

Selecting Comparators in Active Surveillance Analyses

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Background

OMOP aims to inform the appropriate use of observational healthcare data, such as administrative claims and electronic health records, for identifying and evaluating drug safety issues within an active surveillance network. To support this aim, the Partnership has assembled a research community of disparate data sources within both a centralized system and a distributed network. OMOP has also established a methods development community, where research collaborators have implemented multiple different approaches for analyzing observational data. While the specific design of each method may vary, the fundamental objective remains the same: to estimate the strength of the association between drug exposure and outcome, as a means of identifying and prioritizing drug-condition relationships that may warrant further evaluation.

As part of its empiric approach to its methodological research, OMOP is evaluating the performance of all analysis methods in their ability to identify true drug safety issues and minimize false positive findings. Each method deemed computationally feasible is being assessed for two analysis problems: Health Outcomes of Interest (HOI), and Non-Specified Associations (NSA). For both problems, 10 drugs of interest (DOI) were identified as mature products with well-characterized safety profiles. For the HOI problem, 10 outcomes were selected and one or more operational definitions were implemented for each outcome. Amongst the 10 HOIs, 9 DOI-HOI pairs represent 'true positive' safety issue test cases, 2 pairs were selected as 'true positive benefits', and 44 pairs were classified as 'negative controls'. When accounting for the multiple outcome definitions, the HOI experiment contains 35 'true positives' and 178 'negative controls', for 213 test cases in total. For the NSA problem, conditions were selected as either 'true positive' safety issues or 'negative controls' based on the status of the condition in relation to the structured product labels for the Drugs of Interest; this process resulted in a test suite that contained 599 'true positives' and 27,800 'negative controls' for 28,399 test cases in total. The rationale, process and description of the test cases is described elsewhere. Each method will be used to produce a score (eg. estimate or test statistic) for each of the test cases, and a series of measures (such as Mean Average Precision and 'precision-at-k') will be applied to those scores to assess their relative performance in classifying the status of the test cases.

All methods have user-defined parameters that allow the program to be configured to specific settings pertinent to the drug-condition relationship under study. For example, many programs allow the user to specify whether the 'time-at-risk' is defined as a constant window after drug initiation, or based on a variable period based on the length of observed exposure. Other methods allow the user to specify whether the outcome of interest is measured based on incident or prevalent occurrence.

These parameters are used to define how data is extracted and manipulated for use in analysis, and can impact the resulting estimate calculation. Largely, the degree to which these parameters influence the performance behavior of the methods is undetermined. OMOP is exploring multiple configurations of each method in an attempt to uncover patterns about which parameter settings perform best in identifying particular drug-condition associations within certain types of data.

Many methods attempt to estimate the strength of the drug-condition relationship by comparing the observed rate of drug-condition co-occurrence to an expected rate. Some methods estimate the expected rate based on a selection of one or more comparator drugs. Four methods require a user parameter for 'comparator drugs'.

- Maximized sequential probability ratio test (maxSPRT), developed by Harvard Pilgrim and Group Health Cooperative.
- Conditional sequential sampling procedure (CSSP), developed by Harvard Pilgrim and Group Health Cooperative.
- High-dimensional propensity score cohort design (hdPS), initially designed by Schneeweiss et al. and implemented by the OMOP research team.
- Incident user design (IUD), developed by Alan Brookhart of the University of North Carolina at Chapel Hill.

It is expected that the performance of these methods could be highly sensitive to the selection of the comparator drugs. This is consistent with the traditional challenge in pharmacoepidemiologic observational database study design of selecting the appropriate comparator group. The desire is to construct a comparator which is sufficiently similar to the target group that effects observed may be plausibly attributable to the exposure of interest. Analysts take great pains to define study inclusion/exclusion criteria when extracting the data and apply additional analysis techniques (such as matching, stratification, and multivariate modeling) to minimize effects of confounding and other biases. Such design decisions are pivotal to the final result, but can be resource intensive and require subjective expert opinion. As such, we propose using these methods as an opportunity to develop and evaluate alternative approaches to comparator selection.

Proposal

One research opportunity is to evaluate the performance of objective heuristics that could be used to supplement subjective decision-making. In the case of comparator selection, OMOP intends to leverage existing biomedical ontologies to construct alternative definitions of ‘comparator drugs’. NDF-RT is a drug classification system, maintained by the Department of Veteran’s Affairs. NDF-RT provides a multi-axial hierarchy for chemical ingredients in medical products (ex. ‘lisinopril’). The relationships contained within NDF-RT include: ‘may treat’ and ‘may prevent’, which enumerate indications and other potential uses of a product (ex. ‘Hypertension’); ‘mechanism of action’, often thought of a drug class (ex. ‘Angiotensin-converting Enzyme Inhibitors’); ‘chemical structure’ (ex: lisinopril); ‘Physiologic Effect’ (ex. ‘Arterial Vasodilation’). For purposes of this research, OMOP will focus on the ‘may treat’ and ‘mechanism of action’ relationships.

We propose experimenting with five alternative comparator drug definitions:

1. select all drugs with the same ‘may treat’ (indication) relationship as the DOI
2. select all drugs with the same mechanism of action (class) as the DOI
3. select all drugs within a different mechanism of action that share the same primary indication as the DOI
4. select the most prevalent drug within a different mechanism of action that shares the same primary indication as the DOI
5. Select one or more drugs based on subjective expert opinion

The first four comparator definitions can be systematically extracted from the OMOP common data model using NDF-RT. The results of applying these objective heuristics are detailed below. Note, the ‘primary indication’ requires subjective assessment of the available options when there are multiple ‘may treat’ relationships for a give product. Prevalence was estimated as proportion of people with at least one exposure, as extracted from OSCAR across all sources in the OMOP data community. The selections of drug were consistently the most prevalent in all sources. The fifth definition reflects current practice and requires subject matter expertise, including from the collaborators who developed these methods.

It should be recognized that the use of objective heuristics is prone to the same limitations as any subjective assessment involved in comparator selection. The distinction is the relationships between drugs have been pre-defined through clinical review from those who curate and maintain NDF-RT, as opposed to decided at analysis-time for a specific question of interest. As a result, relationships in NDF-RT, may not be consistent with expectations, either to differing clinical opinions or misclassification. In some instances, the classification may not be as granular as desired, and therefore the proposed heuristics may identify a broader set of comparator drugs that initially desired. The intent of conducting the research to evaluate multiple alternative comparator definitions is to allow an assessment of the acceptability of objective heuristics, as a potential supplemental approach to current practice in pharmacoepidemiologic evaluation.

Table 1 highlights the 10 OMOP drugs of Interest (DOIs), and the corresponding primary ‘may treat’ indications, ‘mechanism of action’ and ‘prevalent drugs’ selected as comparators.

DOI_DRUG_NAME	DOI_DESCRIPTION	Comparator 'May Treat' Indication	Comparator 'Mechanism of Action' class	Comparator drug (most prevalent among MoA class)
OMOP ACE Inhibitor	ACE inhibitors: benazepril, captopril, enalapril, fosinopril, lisinopril, quinapril, and ramipril; restricted to oral form	Hypertension	Angiotensin 2 Receptor Antagonists	Valsartan
OMOP Amphotericin B	parenteral Amphotericin B	Candidiasis, Chronic Mucocutaneous	14-alpha demethylase Inhibitors	Fluconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Antibiotics: erythromycins, sulfonamides, and tetracyclines; restricted to oral and injectable	Skin Diseases, Bacterial	Topoisomerase Inhibitors	Ciprofloxacin
OMOP Antiepileptics: carbamazepine, phenytoin	Antiepileptics: carbamazepine, phenytoin; restricted to oral and injectable	Epilepsy, Tonic-Clonic	Neurotransmitter Transporter Interactions	Pentobarbital
OMOP Benzodiazepines	Benzodiazepines: alprazolam, chlordiazepoxide, clonazepam, clorazepate, diazepam, estazolam, flurazepam, halazepam, lorazepam, oxazepam, prazepam, quazepam, temazepam, or triazolam	Anxiety Disorders	Serotonin Uptake Inhibitors	Fluoxetine
OMOP Beta blockers	Beta blockers: propanolol, metoprolol, atenolol; restricted to oral form	Heart Failure, Congestive	Angiotensin-converting Enzyme Inhibitors	Lisinopril
OMOP Bisphosphonates	Bisphosphonates: alendronate	Osteoporosis, Postmenopausal	Selective Estrogen Receptor Modulators	Raloxifene
OMOP Tricyclic antidepressants	Tricyclic antidepressants: restricted to oral and injectable	Depressive Disorder	Dopamine Uptake Inhibitors	Bupropion

DOI_DRUG_NAME	DOI_DESCRIPTION	Comparator 'May Treat' Indication	Comparator 'Mechanism of Action' class	Comparator drug (most prevalent among MoA class)
OMOP Typical antipsychotics	Typical antipsychotics: Chlorpromazine, chlorprothixene, levomepromazine, flupentixol, Fluphenazine decanoate, Fluphenazine enanthate, Fluphenazine hcl, Haloperidol, Haloperidol decanoate, Loxapine hcl, Loxapine succinate, melperon, Mesoridazine, Molindone, Perphenazine, amitriptyline hcl/perphenazine, Pimozide, pipamperone, promazine, Prochlorperazine edisylate, periciazine, Prochlorperazine maleate, Promazine, Propiomazine, Thioridazine, Thiothixene, Trifluoperazine, zuclopenthixol	Psychotic Disorders	Cholinergic Muscarinic Antagonists	olanzapine
OMOP Warfarin	Warfarin	Thromboembolism	Thrombin Inhibitors	Heparin

Comparator 1: select all drugs with the same ‘may treat’ (indication) relationship as the DOI

Table 2 highlights all ‘may treat’ relationships in NDF-RT for all medical products within the 10 DOIs. Those highlighted in yellow were designated as ‘primary indication’.

