edition, 2004, p240.

Alberta Health Services
Calgary and Area

Description: **Pyrimethamine**

Strength: 2 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Pyrimethamine tablets	25 mg	8 tablets
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add HSC vehicle in small quantities until a smooth paste is formed. Add more HSC vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional HSC vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Stability: 60 days

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children, Online Recipe Database** - Pyrimethamne 2 mg/mL oral suspension recipe - April 2007
2. **Am J of Health-Syst Pharm** 1997 (Dec); 54:2714.
3. **Pediatric Drug Formulations,** 5th edition, 2004, p241.

Alberta Health Services
Calgary and Area

Description: **Ramipril**

Strength: 10 mcg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Ramipril capsule	1.25 mg	1 capsule
Distilled or Sterile water		qs to 120 mL

Directions:

1. Empty contents of capsule into a mortar.
2. Gradually levigate powder with water until a liquid is formed.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with water.
5. Transfer to final container and label.

Notes:

- May substitute apple juice or applesauce instead of water.
- A 2.5 mg capsule may be used to prepare a 21 mcg/mL suspension, or a 5 mg capsule may be used to prepare a 42 mcg/mL suspension.
- Can be packaged in amber glass bottles or polyethylene terephthalate (PET) containers.

Stability: Refrigerated: 48 hours
Room Temperature 24 hours

Storage: Refrigerate (preferred)
Amber **Glass** Bottle
Shake Well

References:

1. **Trissel's Stability of Compounded Formulations.** Washington DC. Am Ph Assoc. 3rd edition, 2005:377.
2. Allen LV, Stiles ML, Prince SJ, McLaury HJ, Sylvestri MF. Stability of Ramipril in water, apple juice, and applesauce. **Am J Health-Syst Pharm** 1995; 52:2433-2436.

Alberta Health Services
Calgary and Area

Description: **Ranitidine**

Strength: 15 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Ranitidine tablets	150 mg	10 tablets
Distilled or Sterile water		50 mL
Simple syrup		qs to 100 mL

Directions:

1. In a mortar, crush tablets and triturate to a smooth powder.
2. Gradually add water. Mix well.
3. Pour into a graduated cylinder.
4. QS to final volume with simple syrup.
5. Transfer to final container and label.

Notes:

- **To be prepared ONLY in the event that the commercial oral product is NOT available.**
- Ranitidine USP powder can be used in place of ranitidine tablets.

Stability: 7 days

Storage: Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. Allen, Loyd V Jr. Ranitidine Hydrochloride 15-mg/mL oral liquid. **International Journal of Pharmaceutical Compounding** 2007 (Mar/Apr); 11(2):161.
2. Karnes HT, et al. Concentration uniformity of extemporaneously prepared ranitidine suspension. **Am J Hosp Pharm** 1989; 46(2):304.
3. Woods DJ. **Formulation in Pharmacy Practice**. 2nd edition, Dunedin, New Zealand. Available from: http://pharminfotech.co.nz/manual/Formulation/mixtures/index.htm
4. Pharmacy, **IWK Health Centre**, Halifax, NS. Ranitidine Oral Syrup 150-mg/mL, July 8, 2011.

Alberta Health Services
Calgary and Area

Description: **Riboflavin** (Vitamin B2)

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Riboflavin powder, USP		1 g
HSC Vehicle (Methylcellulose 1% HSC in Simple syrup – see recipe)		qs to 100 mL

Directions:

1. Combine ingredients in final container.
2. Mix well.

Stability: 30 days

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **The Hospital for Sick Children, Online Recipe Database** - Riboflavin 10 mg/mL oral suspension recipe, April 2007.
2. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Rifabutin**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Rifabutin capsules	150 mg	10 capsules
Ora-Blend®		qs to 75 mL

Directions:

1. Empty contents of capsules into mortar.
2. Combine with vehicle.
3. QS to final volume.

Note:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Cherry Syrup

Stability: 12 weeks

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm**, Feb 15 1999; 56:333.
2. **Pediatric Drug Formulations**, 5th edition, 2004, p247.

Alberta Health Services
Calgary and Area

Description: **Rifampin LOW STRENGTH**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Rifampin capsules	300 mg	4 capsules
Simple syrup		qs to 120 mL

Directions:

1. Mix contents of capsules with a small amount of syrup in a mortar.
2. QS to volume with syrup in a graduate.

Stability: 28 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Pediatric Drug Formulations,** 5th edition, 2004.
2. **Trissel's Stability of Compounded Formulations**, 4th edition, 2009.
3. **Am J Hosp Pharm** 1986 (Sept); 43:2225-2228.
4. **US Pharmacist** 1989; 14:102-103.
5. **Annals of Pharmacotherapy** 1994 (Feb); 28: 182-185.
6. **J Clin Pharm Ther** 1994; 19:263-265.

Alberta Health Services
Calgary and Area

Description: **Rifampin**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Rifampin capsules	300 mg	10 capsules
Ora-Blend® or Ora-Blend SF®		qs to 120 mL

Directions:

1. Empty contents of capsules and combine with vehicle.
2. QS to final volume.

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Or-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 28 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1998; 55:1804.
2. **Pediatric Drug Formulations,** 5th edition, 2004, p249-250.

Alberta Health Services
Calgary and Area

Description: **Sevelamer**

Strength: 50 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Sevelamer tablets	800 mg	7 tablets
Distilled or Sterile water		56 mL
Simple syrup		qs to 112 mL

Directions:

1. Place tablets in mortar, add water and allow tablets to soak and disintegrate. Stir occasionally.
2. Add a portion of the simple syrup and mix until uniform.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with simple syrup.
5. Transfer to final container and label.

Note:

- Use whole tablets for accuracy in preparation.

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

McElhiney LF. Sevelamer suspension in children with end-stage renal disease. **International Journal of Pharmaceutical Compounding** 2007; 11:20-24.

