

Therapeutic Interchange for Insulins^{1,3}

Humulin Insulins		Novolin Insulins
Humulin R 100 units/mL		Novolin R 100 units/mL
Humulin N 100 units/mL		Novolin N 100 units/mL
Humulin 70/30 100 units/mL		Novolin 70/30 100 units/mL
Long-Acting Insulins	Rapid-Acting Insulins	Insulin Mixes
Lantus 100 units/mL (insulin glargine)	Apidra 100 units/mL (insulin glulisine)	Humalog Mix 75/25 100 units/mL
Basaglar 100 units/mL (insulin glargine)	Humalog 100 units/mL and 200 units/mL (insulin lispro)	NovoLog Mix 70/30 100 units/mL
Semglee 100 units/mL (insulin glargine)	Admelog 100 units/mL (insulin lispro)	—
Rezvoglar 100 units/mL (insulin glargine)	Lyumjev 100 units/mL and 200 units/mL (insulin lispro-aabc)	—
Levemir 100 units/mL (insulin detemir)	NovoLog 100 units/mL (insulin aspart)	—
Tresiba 100 units/mL and 200 units/mL (insulin degludec)	Fiasp 100 units/mL (insulin aspart)	—
Toujeo 300 units/mL (insulin glargine)	—	—

Insulin clinical issues:

1. When interchanging insulin brands, the pharmacist will counsel the patient to monitor glucose and notify the provider of any change in glucose control. Products and doses may be interchanged unit for unit in most cases.
2. Use 80% of the dose when switching from Toujeo to another long-acting insulin.
3. Lantus, Basaglar, Rezvoglar, and Semglee can be interchanged using the same dosage regimen. 4. Long-acting insulins may only be interchanged with Levemir per this protocol during therapy **initiation** with long-acting insulin.
5. Lyumjev and Fiasp have a more rapid onset of action than other rapid-acting insulins. Recommended dosing is at the start of a meal or up to 20 minutes after starting a meal, not prior to a meal. Lyumjev is not labeled for pump use.
6. Insulin vials and pens may be interchanged as long as drug concentration remains the same, the patient is aware of the change and is counseled on how to administer the correct dose.

References:

1. Lexi-Drugs [database online]. Hudson, OH. Lexi-Comp, 2023. Accessed April 2023.
2. Drugdex [database online]. Greenwood Village, CO: Truven Health Analytics, 2023.

Policy: Collaborative Practice Agreement: Therapeutic Interchange for Outpatient Pharmacies

Foundational Standards > Clinical > Health Sciences Wide > Medication Management

Purpose

- A. Describes situations where pharmacists can use a therapeutic alternative based on an approved list for outpatients without contacting the provider prior to dispensing.

Definitions

- A. "Collaborative pharmacy practice" means a practice of pharmacy whereby one or more pharmacists have jointly agreed, on a voluntary basis, to work in conjunction with one or more practitioners under protocol whereby the pharmacist may perform certain pharmaceutical care functions authorized by the practitioner or practitioners under certain specified conditions or limitations.
- B. "Collaborative pharmacy practice agreement (CPA)" means a written and signed agreement between one or more pharmacists and one or more practitioners that provides for collaborative pharmacy practice for the purpose of drug therapy management of patients and prevention of disease of human subjects.
- C. "Medication Therapy Management (MTM)" is a service or group of services that optimize therapeutic outcomes for individual patients. Medication therapy management services include medication therapy reviews, pharmacotherapy consults, anticoagulation management, immunizations, health and wellness programs and many other clinical services. Pharmacists provide medication therapy management to help patients get the best benefits from their medications by actively managing drug therapy and by identifying, preventing and resolving medication-related problems.

Scope

- A. The following pharmacist(s), according to and in compliance with Utah Code 58-17b-102 (16-17) and (56) (b-c) and Utah Code 58-17b-502 (9) of the Utah State Pharmacy Practice Act, may design, implement, and monitor a therapeutic drug plan intended to manage therapeutic alternatives. Each pharmacist listed under this agreement may provide this service.
- B. The only products that may be interchanged without approval from the provider are those medications and dosages approved under this policy (see [supplemental information table](#)).
- C. These medications are used to manage the following conditions:
 1. Chronic conditions:
 - a. Acid reflux (proton pump inhibitors, H2 receptor antagonists)
 - b. Allergies (nasal antihistamines, nasal steroids, non-sedating antihistamines, ophthalmic antihistamines, epinephrine autoinjectors)
 - c. Asthma (albuterol, inhaled steroids and long acting beta agonists)
 - d. Benign prostatic hyperplasia (Alpha-1 blockers)
 - e. Depression/Anxiety/Mood Disorders (venlafaxine extended-release)
 - f. Dermatologic conditions (antivirals, minocycline)
 - g. Diabetes (testing supplies, gliptins, insulins, extended-release metformin)
 - h. Erectile dysfunction medications
 - i. Hormone replacement therapy (oral and topical estrogens)
 - j. Hyperlipidemia (statins)
 - k. Hypertension (ACEIs, ARBs)
 - l. Migraine medications (triptans, Midrin products)
 - m. Osteoporosis (oral bisphosphonates)
 - n. Overactive bladder (anticholinergics)
 - o. Potassium supplementation
 2. Medications for ophthalmic conditions:
 - a. Ophthalmic antihistamines
 - b. Post-operative Ophthalmic Fluoroquinolones
 - c. Post-operative Ophthalmic Antiinflammatories
 - d. Ophthalmic combination products (eg, glaucoma combinations, anti-infective / anti-inflammatory combinations)
- D. Prescriptions (except nasal steroids) for pediatric patients are excluded from this program.
- E. The pharmacist(s) will assure documentation of allergies and adverse drug reactions prior to initiation of medications and, in the course of the above mentioned therapy, shall document all activities appropriately in the medical record.

- F. A combination medication is two or more separate medication constituents combined into a single presentation. A combination product with immediate-release constituents may be interchanged to the individual immediate-release medication constituents, as appropriate.

Description

- A. Therapeutic interchange or therapeutic alternatives for the approved medications on this list will only be considered in the following cases:
1. The patient's insurance company rejects the claim as a non-preferred drug; or
 2. The patient requests a lower cost option to their prescription benefit, or
 3. A University of Utah preferred drug can be interchanged with a non-preferred drug at equal or reduced cost to the patient; or
 4. The prescribed drug is not available; or
 5. A drug-drug interaction exists between the prescribed drug and one or more of the patient's other medications; or
 6. The prescriber has not marked Dispense as Written (DAW)
- B. Pharmacist responsibilities
1. The pharmacist may only interchange medications and dosages approved (see [supplemental information table](#)). This includes all doses between the initial and maximum doses listed in the tables. Requests for other interchanges will be referred to the prescriber.
 2. The pharmacist shall document the therapeutic interchange and notify the prescribing provider by updating the patient's medication list in the electronic medical record.
- C. Chief Medical Officer responsibilities
1. The Chief Medical Officer will serve as the authorizing provider for each of the pharmacy collaborative practice agreements in conjunction with the Pharmacy and Therapeutics Committee.
 2. Individual patient referrals and outcomes are the responsibility of the referring provider and the pharmacist(s) involved in direct care of the patient according to the collaborative practice agreement.
- D. Patient or Caregiver responsibilities
1. Patient or guardian must approve the change.