DOI_CONCEPT_NAME	MAY_TREAT_CONCEPT_NAME
OMOP ACE Inhibitor	Arthritis, Rheumatoid
OMOP ACE Inhibitor	Diabetic Nephropathies
OMOP ACE Inhibitor	Edema
OMOP ACE Inhibitor	Heart Failure, Congestive
OMOP ACE Inhibitor	Hypertension
OMOP ACE Inhibitor	Hypertension, Malignant
OMOP ACE Inhibitor	Raynaud Disease
OMOP ACE Inhibitor	Ventricular Dysfunction, Left
OMOP Amphotericin B	AIDS-Related Opportunistic Infections
OMOP Amphotericin B	Aspergillosis
OMOP Amphotericin B	Blastomycosis
OMOP Amphotericin B	Candidiasis, Chronic Mucocutaneous
OMOP Amphotericin B	Candidiasis, Cutaneous
OMOP Amphotericin B	Coccidioidomycosis
OMOP Amphotericin B	Cystitis
OMOP Amphotericin B	Fungemia
OMOP Amphotericin B	Histoplasmosis
OMOP Amphotericin B	Leishmaniasis, Visceral
OMOP Amphotericin B	Lung Diseases, Fungal
OMOP Amphotericin B	Meningitis, Cryptococcal
OMOP Amphotericin B	Neutropenia
OMOP Amphotericin B	Paracoccidioidomycosis
OMOP Amphotericin B	Peritonitis
OMOP Amphotericin B	Sporotrichosis
OMOP Amphotericin B	Urinary Tract Infections
OMOP Amphotericin B	Zygomycosis
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	AIDS-Related Opportunistic Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Acne Vulgaris

DOI_CONCEPT_NAME	MAY_TREAT_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Bronchitis
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Campylobacter Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Candidiasis, Vulvovaginal
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chancroid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chlamydia Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chlamydiaceae Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Corneal Ulcer
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dermatitis, Seborrheic
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ear Diseases
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Enterobacteriaceae Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Eye Infections, Bacterial
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Gastroenteritis
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Gonorrhea
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Gram-Positive Bacterial Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Helicobacter Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Legionnaires' Disease
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Malaria
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Mycoplasma Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Otitis Media
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Skin Diseases, Bacterial
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Staphylococcal Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Streptococcal Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Syphilis
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Toxoplasmosis
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Urinary Tract Infections
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Whooping Cough
OMOP Antiepileptics: carbamazepine, phenytoin	Bipolar Disorder
OMOP Antiepileptics: carbamazepine, phenytoin	Epilepsy, Complex Partial
OMOP Antiepileptics: carbamazepine, phenytoin	Epilepsy, Tonic-Clonic
OMOP Antiepileptics: carbamazepine, phenytoin	Psychotic Disorders
OMOP Antiepileptics: carbamazepine, phenytoin	Restless Legs Syndrome
OMOP Antiepileptics: carbamazepine, phenytoin	Schizophrenia
OMOP Antiepileptics: carbamazepine, phenytoin	Seizures

DOI_CONCEPT_NAME	MAY_TREAT_CONCEPT_NAME
OMOP Antiepileptics: carbamazepine, phenytoin	Status Epilepticus
OMOP Antiepileptics: carbamazepine, phenytoin	Stress Disorders, Post-Traumatic
OMOP Antiepileptics: carbamazepine, phenytoin	Substance Withdrawal Syndrome
OMOP Antiepileptics: carbamazepine, phenytoin	Trigeminal Neuralgia
OMOP Benzodiazepines	Alcohol Withdrawal Delirium
OMOP Benzodiazepines	Alcoholism
OMOP Benzodiazepines	Anxiety Disorders
OMOP Benzodiazepines	Bipolar Disorder
OMOP Benzodiazepines	Depressive Disorder
OMOP Benzodiazepines	Duodenal Ulcer
OMOP Benzodiazepines	Epilepsies, Partial
OMOP Benzodiazepines	Epilepsy, Absence
OMOP Benzodiazepines	Muscle Spasticity
OMOP Benzodiazepines	Neuralgia
OMOP Benzodiazepines	Panic Disorder
OMOP Benzodiazepines	Psychotic Disorders
OMOP Benzodiazepines	Restless Legs Syndrome
OMOP Benzodiazepines	Schizophrenia
OMOP Benzodiazepines	Sleep Initiation and Maintenance Disorders
OMOP Benzodiazepines	Status Epilepticus
OMOP Benzodiazepines	Substance Withdrawal Syndrome
OMOP Benzodiazepines	Tic Disorders
OMOP Benzodiazepines	Vomiting
OMOP Beta blockers	Angina Pectoris
OMOP Beta blockers	Atrial Fibrillation
OMOP Beta blockers	Atrial Flutter
OMOP Beta blockers	Esophageal and Gastric Varices
OMOP Beta blockers	Essential Tremor
OMOP Beta blockers	Heart Failure, Congestive
OMOP Beta blockers	Hypertension
OMOP Beta blockers	Myocardial Infarction
OMOP Beta blockers	Panic Disorder
OMOP Beta blockers	Pheochromocytoma

DOI_CONCEPT_NAME	MAY_TREAT_CONCEPT_NAME
OMOP Beta blockers	Tachycardia, Supraventricular
OMOP Beta blockers	Tachycardia, Ventricular
OMOP Beta blockers	Ventricular Fibrillation
OMOP Bisphosphonates	Osteoporosis, Postmenopausal
OMOP Bisphosphonates	Paget's Disease, Extramammary
OMOP Tricyclic antidepressants	Anxiety Disorders
OMOP Tricyclic antidepressants	Attention Deficit Disorder with Hyperactivity
OMOP Tricyclic antidepressants	Depressive Disorder
OMOP Tricyclic antidepressants	Dermatitis, Atopic
OMOP Tricyclic antidepressants	Enuresis
OMOP Tricyclic antidepressants	Obsessive-Compulsive Disorder
OMOP Tricyclic antidepressants	Pain
OMOP Tricyclic antidepressants	Panic Disorder
OMOP Tricyclic antidepressants	Pruritus
OMOP Tricyclic antidepressants	Substance-Related Disorders
OMOP Typical antipsychotics	Anxiety Disorders
OMOP Typical antipsychotics	Attention Deficit and Disruptive Behavior Disorders
OMOP Typical antipsychotics	Dementia
OMOP Typical antipsychotics	Hiccup
OMOP Typical antipsychotics	Huntington Disease
OMOP Typical antipsychotics	Nausea
OMOP Typical antipsychotics	Porphyria, Acute Intermittent
OMOP Typical antipsychotics	Psychotic Disorders
OMOP Typical antipsychotics	Reye Syndrome
OMOP Typical antipsychotics	Schizophrenia
OMOP Typical antipsychotics	Substance Withdrawal Syndrome
OMOP Typical antipsychotics	Tetanus
OMOP Typical antipsychotics	Torticollis
OMOP Typical antipsychotics	Tourette Syndrome
OMOP Typical antipsychotics	Vomiting
OMOP Warfarin	Atrial Fibrillation
OMOP Warfarin	Cerebrovascular Accident
OMOP Warfarin	Postoperative Complications

DOI_CONCEPT_NAME	MAY_TREAT_CONCEPT_NAME
OMOP Warfarin	Pulmonary Embolism
OMOP Warfarin	Thromboembolism
OMOP Warfarin	Thrombophlebitis

Table 3 shows all other drugs that share one or more of these ‘may treat’ relationships, used for the broad Comparator 1 definition:

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP ACE Inhibitor	Timolol
OMOP ACE Inhibitor	Triamterene
OMOP ACE Inhibitor	Trichlormethiazide
OMOP ACE Inhibitor	Methyclothiazide
OMOP ACE Inhibitor	Metolazone
OMOP ACE Inhibitor	Bumetanide
OMOP ACE Inhibitor	torseamide
OMOP ACE Inhibitor	Polythiazide
OMOP ACE Inhibitor	Carteolol
OMOP ACE Inhibitor	Furosemide
OMOP ACE Inhibitor	Sulfasalazine
OMOP ACE Inhibitor	Spirolactone
OMOP ACE Inhibitor	Hydrochlorothiazide
OMOP ACE Inhibitor	Indapamide
OMOP ACE Inhibitor	Amiloride
OMOP ACE Inhibitor	Loteprednol
OMOP ACE Inhibitor	Chlorothiazide
OMOP ACE Inhibitor	leflunomide
OMOP ACE Inhibitor	Tolmetin
OMOP ACE Inhibitor	valdecoxib
OMOP ACE Inhibitor	Aspirin
OMOP ACE Inhibitor	nabumetone
OMOP ACE Inhibitor	anakinra
OMOP ACE Inhibitor	Auranofin
OMOP ACE Inhibitor	Naproxen
OMOP ACE Inhibitor	oxaprozin
OMOP ACE Inhibitor	celecoxib
OMOP ACE Inhibitor	adalimumab
OMOP ACE Inhibitor	Diclofenac
OMOP ACE Inhibitor	Diflunisal
OMOP ACE Inhibitor	Piroxicam
OMOP ACE Inhibitor	Etanercept
OMOP ACE Inhibitor	Fenoprofen
OMOP ACE Inhibitor	Flurbiprofen
OMOP ACE Inhibitor	Aurothioglucose
OMOP ACE Inhibitor	Ibuprofen
OMOP ACE Inhibitor	Indomethacin
OMOP ACE Inhibitor	Ketoprofen
OMOP ACE Inhibitor	Etodolac
OMOP ACE Inhibitor	Sulindac
OMOP ACE Inhibitor	Methotrexate
OMOP ACE Inhibitor	Methyldopa
OMOP ACE Inhibitor	Metoprolol
OMOP ACE Inhibitor	Verapamil