Alberta Health Services

Calgary and Area

Description: **Sildenafil**

Strength: 2.5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sildenafil citrate tablets	20 mg	12.5 tablets
Ora-Plus®		50 mL
Ora-Sweet®		qs to 100 mL

Directions:

1. Grind tablets to a fine powder
2. Use a sufficient portion of Ora-Plus® to levigate to a smooth paste free of lumps.
3. Add the remaining Ora-Plus® in small portions, mixing between each addition and transfer the product to a graduate.
4. Use the Ora-Sweet®, in small amounts to rinse the residue from the mortar.
5. QS with Ora-Sweet® to final volume.

Notes:

- Alternatively, tablets can be soaked in enough Ora-Plus® and Ora-Sweet® (1:1) to cover tablets and allowed to sit for 40 minutes until tablets soften. Triturate mixture to form a paste and add Ora-Plus® and Ora-Sweet® (1:1) to qs to final required volume.
- Alternate Vehicles:
    - Ora-Blend®
    - Methylcellulose 1% (preserved with parabens)/ Simple Syrup (1:1)
- Revatio® (sildenafil citrate) 20 mg tablets are covered by Province Wide Services for the treatment of primary pulmonary hypertension and are formulary.
- Ensure tablets are in a FINE powder form prior to levigating with liquid mixture to prevent flecks of coating from the tablets appearing in the final suspension.

Stability: 91 days

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

International Journal of Pharmaceutical Compounding 2006 (July/August); 10(4):306.

Alberta Health Services
Calgary and Area

Description: **Sodium Benzoate**
(Preserved Water with Sodium Benzoate 0.2%)

Strength: 200 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Sodium benzoate powder		100 g
Sterile water		qs to 500 mL

Directions:
1. Add water to powder and stir.
2. QS to volume.

Note:
- Wear mask and gloves.

Stability: 30 days

Storage: Refrigerate
Amber **Glass** Bottle

References:
The Hospital for Sick Children, Online Recipe Database - Preserved Water with Sodium Benzoate 0.2% (200 mg/mL) recipe, April 2007

Alberta Health Services
Calgary and Area

Description: **Sodium Bicarbonate**

Strength: 1 mEq/mL, 84 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Sodium bicarbonate powder		84 g
Distilled or Sterile water		qs to 1000 mL

Directions:

1. Weigh out sodium bicarbonate powder.
2. In a mortar, dissolve sodium bicarbonate powder in a portion of water.
3. Pour into a graduated cylinder.
4. QS to final volume with water.
5. Transfer to amber **glass** bottles and label.

Notes:

- Also available as a 1 mEq/mL injection in syringes and vials.
- Use injectable form for small volumes.

Stability: 30 days

Storage: Room Temperature
Amber **Glass** Bottle
Protect from Light

References:

1. **Pediatric Drug Formulations.** 5th edition 2003: 254.
2. **International Journal of Pharmaceutical Compounding** 2003; 7(2):142.

Alberta Health Services
Calgary and Area

Description: **Sodium Citrate**

Strength: 0.3 M

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Sodium citrate DIHYDRATE powder or Sodium citrate ANHYDROUS powder		88.2 g 77.4 g
Aspartame (Equal®) tablets		2 tablets
Peppermint Oil		2 drops
Sterile water		1000 mL

Directions:

1. Weigh sodium citrate and pour into 1000 mL calibrated bottle.
2. Add approximately 500 mL sterile water and the 2 aspartame tablets.
3. Shake to dissolve.
4. Add 2 drops peppermint oil and sterile water to make 1000 mL.
5. Shake well.

Notes:

- pH of final solution should be 8.2.
- Allow patient to move around for approximately 5 minutes after dose.
- May adjust aspartame tablet quantity to achieve desired sweetness.

Label: Contains Aspartame

Stability: 60 days

Storage: Refrigerate

References:

1. Grace Hospital Manufacturing Sheet, April 1999.
2. **Anaesthesia and Analgesia** 1981 (July); 60(7).

Alberta Health Services

Calgary and Area

Description: **Sodium Hydroxide Topical Solution**

Strength: 10% *******WHMIS Controlled*******

Route: topical

Form: solution

Ingredients	Strength	Quantity
Sodium hydroxide pellets	100%	1 g
Sterile water		10 mL

Directions:

**** All preparation should occur in a biohazard hood. Sodium hydroxide pellets and 10% topical solution are corrosive. Contact could cause burns to skin, eyes and respiratory tract.**
Wear gloves, gown, mask, and protective eyewear at all times when handling the raw chemical or when preparing the finished product.

1. Obtain the following supplies/equipment prior to preparation:
   - 2 small glass beakers
   - 1 small graduate cylinder
   - 1 small glass bottle with lid (i.e. 15 mL eye dropper bottle with dropper removed)
   - 1 glass stir stick(s)
2. Measure 10 mL of sterile water accurately in a graduate and transfer into a small glass beaker.
3. Prepare for work in the biohazard hood:

   Sodium hydroxide pellets are hygroscopic and will absorb moisture from the air. It is important to weigh the pellets just prior to preparation.
4. Have another coworker tare the scale with an empty, small glass beaker. Have the coworker then weigh the sodium hydroxide pellets.
5. Try to avoid contact with metals by tapping pellets carefully into the beaker. Use a glass stirring rod if necessary to transfer pellets.
6. Transfer the two beakers: one containing the sodium hydroxide pellets and the other containing the sterile water into the biohazard hood.

