PHARMACEUTICAL SERVICES DIVISION

MINISTRY OF HEALTH MALAYSIA

MOH Extemporaneous Formulary 2011

Editorial Board

CONTENTS

INTRODUCTION

Compounding of pharmaceutical formulations remains a core skill of pharmacists and this manual is produced to include well referenced recipes that are easy to prepare, use ingredients readily available, have the longest expiry date possible and when necessary, provide more than one strength or formulation of a recipe to accommodate the unique needs of different groups of patients.

Efforts have been made to search for substantiated references in producing this manual of extemporaneous preparations. However, this list of compounded items in this manual is not exhaustive. Preparations included in the manual are for ingredients available commercially but not in the required dosage form for therapy and thus, necessitate extemporaneous preparations.

The committee has made all reasonable efforts to confirm the accuracy of the information contained in the manual and to present best practices as identified at the time of its completion. Formulations are only included where there is existence of published formulations and associated stability data.

The use of this manual requires knowledge based interpretation by health care professionals and is intended solely for use by pharmacists in healthcare facilities. All information contained in the manual has been provided with the sole intent that it be readily accessible for pharmacist's information and as a guide for preparing extemporaneous preparations that may be prescribed.

OBJECTIVE

To standardise formulations of extemporaneous preparations and practice in healthcare facilities

POLICY

1. Always consider the use of commercially available products as far as possible.

2. If no suitable commercial product exists, consider a therapeutic alternative that is available in a suitable dosage form. This must be discussed with the physician.

3. If necessary, extemporaneous preparations should be done based on evidence-based references.

4. Preparations listed in this manual should be done according to what is stated as far as possible.

5. When no information is available, compound an oral medication by dispensing a tablet and/or capsule and directing the caregiver to mix just prior to administration.

6. Maximum quantity of the extemporaneous preparations to be dispensed should not exceed one month even if shelf life is longer than 30 days.

7. Refrain assumptions on the therapeutic equivalence in the case of suggesting alternative agents as the possibilities and supporting data may be limited.

8. Techniques in compounding preparations and manipulations should always be in line with standard Good Manufacturing Practice as delivering an accurate dose is paramount.

9. Staff and facilities are challenged to undertake intermittent competency assessments in order to achieve the standards requirement.

10. Documentation after each preparation should include details on the materials used, processes involved and the responsible personnel in charge.

CONSIDERATIONS FOR PREPARING EXTEMPORANEOUS COMPOUNDS

1. Pharmacy personnel are reminded not to empirically change flavourings or suspending agents because they can affect pH, etc. of the product and result in an unstable product.

2. Special precautions should be given to formulations for neonates to ensure that no contraindicated ingredients are used if possible (e.g., Benzyl Alcohol).

3. Mixing of a compounded formulation and/or recipe should always be in line with the following principles:
   a) Ensure that all ingredients used are within the expiry date.
   b) Ensure that all utensils are clean; including mortar and pestle, graduates, pill cutters, and stirring rods.
   c) Product should be labelled clearly and stored as recommended within the formula.
   d) For solution or suspension products, emphasise on the importance of thorough shaking before administration.

4. If compounding a preparation using contents from 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.

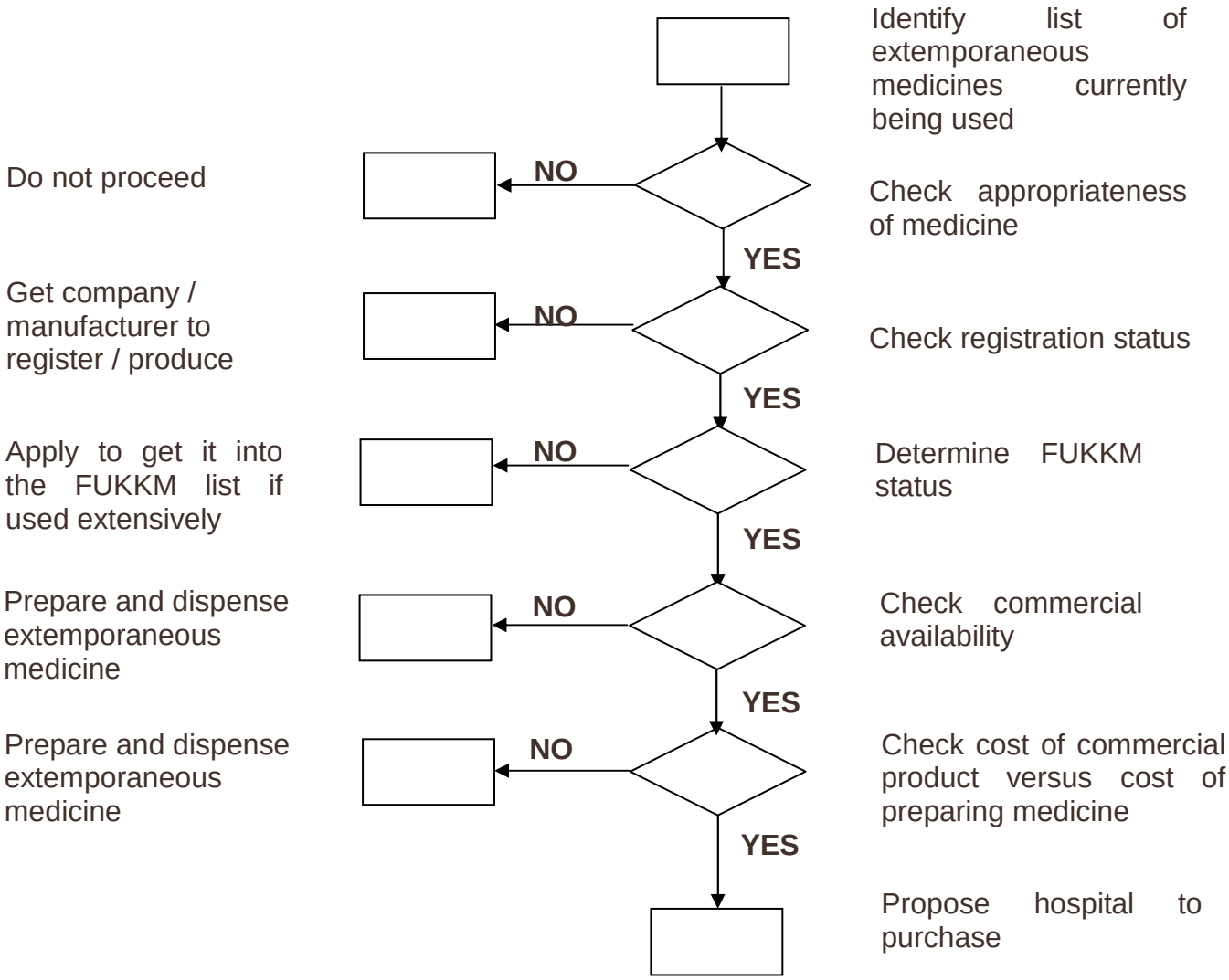
5. Place tablet(s) within mortar and pestle to grind tablets to a fine powder. For film-coated tablets, it may be necessary to add a small amount of diluent such as water, to soften the coating prior to grinding the tablets. This will ensure that the compound will not have an eggshell appearance from 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.