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP ACE Inhibitor	valsartan
OMOP ACE Inhibitor	Minoxidil
OMOP ACE Inhibitor	eplerenone
OMOP ACE Inhibitor	Nadolol
OMOP ACE Inhibitor	Atenolol
OMOP ACE Inhibitor	Bendroflumethiazide
OMOP ACE Inhibitor	telmisartan
OMOP ACE Inhibitor	Nicardipine
OMOP ACE Inhibitor	Nifedipine
OMOP ACE Inhibitor	Angelica sinensis preparation
OMOP ACE Inhibitor	Bepidil
OMOP ACE Inhibitor	Nisoldipine
OMOP ACE Inhibitor	Acebutolol
OMOP ACE Inhibitor	Betaxolol
OMOP ACE Inhibitor	Isradipine
OMOP ACE Inhibitor	Digoxin
OMOP ACE Inhibitor	Papaverine
OMOP ACE Inhibitor	Penbutolol
OMOP ACE Inhibitor	Diltiazem
OMOP ACE Inhibitor	allyl sulfide
OMOP ACE Inhibitor	Amlodipine
OMOP ACE Inhibitor	Phenoxybenzamine
OMOP ACE Inhibitor	Phentolamine
OMOP ACE Inhibitor	Bisoprolol
OMOP ACE Inhibitor	Terazosin
OMOP ACE Inhibitor	trandolapril
OMOP ACE Inhibitor	Guanfacine
OMOP ACE Inhibitor	Mibefradil
OMOP ACE Inhibitor	Pindolol
OMOP ACE Inhibitor	eprosartan
OMOP ACE Inhibitor	carvedilol
OMOP ACE Inhibitor	irbesartan
OMOP ACE Inhibitor	Prazosin
OMOP ACE Inhibitor	coenzyme Q10
OMOP ACE Inhibitor	candesartan
OMOP ACE Inhibitor	Propranolol
OMOP ACE Inhibitor	Felodipine
OMOP ACE Inhibitor	Nitroglycerin
OMOP ACE Inhibitor	Reserpine
OMOP ACE Inhibitor	Doxazosin
OMOP ACE Inhibitor	Guanabenz
OMOP ACE Inhibitor	Guanethidine
OMOP ACE Inhibitor	Losartan
OMOP ACE Inhibitor	Milrinone
OMOP ACE Inhibitor	Hydralazine
OMOP ACE Inhibitor	Hydroflumethiazide
OMOP ACE Inhibitor	Isosorbide

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP ACE Inhibitor	Isoxsuprine
OMOP ACE Inhibitor	Labetalol
OMOP ACE Inhibitor	deserpidine
OMOP ACE Inhibitor	Mecamylamine
OMOP ACE Inhibitor	Chlorthalidone
OMOP ACE Inhibitor	Clonidine
OMOP ACE Inhibitor	guanadrel
OMOP ACE Inhibitor	Danazol
OMOP ACE Inhibitor	Diazoxide
OMOP ACE Inhibitor	prednisolone
OMOP ACE Inhibitor	somatrem
OMOP ACE Inhibitor	Somatropin
OMOP ACE Inhibitor	Hydroxychloroquine
OMOP ACE Inhibitor	Chloroquine
OMOP ACE Inhibitor	desflurane
OMOP ACE Inhibitor	Tolazoline
OMOP ACE Inhibitor	Cyclosporine
OMOP ACE Inhibitor	icodextrin
OMOP ACE Inhibitor	Azathioprine
OMOP ACE Inhibitor	Deslanoside
OMOP ACE Inhibitor	Inamrinone
OMOP ACE Inhibitor	Digitoxin
OMOP ACE Inhibitor	Penicillamine
OMOP ACE Inhibitor	benzothiazide
OMOP ACE Inhibitor	Digitalis preparation
OMOP ACE Inhibitor	esmolol
OMOP ACE Inhibitor	quinethazone
OMOP ACE Inhibitor	cyclothiazide
OMOP ACE Inhibitor	Magnesium Sulfate
OMOP ACE Inhibitor	Fenoldopam
OMOP ACE Inhibitor	Thalidomide
OMOP Amphotericin B	Immunoglobulins, Intravenous
OMOP Amphotericin B	Tobramycin
OMOP Amphotericin B	Methenamine
OMOP Amphotericin B	Methylene blue
OMOP Amphotericin B	Miconazole
OMOP Amphotericin B	Natamycin
OMOP Amphotericin B	oxiconazole
OMOP Amphotericin B	Nitrofurantoin
OMOP Amphotericin B	Nystatin
OMOP Amphotericin B	Ofloxacin
OMOP Amphotericin B	sulconazole
OMOP Amphotericin B	Econazole
OMOP Amphotericin B	ciclopirox
OMOP Amphotericin B	Fosfomycin
OMOP Amphotericin B	Gentian Violet
OMOP Amphotericin B	Ketoconazole

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Amphotericin B	Cinoxacin
OMOP Amphotericin B	Clindamycin
OMOP Amphotericin B	Clotrimazole
OMOP Amphotericin B	Sulfamethizole
OMOP Amphotericin B	Filgrastim
OMOP Amphotericin B	pegfilgrastim
OMOP Amphotericin B	Mesna
OMOP Amphotericin B	colistimethate
OMOP Amphotericin B	Ticarcillin
OMOP Amphotericin B	valganciclovir
OMOP Amphotericin B	Itraconazole
OMOP Amphotericin B	Acyclovir
OMOP Amphotericin B	Trimethoprim
OMOP Amphotericin B	Vancomycin
OMOP Amphotericin B	lomefloxacin
OMOP Amphotericin B	meropenem
OMOP Amphotericin B	Dapsone
OMOP Amphotericin B	Amoxicillin
OMOP Amphotericin B	Nafcillin
OMOP Amphotericin B	voriconazole
OMOP Amphotericin B	Demeclocycline
OMOP Amphotericin B	Aztreonam
OMOP Amphotericin B	gemifloxacin
OMOP Amphotericin B	moxifloxacin
OMOP Amphotericin B	Ampicillin
OMOP Amphotericin B	Caspofungin
OMOP Amphotericin B	Norfloxacin
OMOP Amphotericin B	Dicloxacillin
OMOP Amphotericin B	Oxacillin
OMOP Amphotericin B	Pentamidine
OMOP Amphotericin B	bacampicillin
OMOP Amphotericin B	Carbenicillin
OMOP Amphotericin B	terbinafine
OMOP Amphotericin B	Levofloxacin
OMOP Amphotericin B	Enoxacin
OMOP Amphotericin B	Cidofovir
OMOP Amphotericin B	Piperacillin
OMOP Amphotericin B	cefepime
OMOP Amphotericin B	Trimetrexate
OMOP Amphotericin B	Fluconazole
OMOP Amphotericin B	Flucytosine
OMOP Amphotericin B	Ganciclovir
OMOP Amphotericin B	Pyrimethamine
OMOP Amphotericin B	Rifampin
OMOP Amphotericin B	Cefaclor
OMOP Amphotericin B	Cefadroxil
OMOP Amphotericin B	Cefazolin

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Amphotericin B	Cefoperazone
OMOP Amphotericin B	Cefotaxime
OMOP Amphotericin B	Cefotetan
OMOP Amphotericin B	Cefoxitin
OMOP Amphotericin B	Ceftazidime
OMOP Amphotericin B	Ceftizoxime
OMOP Amphotericin B	Ceftriaxone
OMOP Amphotericin B	Cefuroxime
OMOP Amphotericin B	Imipenem
OMOP Amphotericin B	Atovaquone
OMOP Amphotericin B	Cephalexin
OMOP Amphotericin B	Cephadrine
OMOP Amphotericin B	gatifloxacin
OMOP Amphotericin B	Cefixime
OMOP Amphotericin B	Ciprofloxacin
OMOP Amphotericin B	Cloxacillin
OMOP Amphotericin B	Sulfadiazine
OMOP Amphotericin B	Sulfadoxine
OMOP Amphotericin B	Sulfamethoxazole
OMOP Amphotericin B	Sulfisoxazole
OMOP Amphotericin B	Mezlocillin
OMOP Amphotericin B	Cyclacillin
OMOP Amphotericin B	sulfacytine
OMOP Amphotericin B	Carboprost
OMOP Amphotericin B	Potassium Iodide
OMOP Amphotericin B	Cefamandole
OMOP Amphotericin B	Cephalothin
OMOP Amphotericin B	Cephapirin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Immunoglobulins, Intravenous
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Tetanus immune globulin, human
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Methocarbamol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nicotine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Orphenadrine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cyclobenzaprine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chlorpromazine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Tobramycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Tretinoin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Methenamine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Esomeprazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Trifluridine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Methylene blue
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Miconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Vidarabine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	rabeprazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Bacitracin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Neomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	olsalazine

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Benzocaine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Benzoyl Peroxide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nitrofurantoin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nitrofurazone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Betamethasone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nystatin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Omeprazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Opium
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Iodoquinol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dimenhydrinate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Acetic Acid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	lansoprazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	aluminum acetate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	balsalazide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	resorcinol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	selenium disulfide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	butoconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	terconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	tioconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	zinc pyrithione
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	tazarotene
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	pantoprazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Polymyxin B
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	chloroxine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Povidone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nizatidine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	clidinium
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Mupirocin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Famotidine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Fosfomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Psyllium
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	carbamide peroxide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Gentian Violet
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Aluminum carbonate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Gramicidin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfasalazine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Salicylic Acid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Scopolamine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Silver Nitrate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Silver Sulfadiazine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	mesalamine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Hydrocortisone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	adapalene
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Isotretinoin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Aluminum Hydroxide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ketoconazole

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	dihydroxyaluminum sodium carbonate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chloramphenicol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Loperamide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Loteprednol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Magnesium Hydroxide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Meclizine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cimetidine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cinoxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Clindamycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Clotrimazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Coal Tar
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Antipyrine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sucralfate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfamethizole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfur
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Thiethylperazine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	iodinated glycerol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Aminophylline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Aspirin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ipratropium
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dornase Alfa
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Acetylcysteine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Probenecid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cromolyn
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Guaifenesin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Theophylline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	dehydroepiandrosterone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Pentoxifylline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Calcium Glycerophosphate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Colestipol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	colesevelam
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Norethindrone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Desogestrel
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Spectinomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	colistimethate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ticarcillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	valganciclovir
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Itraconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Acyclovir
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Trimethoprim
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Metronidazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Vancomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	lomefloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	loracarbef
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Minocycline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	meropenem

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cycloserine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dapsone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	trovafloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Amoxicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nafcillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Demeclocycline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Aztreonam
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	gemifloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	moxifloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Amphotericin B
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ampicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	ertapenem
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Norfloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dicloxacillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Oxacillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	aminosalicylic acid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Penicillin G
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	sparfloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Azithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	bacampicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	linezolid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefprozil
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Doxycycline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Carbenicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Levofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Enoxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cidofovir
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Piperacillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefditoren
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefepime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	ceftibuten
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ethambutol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ethionamide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Clarithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Primaquine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Fluconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Flucytosine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Furazolidone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ganciclovir
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Pyrazinamide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Pyrimethamine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Quinine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Rifampin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	halofantrine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Hexachlorophene
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefaclor
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefadroxil

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefazolin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefoperazone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefotaxime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefotetan
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefoxitin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ceftazidime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Hydroxychloroquine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ceftizoxime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Rifabutin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ceftriaxone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefuroxime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Imipenem
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Iodine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Atovaquone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	isoniazid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Kanamycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephalexin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephradine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	gatifloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	quinupristin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	dalfopristin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	dirithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Lincomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chlorhexidine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Amikacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chloroguanide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chloroquine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefixime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefdinir
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ciprofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Clofazimine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cloxacillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Streptomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfadoxine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfisoxazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Mefloquine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Troleandomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cat's Claw preparation
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Mezlocillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cyclacillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	methylbenzethonium
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Azathioprine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Netilmicin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	alatrofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Bismuth
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	sulfacytine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Capreomycin

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Diphtheria Antitoxin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Calcium Carbonate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	rifapentine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cholinophyllin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	aluminum magnesium hydroxide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Calcium gluceptate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Quinacrine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefamandole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	buclizine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephalothin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephapirin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	diphenidol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cholecalciferol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cholestyramine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Penicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Thalidomide
OMOP Antiepileptics: carbamazepine, phenytoin	Thioridazine
OMOP Antiepileptics: carbamazepine, phenytoin	Thiothixene
OMOP Antiepileptics: carbamazepine, phenytoin	Mephobarbital
OMOP Antiepileptics: carbamazepine, phenytoin	Mesoridazine
OMOP Antiepileptics: carbamazepine, phenytoin	Tranlycypromine
OMOP Antiepileptics: carbamazepine, phenytoin	Trifluoperazine
OMOP Antiepileptics: carbamazepine, phenytoin	lamotrigine
OMOP Antiepileptics: carbamazepine, phenytoin	Midazolam
OMOP Antiepileptics: carbamazepine, phenytoin	Molindone
OMOP Antiepileptics: carbamazepine, phenytoin	ziprasidone
OMOP Antiepileptics: carbamazepine, phenytoin	Amobarbital
OMOP Antiepileptics: carbamazepine, phenytoin	nefazodone
OMOP Antiepileptics: carbamazepine, phenytoin	Baclofen
OMOP Antiepileptics: carbamazepine, phenytoin	tiagabine
OMOP Antiepileptics: carbamazepine, phenytoin	Paroxetine
OMOP Antiepileptics: carbamazepine, phenytoin	Diazepam
OMOP Antiepileptics: carbamazepine, phenytoin	Oxazepam
OMOP Antiepileptics: carbamazepine, phenytoin	Pentobarbital
OMOP Antiepileptics: carbamazepine, phenytoin	Perphenazine
OMOP Antiepileptics: carbamazepine, phenytoin	Phenobarbital
OMOP Antiepileptics: carbamazepine, phenytoin	Risperidone
OMOP Antiepileptics: carbamazepine, phenytoin	Sertraline
OMOP Antiepileptics: carbamazepine, phenytoin	Droperidol
OMOP Antiepileptics: carbamazepine, phenytoin	topiramate
OMOP Antiepileptics: carbamazepine, phenytoin	Pimozide
OMOP Antiepileptics: carbamazepine, phenytoin	Ethotoin
OMOP Antiepileptics: carbamazepine, phenytoin	Procaine
OMOP Antiepileptics: carbamazepine, phenytoin	Prochlorperazine
OMOP Antiepileptics: carbamazepine, phenytoin	Propofol
OMOP Antiepileptics: carbamazepine, phenytoin	Fluphenazine
OMOP Antiepileptics: carbamazepine, phenytoin	aripiprazole

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antiepileptics: carbamazepine, phenytoin	Selegiline
OMOP Antiepileptics: carbamazepine, phenytoin	Haloperidol
OMOP Antiepileptics: carbamazepine, phenytoin	quetiapine
OMOP Antiepileptics: carbamazepine, phenytoin	Hydroxyzine
OMOP Antiepileptics: carbamazepine, phenytoin	tizanidine
OMOP Antiepileptics: carbamazepine, phenytoin	olanzapine
OMOP Antiepileptics: carbamazepine, phenytoin	Chlorazepate
OMOP Antiepileptics: carbamazepine, phenytoin	Lorazepam
OMOP Antiepileptics: carbamazepine, phenytoin	Loxapine
OMOP Antiepileptics: carbamazepine, phenytoin	Chlorpromazine
OMOP Antiepileptics: carbamazepine, phenytoin	felbamate
OMOP Antiepileptics: carbamazepine, phenytoin	gabapentin
OMOP Antiepileptics: carbamazepine, phenytoin	Clonazepam
OMOP Antiepileptics: carbamazepine, phenytoin	Clozapine
OMOP Antiepileptics: carbamazepine, phenytoin	Acetazolamide
OMOP Antiepileptics: carbamazepine, phenytoin	Cyproheptadine
OMOP Antiepileptics: carbamazepine, phenytoin	Tocainide
OMOP Antiepileptics: carbamazepine, phenytoin	Reserpine
OMOP Antiepileptics: carbamazepine, phenytoin	deserpidine
OMOP Antiepileptics: carbamazepine, phenytoin	Clonidine
OMOP Antiepileptics: carbamazepine, phenytoin	pyridoxine
OMOP Antiepileptics: carbamazepine, phenytoin	Triflupromazine
OMOP Antiepileptics: carbamazepine, phenytoin	Nitrous Oxide
OMOP Antiepileptics: carbamazepine, phenytoin	phenacemide
OMOP Antiepileptics: carbamazepine, phenytoin	Paraldehyde
OMOP Antiepileptics: carbamazepine, phenytoin	acetophenazine
OMOP Antiepileptics: carbamazepine, phenytoin	piperacetazine
OMOP Antiepileptics: carbamazepine, phenytoin	Prazepam
OMOP Antiepileptics: carbamazepine, phenytoin	Etomidate
OMOP Antiepileptics: carbamazepine, phenytoin	Promazine
OMOP Antiepileptics: carbamazepine, phenytoin	Magnesium Sulfate
OMOP Antiepileptics: carbamazepine, phenytoin	Chlorprothixene
OMOP Antiepileptics: carbamazepine, phenytoin	Lithium
OMOP Benzodiazepines	Thioridazine
OMOP Benzodiazepines	Thiothixene
OMOP Benzodiazepines	Mephenytoin
OMOP Benzodiazepines	Mephobarbital
OMOP Benzodiazepines	Meprobamate
OMOP Benzodiazepines	Mesoridazine
OMOP Benzodiazepines	Tranlycypromine
OMOP Benzodiazepines	Trazodone
OMOP Benzodiazepines	Trifluoperazine
OMOP Benzodiazepines	lamotrigine
OMOP Benzodiazepines	Trimipramine
OMOP Benzodiazepines	Methylphenidate
OMOP Benzodiazepines	Midazolam
OMOP Benzodiazepines	Molindone

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Benzodiazepines	Amitriptyline
OMOP Benzodiazepines	Levetiracetam
OMOP Benzodiazepines	Dantrolene
OMOP Benzodiazepines	ziprasidone
OMOP Benzodiazepines	Amobarbital
OMOP Benzodiazepines	Amoxapine
OMOP Benzodiazepines	fosphenytoin
OMOP Benzodiazepines	nefazodone
OMOP Benzodiazepines	Baclofen
OMOP Benzodiazepines	tiagabine
OMOP Benzodiazepines	Escitalopram
OMOP Benzodiazepines	Desipramine
OMOP Benzodiazepines	oxcarbazepine
OMOP Benzodiazepines	zaleplon
OMOP Benzodiazepines	Pramipexole
OMOP Benzodiazepines	Nortriptyline
OMOP Benzodiazepines	Paroxetine
OMOP Benzodiazepines	Mirtazapine
OMOP Benzodiazepines	Pentobarbital
OMOP Benzodiazepines	Pergolide
OMOP Benzodiazepines	Perphenazine
OMOP Benzodiazepines	Buspiron
OMOP Benzodiazepines	Phenelzine
OMOP Benzodiazepines	Phenobarbital
OMOP Benzodiazepines	Disulfiram
OMOP Benzodiazepines	Risperidone
OMOP Benzodiazepines	Doxepin
OMOP Benzodiazepines	Doxylamine
OMOP Benzodiazepines	Sertraline
OMOP Benzodiazepines	Droperidol
OMOP Benzodiazepines	Carbamazepine
OMOP Benzodiazepines	Phenytoin
OMOP Benzodiazepines	topiramate
OMOP Benzodiazepines	venlafaxine
OMOP Benzodiazepines	zonisamide
OMOP Benzodiazepines	Pimozide
OMOP Benzodiazepines	Ethchlorvynol
OMOP Benzodiazepines	Carisoprodol
OMOP Benzodiazepines	Ethosuximide
OMOP Benzodiazepines	Bupropion
OMOP Benzodiazepines	Fluvoxamine
OMOP Benzodiazepines	Procaine
OMOP Benzodiazepines	Prochlorperazine
OMOP Benzodiazepines	Propofol
OMOP Benzodiazepines	Protriptyline
OMOP Benzodiazepines	Fluoxetine
OMOP Benzodiazepines	Fluphenazine

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Benzodiazepines	aripiprazole
OMOP Benzodiazepines	methsuximide
OMOP Benzodiazepines	Secobarbital
OMOP Benzodiazepines	Selegiline
OMOP Benzodiazepines	Haloperidol
OMOP Benzodiazepines	quetiapine
OMOP Benzodiazepines	Hydroxyzine
OMOP Benzodiazepines	Imipramine
OMOP Benzodiazepines	tizanidine
OMOP Benzodiazepines	cyclobenzaprine
OMOP Benzodiazepines	metaxalone
OMOP Benzodiazepines	Isocarboxazid
OMOP Benzodiazepines	Isoflurane
OMOP Benzodiazepines	olanzapine
OMOP Benzodiazepines	Chlorazepate
OMOP Benzodiazepines	Loxapine
OMOP Benzodiazepines	Maprotiline
OMOP Benzodiazepines	Chlorpromazine
OMOP Benzodiazepines	felbamate
OMOP Benzodiazepines	gabapentin
OMOP Benzodiazepines	Citalopram
OMOP Benzodiazepines	Clomipramine
OMOP Benzodiazepines	Clozapine
OMOP Benzodiazepines	Dolasetron
OMOP Benzodiazepines	Esomeprazole
OMOP Benzodiazepines	Metoclopramide
OMOP Benzodiazepines	magaldrate
OMOP Benzodiazepines	Cyclizine
OMOP Benzodiazepines	rabeprazole
OMOP Benzodiazepines	nabilone
OMOP Benzodiazepines	Omeprazole
OMOP Benzodiazepines	Dimenhydrinate
OMOP Benzodiazepines	lansoprazole
OMOP Benzodiazepines	Capsaicin
OMOP Benzodiazepines	trimethobenzamide
OMOP Benzodiazepines	Nizatidine
OMOP Benzodiazepines	Famotidine
OMOP Benzodiazepines	butabarbital
OMOP Benzodiazepines	Aluminum carbonate
OMOP Benzodiazepines	Aluminum Hydroxide
OMOP Benzodiazepines	dihydroxyaluminum sodium carbonate
OMOP Benzodiazepines	chlorcyclizine
OMOP Benzodiazepines	Magnesium Hydroxide
OMOP Benzodiazepines	Cimetidine
OMOP Benzodiazepines	Ondansetron
OMOP Benzodiazepines	Sucralfate