Addendum

- A. [Authorized Pharmacists under this Collaborative Practice Agreement](#)
- B. [Therapeutic Interchange Dosing](#)
1. [Allergy](#)
 2. [Asthma/COPD](#)
 3. [Depression/Anxiety](#)
 4. [Dermatology](#)
 5. [Diabetes](#)
 6. [Erectile Dysfunction](#)
 7. [Gastrointestinal](#)
 8. [Genitourinary](#)
 9. [Gout](#)
 10. [Headache/Migraine](#)
 11. [Hormone Replacement Therapy](#)
 12. [Hyperlipidemia](#)
 13. [Hypertension](#)
 14. [Ophthalmic](#)
 15. [Oral Mucositis](#)
 16. [Osteoporosis](#)
 17. [Pain After Orthopedic Surgery](#)
 18. [Potassium Supplements](#)
- C. [References](#)

References

1. Related policies
 - a. Collaborative Practice Agreements
 - i. [Cystic Fibrosis](#)
 - ii. [Home Infusion Medications & Related Services](#)
 - iii. [Immunization Prescription and Administration Protocols in Ambulatory Care Areas](#)
 - iv. [Interstitial Lung Disease](#)

- v. [Medication Refill Service Ambulatory Care](#)
 - vi. [Medication Refill Service for Specialty Clinics](#)
 - vii. [Pharmacy Primary Care Services](#)
 - viii. [Outpatient Thrombosis Service](#)
 - ix. [Provision of Naloxone to High Risk Patients](#)
 - x. [Provision of Naloxone to High Risk Patients at Huntsman Cancer Institute](#)
 - xi. [Therapeutic Interchange for Outpatient Pharmacies](#)
- b. [Credentialing and Privileging of Pharmacists for Collaborative Practice Agreements](#)

Owner: Erin R Fox

Policy Liaison: Cliff Feddema

Approval Body: Pharmacy and Therapeutics Committee, Medical Board

Current Review Date: 01/17/2024

Current Revision Date: 01/17/2024

Current Approval Date: 02/05/2024

Previous Review Dates: 12/20/2023, 06/21/2023, 04/19/2023, 02/15/2023, 12/21/2022, 10/19/2022, 06/15/22, 05/18/2022, 09/15/2021, 08/18/2021, 02/17/2021, 11/18/2020, 04/15/2020, 06/19/2019, 02/20/2019, 12/19/2018, 08/17/2016, 10/21/2015, 08/19/2015, 06/18/2014, 04/17/2013, 12/15/2010, 02/17/2010, 03/21/2007

Previous Revision Dates: 12/20/2023, 06/21/2023, 04/19/2023, 02/15/2023, 12/21/2022, 10/19/2022, 06/15/22, 05/18/2022, 09/15/2021, 08/18/2021, 02/17/2021, 11/18/2020, 04/15/2020, 06/19/2019, 02/20/2019, 12/19/2018, 08/17/2016, 10/21/2015, 08/19/2015, 06/18/2014, 04/17/2013, 12/15/2010, 02/17/2010, 03/21/2007

Previous Approval Dates: 01/08/2024, 07/03/2023, 05/01/2023, 03/06/2023, 01/09/2023, 11/07/2022, 07/01/22, 06/06/2022, 10/04/2021, 09/07/2021, 03/01/2021, 12/07/2020, 05/04/2020, 07/01/2019, 03/04/2019, 01/07/2019, 09/12/2016, 11/02/2015, 09/14/2015, 07/07/2014, 04/17/2013, 12/15/2010, 02/17/2010, 03/21/2007

Origin Date: 01/16/2019

Therapeutic Interchange Dosing

Allergy:

Therapeutic Interchange Doses for Nasal Antihistamines¹

Medication	Usual Adult Dose
Azelastine (Astelin 137 mcg/spray, Astepro 0.15%)	1 to 2 sprays q nostril twice daily
Olopatadine (Patanase) 0.6%	2 sprays q nostril twice daily

Therapeutic Interchange Doses for Nasal Steroids¹

Medication	Lower Dosage Equivalents (Adult)	Lower Dosage Equivalents (Pediatric)
Beclomethasone 42 mcg (Beconase AQ 0.042%)	1 to 2 sprays q nostril twice daily	Age 6-12 years: 1 to 2 sprays q nostril twice daily
Budesonide 32 mcg (Rhinocort Aqua)	1 spray q nostril once daily	Age 6-11 years: 1 spray q nostril once daily
Ciclesonide 50 mcg (Omnaris)	2 sprays q nostril once daily	Age 6-12 years: 2 sprays q nostril once daily
Flunisolide Soln 25 mcg (Nasalide/Nasarel Soln 0.025%)	2 sprays q nostril twice daily	Age 6-14 years: 2 sprays q nostril twice daily
Fluticasone 50 mcg (Flonase and generic)	2 sprays q nostril once daily	Age 4-12 years: 1 spray q nostril once daily
Fluticasone 27.5 mcg (Veramyst)	2 sprays q nostril once daily	Age 2-11 years: 1 to 2 sprays q nostril once daily
Mometasone 50 mcg (Nasonex)	2 sprays q nostril once daily	Age 2-11 years: 1 spray q nostril once daily
Triamcinolone 55 mcg (Nasacort AQ and generic)	2 sprays q nostril once daily	Age 6-11 years: 1 spray q nostril once daily

Therapeutic Interchange Doses for Non-Sedating Antihistamines¹

Medication	Cetirizine (Zyrtec)	Desloratadine (Clarinet)	Fexofenadine (Allegra)	Levocetirizine (Xyzal)	Loratadine (Claritin, Alavert)
Usual Adult Dose	10 mg daily OTC	5 mg daily	60 mg twice daily, or 180 mg daily (extended-release) OTC	5 mg daily	10 mg daily OTC

Therapeutic Interchange Doses for Combination Non-Sedating Antihistamines / Pseudoephedrine¹

Medication	Usual Adult Dose
Cetirizine 5 mg/ pseudoephedrine 120 mg (ZyrtecD and generic OTC)	1 tab twice daily
Desloratadine 2.5 mg/ pseudoephedrine 120 mg (Clarinet D 12 hour)	1 tab twice daily
Desloratadine 5 mg/ pseudoephedrine 240 mg (Clarinet D 24 hour)	1 tab once daily
Fexofenadine 60 mg/ pseudoephedrine 120 mg (Allegra D 12 hour and generic OTC)	1 tab twice daily
Fexofenadine 180 mg/ pseudoephedrine 240 mg (Allegra D 24 hour and generic OTC)	1 tab once daily
Loratadine 5 mg/ pseudoephedrine 120 mg (Claritin D 12 hour, Alavert Allergy and Sinus, and generic OTC)	1 tab twice daily
Loratadine 10 mg/ pseudoephedrine 240 mg (Claritin D 24 hour and generic OTC)	1 tab once daily

Therapeutic Interchange Doses for Epinephrine Autoinjectors^{1,a}

EpiPen 0.3 mg/0.3 mL	Twinject 0.3 mg/0.3 mL	Auvi-Q 0.3 mg/0.3 mL
EpiPen Jr. 0.15 mg/0.3 mL	Twinject 0.15 mg/0.15 mL	Auvi-Q 0.15 mg/0.15 mL

^a EpiPen, Twinject, Auvi-Q, and generic injectable epinephrine may all be interchanged with each other at appropriate doses.

Asthma / COPD:**Therapeutic Interchange for Albuterol Inhalers¹**

Medication	Usual Adult Dose	FDA-Approved Indications
Albuterol (Proventil HFA, Ventolin HFA, ProAir HFA, ProAir RespiClick, ProAir Digihaler, and generics)	1 to 3 puffs every 4 to 12 hours	Asthma, Exercise-induced bronchospasm
Levalbuterol tartrate (Xopenex HFA and generics)	1 to 3 puffs every 4 to 12 hours	Asthma

Therapeutic Interchange Doses for Inhaled Long-Acting Beta Agonists¹

Medication	Usual Adult Dose	FDA-Approved Indications ^b
Indacaterol (Arcapta Neohaler) 75 mcg per capsule/inhalation	1 capsule inhaled once daily	COPD
Olodaterol (Striverdi Respimat) 2.5 mcg per inhalation	2 inhalations once daily	COPD
Salmeterol (Serevent Diskus) 50 mcg per inhalation	1 inhalation every 12 hours	Asthma, COPD, Exercise-induced bronchospasm

^b Use of a long-acting beta agonist for the treatment of asthma without a concomitant ICS is contraindicated.