   ****Never add water to sodium hydroxide. Always add sodium hydroxide to water.**
7. In the biohazard hood, carefully transfer the pellets into the beaker of water (solution may warm).
8. The pellets should dissolve very quickly. Once dissolved, carefully pour the solution into a small glass bottle.
9. Cap the bottle tightly.
10. Dispense as required by **WHMIS.**

Notes:

- **Sodium hydroxide is corrosive. Avoid contact with eyes or skin.**
- **If inadvertent contact occurs, immediately flush the area with copious amounts of water soap for 15 minutes. Remove contaminated clothing immediately.**

Stability: 48 hours (arbitrary)

Storage: Room Temperature
Amber **Glass** Bottle
Keep lid tightly closed

References:

1. MSDS sodium hydroxide pellets, MSDS sodium hydroxide 1-50% solution.
2. Dermatol Surg 2004; 30: 26-31.

Alberta Health Services
Calgary and Area

Description: **Sodium Shohl's, Modified** (Dicitrate®/ Bicitra® substitute)

Strength: 100 mg sodium citrate dihydrate/ mL and
66.8 mg citric acid monohydrate/ mL
Provides 1 mEq/mL sodium and bicarbonate

Route: oral

Form: liquid

Ingredients	Strength	Quantity
Sodium citrate dihydrate powder		10 g
Citric acid, monohydrate powder		6.68 g
Distilled or Sterile water		qs to 100 mL

Directions:

1. Accurately weigh and/or measure each ingredient.
2. Dissolve powders in about 3/4 of final volume of water by stirring.
3. Add sufficient water to final volume and mix well.

Notes:

- Electrolyte content per milliliter (mL):
  Sodium 23.5 mg is equivalent to 1 mEq Sodium
  Citrate 64.3 mg (0.335 mmol = 1 mEq) converted to 1 mEq Bicarbonate
- Ingredient alternatives (original recipe ingredients preferred)
  Sodium citrate dihydrate 10 g = sodium citrate anhydrous 8.7 g
  Citric acid monohydrate 6.68 g = citric acid anhydrous 6.11 g

Labels: Dilute before administration

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

International Journal of Pharmaceutical Compounding 2005 (July/Aug); 9(4):316.

Alberta Health Services
Calgary and Area

Description: **Sotalol**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sotalol tablets	80 mg	5 tablets
Ora-Blend®		qs to 80 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)
    - Ora-Plus®: Ora-Sweet SF® (1:1)
    - Ora-Blend SF®
    - Simple Syrup / Methylcellulose 1% preserved with Sodium Benzoate (1:2.5)
- Recipe modified to use 80 mg tablets.

Stability: 12 weeks (84 days)

Storage: Refrigerate (preferred) or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 2011 (Sept/Oct); 15(5):425.
2. **International Journal of Pharmaceutical Compounding** 2005 (Sept/Oct); 9(5): 402-406.
3. **Pediatric Drug Formulations,** 5th edition, 2004, page 258.
4. **Annals of Pharmacotherapy** 2003; 37:506.

Alberta Health Services

Calgary and Area

Description: **Spironolactone**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Spironolactone tablets	25 mg	120 tablets
Ora-Blend® or Ora-Blend SF®		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- Flavouring may be added.

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 1997 (May/June): 1(3):184.
2. **Pediatric Drug Formulations**, 5th edition, 2004, p259.

Alberta Health Services
Calgary and Area

Description: **Spironolactone/ Hydrochlorothiazide**

Strength: 5 mg/ 5 mg/ mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Spironolactone / Hydrochlorothiazide tablets	25 mg/ 25 mg	24 tablets
Ora-Blend® or Ora-Blend SF®		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

Reference:

Am J of Health-Syst Pharm 1996; 53(19):2304-2309.

Alberta Health Services
Calgary and Area

Description: **Sucralfate**

Strength: 200 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sucralfate	1 g	20 tablets
Sterile or Distilled water	qs	100 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Gradually levigate powder with water until a liquid is formed.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with water.
5. Transfer to final container and label

Notes:

- This recipe should only be prepared when the commercial product is on backorder.
- Reports of bezoar formation have been associated with sucralfate. Sucralfate forms an insoluble protein-aluminum complex with enteral feeds, resulting in semi-solid aggregates that can block feeding tubes, or even the stomach or esophagus.
- Enteral feeds should be stopped at least 1 hour before dose and not restarted for 1 hour post-dose. A longer break may be necessary in patients with delayed gastric emptying. Flush enteral feeding tubes thoroughly with water prior to and after administering doses.

Stability: 14 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. Woods DJ. Formulation in pharmacy practice. 2nd edition, Dunedin, New Zealand. Available from: http://pharminfotech.co.nz/manual/Formulation/mixtures/index.htm
2. McCrea J, Rappaport P, Stansfield S, Baker D, Dupuis LL. James G., Extemporaneous oral liquid dosage preparations. 1st ed. Toronto, ON: Canadian Society of Hospital Pharmacists; 1988.
3. White R, Bradnam V. Handbook of drug administration via enteral feeding tubes. First edition. London: Pharmaceutical Press; 2007.

Alberta Health Services
Calgary and Area

Description: **Sucrose**

Strength: 24% w/v

Route: oral

Form: solution

Ingredients	Strength	Quantity
Sodium benzoate powder		0.980 g
Sterile water		500 mL
Simple syrup		141 mL
Preserved Vehicle (see directions)		qs to 500 mL

Directions:

Part A: Preparation of Preserved Vehicle

1. Wear gloves and a mask, and weigh out sodium benzoate powder on weigh boat.
2. Add sterile water qs to 500 mL. Stir well until dissolved.

Part B:

1. Measure out simple syrup in a large graduate.
2. Then qs to 500 mL with preserved vehicle from Part A (see above). Stir well.
3. Transfer 500 mL into 500 mL amber **glass** bottles. Label.