6. Solutions will have a clearer appearance versus a compounded suspension.

7. Manipulations of the available dosage forms in order to fulfil the unusual practitioner's request may impose risks such as preparation and administration errors as well as unpredictable bioavailability, compatibility and stability profile.

8. Understand the roles of excipients in certain formulations and consider their risks over benefits limitation.

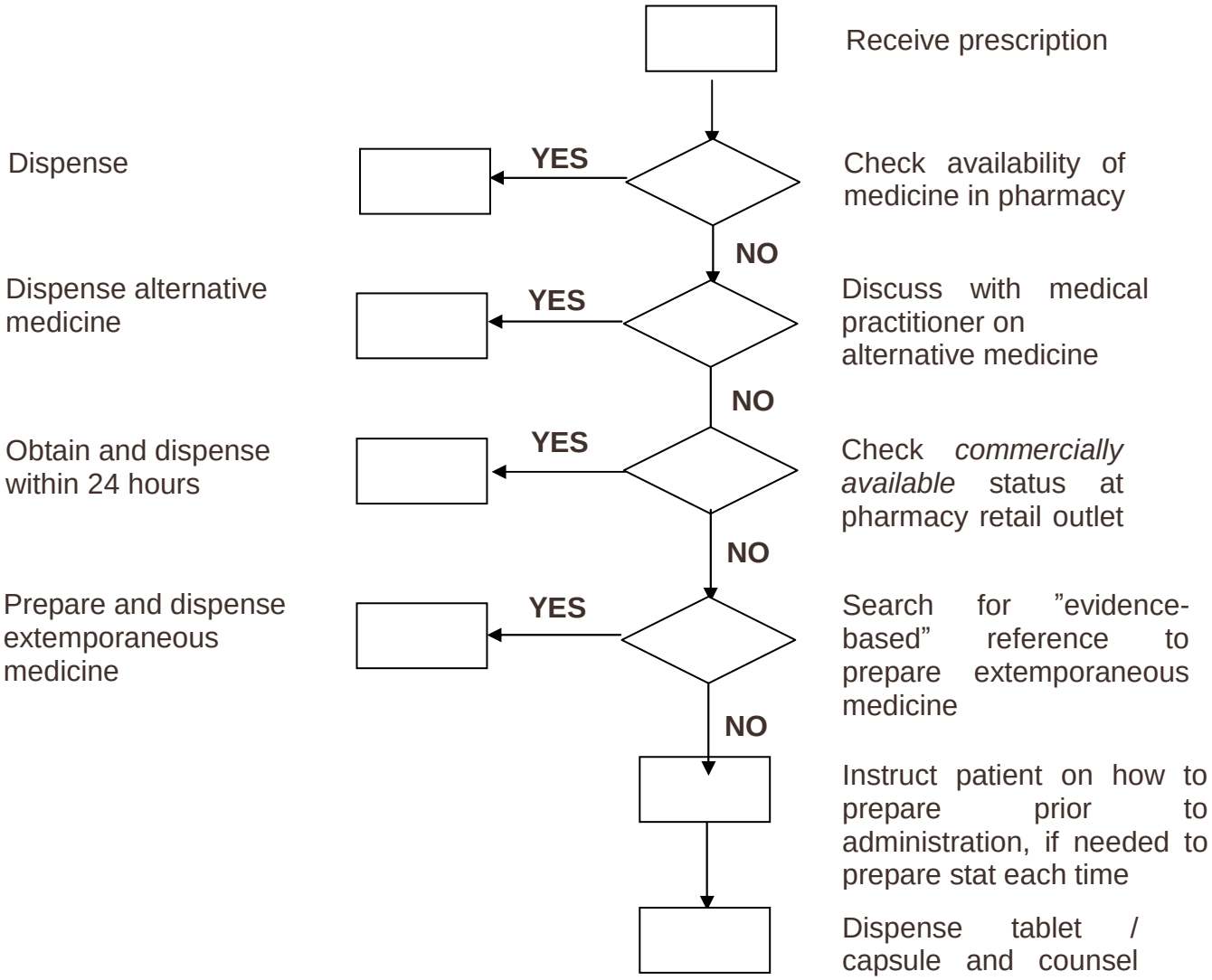
WORK FLOW CHART 1: SOURCING THE COMPOUNDING FORMULARY LIST OF EXTEMPORANEOUS PREPARATION MEDICINES



CHECKLIST 1: SOURCING THE COMPOUNDING FORMULARY LIST OF EXTEMPORANEOUS PREPARATION MEDICINES

NO	ACTION	TICK (√)	NOTE
1.	Identify list of extemporaneous medicines currently being used	☐	
2.	Check appropriateness of medicine	☐	
3.	Check registration status	☐	
4.	Determine FUKKM status	☐	
5.	Check commercial availability	☐	
6.	Check cost of commercial product versus cost of preparing medicine	☐	
7.	Propose hospital to purchase	☐	