Therapeutic Interchange Doses for Nebulized Long-Acting Beta Agonists¹

Medication	Usual Adult Dose	FDA-Approved Indications
Arformoterol (Brovana) 15 mcg per vial for nebulization	1 vial nebulized twice daily	COPD
Formoterol (Perforomist) 20 mcg per vial for nebulization	1 vial nebulized twice daily	COPD

Therapeutic Interchange Adult Doses for Inhaled Steroids^{1,3-5}

Medication	Low total daily dose	Medium total daily dose	High total daily dose
Beclomethasone dipropionate HFA (QVAR RediHaler) 40 mcg/inhalation 80 mcg/inhalation	80 to 240 mcg 1-3 inhalations twice daily 1 inhalation twice daily	240 to 480 mcg 3-6 inhalations twice daily 2-3 inhalations twice daily	> 480 mcg > 6 inhalations twice daily > 3 inhalations twice daily
Budesonide (Pulmicort Flexhaler) 90 mcg/inhalation 180 mcg/inhalation	180 to 400 mcg 1-2 inhalations twice daily 1 inhalation twice daily	>400 to 800 mcg 3-4 inhalations twice daily 2 inhalations twice daily	> 800 mcg ≥ 5 inhalations twice daily ≥ 3 inhalations twice daily
Ciclesonide (Alvesco) 80 mcg/inhalation 160 mcg/inhalation	80 to 160 mcg 1 inhalation twice daily Use lower strength	160 to 320 mcg 1-2 inhalations twice daily 1 inhalations twice daily	> 320 mcg > 2 inhalations twice daily > 1 inhalations twice daily

Medication	Low total daily dose	Medium total daily dose	High total daily dose
Fluticasone propionate 44 mcg/inhalation 110 mcg/inhalation 220 mcg/inhalation	88 to 264 mcg 1-3 inhalations twice daily 1 inhalations twice daily Use lower strength	264 to 440 mcg 3-5 inhalations twice daily 2 inhalations twice daily 1 inhalation twice daily	> 440 mcg > 5 inhalations twice daily > 2 inhalations twice daily > 1 inhalation twice daily
Fluticasone propionate 50 mcg/inhalation 100 mcg/inhalation 250 mcg/inhalation	100 to 250 mcg 1-2 inhalations twice daily 1 inhalation twice daily Use lower strength	250 to 500 mcg 3-5 inhalations twice daily 2 inhalations twice daily 1 inhalation twice daily	> 500 mcg > 5 inhalations twice daily > 2 inhalations twice daily > 1 inhalation twice daily
Fluticasone propionate (ArmonAir RespiClick) MDPI 55 mcg, 113 mcg, 232 mcg/inhalation	110 mcg 1 inhalation twice daily	226 mcg 1 inhalation twice daily	464 mcg 1 inhalation twice daily
Fluticasone furoate (Arnuity Ellipta) 50, 100, 200 mcg/inhalation	100 mcg 1 inhalation once daily	N/A	200 mcg 1 inhalation once daily
Mometasone (Asmanex Twisthaler) ^c 220 mcg/inhalation <i>Also available in 110 mcg/inhalation, which is labeled for children</i>	220 mcg 1 inhalation (220 mcg) once daily in the evening	220 to 440 mcg 220 mcg dose = 1 inhalation daily in the evening 440 mcg/day either as 1 inhalation twice daily or 2 inhalations once daily in the evening	> 440 mcg For the 880 mcg/day dose, use 2 inhalations twice daily
Mometasone furoate (Asmanex HFA) ^c 100 mcg/actuation 200 mcg/actuation	200 mcg 1 inhalation (100 mcg) twice daily <i>Note: The product labeling starting dose is 2 puffs twice daily, which is higher than the equivalent dose of 200 mcg/day as recommended from clinical guidelines.</i>	200 to 400 mcg For 200 mcg dose, use 100 mcg/actuation at 1 puff twice daily. For 400 mcg dose, use 100 mcg/actuation at 2 puffs twice daily.	> 400 mcg For 400 mcg dose, use 100 mcg/actuation at 2 puffs twice daily. For 800 mcg dose, use 200 mcg/actuation at 2 puffs twice daily

^c See GINA 2022 guidelines for information on equivalence

Therapeutic Interchange Doses for Inhaled Combination Steroids / Long-Acting Beta Agonists^{1,3-5}

Medication	Dose	Interval	FDA-approved Indications
Low-dose Daily Corticosteroid Equivalents			
Fluticasone furoate/vilanterol (Breo Ellipta) DPI	100/25 mcg	1 inhalation daily	Asthma, COPD
Budesonide/formoterol (Symbicort Aerosol) HFA MDI	80/4.5 mcg	2 inhalations twice daily	Asthma, COPD
Fluticasone propionate/salmeterol (Advair HFA) HFA MDI	45/21 mcg	2 inhalations twice daily	Asthma

Medication	Dose	Interval	FDA-approved Indications
Fluticasone propionate/salmeterol (Advair Diskus or authorized generic, Wixela Inhub) DPI	100/50 mcg	1 inhalation twice daily	Asthma, COPD
Fluticasone propionate/salmeterol (AirDuo RespiClick or Digihaler, or authorized generic) MDPI	55/14 mcg	1 inhalation twice daily	Asthma
Mometasone/formoterol (Dulera Aerosol) HFA MDI	100/5 mcg	1 inhalation twice daily ^d	Asthma
Medium-dose Daily Corticosteroid Equivalents			
Budesonide/formoterol (Symbicort Aerosol) HFA MDI	160/4.5 mcg	2 inhalations twice daily	Asthma, COPD
Fluticasone propionate/salmeterol (Advair HFA) HFA MDI	115/21 mcg	2 inhalations twice daily	Asthma
Fluticasone propionate/salmeterol (Advair Diskus or authorized generic, Wixela Inhub) DPI	250/50 mcg	1 inhalation twice daily	Asthma, COPD
Fluticasone propionate/salmeterol (AirDuo RespiClick or Digihaler, or authorized generic) MDPI	113/14	1 inhalation twice daily	Asthma
Mometasone/formoterol (Dulera Aerosol) HFA MDI	100/5 mcg	2 inhalations twice daily	Asthma
High-dose Daily Corticosteroid Equivalents			
Fluticasone furoate/vilanterol (Breo Ellipta) DPI	200/25 mcg	1 inhalation daily	Asthma
Fluticasone propionate/salmeterol (Advair HFA) HFA MDI	230/21 mcg	2 inhalations twice daily	Asthma, COPD
Fluticasone propionate/salmeterol (Advair Diskus or authorized generic, Wixela Inhub) DPI	500/50 mcg	1 inhalation twice daily	Asthma
Fluticasone propionate/salmeterol (AirDuo RespiClick or Digihaler, or authorized generic) MDPI	232/14 mcg	1 inhalation twice daily	Asthma
Mometasone/formoterol (Dulera Aerosol) HFA MDI	200/5 mcg	2 inhalations twice daily	Asthma

^d Mometasone/formoterol was not studied at this low-dose equivalent

Therapeutic Interchange Doses for Inhaled Long-Acting Muscarinic Antagonists / Long-Acting Beta Agonists^{1,3}

Medication	Usual Adult Dose	FDA-Approved Indications
Acclidinium bromide/formoterol fumarate (Duaklir Pressair) 400/12 mcg per inhalation	1 inhalation twice daily	COPD
Glycopyrrolate/formoterol (Bevespi Aerosphere) 9/4.8 mcg per inhalation	2 inhalations twice daily	COPD
Glycopyrrolate/indacaterol (Utibron Neohaler) 15.6/27.5 mcg per capsule/inhalation	1 capsule inhaled twice daily	COPD
Tiotropium/olodaterol (Stiolto Respimat) 2.5/2.5 mcg per inhalation	2 inhalations once daily	COPD
Umeclidinium/vilanterol (Anoro Ellipta) 62.5/25 mcg per inhalation	1 inhalation once daily	COPD