Notes:

- The Medisca NF/BP/USP (85% w/v) Simple Syrup brand should be used to prepare this recipe. If another simple syrup product is used, the sucrose content must be verified.
- MUST USE FRESHLY PREPARED PRESERVED VEHICLE ONLY.
- **A commercial oral product is available.**

Stability: 2 months

Storage: Room Temperature
Amber **Glass** Bottle

Reference:

The Hospital for Sick Children, Online Recipe Database - Sucrose 24% w/v oral solution recipe, 2010.

Alberta Health Services
Calgary and Area

Description: **Sulfadiazine**

Strength: 100 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sulfadiazine tablets	500 mg	20 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Add vehicle to powder in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with vehicle. Stir well.
7. Transfer to final container and label.

Notes:

- Alternate Vehicle:
  - Ora-Blend®
- Sulfadiazine is available from Health Canada's Special Access Program

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

International Journal of Pharmaceutical Compounding 2011 (Sept/Oct); 15(5): 426.

Alberta Health Services
Calgary and Area

Description: **Sulfasalazine**

Strength: 100 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sulfasalazine tablets	500 mg	20 tablets
Ora-Plus®: Ora-Sweet® (1:1) or Ora-Blend®		qs to 100 mL

Directions:

1. Place required amount of tablets in mortar.
2. Measure Ora-Plus® and Ora-Sweet® (or Ora-Blend®) vehicles.
3. Pour some of the vehicle on top of the tablets and let soak until tablets are softened (20 - 30 minutes).
4. Levigate the tablets until a smooth paste is formed. Add more vehicle to the mixture until a liquid is formed.
5. Pour into a graduated cylinder.
6. Use additional vehicle to rinse the remaining drug from the mortar and add to the graduated cylinder.
7. QS to final volume with vehicle. Stir well.
8. Transfer to a final container and label.

Note:

- Do not use enteric coated tablets.

Labels: Avoid Sunlight
Take with plenty of water
Take with food or milk

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle **(glass, polyvinylchloride (PVC), or PET bottle).**
Shake Well

Reference:

Can J Hosp Pharm 2006; 59:194-200.

Alberta Health Services
Calgary and Area

Description: **Sumatriptan**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Sumatriptan tablets	50 mg	18 tablets
Ora-Blend® or Ora-Blend SF®		qs to 180 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 21 days

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

References:

1. **Pediatric Drug Formulations**, 5th edition, 2004, p266.
2. **Am J of Health-Syst Pharm** 1997; 57:1619.

Alberta Health Services
Calgary and Area

Description: **Sunitinib**

Strength: 10 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Sunitinib capsules	50 mg	20 capsules
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Empty contents of capsules into a mortar and triturate to a fine powder.
3. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
4. Gradually levigate powder with vehicle until a liquid is formed.
5. Pour into a graduated cylinder.
6. Rinse mortar and qs to final volume with vehicle.
7. Transfer to final container and label.

Notes:

- Alternate Vehicle:
  - Ora-Blend®
- Can be packaged in amber **glass** bottles or polyethylene terephthalate (PET) containers

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber **Glass** Bottle
Shake Well
Cytotoxic

Reference:

Navid F. Christensen R. Minkin P. Stewart CF. Furman WL. Baker S. Stability of sunitinib in oral suspension. **Annals of Pharmacotherapy** 2008; 42:962-966.

Alberta Health Services
Calgary and Area

Description: **Tacrolimus**

Strength: 1 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Tacrolimus capsules	5 mg	20 capsules
Distilled or Sterile water		15 mL
Ora-Plus®: Simple syrup (1:1)		qs to 100 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Empty capsules into mortar and mix in water until dissolved.
3. Mix Ora-Plus® and Simple syrup together (1:1) and levigate with solution.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume.
6. Dispense in amber prescription bottle.

Notes:

- Preferable not to recycle oral syringes.
- Subsequent doses do not require biohazard hood precaution.

Stability: 120 days (4 months)

Storage: Room Temperature
Amber Glass or **non-PVC Plastic** Bottle
Shake Well
Cytotoxic

Reference:

Bone Marrow Transplantation 2006; 37:781-784.

Alberta Health Services
Calgary and Area

Description: **Tadalafil**

Strength: 5 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Tadalafil tablets	20 mg	25 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 100 mL

Directions:

1. In a mortar, crush tablets and triturate to a FINE powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle until a liquid is formed.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle.
6. Transfer to final container and label.

Notes:

- Tadalafil tablets are Formulary Restricted.
- Refer to Tadalafil tablets in AHS Provincial Formulary

Stability: 91 days

Storage: Room Temperature
Shake Well

Reference:

Pettit RS. Johnson CE. Caruthers RL. Stability of an extemporaneously prepared tadalafil suspension. **Am J Health-Syst Pharm** 2012; 69: 592-594.

Alberta Health Services

Calgary and Area

Description:	**Temozolomide**
Strength:	10 mg/mL
Route:	oral
Form	suspension

Ingredients	Strength	Quantity
Temozolomide capsules	250 mg	4 capsules
Povidone USP 30 powder		500 mg
Citric acid powder, anhydrous		25 mg
Distilled or Sterile water		1.5 mL
Ora-Plus®		50 mL
Ora-Sweet®		qs to 100 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask, and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. Triturate contents of temozolomide capsules and povidone in a **GLASS** mortar.
3. Dissolve citric acid in water and mix with powder mixture in mortar to form a uniform paste.
4. Add Ora-Plus® to paste and mix thoroughly.
5. Pour into a **glass** graduated cylinder.
6. Rinse mortar and qs to final volume with Ora-Sweet®.

Notes:

- Alternate Vehicle: :
  - Ora-Plus®: Ora-Sweet SF® (1:1)
- Ora-Sweet SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).
- Wear gloves and mask when weighing povidone and citric acid powder. Avoid contact with skin or eyes. Avoid inhalation of particles.