WORK FLOW CHART 2: HANDLING OF PRESCRIPTIONS WITH EXTEMPORANEOUS PREPARATION MEDICINES IN THE DISPENSARY

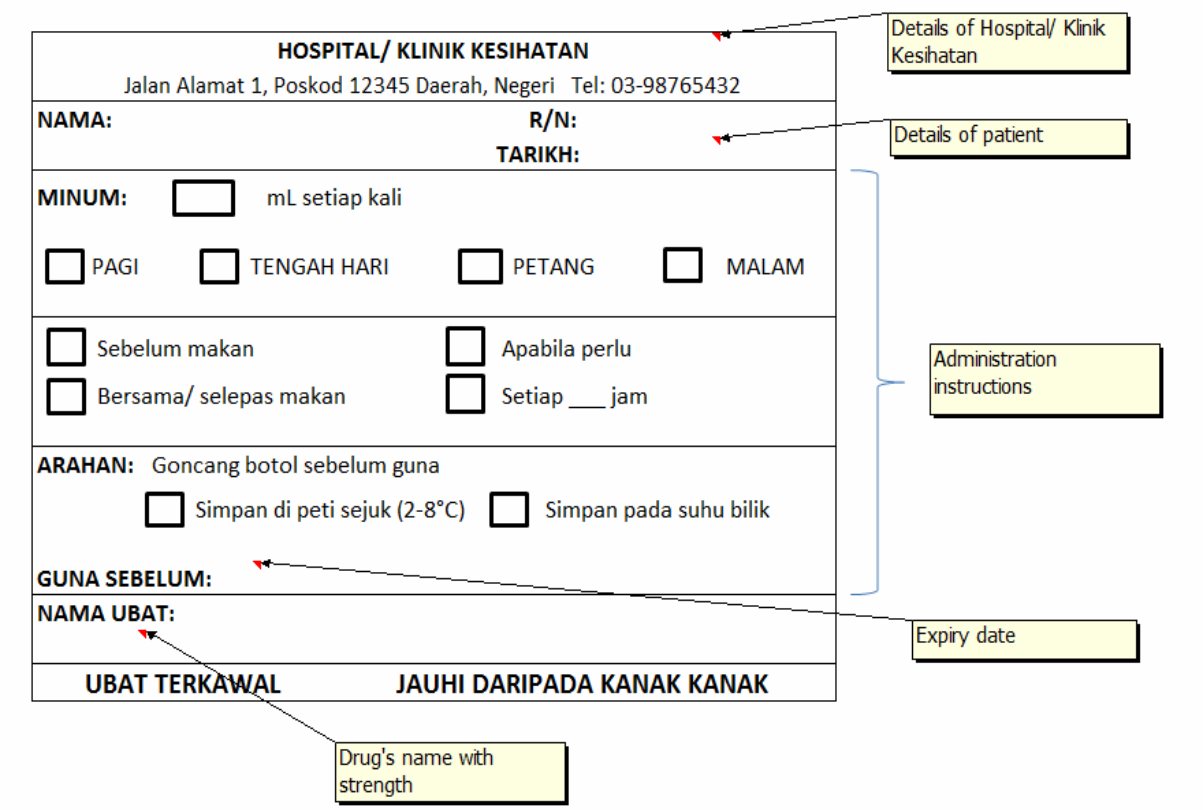


CHECKLIST 2: HANDLING OF PRESCRIPTIONS WITH EXTEMPORANEOUS PREPARATION MEDICINES IN THE DISPENSARY

NO	ACTION	TICK (√)	NOTE
1.	Receive prescription	☐	
2.	Check availability of medicine	☐	
3.	Discuss with medical practitioner on alternative medicine	☐	
4.	Check commercially available status at retail pharmacy outlet	☐	
5.	Search for evidence-based reference to prepare extemporaneous medicine	☐	
6.	Instruct patient / caregiver on how to prepare prior to administration of medicine, if needed to prepare stat each time	☐	
7.	Dispense medicine and counsel patient / caregiver accordingly	☐	

STANDARD LABEL DESIGN FOR EXTEMPORANEOUS PREPARATIONS

The proposed label for extemporaneous preparations must have the information as shown below:



GENERIC NAME : **Acetazolamide**

INDICATION : Reduction of intra-ocular pressure in open-angle glaucoma, secondary glaucoma and peri-operatively in angle-closure glaucoma

DOSAGE FORM : Suspension

STRENGTH : 25mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature.

Ingredients	Strength	Quantity
Acetazolamide	250mg	12 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or Ora-Blend SF®
- or Cherry syrup
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Allen LV and Erickson MA. Stability of Acetazolamide, Allopurinol, Azathioprine, Clonazepam, and Flucytosine in Extemporaneously Compounded Oral Liquids. Am J Health Sys Pharm 1996;53:1944-9.

GENERIC NAME : **Allopurinol**

INDICATION : Gout or uric acid and calcium oxalate renal stones

DOSAGE FORM : Suspension

STRENGTH : 20mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Protect from light.

Ingredients	Strength	Quantity
Allopurinol	300mg	8 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or Ora-Blend
- or Ora-Blend SF®
- or Cherry syrup
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Allen LV and Erickson MA. Stability of Acetazolamide, Allopurinol, Azathioprine, Clonazepam, and Flucytosine in Extemporaneously Compounded Oral Liquids. Am J Health Sys Pharm 1996;53:1944-9.

GENERIC NAME : **Allopurinol**

INDICATION : Gout or uric acid and calcium oxalate renal stones

DOSAGE FORM : Suspension

STRENGTH : 20mg/mL

STABILITY : 56 days

STORAGE : Refrigerate (preferable) or at room temperature.

Ingredients	Strength	Quantity
Allopurinol	300mg	8 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Methylcellulose 1% : Simple Syrup (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Dressman JB and Poust RI. Stability of Allopurinol and five antineoplastics in suspension. Am J Hosp Pharm 1983; 40 (4): 616-8.

GENERIC NAME : **Amiodarone**

INDICATION : Arrhythmias

DOSAGE FORM : Suspension

STRENGTH : 5mg/mL

STABILITY : 90 days (refrigerate) or 42 days (room temperature)

STORAGE : Refrigerate (preferable) or at room temperature.

Ingredients	Strength	Quantity
Amiodarone	200mg	3 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Methylcellulose 1% : Simple Syrup (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC. Stability of Amiodarone in an Oral Suspension Stored under refrigeration and at Room Temperature. Annals of Pharmacotherapy 1997; 31:851-852

GENERIC NAME : **Atenolol**

INDICATION : Hypertension, angina pectoris, myocardial infarction and arrhythmias

DOSAGE FORM : Suspension

STRENGTH : 2mg/mL

STABILITY : 14 days or 90 days

STORAGE : Refrigerate

Ingredients	Strength	Quantity
Atenolol	100mg	1 tablet
Glycerin		2mL
Vehicle	qs	50mL

Vehicle Choice:

- Simple Syrup (stability 14 days)
- or Ora-Sweet (stability 14 days)
- or Ora-Sweet SF (stability 90 days)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with glycerin until a smooth paste is formed.
3. Add vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Patel D, Doshi DH, Desia A. Short term stability of Atenolol in oral liquid formulations. International Journal of Pharmaceutical Compounding 1997; 437-439.