Therapeutic Interchange Doses for Inhaled Long-Acting Muscarinic Antagonists¹

Medication	Usual Adult Dose	FDA-Approved Indications
Acclidinium (Tudorza Pressair) 400 mcg per inhalation	1 inhalation twice daily	COPD
Glycopyrrolate (Seebri Neohaler) 15.6 mcg per capsule/inhalation	1 capsule inhaled twice daily	COPD
Tiotropium (Spiriva HandiHaler) 18 mcg per capsule	1 capsule (2 inhalations) once daily	COPD

Medication	Usual Adult Dose	FDA-Approved Indications
Tiotropium (Spiriva Respimat) 1.25 mcg ^e , 2.5 mcg ^f per inhalation	2 inhalations once daily	Asthma, COPD
Umeclidinium (Incruse Ellipta) 62.5 mcg per inhalation	1 inhalation once daily	COPD

^e Approved asthma dosing: 1.25 mcg/inhalation, 2 inhalations once daily

^f Approved COPD dosing: 2.5 mcg/inhalation, 2 inhalations once daily

Therapeutic Interchange Doses for Nebulized Long-Acting Muscarinic Antagonists¹

Medication	Usual Adult Dose	FDA-Approved Indications
Glycopyrrolate (Lonhala Magnair) 25 mcg per vial for nebulization	1 vial nebulized twice daily	COPD
Revefenacin (Yuperli) 175 mcg per vial for nebulization	1 vial nebulized once daily	COPD

Depression/Anxiety/Mood Disorders:

Therapeutic Interchange for Venlafaxine Extended-Release Tablets and Capsules⁶

Medication	Venlafaxine extended-release tablets	Venlafaxine extended-release capsules
Usual Adult Dose	May be interchanged at equivalent doses	
Equivalence	Venlafaxine extended-release tablets are bioequivalent to venlafaxine extended-release capsules, but cannot be considered therapeutically equivalent (AB-rated) because of the difference in formulation (capsules vs tablets).	

Dermatology:

Therapeutic Interchange Doses for Oral Antih herpes Antivirals^{1,3,7-9}

Medication	Herpes Zoster	Recurrent Cold Sore	Initial Genital Herpes Episode	Recurrent Genital Herpes Episode
Acyclovir (Zovirax)	800 mg five times daily x 7 to 10 days	200 to 400 mg five times daily x 5 days	200 mg five times daily OR 400 mg three times daily x 7 to 10 days	200 mg five times daily OR 400 mg three times daily x 5 days
Famciclovir (Famvir)	500 mg three times daily x 7 days	1500 mg as single dose	250 mg three times daily x 7 to 10 days	1000 mg twice daily x 1 day
Valacyclovir (Valtrex)	1000 mg three times daily x 7 days	2000 mg x 2 doses 12 hours apart	1000 mg twice daily x 10 days	500 mg twice daily x 3 days OR 1000 mg once daily x 5 days

Therapeutic Interchange for Minocycline Hydrochloride Immediate-Release Tablets and Capsules²

Medication	Minocycline tablets 50 mg, 75 mg, 100 mg	Minocycline capsules 50 mg, 75 mg, 100 mg
Usual Adult Dose	May be interchanged at equivalent doses	
Equivalence	Minocycline tablet and capsules cannot be considered therapeutically equivalent (AB-rated) because of the difference in formulation (capsules vs tablets). The immediate-release capsules and tablets have similar systemic bioavailability. The dosing for the immediate-release tablets and capsules is the same.	

Diabetes:**Therapeutic Interchange for Metformin Extended-Release Once Daily Tablets⁶**

Medication	Metformin extended-release tablets given once daily	Glumetza, Fortamet, Glucophage XR and generic equivalents
Usual Adult Dose	May be interchanged at equivalent doses	
Equivalence	Metformin extended-release tablets are not be considered therapeutically equivalent (AB-rated) because of the differences in formulation and how the metformin is released over time. Fortamet, an AB2 rated product, is an osmotic release tablet, Glumetza, an AB3 rated product, is a modified-release metformin tablet that delivers metformin to the duodenum over 8-9 hours, and Glucophage XR is AB/AB1 rated. All products within the AB2 category are equivalent but these products are not equivalent to products in the AB3 category. The clinical efficacy of these products has not been compared to each other in head-to-head trials but HbA1c lowering is comparable.	

Therapeutic Interchange for Diabetes Testing Supplies¹⁵

Common Brand Glucometers and Test Strips
Accu-Chek (Active, Aviva, Compact Plus)
Bayer/Ascensia Contour (Breeze 2, Next)
FreeStyle (Freedom Lite, Lite)
OneTouch (Ultra 2, UltraMini, UltraSmart, VerioIQ)
Precision Xtra
TRUE (Balance, Result, Track)
WaveSense (Keynote, Presto)

Therapeutic Interchange Doses for SGLT2 Inhibitors^{1,3}

Medication	Initial Dose	Maximum Dose	Renal Dose Adjustment
Canagliflozin (Invokana)	100 mg daily	300 mg daily	eGFR \geq 45 to < 60 mL/min/1.73 m ² : 100 mg/day max eGFR \geq 30 to < 45 mL/min/1.73 m ² : 100 mg/day max with risk benefit assessment eGFR < 30 mL/min/1.73 m ² or dialysis: contraindicated <u>Concurrent use of UDP- glucuronosyl transferase inducers:</u> eGFR \geq 60 mL/min/1.73 m ² : increase tolerated daily dose by 100 mg; max of 300 mg/day eGFR \geq 30 to < 60 mL/min/1.73 m ² : increase daily dose from 100 mg to 200 mg.
Dapagliflozin (Farxiga)	5 mg daily	10 mg daily	eGFR \geq 25 to < 45 mL/min/1.73 m ² : no dose adjustment needed; however, not recommended for the use of improved glycemic control in type 2 diabetes eGFR < 25 mL/min/1.73 m ² : initiation not recommended; previously established patients can continue with no dose adjustment Dialysis: contraindicated
Empagliflozin (Jardiance)	10 mg daily	25 mg daily	eGFR < 30 mL/min/1.73 m ² : not recommended Dialysis: contraindicated
Ertugliflozin (Steglatro)	5 mg daily	15 mg daily	eGFR < 45 mL/min/1.73 m ² : not recommended Dialysis: contraindicated

Therapeutic Interchange Doses for Dipetidyl Peptidase IV (DPP-IV) Inhibitors¹

Medication	Usual Dose	Renal Dose Adjustment
Alogliptin (Nesina)	25 mg daily	CrCl \geq 30 to < 60 mL/min: 12.5 mg daily CrCl < 30 mL/min: 6.25 mg daily
Linagliptin (Tradjenta)	5 mg daily	None
Saxagliptin (Onglyza)	2.5 to 5 mg daily	eGFR < 45 mL/min/1.73m ² : 2.5 mg daily
Sitagliptin (Januvia)	100 mg daily	eGFR \geq 30 to < 45 mL/min/1.73m ² : 50 mg daily eGFR < 30 mL/min/1.73m ² : 25 mg daily

Therapeutic Interchange for Glucagon-like Peptide-1 (GLP-1) Agonists and Glucose-dependent insulintropic polypeptide (GIP)/GLP-1 Agonists for Diabetes Mellitus ^{1,3}

Medication	Route	Initial Dose	Maximum Dose	Renal Dose Adjustment	How Supplied
Dulaglutide (Trulicity)	Subcutaneous	0.75 mg weekly	4.5 mg weekly	No adjustment required	Single dose pen injector with attached needle
Exenatide (Byetta)	Subcutaneous	5 mcg twice daily	10 mcg twice daily	CrCl < 30 mL/min: Not recommended	Prefilled pen; pen needles not included and must be purchased separately. Can use 29, 30, or 31 gauge disposable needles.
Exenatide ER (Bydureon BCise)	Subcutaneous	2 mg weekly	2 mg weekly	eGFR < 45 mL/minute/1.73 m ² : Not recommended	Single dose autoinjector with needle attached
Liraglutide (Victoza)	Subcutaneous	0.6 mg daily ^h	1.8 mg daily	No adjustment required	Prefilled pen and needles not included. Use with Novo Nordisk disposable needles.
Semaglutide (Ozempic)	Subcutaneous	0.25 mg weekly	1 mg weekly	None adjustment required	Prefilled pen with Novofine Plus 32G 4 mm disposable needles included. The pen can be used with Novofine Plus or Novofine disposable needles up to 8 mm.
GIP Agonist and GLP-1 Agonist					
Tirzepatide (Mounjaro)	Subcutaneous	2.5 mg weekly ^h	15 mg weekly	No adjustment necessary	Single dose pen with needle attached

^g Switch to the desired product when the next dose of the old product is due. Patients may experience a temporary increase in blood glucose concentrations when switching from a short acting to a long-acting product. Monitor for side effects when switching products and increasing doses.