Stability: 60 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well
Cytotoxic

Reference:

Trissel's LA. Zhang Y. Koontz SE. Temozolomide stability in extemporaneously compounded oral suspensions. **International Journal of Pharmaceutical Compounding** 2006; 10(5):396-399.

Alberta Health Services
Calgary and Area

Description: **Terbinafine**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Terbinafine tablets	250 mg	10 tablets
Ora-Blend®		qs to 100 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Note:

- Alternate Vehicle:
    - Ora-Plus®: Ora-Sweet® (1:1)

Stability: 42 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1999; p243.
2. **Pediatric Drug Formulations,** 5th edition, 2004, p269.
3. **The Hospital for Sick Children, Online Recipe Database -** Terbinafine 25 mg/mL oral suspension recipe, April 2007.

Alberta Health Services
Calgary and Area

Description: **Tetracaine/ Oxymetazoline nose drops**

Strength: tetracaine 1%/ oxymetazoline 0.025%

Route: nasal

Form: solution

Ingredients	Strength	Quantity
Tetracaine HCl powder		800 mg
Oxymetazoline	0.05%	40 mL
Sterile water		qs to 80 mL

Hazards:

Tetracaine HCl is a poison by ingestion and eye irritant. Use gloves, mask and goggles when making this compound.

Directions:

1. Accurately weight tetracaine HCl powder.
2. Measure oxymetazoline 0.05% in a graduate.
3. Dissolve tetracaine powder in ~30 mL of water. Mix well, stirring with a glass stirring rod if necessary.
4. QS to a final volume of 80 mL with water.
5. Filter the final solution through a 0.2 micron filter into bottle(s).
6. Package and label.
7. Apply seals to the tops of the bottles.

Notes:

- Provides tetracaine HCl 10 mg/mL and oxymetazoline 0.25 mg/mL.
- Nasal products should be manufactured STERILE using STERILE technique, ingredients and equipment, but consider individual needs and usage.

Stability: 14 days

Storage: Refrigerate
Amber **Plastic or Glass** Bottle
Protect from Light

References:

1. **Cincinnati Children Hospital,** March 2002.
2. **Anesth Analg** 1995; 81:724-727.

Alberta Health Services
Calgary and Area

Description: **Tetracycline**

Strength: 25 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Tetracycline capsules	250 mg	10 capsules
Ora-Blend® or Ora-Blend SF®		qs to 100 mL

Directions:

1. Empty contents of capsules and combine with vehicle.
2. QS to final volume.

Notes:

- Alternate Vehicles and Stability:
  - Ora-Blend® or Ora-Plus®: Ora-Sweet® (1:1):
    - 28 days Refrigerated or Room Temperature
  - Ora-Blend SF® or Ora-Plus®: Ora-Sweet SF® (1:1):
    - 10 days Refrigerated or 7 days Room Temperature
  - Cherry Syrup (cherry syrup concentrate diluted 1:4 with simple syrup):
    - 7 days Refrigerated or 2 days Room Temperature
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: See Notes Section

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

References:

1. **Trissel's Stability of Compounded Formulations**, 3rd edition, 2005, p414.
2. **Am J of Health-Syst Pharm** 1998; 55:1804.

Alberta Health Services
Calgary and Area

Description: **Thiamine** (Vitamin B1)

Strength: 100 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Thiamine tablets	100 mg	50 tablets
Ora-Plus®: Ora-Sweet® (1:1)		qs to 50 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
3. Gradually levigate powder with vehicle to form a liquid.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with vehicle.
6. Transfer to final container and label.

Note:

- Alternate Vehicle
    - Ora-Blend®

Stability: 91 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Ensom MH and Decarie D. Stability of thiamine in extemporaneously compounded suspensions. **Can J Hosp Pharm** 2005; 58:26-30.

Alberta Health Services
Calgary and Area

Description: **Thioguanine**

Strength: 20 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Thioguanine tablets	40 mg	15 tablets
Ora-Plus®: Ora:Sweet® (1:1)		qs to 30 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
    - Biohazard hood and appropriate personnel.
    - Wear appropriate clothing when preparing (gloves, mask and gown).
    - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2. In a mortar, crush tablets and triturate to a fine powder.
3. Mix Ora-Plus® and Ora-Sweet® together (1:1) to make vehicle.
4. Gradually levigate powder with vehicle until a liquid is formed.
5. Pour into a graduated cylinder.
6. Rinse mortar and qs to final volume with vehicle.
7. Transfer to final container and label

Notes:

- Alternate Vehicles:
    - Ora-Blend®
    - Methylcellulose 1% solution / Simple Syrup (1:2); can use either Methylcellulose 1% solution (with parabens) or Methylcellulose 1% solution (with sodium benzoate).
- Subsequent doses do not require biohazard hood precaution.

Stability: 60 days

Storage: Room Temperature
Amber **Glass** Bottle
Shake Well
Cytotoxic

References:

1. **Am J Health-Syst Pharm** 2011; 68:900-908.
2. **Am J of Hosp Pharm** 1983; 40:616.

Alberta Health Services

Calgary and Area

Description: **Tobramycin** (Fortified)

Strength: 14 mg/mL (1.4%)

Route: ophthalmic

Form solution

Ingredients	Strength	Quantity
Tobramycin injection	40 mg/mL	2 mL
Tobramycin ophthalmic drops	0.3%	5 mL

Directions:

Prepare in laminar flow hood using aseptic technique whenever possible.

1. Draw up required amount of tobramycin 40 mg/mL solution for injection into a syringe and transfer to a sterile ophthalmic dropper bottle.
2. Withdraw tobramycin ophthalmic solution into a syringe and transfer to the sterile ophthalmic dropper bottle.
3. Cap the ophthalmic dropper bottle aseptically and label.