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Benzodiazepines	Tetrahydrocannabinol
OMOP Benzodiazepines	Thiethylperazine
OMOP Benzodiazepines	Cyproheptadine
OMOP Benzodiazepines	Diphenhydramine
OMOP Benzodiazepines	bromodiphenhydramine
OMOP Benzodiazepines	Promethazine
OMOP Benzodiazepines	Kava preparation
OMOP Benzodiazepines	Propranolol
OMOP Benzodiazepines	Reserpine
OMOP Benzodiazepines	deserpidine
OMOP Benzodiazepines	Mecamylamine
OMOP Benzodiazepines	Clonidine
OMOP Benzodiazepines	Dexamethasone
OMOP Benzodiazepines	Amoxicillin
OMOP Benzodiazepines	Naltrexone
OMOP Benzodiazepines	Clarithromycin
OMOP Benzodiazepines	Tolazoline
OMOP Benzodiazepines	Triflupromazine
OMOP Benzodiazepines	Methotrimeprazine
OMOP Benzodiazepines	Trimethadione
OMOP Benzodiazepines	Methyprylon
OMOP Benzodiazepines	Nitrous Oxide
OMOP Benzodiazepines	phenacemide
OMOP Benzodiazepines	phensuximide
OMOP Benzodiazepines	acetophenazine
OMOP Benzodiazepines	aprobarbital
OMOP Benzodiazepines	Calcium Carbonate
OMOP Benzodiazepines	benzquinamide
OMOP Benzodiazepines	piperacetazine
OMOP Benzodiazepines	Etomidate
OMOP Benzodiazepines	Promazine
OMOP Benzodiazepines	propiomazine
OMOP Benzodiazepines	aluminum magnesium hydroxide
OMOP Benzodiazepines	Calcium gluceptate
OMOP Benzodiazepines	Glutethimide
OMOP Benzodiazepines	buclizine
OMOP Benzodiazepines	diphenidol
OMOP Benzodiazepines	Chlormezanone
OMOP Benzodiazepines	Chlorprothixene
OMOP Benzodiazepines	ethinamate
OMOP Benzodiazepines	Lithium
OMOP Beta blockers	Paroxetine
OMOP Beta blockers	Diazepam
OMOP Beta blockers	Sertraline
OMOP Beta blockers	Fluvoxamine
OMOP Beta blockers	Fluoxetine
OMOP Beta blockers	Imipramine

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Beta blockers	Alprazolam
OMOP Beta blockers	Maprotiline
OMOP Beta blockers	Clomipramine
OMOP Beta blockers	Clonazepam
OMOP Beta blockers	Temazepam
OMOP Beta blockers	Timolol
OMOP Beta blockers	Triamterene
OMOP Beta blockers	Trichlormethiazide
OMOP Beta blockers	Methyclothiazide
OMOP Beta blockers	Metolazone
OMOP Beta blockers	Bumetanide
OMOP Beta blockers	torseamide
OMOP Beta blockers	Polythiazide
OMOP Beta blockers	Carteolol
OMOP Beta blockers	Furosemide
OMOP Beta blockers	Spirolactone
OMOP Beta blockers	Hydrochlorothiazide
OMOP Beta blockers	Indapamide
OMOP Beta blockers	Lidocaine
OMOP Beta blockers	Amiloride
OMOP Beta blockers	Chlorothiazide
OMOP Beta blockers	Phenylephrine
OMOP Beta blockers	Isoproterenol
OMOP Beta blockers	Sulfinpyrazone
OMOP Beta blockers	Enoxaparin
OMOP Beta blockers	Dalteparin
OMOP Beta blockers	Methyldopa
OMOP Beta blockers	Urokinase
OMOP Beta blockers	Mexiletine
OMOP Beta blockers	Verapamil
OMOP Beta blockers	Lisinopril
OMOP Beta blockers	valsartan
OMOP Beta blockers	Minoxidil
OMOP Beta blockers	Adenosine
OMOP Beta blockers	eplerenone
OMOP Beta blockers	Amiodarone
OMOP Beta blockers	Warfarin
OMOP Beta blockers	moexipril
OMOP Beta blockers	Nadolol
OMOP Beta blockers	Astragalus preparation
OMOP Beta blockers	Bendroflumethiazide
OMOP Beta blockers	telmisartan
OMOP Beta blockers	Nicardipine
OMOP Beta blockers	Nifedipine
OMOP Beta blockers	Amyl Nitrite
OMOP Beta blockers	Angelica sinensis preparation
OMOP Beta blockers	Bepridil

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Beta blockers	Nisoldipine
OMOP Beta blockers	Acebutolol
OMOP Beta blockers	Betaxolol
OMOP Beta blockers	eptifibatide
OMOP Beta blockers	Isradipine
OMOP Beta blockers	Digoxin
OMOP Beta blockers	Papaverine
OMOP Beta blockers	Penbutolol
OMOP Beta blockers	Diltiazem
OMOP Beta blockers	allyl sulfide
OMOP Beta blockers	quinapril
OMOP Beta blockers	Amlodipine
OMOP Beta blockers	anisindione
OMOP Beta blockers	Ramipril
OMOP Beta blockers	Phenoxybenzamine
OMOP Beta blockers	benazepril
OMOP Beta blockers	Phentolamine
OMOP Beta blockers	Disopyramide
OMOP Beta blockers	Bisoprolol
OMOP Beta blockers	Captopril
OMOP Beta blockers	Terazosin
OMOP Beta blockers	Enalapril
OMOP Beta blockers	trandolapril
OMOP Beta blockers	Epinephrine
OMOP Beta blockers	Guanfacine
OMOP Beta blockers	Moricizine
OMOP Beta blockers	Mibefradil
OMOP Beta blockers	Pindolol
OMOP Beta blockers	eprosartan
OMOP Beta blockers	carvedilol
OMOP Beta blockers	irbesartan
OMOP Beta blockers	Alteplase
OMOP Beta blockers	Prazosin
OMOP Beta blockers	coenzyme Q10
OMOP Beta blockers	Procainamide
OMOP Beta blockers	candesartan
OMOP Beta blockers	Propafenone
OMOP Beta blockers	Felodipine
OMOP Beta blockers	Flecainide
OMOP Beta blockers	Quinidine
OMOP Beta blockers	Nitroglycerin
OMOP Beta blockers	Reserpine
OMOP Beta blockers	dofetilide
OMOP Beta blockers	Doxazosin
OMOP Beta blockers	Fosinopril
OMOP Beta blockers	Guanabenz
OMOP Beta blockers	Guanethidine

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Beta blockers	Losartan
OMOP Beta blockers	Heparin
OMOP Beta blockers	Milrinone
OMOP Beta blockers	Sotalol
OMOP Beta blockers	Perindopril
OMOP Beta blockers	Hydralazine
OMOP Beta blockers	Hydroflumethiazide
OMOP Beta blockers	Isosorbide
OMOP Beta blockers	Labetalol
OMOP Beta blockers	deserpidine
OMOP Beta blockers	Mecamylamine
OMOP Beta blockers	Chlorthalidone
OMOP Beta blockers	Clonidine
OMOP Beta blockers	guanadrel
OMOP Beta blockers	Metyrosine
OMOP Beta blockers	Vasopressin (USP)
OMOP Beta blockers	Diazoxide
OMOP Beta blockers	Glucagon
OMOP Beta blockers	somatrem
OMOP Beta blockers	Somatropin
OMOP Beta blockers	Edetic Acid
OMOP Beta blockers	desflurane
OMOP Beta blockers	tirofiban
OMOP Beta blockers	Deslanoside
OMOP Beta blockers	Inamrinone
OMOP Beta blockers	Digitoxin
OMOP Beta blockers	benzothiazide
OMOP Beta blockers	bretylum
OMOP Beta blockers	Anistreplase
OMOP Beta blockers	Erythryl Tetranitrate
OMOP Beta blockers	abciximab
OMOP Beta blockers	ibutilide
OMOP Beta blockers	Digitalis preparation
OMOP Beta blockers	esmolol
OMOP Beta blockers	Sodium Morrhuate
OMOP Beta blockers	Sodium Tetradecyl Sulfate
OMOP Beta blockers	quinethazone
OMOP Beta blockers	cyclothiazide
OMOP Beta blockers	bivalirudin
OMOP Beta blockers	lepirudin
OMOP Beta blockers	Magnesium Sulfate
OMOP Beta blockers	ethanolamine oleate
OMOP Beta blockers	Fenoldopam
OMOP Beta blockers	RETEPLASE,RECOMBINANT
OMOP Beta blockers	Tenecteplase
OMOP Beta blockers	Streptokinase
OMOP Bisphosphonates	calcium acetate