^h The initial dose does not provide effective glycemic control. The initial dose is intended to reduce gastrointestinal side effects. If the provider wrote for an initial dose only then send an initial dose prescription. If provider wrote for the initial dose and maintenance dose, then send both the initial, titration dose and maintenance dose. Forward to provider for any concerns about titration dosing.

ⁱ GLP-1 agonists and GIP/GLP-1 agonists may be interchanged with each other.

Therapeutic Interchange for Glucagon-like Peptide-1 (GLP-1) Agonists for Weight Loss¹

Medication	Route	Initial Dose	Maximum Dose	Renal Dose Adjustment
Glucagon-like Peptide-1 (GLP-1) Agonists labeled for Weight Loss				
Liraglutide (Saxenda)	Subcutaneous	0.6 mg daily	3 mg daily	No adjustment required

Medication	Route	Initial Dose	Maximum Dose	Renal Dose Adjustment
Semaglutide (Wegovy)	Subcutaneous	0.25 mg weekly	2.4 mg weekly	No adjustment required
GIP Agonist and GLP-1 Agonist				
Tirzepatide (Zepbound)	Subcutaneous	2.5 mg weekly	15 mg weekly	No adjustment required

^j Switch to the desired product when the next dose of the old product is due. Monitor for side effects when switching products and increasing doses.

^k If insurance does not cover an FDA-labeled GLP-1 agonist for weight loss, forward to provider.

Therapeutic Interchange for Insulins^{1,3}

Humulin Insulins		Novolin Insulins			
Humulin R 100 units/mL		Novolin R 100 units/mL			
Humulin N 100 units/mL		Novolin N 100 units/mL			
Humulin 70/30 100 units/mL		Novolin 70/30 100 units/mL			
Long-Acting Insulins		Rapid-Acting Insulins		Insulin Mixes	
Lantus 100 units/mL (insulin glargine)		Apidra 100 units/mL (insulin glulisine)		Humalog Mix 75/25 100 units/mL	
Basaglar 100 units/mL (insulin glargine)		Humalog 100 units/mL and 200 units/mL (insulin lispro)		NovoLog Mix 70/30 100 units/mL	
Semglee 100 units/mL (insulin glargine)		Admelog 100 units/mL (insulin lispro)		—	
Rezvoglar 100 units/mL (insulin glargine)		Lyumjev 100 units/mL and 200 units/mL (insulin lispro-aabc)		—	
Levemir 100 units/mL (insulin detemir)		NovoLog 100 units/mL (insulin aspart)		—	
Tresiba 100 units/mL and 200 units/mL (insulin degludec)		Fiasp 100 units/mL (insulin aspart)		—	
Toujeo 300 units/mL (insulin glargine)		—		—	

Insulin clinical issues:

- When interchanging insulin brands, the pharmacist will counsel the patient to monitor glucose and notify the provider of any change in glucose control. Products and doses may be interchanged unit for unit in most cases.
- Use 80% of the dose when switching from Toujeo to another long-acting insulin.
- Lantus, Basaglar, Rezvoglar, and Semglee can be interchanged using the same dosage regimen.
- Long-acting insulins may only be interchanged with Levemir per this protocol during therapy **initiation** with long-acting insulin.
- Lyumjev and Fiasp have a more rapid onset of action than other rapid-acting insulins. Recommended dosing is at the start of a meal or up to 20 minutes after starting a meal, not prior to a meal. Lyumjev is not labeled for pump use.
- Insulin vials and pens may be interchanged as long as drug concentration remains the same, the patient is aware of the change and is counseled on how to administer the correct dose.
- Pharmacists may authorize the correct supplies (eg, syringes, pen needles) to administer the insulin or GLP-1 product.
- Pharmacists may authorize corresponding supplies (eg, test strips/lancets) for use with glucose meters.

Erectile Dysfunction:**Therapeutic Interchange Doses for Erectile Dysfunction Medications¹**

Medication	Usual Dose
Avanafil (Stendra)	100 mg (50 to 200 mg)
Sildenafil (Viagra)	50 mg (25 to 100 mg)
Tadalafil (Cialis)	10 mg (5 to 20 mg)
Vardenafil (Levitra)	10 mg (5 to 20 mg)

Gastrointestinal:**Therapeutic Interchange Doses for Ondansetron¹**

Medication	Lower Dosage Equivalents	Higher Dosage Equivalents
Ondansetron oral tablets	4 mg	24 mg
Ondansetron oral disintegrating tablets	4 mg	24 mg

Therapeutic Interchange Doses for Proton Pump Inhibitors (PPIs)^{1,4,16-19}

Medication	Lower Dosage Equivalents	Higher Dosage Equivalents
Dexlansoprazole (Dexilant)	30 mg daily	60 mg daily
Esomeprazole (Nexium)	20 mg daily	40 mg daily
Lansoprazole (generic or brand Prevacid or Prevacid OTC)	15 mg daily	30 mg daily
Omeprazole (generic or brand Prilosec or Prilosec OTC)	20 mg daily	40 mg daily
Pantoprazole (generic or brand Protonix)	20 mg daily	40 mg daily
Rabeprazole (Aciphex)	20 mg daily	20 mg daily

¹ Refer to the provider for any requests for interchange of PPIs used in combination with antibiotics for treatment of *Helicobacter pylori*.

^m If a patient on home PPI therapy is discharged from the hospital with a new PPI prescription, pharmacy may interchange one for the other at an equivalent dose to avoid duplicate therapy.

Therapeutic Interchange Doses for H2 Receptor Antagonists^{1,20}

Medication	Lower Dosage Equivalents	Higher Dosage Equivalents
Famotidine (Pepcid, generic and OTC)	20 mg at bedtime	40 mg at bedtime or divided twice daily
Nizatidine (Axid, generic and OTC)	150 mg at bedtime	300 mg at bedtime or divided twice daily
Ranitidine (Zantac, generic and OTC)	150 mg at bedtime	300 mg at bedtime or divided twice daily

Therapeutic Interchange for Infliximab Products

Pharmacists may switch patients from infliximab (Remicade) to biosimilar infliximab (eg Renflexis, others) a single time. Additional switches require provider approval.

Therapeutic Interchange for Polyethylene Glycol with Electrolytes Products^{1,3}

Medication	Dose Equivalents
Polyethylene glycol 3350, KCl, NaHCO ₃ , NaCl, Na ₂ SO ₄ (Golytely, GaviLyte-C, GaviLyte-C, and generic)	236 g, 2.97 g, 6.74 g, 5.86 g, 22.74 g in 4 L bottle
Polyethylene glycol 3350, KCl, NaHCO ₃ , NaCl (NuLyteLy, TriLyte, GaviLyte-N, and generic)	420 g, 1.48 g, 5.72 g, 11.2 g in 4 L bottle

Genitourinary:**Therapeutic Interchange Doses for Selective Alpha-1 Blockers for Benign Prostatic Hyperplasia (BPH)¹**

Medication	Usual Initial Dose	Maximum Dose
Alfuzosin (Uroxatral) ⁿ	10 mg once daily	10 mg once daily
Silodosin (Rapaflo) ^{o,p}	8 mg once daily	8 mg once daily
Tamsulosin (Flomax)	0.4 mg once daily	0.8 mg once daily

ⁿ Alfuzosin is contraindicated in moderate to severe hepatic impairment.