Stability: 91 days

Storage: Refrigerate
Sterile Eye Dropper Bottle

References:

1. McBride HA, Martinez DR, Trang JM, et al. Stability of gentamicin sulfate and tobramycin sulfate in extemporaneously prepared ophthalmic solutions at 8 degrees celsius. **Am J Hosp Pharm** 1991 (Mar); 48(3):507-509.
2. Reynolds LA, Closson RG. **Extemporaneous ophthalmic preparations.** Applied Therapeutics Inc: Vancouver, WA, USA; 1993.

Alberta Health Services
Calgary and Area

Description: **Tolterodine**

Strength: 0.4 mg/mL

Route: oral

Form suspension

Ingredients	Strength	Quantity
Tolterodine tablets	2 mg	20 tablets
Distilled or Sterile water		15 mL
Ora-Plus®		45 mL
Ora-Sweet®		qs to 100 mL

Directions:

1. Place tablets in mortar and soak in water.
2. Add Ora-Plus® and mix well.
3. Pour into a graduated cylinder.
4. Rinse mortar and qs to final volume with Ora-Sweet® vehicle.
5. Transfer to final container and label.

Stability 14 days

Storage Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

Formulations: Tolterodine 2 mg/5 mL oral suspension. **International Journal of Pharmaceutical Compounding** 2009; 13(2):160.

Alberta Health Services
Calgary and Area

Description: **Topiramate**

Strength: 6 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Topiramate tablets	100 mg	6 tablets
Methylcellulose with Parabens (see recipe)	1%	10 mL
Simple syrup		qs to 100 mL

Directions:

1. Crush the tablets and triturate to a fine powder in a mortar.
2. Levigate the powder with methylcellulose gel to uniform paste. Add simple syrup in geometric proportions with constant mixing and transfer to a graduate.
3. Rinse the mortar with syrup, and pour into a graduated cylinder.
4. QS to final volume.

Note:

- May substitute Methylcellulose1% with parabens and Simple Syrup with:
  - Ora-Blend®
  - Ora-Plus® : Ora-Sweet® (1:1)

Stability: 90 days

Storage: Refrigerate (preferred) or Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

Pediatric Drug Formulations 5th edition, 2004, p253.

Alberta Health Services
Calgary and Area

Description: **Tranexamic Acid**

Strength: 5% (w/w)

Route: nasal

Form gel

Ingredients	Strength	Quantity
Tranexamic acid tablets	500 mg	10 tablets
Intrasite® gel		100 g
Sterile water (to wet tablets)		5 mL

Directions:

1. In a mortar, crush tablets and triturate to a fine powder.
2. Levigate powder with water to make a smooth paste.
3. Gradually add the IntraSITE® gel to the paste.
4. Pull the plunger out of a 60 mL syringe and fill the barrel with gel.
5. Replace the plunger and transfer 1 mL of gel to a 3 mL syringe using a syringe tip connector. Cap with syringe tip cap.

Notes:

- Actual concentration is about 4.5%.
- Isopropyl alcohol was used as a wetting agent in the past.
- Wetting agent can be omitted altogether.
- Can be packaged in ointment jars.
- Use gloves and mask when preparing.

Stability: 7 days

Storage: Refrigerate
3 mL syringe or ointment jar

Reference:

THIS FORMULATION IS NOT BASED ON LITERATURE, but from unpublished data, historical use or physician/pharmacy experience.

Alberta Health Services
Calgary and Area

Description: **Tranexamic Acid**

Strength: 48 mg/mL

Route: oral

Form: mouthwash

Ingredients	Strength	Quantity
Tranexamic acid injection	100 mg/mL	25 mL
Sterile water		27 mL

Directions:

1. Withdraw required amount of tranexamic acid from vials into a syringe.
2. Measure required amount of sterile water in a separate syringe.
3. Using a syringe tip connector, combine tranexamic acid and sterile water into one syringe. Roll gently to mix.
4. Transfer mixture into a final container.

Note:

- If using ampoules instead of vials, use a 5 micron filter needle, and withdraw required amount of tranexamic acid from ampoules into a syringe. Remove filter needle. Then proceed with step 2 of directions.

Stability: 2 months unopened
48 hours when opened in hospital
7 days open for outpatient use

Storage: Refrigerate
Amber **Glass** Bottle

References:

1. **The Hospital for Sick Children**, Toronto, Pharmacy Department.
2. Alberta Children's Hospital Pharmacy – anecdotal.

Alberta Health Services
Calgary and Area

Description: **Trazodone Hydrochloride**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Trazodone hydrochloride	150 mg	1 tablet
Simple syrup		qs to 15 mL

Directions:

1. Crush tablet in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle
Shake Well

Reference:

US Pharmacist 1990 (July); p64.

Alberta Health Services
Calgary and Area

Description	**Triamterene/ Hydrochlorothiazide**
Strength:	4 mg/ 2 mg/ mL
Route:	oral
Form:	liquid

Ingredients	Strength	Quantity
Triamterene /Hydrochlorothiazide (Dyazide® or equivalent tablets)	50 mg/ 25 mg	12 tablets
Simple syrup: Distilled water (1:1)		qs to 150 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Stability: 2 weeks

Storage: Refrigerate
Amber Bottle

Reference:

Professional Compounding Company – Personal Communication (ACH DI files).

Alberta Health Services

Calgary and Area

Description: **Tricitrate Oral Solution**
(Potassium Citrate/ Sodium Citrate)

Strength:
Bicarbonate 2 mEq/mL (converted from citrate)
Sodium 1 mEq/mL
Potassium 1 mEq/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Citric acid USP powder, monohydrate		6.7 g
Sodium citrate powder		10 g
Potassium citrate powder		11 g
Distilled or Sterile water		50 mL
Simple syrup		qs to 100 mL

Directions:

1. Weigh out powders and place in mortar.
2. Dissolve powder in a portion of the water. Dissolve powders in water by stirring.
3. Gradually add the remaining amount of water.
4. Pour into a graduated cylinder.
5. Rinse mortar and qs to final volume with simple syrup.
6. Transfer to final container and label.