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Bisphosphonates	Calcium Glycerophosphate
OMOP Bisphosphonates	pamidronate
OMOP Bisphosphonates	Raloxifene
OMOP Bisphosphonates	Risedronate
OMOP Bisphosphonates	Teriparatide
OMOP Bisphosphonates	Etidronate
OMOP Bisphosphonates	Tiludronate
OMOP Bisphosphonates	Plicamycin
OMOP Bisphosphonates	Calcium Carbonate
OMOP Bisphosphonates	Calcium Gluconate
OMOP Bisphosphonates	calcium phosphate
OMOP Bisphosphonates	Calcium Citrate
OMOP Bisphosphonates	Calcium gluceptate
OMOP Bisphosphonates	calcium lactate
OMOP Bisphosphonates	CALCIUM LEVULINATE
OMOP Bisphosphonates	glubionate calcium
OMOP Tricyclic antidepressants	Mepivacaine
OMOP Tricyclic antidepressants	Meprobamate
OMOP Tricyclic antidepressants	Tranlycypromine
OMOP Tricyclic antidepressants	Trazodone
OMOP Tricyclic antidepressants	Methamphetamine
OMOP Tricyclic antidepressants	Methocarbamol
OMOP Tricyclic antidepressants	Methylphenidate
OMOP Tricyclic antidepressants	Midazolam
OMOP Tricyclic antidepressants	modafinil
OMOP Tricyclic antidepressants	Amobarbital
OMOP Tricyclic antidepressants	Amoxapine
OMOP Tricyclic antidepressants	nefazodone
OMOP Tricyclic antidepressants	Amphetamine
OMOP Tricyclic antidepressants	Baclofen
OMOP Tricyclic antidepressants	Escitalopram
OMOP Tricyclic antidepressants	Nicotine
OMOP Tricyclic antidepressants	Dextroamphetamine
OMOP Tricyclic antidepressants	Pramipexole
OMOP Tricyclic antidepressants	Paroxetine
OMOP Tricyclic antidepressants	Diazepam
OMOP Tricyclic antidepressants	Orphenadrine
OMOP Tricyclic antidepressants	Oxazepam
OMOP Tricyclic antidepressants	Mirtazapine
OMOP Tricyclic antidepressants	Pemoline
OMOP Tricyclic antidepressants	dexmethylphenidate
OMOP Tricyclic antidepressants	Bupivacaine
OMOP Tricyclic antidepressants	Perphenazine
OMOP Tricyclic antidepressants	Buspirone
OMOP Tricyclic antidepressants	Phenelzine
OMOP Tricyclic antidepressants	Disulfiram
OMOP Tricyclic antidepressants	Doxapram

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Tricyclic antidepressants	Doxylamine
OMOP Tricyclic antidepressants	Sertraline
OMOP Tricyclic antidepressants	Droperidol
OMOP Tricyclic antidepressants	Carbamazepine
OMOP Tricyclic antidepressants	atomoxetine
OMOP Tricyclic antidepressants	topiramate
OMOP Tricyclic antidepressants	venlafaxine
OMOP Tricyclic antidepressants	Carisoprodol
OMOP Tricyclic antidepressants	Bupropion
OMOP Tricyclic antidepressants	Fluvoxamine
OMOP Tricyclic antidepressants	Procaine
OMOP Tricyclic antidepressants	Prochlorperazine
OMOP Tricyclic antidepressants	Propofol
OMOP Tricyclic antidepressants	Fluoxetine
OMOP Tricyclic antidepressants	Selegiline
OMOP Tricyclic antidepressants	Haloperidol
OMOP Tricyclic antidepressants	Hydroxyzine
OMOP Tricyclic antidepressants	tizanidine
OMOP Tricyclic antidepressants	cyclobenzaprine
OMOP Tricyclic antidepressants	metaxalone
OMOP Tricyclic antidepressants	Alprazolam
OMOP Tricyclic antidepressants	Isocarboxazid
OMOP Tricyclic antidepressants	Isoflurane
OMOP Tricyclic antidepressants	Ketamine
OMOP Tricyclic antidepressants	Chlorazepate
OMOP Tricyclic antidepressants	Lorazepam
OMOP Tricyclic antidepressants	Maprotiline
OMOP Tricyclic antidepressants	Chlorpromazine
OMOP Tricyclic antidepressants	Chlorzoxazone
OMOP Tricyclic antidepressants	gabapentin
OMOP Tricyclic antidepressants	Citalopram
OMOP Tricyclic antidepressants	Clonazepam
OMOP Tricyclic antidepressants	halazepam
OMOP Tricyclic antidepressants	Temazepam
OMOP Tricyclic antidepressants	Menthol
OMOP Tricyclic antidepressants	Timolol
OMOP Tricyclic antidepressants	Tolnaftate
OMOP Tricyclic antidepressants	Mometasone
OMOP Tricyclic antidepressants	Miconazole
OMOP Tricyclic antidepressants	naftifine
OMOP Tricyclic antidepressants	Capsicum extract
OMOP Tricyclic antidepressants	Pimecrolimus
OMOP Tricyclic antidepressants	Benzocaine
OMOP Tricyclic antidepressants	oxiconazole
OMOP Tricyclic antidepressants	Betamethasone
OMOP Tricyclic antidepressants	paregoric
OMOP Tricyclic antidepressants	phenol

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Tricyclic antidepressants	Hyoscyamine
OMOP Tricyclic antidepressants	Opium
OMOP Tricyclic antidepressants	Dibucaine
OMOP Tricyclic antidepressants	pramoxine
OMOP Tricyclic antidepressants	prednicarbate
OMOP Tricyclic antidepressants	Phenazopyridine
OMOP Tricyclic antidepressants	phenyl salicylate
OMOP Tricyclic antidepressants	Camphor
OMOP Tricyclic antidepressants	Capsaicin
OMOP Tricyclic antidepressants	sulconazole
OMOP Tricyclic antidepressants	Econazole
OMOP Tricyclic antidepressants	chlorophyllin copper complex
OMOP Tricyclic antidepressants	trichlorofluoromethane
OMOP Tricyclic antidepressants	trolamine salicylate
OMOP Tricyclic antidepressants	alosetron
OMOP Tricyclic antidepressants	halobetasol
OMOP Tricyclic antidepressants	ciclopirox
OMOP Tricyclic antidepressants	Ethyl Chloride
OMOP Tricyclic antidepressants	Tacrolimus
OMOP Tricyclic antidepressants	Antazoline
OMOP Tricyclic antidepressants	Prilocaine
OMOP Tricyclic antidepressants	Fluocinonide
OMOP Tricyclic antidepressants	butenafine
OMOP Tricyclic antidepressants	belladonna extract, USP
OMOP Tricyclic antidepressants	Witch Hazel
OMOP Tricyclic antidepressants	Diflorasone
OMOP Tricyclic antidepressants	crotamiton
OMOP Tricyclic antidepressants	Hydrocortisone
OMOP Tricyclic antidepressants	Clioquinol
OMOP Tricyclic antidepressants	Ketoconazole
OMOP Tricyclic antidepressants	Colloidal oatmeal
OMOP Tricyclic antidepressants	Lidocaine
OMOP Tricyclic antidepressants	chlorcyclizine
OMOP Tricyclic antidepressants	Chlordiazepoxide
OMOP Tricyclic antidepressants	dyclonine
OMOP Tricyclic antidepressants	fluocinolone
OMOP Tricyclic antidepressants	Ondansetron
OMOP Tricyclic antidepressants	Cocaine
OMOP Tricyclic antidepressants	Antipyrine
OMOP Tricyclic antidepressants	Tetracaine
OMOP Tricyclic antidepressants	Meperidine
OMOP Tricyclic antidepressants	Tramadol
OMOP Tricyclic antidepressants	valdecocib
OMOP Tricyclic antidepressants	Methadone
OMOP Tricyclic antidepressants	Tripolidine
OMOP Tricyclic antidepressants	Morphine
OMOP Tricyclic antidepressants	Cyproheptadine

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Tricyclic antidepressants	Aspirin
OMOP Tricyclic antidepressants	nabumetone
OMOP Tricyclic antidepressants	Nalbuphine
OMOP Tricyclic antidepressants	Naloxone
OMOP Tricyclic antidepressants	Nedocromil
OMOP Tricyclic antidepressants	Naproxen
OMOP Tricyclic antidepressants	celecoxib
OMOP Tricyclic antidepressants	Diclofenac
OMOP Tricyclic antidepressants	Oxycodone
OMOP Tricyclic antidepressants	Acetaminophen
OMOP Tricyclic antidepressants	Oxymorphone
OMOP Tricyclic antidepressants	Diflunisal
OMOP Tricyclic antidepressants	Hydromorphone
OMOP Tricyclic antidepressants	Diphenhydramine
OMOP Tricyclic antidepressants	Pentazocine
OMOP Tricyclic antidepressants	Buprenorphine
OMOP Tricyclic antidepressants	Butorphanol
OMOP Tricyclic antidepressants	Phenylephrine
OMOP Tricyclic antidepressants	ropivacaine
OMOP Tricyclic antidepressants	Salsalate
OMOP Tricyclic antidepressants	bromfenac
OMOP Tricyclic antidepressants	bromodiphenhydramine
OMOP Tricyclic antidepressants	butalbital
OMOP Tricyclic antidepressants	Promethazine
OMOP Tricyclic antidepressants	Propoxyphene
OMOP Tricyclic antidepressants	Fenoprofen
OMOP Tricyclic antidepressants	Fentanyl
OMOP Tricyclic antidepressants	salicylamide
OMOP Tricyclic antidepressants	Magnesium Salicylate
OMOP Tricyclic antidepressants	Hydrocodone
OMOP Tricyclic antidepressants	Ibuprofen
OMOP Tricyclic antidepressants	Indomethacin
OMOP Tricyclic antidepressants	Meclofenamate
OMOP Tricyclic antidepressants	Eucalyptus oil
OMOP Tricyclic antidepressants	Ketoprofen
OMOP Tricyclic antidepressants	dihydrocodeine
OMOP Tricyclic antidepressants	rofecoxib
OMOP Tricyclic antidepressants	Levorphanol
OMOP Tricyclic antidepressants	Etodolac
OMOP Tricyclic antidepressants	Codeine
OMOP Tricyclic antidepressants	Sulfipyrazone
OMOP Tricyclic antidepressants	Enoxaparin
OMOP Tricyclic antidepressants	Dalteparin
OMOP Tricyclic antidepressants	Kava preparation
OMOP Tricyclic antidepressants	Metoprolol
OMOP Tricyclic antidepressants	Verapamil
OMOP Tricyclic antidepressants	Vitamin B 12