GENERIC NAME : **Baclofen**

INDICATION : Spasticity of the skeletal muscle

DOSAGE FORM : Suspension

STRENGTH : 5mg/mL

STABILITY : 35 days

STORAGE : Refrigerate. Amber glass bottle. Protect from light.

Ingredients	Strength	Quantity
Baclofen	10mg	30 tablets
Glycerine		3mL
Simple Syrup	qs	60mL

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with glycerine until a smooth paste is formed.
3. Add vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

Another Baclofen preparation is 10mg/mL (Additional)

REFERENCES:

1. Johnson CE and Hart SM. Stability of an Extemporaneously Compounded Baclofen Oral Liquid. Am J Hosp Pharm 1993;50(11):2353-5.

GENERIC NAME : **Baclofen**

INDICATION : Spasticity of the skeletal muscle

DOSAGE FORM : Suspension

STRENGTH : 10mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Protect from light.

Ingredients	Strength	Quantity
Baclofen	10mg	120 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:
Another Baclofen preparation is 5mg/mL

REFERENCES:

1. Allen LV and Erickson MA. Stability of Acetazolamide, Allopurinol, Azathioprine, Clonazepam, and Flucytosine in Extemporaneously Compounded Oral Liquids. Am J Health Sys Pharm 1996;53:1944-9.

GENERIC NAME : **Captopril**

INDICATION : i) Hypertension ii) Congestive heart failure iii) Post-myocardial infarction iv) Diabetic nephropathy

DOSAGE FORM : Syrup

STRENGTH : 1mg/mL

STABILITY : 30 days

STORAGE : Refrigerate. Amber glass bottle.

Ingredients	Strength	Quantity
Captopril	25mg	4 tablets
Simple Syrup	qs	100mL

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with simple syrup until a smooth paste is formed.
3. Add more simple syrup to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Lye MY, Yow KL, Lim LY, et al. Effects of Ingredients on Stability of Captopril in Extemporaneously Prepared Oral Liquids. Am J Health Syst Pharm 1997;54(21):2483-7.

GENERIC NAME : **Captopril**

INDICATION : i) Hypertension ii) Congestive heart failure iii) Post-myocardial infarction iv) Diabetic nephropathy

DOSAGE FORM : Solution

STRENGTH : 1mg/mL

STABILITY : 56 days

STORAGE : Refrigerate

Ingredients	Strength	Quantity
Captopril	25mg	4 tablets
Ascorbic Acid	500mg	1 tablet
Distilled Water	qs	100mL

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with distilled water until a smooth paste is formed.
3. Add more distilled water to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC, Morosco RS, and Hipple TF. Stability of Captopril in Liquid Containing Ascorbic Acid or Sodium Ascorbate. Am J Hosp Pharm 1994;51(13):1707-8.

GENERIC NAME : **Carvedilol**

INDICATION : Treatment of stable moderate to severe congestive cardiac failure in addition to ACEI's and diuretics

DOSAGE FORM : Suspension

STRENGTH : 0.5 mg/mL

STABILITY : 30 days

STORAGE : Room temperature. Amber glass bottle.

Ingredients	Strength	Quantity
Carvedilol	12.5 mg	4 tablets
Vehicle	qs	100mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Blend ®
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:
Another Carvedilol preparation is 1mg/mL

REFERENCES:

1. Nationwide Children's Hospital, reviewed 11/2/2010

GENERIC NAME : **Carvedilol**

INDICATION : Treatment of stable moderate to severe congestive cardiac failure in addition to ACEI's and diuretics

DOSAGE FORM : Suspension

STRENGTH : 1mg/mL

STABILITY : 84 days

STORAGE : Room temperature. Amber glass bottle.

Ingredients	Strength	Quantity
Carvedilol	12.5 mg	8 tablets
Sterile water for irrigation		10ml
Vehicle	qs	100mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Blend ®
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with 10ml of sterile water for irrigation until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

Another Carvedilol preparation is 0.5mg/mL

REFERENCES:

1. Yamreudeewong W, Dolence EK, Pahl D. Stability of two extemporaneously prepared oral metoprolol and carvedilol liquids. Hosp Pharm. 2006;41:254–9
2. Pharmacy Compounding Manual 2008

GENERIC NAME : **Chloroquine**

INDICATION : Treatment of malaria - acute attack

DOSAGE FORM : Suspension

STRENGTH : 15mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature.
Amber plastic bottle.

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

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or Ora-Blend ® or Ora-Blend SF®
- or Cherry syrup
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)
  Ora-Sweet SF® and Ora-Blend® SF should not be used in neonates ≤ 28 days corrected age.

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC,Pai VB & Hipple TF. *Pediatric Drug Formulations*, fifth edition revised 2004:60.
2. Pharmacy Compounding Manual 2008, Calgary Health Region Pharmacy p47 (Can J Hosp Pharm, 2006; 59:29-33)
3. Pharmacy Compounding Manual, Alberta Health Services 2011;44.
4. American Journal Health-System Pharmacy, Sep 15 (1998);55:1915.

GENERIC NAME : **Ciprofloxacin**

INDICATION : Treatment of infections due to susceptible bacterial strains

DOSAGE FORM : Suspension

STRENGTH : 50mg/mL

STABILITY : 91 days (4°C); 70 days (25°C)

STORAGE : Refrigerate (preferable) or at room temperature. Plastic bottle.

Ingredients	Strength	Quantity
Ciprofloxacin	500mg	20 tablets
Vehicle	qs	200 mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)
- Methylcellulose 1%: Simple syrup (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC, Morosco R, Hipple TF. Development of stable oral suspension of ciprofloxacin. J Appl Ther Res 2000 ;3:61-5.

GENERIC NAME : **Clonazepam**

INDICATION : i) Epilepsy ii) Non-epileptic myoclonus

DOSAGE FORM : Suspension

STRENGTH : 0.1mg/ml

STABILTY : 60 days

STORAGE : Refrigerate or at room temperature
Amber Glass Bottle

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

VEHICLE CHOICES:

- Ora-Blend® or Ora-Blend SF®
  (Ora-Sweet SF® and Ora-Blend SF® should not be used in neonates ≤ 28 days corrected age)
- Ora-Plus®: Ora-Sweet® (1:1)
- Ora-Plus®: Ora-Sweet SF® (1:1)
- Cherry Syrup
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Grind up tablets in mortar.
2. Levigate powders with small amount of vehicle until homogenous.
3. Make up to the final volume using vehicle.