Note:

Electrolyte content per milliliter (mL):
Sodium: 23.5 mg equivalent to 1 mEq Sodium
Potassium: 39.8 mg equivalent to 1 mEq Potassium
Citrate: 128.4 mg converted to 2 mEq Bicarbonate

Stability: 14 days

Storage: Refrigerate; DO NOT freeze
Amber Plastic Bottle

Reference:

Formulations: Citric Acid, Potassium Citrate and Sodium Citrate Solution**. International Journal of Pharmaceutical Compounding** 2011 (Jul/Aug); 15(4):335.

Alberta Health Services
Calgary and Area

Description: **Trihexyphenidyl**

Strength: 0.4 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Trihexyphenidyl tablets	2 mg	20 tablets
Citric acid USP powder, monohydrate		200 mg
Parabens solution	10%	1 mL
Simple syrup		50 mL
Distilled or Sterile water		qs to 100 mL

Directions:

1. Crush tablets.
2. Dissolve citric acid powder in a small amount of water and add to tablets.
3. Add parabens solution and simple syrup.
4. QS to final volume with water.

Stability: 14 days

Storage: Room Temperature or Refrigerate
Amber Plastic Bottle
Shake Well

References:

1. **Trissel's Stability of Compounded Formulations,** 3rd edition, 2005, p433-434.
2. **Formulation in Pharmacy Practice,** 1st edition, 1998

Alberta Health Services
Calgary and Area

Description: **Trimethoprim**

Strength: 10 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Trimethoprim tablets	100 mg	10 tablets
Simple syrup		qs to 100 mL

Directions:

1. Soak the tablets in mortar with some simple syrup for about 10 minutes.
2. Then levigate to a smooth paste.
3. Add more simple syrup to the paste until a liquid is formed.
4. Pour into a graduated cylinder.
5. Use additional simple syrup to rinse the remaining drug from the mortar and add to graduate.
6. QS to final volume with simple syrup. Stir well.
7. Transfer to a final container and label.

Stability: 30 days

Storage: Room Temperature
Amber Plastic Bottle
Shake Well

Reference:

The Hospital for Sick Children, Online Recipe Database - Trimethoprim 10 mg/mL oral suspension recipe, Feb 2008.

Alberta Health Services
Calgary and Area

Description: **Uromitexan** (Mesna®)

Strength: 20 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
MESNA® injection	100 mg/mL	10 mL
Vehicle		qs to 50 mL

Directions:

1. Combine ingredients in final container.
2. Mix well.

Notes:

- Alternate Vehicles:
  - Orange Syrup
  - Grape Syrup
  - Can be further diluted with carbonated beverage and juice (apple or orange).
  - **Do not** mix in milk or chocolate milk.
- Can also be diluted to 50 mg/mL.
- Mesna injection may contain benzyl alcohol

Stability: 7 days (in syrup), if further diluted than 24 hours

Storage: Room Temperature
Amber **Glass** Bottle

References:

1. **Trissel's Stability of Compounded Formulations,** 3rd edition, 2005.
2. **Cancer Chemotherapy Pharmacology** 1991; 28:298.

Alberta Health Services
Calgary and Area

Description: **Ursodiol**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Ursodiol tablets	250 mg	24 tablets
Ora-Blend®		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label.

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Ora-Blend SF®
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria)

Stability: 60 days

Storage: Room Temperature.
Amber Plastic Bottle
Shake Well

References:

1. **Am J Health-Syst Pharm** 2002 (Feb 15); 59; 361-363.
2. **The Hospital for Sick Children, Online Recipe Database -** Ursodiol 50 mg/mL oral suspension, April 2007.

Alberta Health Services
Calgary and Area

Description: **valACYclovir**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
valACYclovir caplets	500 mg	18 caplets
Ora-Plus®		40 mL
Ora-Sweet® or Ora-Sweet SF®		qs to 180 mL

Directions:

1. Crush caplets in mortar and triturate to a fine powder.
2. Add vehicle 5 mL at a time, mixing thoroughly between additions.
3. Pour the mixture into the final container.
4. Thoroughly rinse the mortar with 10 mL of the suspension vehicle and pour into the bottle.
5. Repeat rinsing process 4 more times.
6. QS to final volume.
7. Shake well.

Note:

- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 21 days

Storage: Refrigerate
Amber **Glass** Bottle
Shake Well

References:

1. **Am J of Health-Syst Pharm** 1999; p1957.
2. **International Journal of Pharmaceutical Compounding** 2006 (Nov/Dec); 10(6):461

Alberta Health Services
Calgary and Area

Description: **valGANCIclovir**

Strength: 60 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
valGANCIclovir tablets	450 mg	16 tablets
Ora-Blend®		qs to 120 mL

Directions:

1. Employ Safe Handling of Hazardous Drugs best practices, including:
   - Biohazard hood and appropriate personnel.
   - Wear appropriate clothing when preparing (gloves, mask and gown).
   - Once prepared, use a dispensing cap (pin) on bottle for safe dispensing of subsequent doses.
2 In a mortar, crush tablets and triturate to a fine powder.
3 Gradually levigate powder with vehicle until a liquid is formed.
4 Pour into a graduated cylinder.
5 Rinse mortar and qs to final volume with vehicle.
6 Transfer to final container and label.

Note:

- Alternate Vehicle:
  - Ora-Plus :Ora-Sweet (1:1)

Stability: 35 days

Storage: Refrigerate
Amber **Glass** bottle
Shake Well
Cytotoxic

References:

1. **Am J of Health-Syst Pharm** 2003 (April); 60: 687.
2. **The Hospital for Sick Children, Online Recipe Database** - Valganciclovir 60 mg/mL oral suspension, April 2007.