^o Silodosin renal dose adjustment: Creatinine clearance (CrCl) 30 to 50 mL/min: 4 mg once daily
CrCl < 30 mL/min: contraindicated

^p Silodosin is contraindicated in severe hepatic impairment.

Therapeutic Interchange Doses for Non-selective Alpha-1 Blockers for Benign Prostatic Hyperplasia (BPH)^{1,3}

Medication	Usual Initial Dose	Maximum Dose
Doxazosin (Cardura, Cardura XL)	Immediate release: 1 mg once daily Extended release: 4 mg once daily	8 mg once daily
Terazosin (Hytrin)	1 mg once daily	10 mg once daily

Therapeutic Interchange Doses for Short Acting Anticholinergics for Overactive Bladder^{1,21}

Medication	Usual Initial Dose	Maximum Dose
Oxybutynin (Ditropan and generic)	5 mg two to three times daily	5 mg four times daily
Tolterodine (Detrol and generic)	1 to 2 mg twice daily	2 mg twice daily
Trospium (Sanctura and generic)	20 mg twice daily	20 mg twice daily

Therapeutic Interchange Doses for Long Acting Anticholinergics for Overactive Bladder^{1,21}

Medication	Usual Initial Dose	Maximum Dose
Darifenacin (Enblex)	7.5 mg once daily	15 mg once daily
Fesoterodine (Toviaz)	4 mg once daily	8 mg once daily
Oxybutynin long-acting (Ditropan XL and generic)	5 mg once daily	30 mg once daily
Solifenacin (Vesicare)	5 mg once daily	10 mg once daily
Tolterodine extended-release (Detrol LA)	2 to 4 mg once daily	4 mg once daily
Trospium extended-release (Sanctura XR)	60 mg once daily	60 mg once daily

Gout:**Therapeutic Interchange Doses for Xanthine Oxidase Inhibitors¹**

Medication	Usual Initial Dose	Maximum Dose
Allopurinol ^q	100 to 300 mg daily	800 mg per day
Febuxostat (Uloric) ^{r,s}	40 mg once daily	80 mg once daily

^q Allopurinol renal dose adjustment per manufacturer's labeling:

CrCl 10-20 mL/min: 200mg/day

CrCl 3-9 mL/min: ≤100mg/day

CrCl <3mL/min: 100mg/day at extended intervals^r

^r Febuxostat renal dose adjustment per manufacturer's labeling:

CrCl <30 mL/min: use caution, insufficient data available

^s Febuxostat should be used with caution in patients with a history of stroke or myocardial infarction, preexisting cardiac disease, or other cardiac risk factors.

Headache/Migraine:**Therapeutic Interchange Doses for Midrin and Similar Products¹**

Medication	Midrin (acetaminophen 325 mg, isometheptene mucate 65 mg, dichloralphenazone 100 mg)	Various products containing acetaminophen 325 mg, isometheptene mucate 65 mg, and dichloralphenazone 100 mg per capsule
Usual Adult Dose	May be interchanged at equivalent doses.	

Therapeutic Interchange Doses for Oral Tablet 5-HT₁ Receptor Agonists (Triptans)¹

Medication^P	Lowest Single Dose	Maximum Single Dose	Maximum Daily Dose
Almotriptan (Axert)	6.25 mg	12.5 mg	25 mg
Eletriptan (Relpax)	20 mg	40 mg	80 mg
Frovatriptan (Frova)	2.5 mg	2.5 mg	7.5 mg
Naratriptan (Amerge)	1 mg	2.5 mg	5 mg
Rizatriptan (Maxalt)	5 mg	10 mg	30 mg
Sumatriptan (Imitrex)	25 to 50 mg	100 mg	200 mg
Zolmitriptan (Zomig)	1.25 to 2.5 mg	5 mg	10 mg

[†] Note frovatriptan (Frova) and naratriptan (Amerge) have longer onsets of action.

Hormone Replacement Therapy:**Therapeutic Interchange Doses for Oral Estrogens in Hormone Replacement Therapy^{1,3,22}**

Medication	Low Dose	Standard Dose	High Dose
Conjugated estrogens			
Premarin	0.3 to 0.45 mg	0.625 mg	0.9 to 1.25 mg
Synthetic conjugated estrogens, A			
Cenestin	0.3 to 0.45 mg	0.625 mg	0.9 to 1.25 mg
Synthetic conjugated estrogens, B			
Enjuvia	0.3 to 0.45 mg	0.625 mg	0.9 to 1.25 mg
Esterified estrogens			
Menest	0.3 mg	0.625 mg	1.25 to 2.5 mg
Estropipate			
Ogen	—	0.625 mg to 1.25 mg (0.75 mg to 1.5 mg estropipate)	2.5 mg (3 mg estropipate)
17beta-estradiol			
Estrace and generic	0.5 mg	1 to 2 mg	—

Therapeutic Interchange for Topical Vaginal Estradiol Presentations^{1,3}

Product name	Manufacturer	Formulation	Route of Administration	Initial Dose	Maintenance
Vagifem	Novo Nordisk	Tablet 10 mcg	Intravaginally	1 tablet once daily for 2 weeks	1 tablet twice per week
Yuvafem	Amneal, Avkare	Tablet 10 mcg	Intravaginally	1 tablet once daily for 2 weeks	1 tablet twice per week
Estradiol	Generic, Glenmark, Teva	Tablet 10 mcg	Intravaginally	1 tablet once daily for 2 weeks	1 tablet twice per week

Product name	Manufacturer	Formulation	Route of Administration	Initial Dose	Maintenance
Imvexxy	TherapeuticsMD	Insert 4 mcg 10 mcg	Intravaginally	4 mcg once daily for 2 weeks	4 mcg twice per week
Estradiol	Generic, Alvogen, Amneal, Mylan, Teva	Cream 0.1 mg/g	Intravaginally	Use 2 to 4 grams once daily for 1 to 2 weeks	Use 1 gram 1 to 3 times per week
Estrace	Allergan	Cream 0.1 mg/g	Intravaginally	Use 2 to 4 grams once daily for 1 to 2 weeks	Use 1 gram 1 to 3 times per week

Therapeutic Interchange for Injectable Testosterone Cypionate 200 mg/mL¹

Medication	Interchange
Testosterone cypionate 200 mg/mL 1 mL single-dose vial	Single-dose vials may be dispensed as multidose vials with a 28-day expiration date after opening. ^u
Testosterone cypionate 200 mg/mL 10 mL multidose vial	

^u Testosterone cypionate 1 mL single-dose vials dispensed for clinic administration are not eligible for this interchange and will be used as single-dose vials with the unused portion wasted.

Hyperlipidemia:

Therapeutic Interchange Doses for Fenofibrates^{1,23}

Medication	Antara (fenofibrate micronized capsule)	Fenoglide (fenofibrate MeltDose tablets)	Fibracor (fenofibric acid tablet)	Lipofen (fenofibrate Lidose capsule)	Lofibra (fenofibrate film-coated tablet) AB-rated generic	Lofibra (fenofibrate micronized capsule) AB-rated generic	Tricor (fenofibrate nanocrystal tablet)	Triglide (fenofibrate IDD-P tablets)	Trilipix (fenofibric acid delayed release capsule)	Fenofibrate	Fenofibrate (micronized capsule)
Dose Equivalent	43 mg	40 mg	35 mg	50 mg	54 mg	67 mg	48 mg	50 mg	45 mg	48 mg 54 mg	67 mg
	130 mg	120 mg	105 mg	150 mg	160 mg	134 mg	145 mg	160 mg	135 mg	145 mg 160 mg	134 mg
						200 mg					200 mg

∨ Refer to table below for information regarding concomitant simvastatin use.