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Tricyclic antidepressants	Mitoxantrone
OMOP Tricyclic antidepressants	Nadolol
OMOP Tricyclic antidepressants	Atenolol
OMOP Tricyclic antidepressants	Aloe vera preparation
OMOP Tricyclic antidepressants	Astragalus preparation
OMOP Tricyclic antidepressants	Nicardipine
OMOP Tricyclic antidepressants	Nifedipine
OMOP Tricyclic antidepressants	Amyl Nitrite
OMOP Tricyclic antidepressants	Angelica sinensis preparation
OMOP Tricyclic antidepressants	Bepidil
OMOP Tricyclic antidepressants	Nisoldipine
OMOP Tricyclic antidepressants	Acebutolol
OMOP Tricyclic antidepressants	eptifibatide
OMOP Tricyclic antidepressants	Isradipine
OMOP Tricyclic antidepressants	Papaverine
OMOP Tricyclic antidepressants	Penbutolol
OMOP Tricyclic antidepressants	Diltiazem
OMOP Tricyclic antidepressants	Amlodipine
OMOP Tricyclic antidepressants	Bisoprolol
OMOP Tricyclic antidepressants	Mibefradil
OMOP Tricyclic antidepressants	Pindolol
OMOP Tricyclic antidepressants	carvedilol
OMOP Tricyclic antidepressants	coenzyme Q10
OMOP Tricyclic antidepressants	Propranolol
OMOP Tricyclic antidepressants	Felodipine
OMOP Tricyclic antidepressants	Nitroglycerin
OMOP Tricyclic antidepressants	Heparin
OMOP Tricyclic antidepressants	Hydroxocobalamin
OMOP Tricyclic antidepressants	Isosorbide
OMOP Tricyclic antidepressants	Labetalol
OMOP Tricyclic antidepressants	Clonidine
OMOP Tricyclic antidepressants	desmopressin
OMOP Tricyclic antidepressants	Naltrexone
OMOP Tricyclic antidepressants	terbinafine
OMOP Tricyclic antidepressants	Griseofulvin
OMOP Tricyclic antidepressants	Sodium Hypochlorite
OMOP Tricyclic antidepressants	desflurane
OMOP Tricyclic antidepressants	Tolazoline
OMOP Tricyclic antidepressants	Triflupromazine
OMOP Tricyclic antidepressants	Methotrimeprazine
OMOP Tricyclic antidepressants	Trimeprazine
OMOP Tricyclic antidepressants	methdilazine
OMOP Tricyclic antidepressants	nalmefene
OMOP Tricyclic antidepressants	Levonordefrin
OMOP Tricyclic antidepressants	remifentanil
OMOP Tricyclic antidepressants	tirofiban
OMOP Tricyclic antidepressants	Nitrous Oxide

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Tricyclic antidepressants	butacaine
OMOP Tricyclic antidepressants	Erythryl Tetranitrate
OMOP Tricyclic antidepressants	abciximab
OMOP Tricyclic antidepressants	chloroprocaine
OMOP Tricyclic antidepressants	Prazepam
OMOP Tricyclic antidepressants	Etidocaine
OMOP Tricyclic antidepressants	Etomidate
OMOP Tricyclic antidepressants	Eugenol
OMOP Tricyclic antidepressants	CAPSICUM OLEORESIN
OMOP Tricyclic antidepressants	Dexmedetomidine
OMOP Tricyclic antidepressants	esmolol
OMOP Tricyclic antidepressants	Sufentanil
OMOP Tricyclic antidepressants	Articaine
OMOP Tricyclic antidepressants	bivalirudin
OMOP Tricyclic antidepressants	dezocine
OMOP Tricyclic antidepressants	Levomethadyl
OMOP Tricyclic antidepressants	lepirudin
OMOP Tricyclic antidepressants	Chlormezanone
OMOP Tricyclic antidepressants	Chlorphenesin
OMOP Tricyclic antidepressants	Levobupivacaine
OMOP Tricyclic antidepressants	haloprogin
OMOP Tricyclic antidepressants	Lithium
OMOP Tricyclic antidepressants	Thiamine
OMOP Typical antipsychotics	Tetanus immune globulin, human
OMOP Typical antipsychotics	Meprobamate
OMOP Typical antipsychotics	Mesoridazine
OMOP Typical antipsychotics	Tranylcypromine
OMOP Typical antipsychotics	Methamphetamine
OMOP Typical antipsychotics	Methocarbamol
OMOP Typical antipsychotics	Methylphenidate
OMOP Typical antipsychotics	Midazolam
OMOP Typical antipsychotics	modafinil
OMOP Typical antipsychotics	ziprasidone
OMOP Typical antipsychotics	Amobarbital
OMOP Typical antipsychotics	nefazodone
OMOP Typical antipsychotics	Amphetamine
OMOP Typical antipsychotics	Baclofen
OMOP Typical antipsychotics	donepezil
OMOP Typical antipsychotics	Desipramine
OMOP Typical antipsychotics	Dextroamphetamine
OMOP Typical antipsychotics	Nortriptyline
OMOP Typical antipsychotics	Paroxetine
OMOP Typical antipsychotics	Diazepam
OMOP Typical antipsychotics	Orphenadrine
OMOP Typical antipsychotics	Oxazepam
OMOP Typical antipsychotics	Pemoline
OMOP Typical antipsychotics	dexmethylphenidate

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Typical antipsychotics	Pergolide
OMOP Typical antipsychotics	Buspirone
OMOP Typical antipsychotics	rivastigmine
OMOP Typical antipsychotics	Risperidone
OMOP Typical antipsychotics	Doxepin
OMOP Typical antipsychotics	Sertraline
OMOP Typical antipsychotics	Droperidol
OMOP Typical antipsychotics	Carbamazepine
OMOP Typical antipsychotics	atomoxetine
OMOP Typical antipsychotics	venlafaxine
OMOP Typical antipsychotics	Bupropion
OMOP Typical antipsychotics	Fluvoxamine
OMOP Typical antipsychotics	Procaine
OMOP Typical antipsychotics	Fluoxetine
OMOP Typical antipsychotics	Galantamine
OMOP Typical antipsychotics	aripiprazole
OMOP Typical antipsychotics	Selegiline
OMOP Typical antipsychotics	quetiapine
OMOP Typical antipsychotics	Hydroxyzine
OMOP Typical antipsychotics	Imipramine
OMOP Typical antipsychotics	cyclobenzaprine
OMOP Typical antipsychotics	Alprazolam
OMOP Typical antipsychotics	olanzapine
OMOP Typical antipsychotics	Chlorazepate
OMOP Typical antipsychotics	Lorazepam
OMOP Typical antipsychotics	Maprotiline
OMOP Typical antipsychotics	gabapentin
OMOP Typical antipsychotics	Citalopram
OMOP Typical antipsychotics	Clomipramine
OMOP Typical antipsychotics	Clonazepam
OMOP Typical antipsychotics	Clozapine
OMOP Typical antipsychotics	halazepam
OMOP Typical antipsychotics	Tacrine
OMOP Typical antipsychotics	Temazepam
OMOP Typical antipsychotics	Dolasetron
OMOP Typical antipsychotics	Metoclopramide
OMOP Typical antipsychotics	Cyclizine
OMOP Typical antipsychotics	nabilone
OMOP Typical antipsychotics	Dimenhydrinate
OMOP Typical antipsychotics	trimethobenzamide
OMOP Typical antipsychotics	chlorcyclizine
OMOP Typical antipsychotics	Chlordiazepoxide
OMOP Typical antipsychotics	Tetrahydrocannabinol
OMOP Typical antipsychotics	Thiethylperazine
OMOP Typical antipsychotics	Cyproheptadine
OMOP Typical antipsychotics	Diphenhydramine
OMOP Typical antipsychotics	benzonatate

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Typical antipsychotics	bromodiphenhydramine
OMOP Typical antipsychotics	Promethazine
OMOP Typical antipsychotics	Kava preparation
OMOP Typical antipsychotics	coenzyme Q10
OMOP Typical antipsychotics	Propranolol
OMOP Typical antipsychotics	Reserpine
OMOP Typical antipsychotics	deserpidine
OMOP Typical antipsychotics	Mecamylamine
OMOP Typical antipsychotics	Clonidine
OMOP Typical antipsychotics	Dexamethasone
OMOP Typical antipsychotics	Triflupromazine
OMOP Typical antipsychotics	Methotrimeprazine
OMOP Typical antipsychotics	Vitamin E
OMOP Typical antipsychotics	Nitrous Oxide
OMOP Typical antipsychotics	acetophenazine
OMOP Typical antipsychotics	benzquinamide
OMOP Typical antipsychotics	piperacetazine
OMOP Typical antipsychotics	Prazepam
OMOP Typical antipsychotics	Promazine
OMOP Typical antipsychotics	Hemin
OMOP Typical antipsychotics	buclizine
OMOP Typical antipsychotics	diphenidol
OMOP Typical antipsychotics	Chlormezanone
OMOP Typical antipsychotics	Chlorprothixene
OMOP Typical antipsychotics	Lithium
OMOP Warfarin	Dantrolene
OMOP Warfarin	TRYPSIN
OMOP Warfarin	Metoclopramide
OMOP Warfarin	Povidone
OMOP Warfarin	Nalbuphine
OMOP Warfarin	Oxycodone
OMOP Warfarin	Hydromorphone
OMOP Warfarin	ropivacaine
OMOP Warfarin	bromfenac
OMOP Warfarin	Promethazine
OMOP Warfarin	Hydrocodone
OMOP Warfarin	Ibuprofen
OMOP Warfarin	dihydrocodeine
OMOP Warfarin	Codeine
OMOP Warfarin	Enoxaparin
OMOP Warfarin	Dalteparin
OMOP Warfarin	Ticlopidine
OMOP Warfarin	Metoprolol
OMOP Warfarin	Urokinase
OMOP Warfarin	Verapamil
OMOP Warfarin	tinzaparin
OMOP Warfarin	Atenolol