NOTES: Clonazepam solutions should not be stored in polyvinyl chloride (plastic) bottle or polypropylene (oral syringes) for longer than 24 hours.

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.

GENERIC NAME : **Enalapril**

INDICATION : i) Hypertension ii) Congestive heart failure

DOSAGE FORM : Suspension

STRENGTH : 0.1mg/mL

STABILTY : 6 weeks

STORAGE : Room temperature

Ingredients	Strength	Quantity
Enalapril	10mg	5 tablets
Distilled water	qs	500ml

PROCEDURE:

1. Crush tablets in a mortar to make fine powders.
2. Levigate powders with small amount of distilled water until homogenous.
3. Make up to the final volume using distilled water.

NOTES:

REFERENCES:

1. Paediatric Information Handbook 3th Edition 1997
2. Compounded Drug Formulas 2004, Alberta Children's Hospital.

GENERIC NAME : **Glycopyrrolate**

INDICATIONS : To reduce excessive drooling

DOSAGE FORM : Syrup

STRENGTH : 0.1mg/mL

STABILITY : 14 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic bottle.

Ingredients	Strength	Quantity
Glycopyrrolate injection	200mcg/ml	5ml
Simple Syrup	qs	10mL

PROCEDURE:

1. Break the ampoule and syringe out the content of glycopyrrolate from the ampoule with 5 µm filter into a mortar.
2. Add the sufficient quantity of simple syrup and stir well.
3. Use additional simple syrup to rinse the remaining drug from the mortar and pour into the container.
4. Make up to final volume with simple syrup.
5. Shake well and label.

NOTES:

REFERENCES:

1. Takendo, C. Pediatric Dosage handbook 1996-1997
2. Christine L, Jean-Marc F & Patrice H. Stability and subjective taste acceptability of four glycopyrrolate solutions for oral administration. Int J of Pharmaceutical Compounding 2005;9(5):396.

GENERIC NAME : **Hydrochlorothiazide**

INDICATION : Diuretic, hypertension

DOSAGE FORM : Suspension

STRENGTH : 5mg/ mL

STABILTY : 60 days

STORAGE : Refrigerate
Protect from light

Ingredients	Strength	Quantity
Hydrochlorothiazide	25 mg	20 tablets
X-Temp	qs	100 mL

PROCEDURE:

1. Crush tablets in mortar to make fine powders.
2. If needed, soak tablets in 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. Transfer the contents to a graduate cylinder.
5. Use additional vehicle to rinse the remaining drug from the mortar and add it to the graduate.
6. Make up to final volume with vehicle. Stir well.
7. Transfer suspension to final container and label.

NOTES:

REFERENCES:

1. Calgary Health Region Pharmacy Compounding Manual 2008.

GENERIC NAME : **Indomethacin**

INDICATION : Pain and inflammation in rheumatic disease

DOSAGE FORM : Syrup

STRENGTH : 5mg/mL

STABILITY : 60 days

STORAGE : Refrigerate. Protect from light.

Ingredients	Strength	Quantity
Indomethacin	25mg	20 capsules
Simple syrup	qs	100mL

PROCEDURE:

1. Open capsules and empty the contents into a mortar.
2. Levigate the powder with small amount of simple syrup until a smooth paste is formed.
3. Add more simple syrup to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional simple syrup to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with simple syrup.
6. Shake well and label.

NOTES:

REFERENCES:

1. Calgary Health Region Pharmacy Compounding Manual 2008
2. CSHP, Extemporaneous Oral Liquid Dosage Form Preparations; 1988: p 15 Pharmacy Practice, 1998, 14(2): p 63

GENERIC NAME : **Isoniazid**

INDICATION : i) Tuberculosis ii)Tuberculous meningitis

DOSAGE FORM : Syrup

STRENGTH : 10mg/mL

STABILITY : 21 days

STORAGE : Refrigerate

Ingredients	Strength	Quantity
Isoniazid	100mg	10 tablets
Distilled water		10mL
Sorbitol 70%	qs	100mL

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with 10mL of distilled water until a smooth paste is formed.
3. Add Sorbitol 70% to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional Sorbitol 70% to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with Sorbitol 70%.
6. Shake well and label.

NOTES:

Do not use sugar based syrups.

REFERENCES:

1. Calgary Health Region Pharmacy Compounding Manual 2008
2. Pediatric Drug Formulations, 5th Edition; 2004: p. 148.
3. Trissel's Stability of compounded formulations 4th edition :p. 305

GENERIC NAME : **Labetalol**

INDICATION : Hypertension

DOSAGE FORM : Syrup

STRENGTH : 10 mg/mL

STABILITY : 28 days

STORAGE : Refrigerate (preferable) or at room temperature.

Ingredients	Strength	Quantity
Labetalol	100mg	12 tablets
Simple syrup	qs	120mL

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of Simple syrup until a smooth paste is formed.
3. Add more Simple syrup to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC. Stability of Labetalol hydrochloride in distilled water, simple syrup and three fruit juices. DICP 1991; 25:465-9

GENERIC NAME : **Labetalol**

INDICATION : Hypertension

DOSAGE FORM : Syrup

STRENGTH : 40 mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber clear plastic (polyethylene terephthalate) bottle. Protect from light.

Ingredients	Strength	Quantity
Labetalol	100mg	48 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Blend ®
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Allen LV and Erickson MA. Stability of Labetalol HCL, Metoprolol tartrate, Verapamil HCL, and Spironolactone with Hydrochlorothiazide in extemporaneously compounded Oral Liquids. Am J Health Sys Pharm 1996;53:2304-8.

GENERIC NAME : **Lansoprazole**

INDICATION : i) Peptic ulcer disease ii) Reflux oesophagitis iii) Zollinger-Ellison Syndrome iv) For eradication of Helicobacter pylori in combination with antibiotic

DOSAGE FORM : Suspension

STRENGTH : 3mg/mL

STABILITY : 14 days

STORAGE : Refrigerate (preferable) or at room temperature (8 hours).
Keep in amber plastic bottle/ oral syringes.

Ingredients	Strength	Quantity
Lansoprazole	30mg	10 capsules
Sodium bicarbonate 8.4% injection	qs	100mL

PROCEDURE:

1. Open capsules and empty the contents into a mortar.
2. Syringe out sodium bicarbonate 8.4% injection solution from ampoule using 5µ filter.
3. Levigate the powder with small amount of sodium bicarbonate solution until a smooth paste is formed.
4. Add more sodium bicarbonate solution to the paste until a liquid is formed and transfer the liquid into the container.
5. Use additional sodium bicarbonate solution to rinse the remaining drug from the mortar and pour into the container.
6. Make up to final volume with sodium bicarbonate solution.
7. Shake well and label.