Therapeutic Interchange Doses for HMG-CoA Reductase Inhibitors (Statins)^{1,24}

Medication		Rosuvastatin (Crestor)	Atorvastatin (Lipitor)	Simvastatin (Zocor)	Pravastatin (Pravachol)	Lovastatin (Mevacor)	Fluvastatin (Lescol)	Pitavastatin (Livalo)
Dose Equivalents	High- intensity	40 mg	80 mg					
		20 mg	40 mg	80 mg ^x				
	Moderate- intensity	10 mg	20 mg	40 mg	80 mg	80 mg	-	4 mg
		5 mg	10 mg	20 mg	40 mg	40 mg	80 mg	2 mg
	Low- intensity	2.5 mg ^w	5 mg ^w	10 mg	20 mg	20 mg	40 mg	1 mg
				5 mg	10 mg	10 mg	20 mg	-

^w Half-tab

^x Simvastatin 80 mg is limited to patients previously on the dose for >1 year. Do not start on or titrate any new patients to this dose.

∨ Refer to table below for information regarding recommended simvastatin dosing limits.

Simvastatin dosing limitations^{1,25}

Interacting Agents	Prescribing Recommendations
Strong CYP3A4 inhibitors (eg, itraconazole, ketoconazole, posaconazole, clarithromycin, erythromycin, telithromycin, HIV protease inhibitors, boceprevir, telaprevir, nefazodone)	Contraindicated with simvastatin
Gemfibrozil, cyclosporine, danazol	Contraindicated with simvastatin
Verapamil, diltiazem	Do not exceed 10 mg simvastatin daily
Amiodarone, amlodipine, ranolazine	Do not exceed 20 mg simvastatin daily

Hypertension:**Therapeutic Interchange Doses for ACEIs (Angiotensin-Converting Enzyme Inhibitors)^{1,3,26-28}**

Medication	Equivalent Daily Doses					Dosage interval	Duration of action
	5 mg	10 mg	20 mg	40 mg	NA		
Benazapril (Lotensin)	5 mg	10 mg	20 mg	40 mg	NA	Give in 1 - 2 divided doses.	Intermediate
Enalapril (Vasotec)	2.5 mg	5 mg	10 mg	20 mg	40 mg		Intermediate
Fosinopril (Monopril)	5 mg	10 mg	20 mg	40 mg	80 mg		Long-acting
Lisinopril (Prinivil, Zestril)	5 mg	10 mg	20 mg	40 mg	NA	Give 1 daily dose.	Long-acting
Moexipril (Univasc)	3.75 mg	7.5 mg	15 mg	30 mg	60 mg	Give in 1 – 2 divided doses.	Intermediate
Perindopril (Aceon)	2 mg	4 mg	6 mg	8 mg	16 mg		Long-acting
Quinapril (Accupril)	5 mg	10 mg	20 mg	40 mg	80 mg		Intermediate
Ramipril (Altace)	1.25 mg	2.5 mg	5 mg	10 mg	20 mg		Intermediate
Trandolapril (Mavik)	0.5 mg	1 mg	2 mg	4 mg	8 mg		Long-acting

ACE Inhibitors Clinical Issues:

1. Captopril is not included in this interchange due to different dosing schedules. If no corresponding dose is available for the preferred medication, then no interchange may be performed. Benazepril, moexipril, and perindopril are not indicated for heart failure. Ramipril and trandolapril are approved for CHF post MI only.
2. Many of these medications may have dosing divided twice daily as shown in the table. When possible, the dosing interval for the interchanged doses should be the same. For example, when interchanging a prescription for benazapril 20 mg bid, change to quinapril 20 mg bid or ramipril 5 mg bid.
3. Use in renal dysfunction: Fosinopril does not require dose adjustment for renal impairment.
4. Use in hepatic dysfunction: Preferred agents in hepatic impairment are lisinopril and fosinopril.
5. Adverse effects: Trandolapril has the highest incidence of cough (>30%) and CNS adverse effects.

Therapeutic Interchange Doses for ARBs (Angiotensin Receptor Blockers)^{1,29}

Medication	FDA approved Indications	Equivalent Daily Doses			May divide BID?
		Initial dose	Moderate	Maximum	
Azilsartan (Edarbi)	HTN	HTN: 80 mg daily (40 mg daily for volume-sodium depleted patients)	80 mg	80 mg	
Candesartan (Atacand)	HTN CHF	HTN: 8-16 mg daily (8 mg daily if on a diuretic) CHF: 4 mg daily	16 mg	32 mg	Yes
Eprosartan (Teveten)	HTN	HTN: 600 mg daily (lower doses, such as 400 mg daily or 200 mg bid may be considered for dose-sensitive patients)	600 mg	800 mg	Yes
Irbesartan (Avapro)	HTN DM2 with Nephropathy	HTN: 75-150 mg daily (75 mg daily if on a diuretic) Nephropathy: target dose 300 mg daily	150 mg	300 mg	
Losartan (Cozaar)	HTN HTN/LVH DM2 with Nephropathy	HTN: 50 mg daily (25 mg daily if on a diuretic) HTN/LVH: 50 mg daily Nephropathy: 50 mg daily	50 mg	100 mg	Yes
Olmесartan (Benicar)	HTN	HTN: 20 mg daily (10 mg daily if on a diuretic)	20 mg	40 mg	

Medication	FDA approved Indications	Equivalent Daily Doses			May divide BID?
		Initial dose	Moderate	Maximum	
Telmisartan (Micardis)	HTN	HTN: 40 mg daily (20 mg daily if on a diuretic)	40 mg	80 mg	
Valsartan (Diovan)	HTN CHF	HTN: 80 mg daily (40 mg daily if on a diuretic) CHF: 40 mg twice daily	HTN: 160 mg CHF: 80 mg twice daily	HTN: 320 mg CHF: 160 mg twice daily	Yes— CHF

Initial doses for monotherapy - start with higher initial dose if range given.

Ophthalmic Products:

Therapeutic Interchange Doses for Ophthalmic Mast Cell Stabilizing Antihistamines^{1,3}

Medication	Dose	FDA-Approved Indications
Alcaftadine 0.25% (Lastacaft)	1 drop in each eye once daily	Prevention of itching associated with allergic conjunctivitis
Azelastine 0.05% (Optivar)	1 drop in each affected eye twice daily	Treatment of itching of the eye associated with allergic conjunctivitis
Bepotastine 1.5% (Bepreve)	1 drop in each affected eye twice daily	Treatment of itching associated with allergic conjunctivitis
Emedastine 0.05% (Emadine)	1 drop in each affected eye up to four times daily	Temporary relief of the signs and symptoms of allergic conjunctivitis
Epinastine 0.05% (Elestat)	1 drop in each eye twice daily	Prevention of itching associated with allergic conjunctivitis
Ketotifen 0.025% (Zaditor)	1 drop in each affected eye every 8–12 hours	Temporary relief of itchy eyes due to pollen, ragweed, grass, animal hair, and dander
Olopatadine 0.1% (Patanol)	1 drop in each affected eye twice daily	Treatment of the signs and symptoms of allergic conjunctivitis
Olopatadine 0.2% (Pataday)	1 drop in each affected eye once daily	Treatment of ocular itching associated with allergic conjunctivitis

Therapeutic Interchange for Post-Operative Ophthalmic Fluoroquinolones^{1,3}

Medication	Dose	Frequency	Frequency	Frequency
Gatifloxacin 0.5% ^z	1 drop	Q2h day 1 then QID	TID	QID
Levofloxacin 0.5%	1 drop	Q2h day 1 then QID	TID	QID
Moxifloxacin 0.5% ^z	1 drop	Q2h day 1 then QID	TID	QID
Ofloxacin 0.3%	1 drop	Q2h day 1 then QID	TID	QID