Alberta Health Services
Calgary and Area

Description: **Vancomycin**

Strength: 25 mg/mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Vancomycin injection	500 mg	5 vials
Ora-Sweet vehicle		25 mL
Sterile water		25 mL
Sterile water (to reconstitute vials)		See directions

Directions:

1. Reconstitute each vial with 10 mL of sterile water.
2. Mix Ora-Sweet and sterile water 1:1.
3. Withdraw reconstituted vancomycin from vials and dilute with Ora-Sweet®/ sterile water (1:1) mixture.
4. Transfer to final container and label.

Stability: 75 days

Storage: Refrigerate
Amber Plastic Bottle

Reference:

Ensom MHH, et al. Stability of vancomycin 25 mg/mL in Ora-Sweet and water in unit - dose cups and plastic bottles at 4°C and 25°C. **Can J Hosp Pharm** 2010; 63(5):366-372.

Alberta Health Services

Calgary and Area

Description: **Vancomycin**

Strength: 5 mg/mL

Route: rectal

Form solution

Ingredients	Strength	Quantity
Vancomycin injection	1 gram (reconstituted concentration of 50 mg/mL with 20 mL of SWI)	1 vial
Sodium chloride injection	0.9%	See step 3 of Directions

Directions:

1. Reconstitute vancomycin 1 g vial with 20 mL of sterile water (water not included in ingredient list), to make a 50 mg/mL concentration.
2. Withdraw 10 mL of the reconstituted solution into a syringe and transfer to a sterile amber bottle.
3. QS bottle to 100 mL of normal saline to prepare a final concentration of 5 mg/mL.

Stability: 14 days

Storage Refrigerate
Amber **Glass** (preferred) or Plastic Bottle

References:

1. Adjunctive Intracolonic Vancomycin for Severe Clostridium difficile Colitis: Case Series and Review of the Literature. Clin Infectious Diseases 2002, 35:690-696.
2. Guidelines for the Diagnosis and Management of Clostridium difficile - Associated Diarrhea and Colitis. Am J of Gastroentero 1997; 92(5):739-750.
3. Treatment of Clostridium difficile infection in adults. UpToDate 2011.
4. Manufacturer package insert for Vancomycin Injection, PPC Inc Canada, July 2008.
5. USP 795 Guidelines: Pharmaceutical Compounding of Non-Sterile Preparations. (Reference for stability data).

Alberta Health Services
Calgary and Area

Description: **Verapamil**

Strength: 50 mg/mL

Route: oral

Form: suspension

Ingredients	Strength	Quantity
Verapamil tablets	80 mg	75 tablets
Ora-Blend® or Ora-Blend SF®		qs to 120 mL

Directions:

1. Crush tablets in mortar to a fine powder.
2. Add vehicle in small quantities until a smooth paste is formed. Add more vehicle to the paste until a liquid is formed.
3. Pour into a graduated cylinder.
4. Use additional vehicle to rinse the remaining drug from the mortar and add to graduate.
5. QS to final volume with vehicle. Stir well.
6. Transfer to final container and label

Notes:

- Alternate Vehicles:
  - Ora-Plus®: Ora-Sweet® (1:1)
  - Ora-Plus®: Ora-Sweet SF® (1:1)
  - Cherry Syrup
- Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates less than or equal to 28 days corrected age (see Criteria).

Stability: 60 days

Storage: Refrigerate or Room Temperature
Amber Plastic Bottle
Protect from Light
Shake Well

References:

1. **International Journal of Pharmaceutical Compounding** 1997 (May/June); 1(2):188.
2. **Am J of Health-Syst Pharm** 1996; 53:2304.
3. **Pediatric Drug Formulations,** 5th edition, 2004, p292.

Alberta Health Services
Calgary and Area

Description: **Wild Cherry Syrup HSC**

Strength: 0.2%

Route: oral

Form: syrup

Ingredients	Strength	Quantity
Artificial Wild cherry flavor		2 mL
Simple syrup		qs to 1000 mL

Directions:

1. Combine ingredients in final container.
2. Mix well.

Stability: 6 months

Storage: Room Temperature

Reference:

McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.

Alberta Health Services
Calgary and Area

Description: **Zinc Acetate**

Strength: 10 mg of elemental zinc/ mL

Route: oral

Form: syrup

Ingredients	Strength	Quantity
Zinc acetate powder, USP		1.68 g
Distilled or Sterile water, warmed		10 mL
Simple syrup: Cherry syrup (2:1)		qs to 50 mL

Directions:

1. Dissolve powder in warm water.
2. Simple syrup 30 mL mixed with cherry syrup 15 mL.
3. QS to 50 mL with syrup mixture.

Note:

- Alternate Vehicle:
    - Simple Syrup

Stability: 60 days

Storage: Refrigerate

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **Pediatric Drug Formulations,** 3rd edition, 1997, p112.

Alberta Health Services
Calgary and Area

Description: **Zinc Sulfate**

Strength: 10 mg elemental zinc/ mL

Route: oral

Form: solution

Ingredients	Strength	Quantity
Zinc sulfate powder, USP		4.4 g
Preserved Water HSC (see recipe)	0.1%	qs to 100 mL

Directions:

1. Weigh powder.
2. Combine with water.
3. Mix well.

Note:

- Elemental zinc 1 mg = zinc sulfate 2.47 mg or zinc sulfate heptahydrate 4.4 mg

Stability: 30 days

Storage: Refrigerate
Amber Plastic Bottle

References:

1. McCrea J. **Extemporaneous oral liquid dosage preparations.** 1st edition. Toronto, ON, Canada: Canadian Society of Hospital Pharmacists; 1988.
2. **The Hospital for Sick Children, Online Recipe Database** - Zinc sulphate 10 mg elemental zinc/mL oral solution, April 2007.