NOTES:

REFERENCES:

1. Calgary Health Region Pharmacy Compounding Manual 2008
2. Pediatric Drug Formulations, 5th Edition; 2004
3. Trissel's Stability of compounded formulations 4th edition :p. 323

GENERIC NAME : **Lorazepam**

INDICATION : i) Severe anxiety ii) Insomnia

DOSAGE FORM : Syrup

STRENGTH : 0.4mg/mL

STABILITY : 30 days

STORAGE : Refrigerate

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

PROCEDURE:

1. Crush tablets in a mortar to a fine powder
2. Levigate the powder with small amount of simple syrup until a smooth paste is formed.
3. Add more simple syrup to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional simple syrup to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with simple syrup.
6. Shake well and label.

NOTES:

REFERENCES:

1. Calgary Health Region Pharmacy Compounding Manual 2008
2. AHC Compounding Manual 2004

GENERIC NAME : **Methylcellulose**

DOSAGE FORM : Suspending Agent

STRENGTH : 1% (0.01g/mL)

STABILITY : 6 months

STORAGE : Room temperature

Ingredients	Strength	Quantity
Methylcellulose Powder	CPS 1500	10 g
Sodium Benzoate Powder		2 g
Distilled Water	qs	1000 ml

PROCEDURE:

1. Dissolve Sodium Benzoate in 200 mL of boiling distilled water.
2. Add Methylcellulose Powder and stir well for 2-3 minutes (use blender if available).
3. Add 800 mL 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 converts to gel.

NOTES:

REFERENCES:

1. CSHP, Extemporaneous Oral Liquid Dosage Form Preparations, 1988: p 6

GENERIC NAME : **Metoprolol**

INDICATION : Hypertension, angina, myocardial infarction, arrhythmias

DOSAGE FORM : Suspension

STRENGTH : 10mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature.
Amber plastic bottle.
Protect from light.

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

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or Ora-Blend ® or Ora-Blend SF®
- or Cherry syrup
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)
  Ora-Sweet SF® and Ora-Blend® SF should not be used in neonates ≤ 28 days corrected age.

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Milap C. Nahata, Vinita B.Pai, Thomas F.Hipple. *Pediatric Drug Formulation*, fifth edition, 2004, p185-186
2. Pharmacy Compounding Manual 2008, Calgary Health Region Pharmacy p154 (Can J Hosp Pharm, 2006; 59:29-33)
3. Pharmacy Compounding Manual, Alberta Health Services 2011 p137
4. Pediatric Drug Formulations, 3rd Edition, 1997: p 74
5. American Journal of Health-Systems Pharmacy, 1996, 53(19): p 2304-9

GENERIC NAME : **Midazolam**

INDICATION : Pre-operative sedation, induction of general anaesthesia, premedication and sedation in ICU and sedation for minor procedures

DOSAGE FORM : Syrup

STRENGTH : 2mg/mL

STABILITY : 56 days

STORAGE : Refrigerate (preferable) or at room temperature.
Amber glass bottle.

Ingredients	Strength	Quantity
Midazolam injection	5 mg/ml	48 mL
Simple Syrup	qs	120 mL

PROCEDURE:

1. Break the ampoule and syringe out the content of Midazolam from the ampoule with 5 µm filter into a mortar.
2. Add the sufficient quantity of simple syrup and stir well.
3. Use additional simple syrup to rinse the remaining drug from the mortar and pour into the container.
4. Make up to final volume with simple syrup.
5. Shake well and label.

NOTES : Undiluted injection can be administered orally.
Injection may contain benzyl alcohol

REFERENCES:

1. Pharmacy Compounding Manual 2008, Calgary Health Region Pharmacy p158 (Can J Hosp Pharm, 2006; 59:29-33)
2. Pharmacy Compounding Manual, Alberta Health Services 2011 p141
3. Pediatric Drug Formulations, 3rd Edition, 1997: p 78

GENERIC NAME : **Nifedipine**

INDICATION : Hypertension

DOSAGE FORM : Suspension

STRENGTH : 1mg/mL

STABILITY : 28 days

STORAGE : Refrigerate (preferable) or at room temperature.

Ingredients	Strength	Quantity
Nifedipine	10 mg	5 tablets
Methylcellulose 1%	qs	50 mL

*Hydroxypropylmethyl-cellulose Solution (In reference)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of Methylcellulose 1% until a smooth paste is formed.
3. Add more Methylcellulose 1% to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional Methylcellulose 1% to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with Methylcellulose 1%.
6. Shake well and label.

NOTES:

REFERENCES:

1. Milap C. Nahata, Vinita B.Pai, Thomas F.Hipple. *Pediatric Drug Formulation*, fifth edition, 2004, p206
2. Frank Shann. *Drug Doses*, fourteenth edition, *Royal Children's Hospital*, Australia, 2008
3. Formulasi Sediaan Ekstemporaneous, Farmasi Hospital Tuanku Ja'afar Seremban. Edisi Pertama (Februari 2010) p29

GENERIC NAME : **Nitrofurantoin**

INDICATION : Uncomplicated lower urinary tract infections

DOSAGE FORM : Suspension

STRENGTH : 10mg/mL

STABILITY : 91 days

STORAGE : Refrigerate (preferable) or at room temperature.
Keep in amber bottle and protect from light.

Ingredients	Strength	Quantity
Nitrofurantoin	100mg	10 tablets
Vehicle	qs	100mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into a container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Pharmacy Compounding Manual 2008, Calgary Health Region Pharmacy (Can J Hosp Pharm, 2006; 59:29-33)
2. Australian Medicines Handbook 2010
3. Carol KT, Jane HH, Donna MK. Pediatric Dosage Handbook 14th Edition

GENERIC NAME : **Omeprazole**

INDICATION : i) Reflux oesophagitis, eradication of H. Pylori infection, benign peptic ulcer not responding to conventional therapy, Zollinger-Ellison Syndrome ii) Endoscopically confirmed peptic ulcer

DOSAGE FORM : Suspension

STRENGTH : 2mg/mL

STABILITY : 14 days at room temperature of 25°C or
30 days under refrigeration at 2-8°C

STORAGE : Refrigerate (preferable) or at room temperature.
Keep in amber glass bottle and protect from light.