^z Fourth-generation fluoroquinolones are favored substitutions

Oral Mucositis:

Therapeutic Interchange for Triple Mix or First Mouthwash BLM

Medication	Usual Adult Dose	Equivalence
Triple Mix First Mouthwash BLM	May be interchanged at equivalent doses	Interchanged to the 3 individual ingredients, 100 mL each: 1. 100 mL Lidocaine viscous solution, mouth/throat, 2% 2. 100 mL Diphenhydramine 12.5 mg/5 mL 3. 100 mL Antacid/Antigas regular strength (aluminum hydroxide 400 mg/10 mL, magnesium hydroxide 400 mg/10 mL, simethicone 40 mg/10 mL)

Osteoporosis:**Therapeutic Interchange Doses for Oral Bisphosphonates¹**

Medication	Treatment Dose
Alendronate (Fosamax and generic)	10 mg once daily OR 70 mg once weekly
Ibandronate (Boniva and generic)	150 mg once monthly
Risedronate (Actonel)	5 mg once daily OR 35 mg once weekly OR 150 mg once monthly
Risedronate delayed-release (Atelvia)	35 mg once weekly

Pain After Orthopedic Surgery:**Therapeutic Interchange Doses for Oral NSAIDs (Non-Steroidal Anti-Inflammatory Drugs) After Orthopedic Surgery¹**

Medication	Dose
Naproxen (Naprosyn and generic)	500 mg twice daily
Celecoxib ^{aa,bb} (Celebrex and generic)	200 mg once daily
Meloxicam (Mobic and generic)	15 mg once daily

^{aa} Celecoxib is contraindicated in severe hepatic impairment.

^{bb} Celecoxib is the preferred agent for patients on warfarin.

^{cc} Educate patients on bleeding risks if taking NSAIDs and DOACs concomitantly.

Potassium Supplements:**Therapeutic Interchange Doses for Oral Potassium^{1,30}**

Dosage Form	Potassium Salt	Strength	Brand Name	Generics
Capsules, extended-release	Potassium Chloride	8 mEq	Micro-K	Potassium chloride extended-release capsules (with povidone)
		10 mEq	Micro-K	Potassium chloride extended-release capsules (with povidone)
Tablets, extended-release (coated potassium chloride crystals)	Potassium Chloride	10 mEq	Klor-Con M10	Potassium chloride extended-release tablets
		15 mEq	Klor-Con M15	Potassium chloride extended-release tablets
		20 mEq	Klor-Con M20	Potassium chloride extended-release tablets
Tablets, extended-release (film coated)	Potassium Chloride	8 mEq	Klor-Con 8	Potassium chloride extended-release tablets
		10 mEq	Klor-Con 10	Potassium-chloride extended-release tablets
Tablets, for solution	Potassium Bicarbonate	10 mEq	Effer-K	Potassium bicarbonate effervescent tablets
		20 mEq	Effer-K	Potassium bicarbonate effervescent tablets
		25 mEq	Klor-Con/EF	Potassium bicarbonate effervescent tablets

References:

1. Lexi-Drugs [database online]. Hudson, OH. Lexi-Comp, 2023. Accessed April 2023.
2. Cartwright AC, Hatfield HL, Yeadon A, London E. A comparison of the bioavailability of minocycline capsules and film-coated tablets. *J Antimicrob Chemother* 1975; 1:317-22.
3. Drugdex [database online]. Greenwood Village, CO: Truven Health Analytics, 2023.
4. Global Strategy for Asthma Management and Prevention (GINA), 2022 Update. <https://ginasthma.org/wp-content/uploads/2022/07/GINA-Main-Report-2022-FINAL-22-07-01-WMS.pdf>. Accessed April 10, 2023.
5. Drugs for Asthma. *The Medical Letter* 2020; 62(1613): 193-200. .
6. US Food & Drug Administration Approved Drug Products With Therapeutic Equivalence (Orange Book). Available at <https://www.accessdata.fda.gov/scripts/cder/ob/default.cfm>. Last accessed June 18, 2017.
7. Treatment of Shingles. *Pharmacist's Letter/Prescriber's Letter*. 2012; 28(9):280911.
8. Treatment of Cold Sores. *Pharmacist's Letter/Prescriber's Letter*. 2011; 27(5):27051.1
9. Sexually transmitted diseases treatment guidelines. *Pharmacist's Letter/Prescriber's Letter* 2011;27(4):270410.
10. UpToDate. <https://www.uptodate.com/contents/search>. Accessed November 4, 2019.
11. Sewell MJ, Burkhart CN, Morrell DS. Dermatological Pharmacology. In: Brunton LL, Hilal-Dandan R, Knollmann BC, ed. *Goodman & Gilman's: The Pharmacological Basis of Therapeutics*. New York: McGraw Hill Medical; 2018:1271-1296.
12. Tadicherla S, Ross K, Shenefelt PD, Fenske NA. Topical corticosteroids in dermatology. *J Drugs Dermatol*. 2009;8(12):1093-1105.
13. Aayushi M, Nadkarni N, Patil S, et al. Topical corticosteroids in dermatology. 2016; 82(4): 371-8.
14. Habif TP. Topical therapy and topical corticosteroids. In: Habif TP, ed. *Clinical Dermatology*. Philadelphia, PA: Saunders; 2016:75-89.
15. Blood glucose meters. *Pharmacist's Letter/Prescriber's Letter* 2009;25(4):250411. (Update January 2010).
16. Hirschowitz BI, Simmons J, Mohnen J. Long-term lansoprazole control of gastric acid and pepsin secretion in ZE and non-ZE hypersecretors: a prospective 10-year study. *Aliment Pharmacol Ther* 2001;15:1795-1806.
17. Carling L, Axelsson CK, Forssell H, et al. Lansoprazole and omeprazole in the prevention of relapse of reflux oesophagitis: a long-term comparative study. *Aliment Pharmacol Ther* 1998;12: 985-990.
18. Lauritsen K, Deviere J, Bigard MA, et al: Esomeprazole 20 mg and lansoprazole 15 mg in maintaining healed reflux oesophagitis: Metropole study results. *Aliment Pharmacol Ther* 2003;17(3): 333-341.
19. Proton pump inhibitor dose comparison. *Pharmacist's Letter/Prescriber's Letter* 2009;25(8):250801.
20. Histamine H2 blocker oral dose comparison. *Pharmacist's Letter/Prescriber's Letter* 2009;25(8):250801.
21. Medications for Overactive Bladder. *Pharmacist's Letter/Prescriber's Letter* 2012; 28(10):281002.
22. Converting between estrogen products. *Pharmacist's Letter/Prescriber's Letter* 2009;25(11):251109.
23. Comparison of fenofibric acid and fenofibrate products. *Pharmacist's Letter/Prescriber's Letter* 2009;25(2):250211.
24. Characteristics of the various Statins. *Pharmacist's Letter* 2010;26(6):260611.
25. Zocor® package insert. Whitehouse Station, NJ: Merck & Co., Inc.; 2012 June.
26. National High Blood Pressure Education Program Coordinating committee. The seventh report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure. Washington, DC: U.S. Department of Health and Human Services, 2003; NIH publication no. 03-5233.
27. Beckwith MC, Peterson D, Fox ER. Comparison of available ACEIs. Paper prepared by the Drug Information Services, Department of Pharmacy Services, University of Utah Hospitals and Clinics, Salt Lake City, UT. 2003 June 16.
28. Stoysich A, Massoomi F. Automatic interchange of the ACE inhibitors: Decision-making process and initial results. *Formulary*. 2002;37(1):41-44.
29. Comparison of Angiotensin Receptor Blockers. *Pharmacist's Letter* 2012; 28(3):280302 (Updated February 2012).
30. Potassium Supplements. In DynaMed [database online]. EBSCO Publishing. <http://www.ebscohost.com/DynaMed/>. Updated April 11, 2011. Accessed October 23, 2012.