Ingredients	Strength	Quantity
Omeprazole Capsules	20mg	10 capsules
Sodium Bicarbonate Injection	8.4%	10 amp x 10ml

PROCEDURE:

1. Open capsules and empty the contents into a mortar.
2. Syringe out Sodium Bicarbonate 8.4% with 5µm filter into a beaker.
3. Add about half of Sodium Bicarbonate 8.4% into Omeprazole powder in the mortar.
4. Let mixture sit with occasional stirring (at least 20 minutes) until a white suspension is formed.
5. Transfer the contents to an amble glass bottle.
6. Use the balance of Sodium Bicarbonate 8.4% to rinse the remaining drug from the mortar and pour into the amble glass bottle.
7. Make up to final volume with Sodium Bicarbonate 8.4%.
8. Shake well and label.

NOTES:

REFERENCES:

1. American Journal of Health-Systems Pharmacy, Aug 15 1997 (54); p 1833
2. Pediatric Drug Formulations, 5th Edition, 2003, p 210
3. Micromedex Inc., Vol 148

GENERIC NAME : **Pentoxifylline**

INDICATION : Peripheral vascular disease

DOSAGE FORM : Solution

STRENGTH : 20mg/mL

STABILITY : 91 days

STORAGE : Refrigerate (preferable) or at room temperature.
Keep in amber glass bottle and protect from light.

Ingredients	Strength	Quantity
Pentoxifylline Tablets	400mg	12 tablets
Distilled Water	qs	240 ml

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of Distilled Water until a smooth paste is formed.
3. Add more Distilled Water to the paste until a liquid is formed and transfer the liquid into a container.
4. Use additional Distilled Water to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with Distilled Water.
6. Shake well and label.

NOTES:

REFERENCES:

1. American Journal of Health-System Pharmacy, 1997; p 1301
2. Paediatric Drug Formulations, 5th ed, Nahata MC, Pai VB, and Hipple TF Cincinnati, OH: Harvey Whitney Books Co, 2004
3. Micromedex Inc., Vol 148
4. Australian Medicines Handbook 2010

GENERIC NAME : **Phenobarbitone**

INDICATION : Epilepsy

DOSAGE FORM : Suspension

STRENGTH : 10mg/mL

STABILITY : 115 days

STORAGE : Room temperature.

Keep in amber plastic bottle.

Ingredients	Strength	Quantity
Phenobarbitone	30mg	20 tablets
Vehicle	qs	60mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES : May mix dose with chocolate syrup (1:1 volume) immediately before administration to mask the bitter after taste.

REFERENCES:

1. Carol KT, Jane HH, Donna MK. Paediatric Dosage Handbook 14th Edition

GENERIC NAME : **Phytomenadione (Vitamin K1)**

INDICATIONS : Vitamin K deficiency due to liver failure.

DOSAGE FORM : Liquid

STRENGTH : 1mg/mL

STABILITY : Sterile water (preferred) : 104 days

Simple Syrup : 111 days

STORAGE : Refrigerate or at room temperature.
Keep in amber glass bottle.

Ingredients	Strength	Quantity
Phytomenadione Injection	10mg	1 mL
Sterile Water or Simple Syrup	qs	10mL

PROCEDURE:

1. Using a 5µM filter withdraw the required amount of Vitamin K1 and transfer into an amber glass bottle.
2. Add vehicle and mix well.

NOTES : Sterile water formulation is preferred in neonates due to absence of dyes and lower osmolarity

REFERENCES:

1. Pharmacy Compounding Manual 2008, Calgary Health Region Pharmacy, p 192
2. Pharmacy Compounding Manual May 2011, Alberta Health Services Calgary and Area ,p 169

GENERIC NAME : **Phytomenadione (Vitamin K1)**

INDICATIONS : Vitamin K deficiency due to liver failure.

DOSAGE FORM : Liquid

STRENGTH : 1mg/mL

STABILITY : Use immediately once opened

STORAGE : Protect from light

Ingredients	Strength	Quantity
Phytomenadione Injection	1mg	1 mL

PROCEDURE:

1. Using a 5µM filter withdraw the required amount of Vitamin K1 using syringe.
2. Remove filter and administer contents of syringe directly into patient's mouth.

NOTES : Wash down with fluid after administration.
Should not be diluted.

REFERENCES:

1. http://www.medicines.ie/medicine/3236/SPC/Konakion MM Ampoules 10mg/ml Solution for Injection and Oral Solution

GENERIC NAME : **Propranolol**

INDICATION : Dysrhythmias, tachycardia, hypertrophic obstructive cardiomyopathy (For cardiologist only)

DOSAGE FORM : Suspension

STRENGTH : 1mg/mL

STABILITY : 45 days

STORAGE : Refrigerate. Keep in amber bottle. Protect from light.

Ingredients	Strength	Quantity
Propranolol	40mg	6 tablets
Distilled Water (wetting agent)		4.8 mL
Citric Acid Solution	25%	1 mL
Simple Syrup	qs	240mL

PROCEDURE:

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

REFERENCES:

1. Pharmacy Compounding Manual 2008, Calgary Health Region Pharmacy, p 204
2. Pharmacy Compounding Manual May 2011, Alberta Health Services Calgary and Area ,p 179
3. Milap C. Nahata, Vinita B.Pai, Thomas F.Hipple. *Peadiatric Drug Formulation*, 5th Edition, 2004 p 233.

GENERIC NAME : **Pyrazinamide**

INDICATION : Tuberculosis

DOSAGE FORM : Suspension

STRENGTH : 10mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber bottle.

Ingredients	Strength	Quantity
Pyrazinamide	500mg	3 tablets
Vehicle	qs	150mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or Ora-Blend SF®
- or Cherry syrup
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Allen, L. V., Jr. and Erickson, M. A. Stability of Bethanechol chloride, Pyrazinamide, Quinidine sulfate, Rifampin, and Tetracycline hydrochloride in extemporaneously compounded oral liquids. Am J Health Syst Pharm1998;55(17):1804-1809.

GENERIC NAME : **Pyrazinamide**

INDICATION : Tuberculosis

DOSAGE FORM : Syrup

STRENGTH : 100mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber bottle.

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

PROCEDURE:

1. Crush tablets in a mortar to form a fine paste.
2. Levigate the powder with small amount of simple syrup until a smooth paste is formed.
3. Add more simple syrup to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional simple syrup to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with simple syrup.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata, M. C., Morosco, R. S. and Peritore, S. P. Stability of Pyrazinamide in two suspensions. Am J Health Syst Pharm, 52(14): 1558-1560, 1995.
2. Pharmacy Compounding Manual, Alberta Health Services 2011; 181

GENERIC NAME : **Sildenafil**

INDICATION : Pulmonary hypertension

DOSAGE FORM : Suspension

STRENGTH : 2.5mg/mL

STABILITY : 91 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic bottle.

Ingredients	Strength	Quantity
Sildenafil	50mg	5 tablets
Vehicle	qs	100mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- Methylcellulose 1%: Simple Syrup (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to form a fine paste.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata, M. C., Morosco, R. S. and Brady, M. T. Extemporaneous Sildenafil citrate oral suspensions for the treatment of pulmonary hypertension in children. Am J Health Syst Pharm, 63(3): 254-257, 2006.
2. Pharmacy Compounding Manual, Alberta Health Services 2011; 190

GENERIC NAME : **Spironolactone**

INDICATION : Oedema and ascites in cirrhosis of the liver, congestive heart failure

DOSAGE FORM : Syrup

STRENGTH : 2.5mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber glass bottle.

Ingredients	Strength	Quantity
Spironolactone	25mg	4 tablets
Sterile water for injection		5mL
Simple Syrup	qs	40mL

PROCEDURE:

1. Crush tablets in a mortar to form a fine paste.
2. Levigate the powder with sterile water for injection until a smooth paste is formed.
3. Add simple syrup to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional simple syrup to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with simple syrup.
6. Shake well and label.

NOTES:

REFERENCES:

1. Salgado AC, Rosa ML, Duarte MA and Almeida AJ. Stability of Spironolactone in an extemporaneously prepared aqueous suspension: the importance of microbiological quality of compounded paediatric formulations. Eur J Hosp Pharm Science 2005; 11(3):68-73, 2005.

GENERIC NAME : **Topiramate**

INDICATION : Add-on therapy for intractable partial epilepsy

DOSAGE FORM : Suspension

STRENGTH : 6mg/mL

STABILITY : 90 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic bottle.

Ingredients	Strength	Quantity
Topiramate	100mg	6 tablets
Methylcellulose 1%		10mL
Simple Syrup	qs	100mL

Other Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC, Pai VB, Hipple TF. Topiramate. ***Pediatric Drug Formulations***. 2004; (5): 282.
2. Pharmacy Compounding Manual, Alberta Health Services 2011; 210

GENERIC NAME : **Trimethoprim**

INDICATION : Treatment of urinary tract infections due to susceptible pathogens

DOSAGE FORM : Suspension

STRENGTH : 10mg/mL

STABILITY : 6 weeks at 25°C; 3 months at 4°C

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic bottle.

Ingredients	Strength	Quantity
Trimethoprim	100mg	10 tablets
Vehicle	qs	100mL

Vehicle Choice:

- Methylcellulose 1% : Simple Syrup (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

* A suspending base of methylcellulose 1 - 2% without syrup can be used if preferred.

REFERENCES:

1. http://www.pharminfotech.co.nz/manual/Formulation/mixtures/trimethoprim.html

GENERIC NAME : **Trimethoprim**

INDICATION : Treatment of urinary tract infections due to susceptible pathogens

DOSAGE FORM : Syrup

STRENGTH : 10mg/mL

STABILITY : 30 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic bottle.

Ingredients	Strength	Quantity
Trimethoprim	100mg	10 tablets
Simple Syrup	qs	100mL

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. http://www.sickkids.ca/pdfs/Pharmacy/2703-Trimethoprim.pdf
2. Pharmacy Compounding Manual, Alberta Health Services 2011; 216

GENERIC NAME : **Ursodeoxycholic Acid**

INDICATION : Cholestatic liver diseases (eg. primary biliary cirrhosis, primary cholangitis etc)

DOSAGE FORM : Suspension

STRENGTH : 50mg/mL

STABILITY : 90 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic bottle.

Ingredients	Strength	Quantity
Ursodeoxycholic Acid	250mg	12 tablets
Vehicle	qs	60mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Johnson CE, Streetman DD. Stability of Oral Suspensions of Ursodiol Made from Tablets. Am J Health Syst Pharm. 2002 :59(4)
2. Micromedex® 2011

GENERIC NAME : **Verapamil**

INDICATION : i) Supraventricular tachyarrhythmia (SVT) prophylaxis ii) angina

DOSAGE FORM : Suspension

STRENGTH : 50mg/mL

STABILITY : 60 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber clear plastic (polyethylene terephthalate) bottle

Ingredients	Strength	Quantity
Verapamil hydrochloride	40mg	150 tablets
Vehicle	qs	120mL

Vehicle Choice:

- Ora-Sweet® : Ora-Plus® (1:1)
- or Ora-Sweet SF®: Ora-Plus® (1:1)
- or equivalent vehicle to Ora-Sweet® : Ora-Plus® (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with small amount of vehicle until a smooth paste is formed.
3. Add more vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Allen LV and Erickson MA. Stability of Labetalol HCL, Metoprolol tartrate, Verapamil HCL, and Spironolactone with Hydrochlorothiazide in extemporaneously compounded Oral Liquids. Am J Health Sys Pharm 1996;53:2304-8.

GENERIC NAME : **Verapamil**

INDICATION : i) Supraventricular tachyarrhythmia (SVT) prophylaxis ii) angina

DOSAGE FORM : Suspension

STRENGTH : 50mg/mL

STABILITY : 91 days

STORAGE : Refrigerate (preferable) or at room temperature. Amber plastic / glass bottle

Ingredients	Strength	Quantity
Verapamil hydrochloride	40mg	150 tablets
Purified water, USP		3mL
Vehicle	qs	120mL

Vehicle Choice:

- Methylcellulose 1%: Simple syrup (1:1)

PROCEDURE:

1. Crush tablets in a mortar to a fine powder.
2. Levigate the powder with purified water until a smooth paste is formed.
3. Add vehicle to the paste until a liquid is formed and transfer the liquid into the container.
4. Use additional vehicle to rinse the remaining drug from the mortar and pour into the container.
5. Make up to final volume with vehicle.
6. Shake well and label.

NOTES:

REFERENCES:

1. Nahata MC. Stability of Verapamil in an extemporaneous liquid dosage form. J Appl Ther Res 1997; 1:271-3

Abbreviations:

mg	-	milligram
ml	-	millilitre
qs	-	up to