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Warfarin	argatroban
OMOP Warfarin	Dicumarol
OMOP Warfarin	Digoxin
OMOP Warfarin	Papaverine
OMOP Warfarin	Diltiazem
OMOP Warfarin	Pentoxifylline
OMOP Warfarin	anisindione
OMOP Warfarin	Disopyramide
OMOP Warfarin	Alteplase
OMOP Warfarin	cilostazol
OMOP Warfarin	Procainamide
OMOP Warfarin	Propafenone
OMOP Warfarin	Quinidine
OMOP Warfarin	dofetilide
OMOP Warfarin	Heparin
OMOP Warfarin	Sotalol
OMOP Warfarin	Vasopressin (USP)
OMOP Warfarin	Glucose
OMOP Warfarin	Insulin, Regular, Pork
OMOP Warfarin	Insulin, Regular, Beef-Pork
OMOP Warfarin	Regular Insulin, Human
OMOP Warfarin	Metronidazole
OMOP Warfarin	Vancomycin
OMOP Warfarin	Nafcillin
OMOP Warfarin	Ampicillin
OMOP Warfarin	Dicloxacillin
OMOP Warfarin	Oxacillin
OMOP Warfarin	Glutaral
OMOP Warfarin	Cefotetan
OMOP Warfarin	Cefoxitin
OMOP Warfarin	Hydrogen Peroxide
OMOP Warfarin	Cefuroxime
OMOP Warfarin	Iodine
OMOP Warfarin	Cephalexin
OMOP Warfarin	Cloxacillin
OMOP Warfarin	Tolazoline
OMOP Warfarin	Insulin, Regular, Beef
OMOP Warfarin	Deslanoside
OMOP Warfarin	Digitoxin
OMOP Warfarin	danaparoid
OMOP Warfarin	Phenprocoumon
OMOP Warfarin	Anistreplase
OMOP Warfarin	ibutilide
OMOP Warfarin	Etidocaine
OMOP Warfarin	ardeparin
OMOP Warfarin	Protamine Sulfate (USP)
OMOP Warfarin	Digitalis preparation

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Warfarin	lepirudin
OMOP Warfarin	Streptokinase

Comparator 2: select all drugs with the same mechanism of action (class) as the DOI

Table 4 highlights the mechanism of actions for the OMOP DOIs. The row highlighted in red was excluded for further analysis because it represents a broad ‘catch all’ mechanism of action.

DOI_CONCEPT_NAME	MOA_CONCEPT_NAME
OMOP ACE Inhibitor	Angiotensin-converting Enzyme Inhibitors
OMOP Amphotericin B	Ergosterol Synthesis Inhibitors
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Protein Synthesis Inhibitors
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Para-Aminobenzoic Acid Inhibitor
OMOP Antiepileptics: carbamazepine, phenytoin	Sodium Channel Interactions
OMOP Antiepileptics: carbamazepine, phenytoin	Unknown Cellular or Molecular Interaction
OMOP Benzodiazepines	GABA A Modulators
OMOP Beta blockers	Adrenergic beta2-Antagonists
OMOP Beta blockers	Adrenergic beta1-Antagonists
OMOP Bisphosphonates	Bone Surface Interaction
OMOP Tricyclic antidepressants	Serotonin Uptake Inhibitors
OMOP Tricyclic antidepressants	Norepinephrine Uptake Inhibitors
OMOP Typical antipsychotics	Adrenergic alpha-Antagonists
OMOP Typical antipsychotics	Serotonin Antagonists
OMOP Typical antipsychotics	Dopamine Antagonists
OMOP Warfarin	Vitamin K Epoxide Reductase Inhibitors

Table 5 highlights the other drugs that share the same mechanism of action, to be used to define Comparator 2:

DOI_CONCEPT_NAME	C2_CONCEPT_NAME
OMOP ACE Inhibitor	trandolapril
OMOP Amphotericin B	Natamycin
OMOP Amphotericin B	Nystatin
OMOP Amphotericin B	butenafine
OMOP Amphotericin B	terbinafine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	metaxalone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Tobramycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Neomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	sulfabenzamide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	ciclopirox
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Gramicidin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Silver Nitrate
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Chloramphenicol
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Mafenide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Clindamycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfamethizole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	sulfathiazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dactinomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	docetaxel
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Methimazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Propylthiouracil
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Spectinomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	telithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Minocycline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Dapsone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Demeclocycline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	aminosalicylic acid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Paromomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Azithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	linezolid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Doxycycline
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ethionamide
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Clarithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Flucytosine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Kanamycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	quinupristin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	dalfopristin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	dirithromycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Amikacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Streptomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfadoxine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfisoxazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Troleandomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	sulfacytine

DOI_CONCEPT_NAME	C2_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	fomivirsen
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Sulfapyridine
OMOP Antiepileptics: carbamazepine, phenytoin	Mepivacaine
OMOP Antiepileptics: carbamazepine, phenytoin	lamotrigine
OMOP Antiepileptics: carbamazepine, phenytoin	oxcarbazepine
OMOP Antiepileptics: carbamazepine, phenytoin	Bupivacaine
OMOP Antiepileptics: carbamazepine, phenytoin	Riluzole
OMOP Antiepileptics: carbamazepine, phenytoin	topiramate
OMOP Antiepileptics: carbamazepine, phenytoin	Ethotoin
OMOP Antiepileptics: carbamazepine, phenytoin	Procaine
OMOP Antiepileptics: carbamazepine, phenytoin	Benzocaine
OMOP Antiepileptics: carbamazepine, phenytoin	Dibucaine
OMOP Antiepileptics: carbamazepine, phenytoin	Prilocaine
OMOP Antiepileptics: carbamazepine, phenytoin	Pyrethrins
OMOP Antiepileptics: carbamazepine, phenytoin	Lidocaine
OMOP Antiepileptics: carbamazepine, phenytoin	dyclonine
OMOP Antiepileptics: carbamazepine, phenytoin	Cocaine
OMOP Antiepileptics: carbamazepine, phenytoin	Tetracaine
OMOP Antiepileptics: carbamazepine, phenytoin	ropivacaine
OMOP Antiepileptics: carbamazepine, phenytoin	Mexiletine
OMOP Antiepileptics: carbamazepine, phenytoin	Amiodarone
OMOP Antiepileptics: carbamazepine, phenytoin	Bepridil
OMOP Antiepileptics: carbamazepine, phenytoin	Moricizine
OMOP Antiepileptics: carbamazepine, phenytoin	Tocainide
OMOP Antiepileptics: carbamazepine, phenytoin	Propafenone
OMOP Antiepileptics: carbamazepine, phenytoin	Quinidine
OMOP Antiepileptics: carbamazepine, phenytoin	Levonordefrin
OMOP Antiepileptics: carbamazepine, phenytoin	butacaine
OMOP Antiepileptics: carbamazepine, phenytoin	chloroprocaine
OMOP Antiepileptics: carbamazepine, phenytoin	Etidocaine
OMOP Antiepileptics: carbamazepine, phenytoin	Encainide
OMOP Antiepileptics: carbamazepine, phenytoin	Articaine
OMOP Antiepileptics: carbamazepine, phenytoin	Levobupivacaine
OMOP Benzodiazepines	Midazolam
OMOP Benzodiazepines	zolpidem
OMOP Benzodiazepines	Secobarbital
OMOP Benzodiazepines	Chlorazepate
OMOP Beta blockers	Timolol
OMOP Beta blockers	Carteolol
OMOP Beta blockers	Nadolol
OMOP Beta blockers	Acebutolol
OMOP Beta blockers	Betaxolol
OMOP Beta blockers	Penbutolol
OMOP Beta blockers	Bisoprolol
OMOP Beta blockers	Pindolol
OMOP Beta blockers	carvedilol
OMOP Beta blockers	Sotalol

DOI_CONCEPT_NAME	C2_CONCEPT_NAME
OMOP Beta blockers	Labetalol
OMOP Beta blockers	esmolol
OMOP Bisphosphonates	aluminum chloride
OMOP Bisphosphonates	pamidronate
OMOP Bisphosphonates	Ibandronate
OMOP Bisphosphonates	Risedronate
OMOP Bisphosphonates	Etidronate
OMOP Bisphosphonates	Tiludronate
OMOP Bisphosphonates	Plicamycin
OMOP Tricyclic antidepressants	Trazodone
OMOP Tricyclic antidepressants	Methamphetamine
OMOP Tricyclic antidepressants	Methylphenidate
OMOP Tricyclic antidepressants	Amoxapine
OMOP Tricyclic antidepressants	nefazodone
OMOP Tricyclic antidepressants	Amphetamine
OMOP Tricyclic antidepressants	duloxetine
OMOP Tricyclic antidepressants	Escitalopram
OMOP Tricyclic antidepressants	Dexfenfluramine
OMOP Tricyclic antidepressants	Benzphetamine
OMOP Tricyclic antidepressants	Dextroamphetamine
OMOP Tricyclic antidepressants	Paroxetine
OMOP Tricyclic antidepressants	phendimetrazine
OMOP Tricyclic antidepressants	Diethylpropion
OMOP Tricyclic antidepressants	dexmethylphenidate
OMOP Tricyclic antidepressants	Phentermine
OMOP Tricyclic antidepressants	Sertraline
OMOP Tricyclic antidepressants	sibutramine
OMOP Tricyclic antidepressants	atomoxetine
OMOP Tricyclic antidepressants	venlafaxine
OMOP Tricyclic antidepressants	Bupropion
OMOP Tricyclic antidepressants	Fluvoxamine
OMOP Tricyclic antidepressants	Fenfluramine
OMOP Tricyclic antidepressants	Fluoxetine
OMOP Tricyclic antidepressants	Maprotiline
OMOP Tricyclic antidepressants	Mazindol
OMOP Tricyclic antidepressants	Citalopram
OMOP Tricyclic antidepressants	Reserpine
OMOP Tricyclic antidepressants	deserpidine
OMOP Tricyclic antidepressants	Phenmetrazine
OMOP Typical antipsychotics	Mesoridazine
OMOP Typical antipsychotics	ziprasidone
OMOP Typical antipsychotics	Amoxapine
OMOP Typical antipsychotics	Risperidone
OMOP Typical antipsychotics	Droperidol
OMOP Typical antipsychotics	ergoloid mesylates, USP
OMOP Typical antipsychotics	quetiapine
OMOP Typical antipsychotics	olanzapine

DOI_CONCEPT_NAME	C2_CONCEPT_NAME
OMOP Typical antipsychotics	Clozapine
OMOP Typical antipsychotics	Metoclopramide
OMOP Typical antipsychotics	Hyoscyamine
OMOP Typical antipsychotics	alosetron
OMOP Typical antipsychotics	Scopolamine
OMOP Typical antipsychotics	Thiethylperazine
OMOP Typical antipsychotics	Cyproheptadine
OMOP Typical antipsychotics	Dihydroergotamine
OMOP Typical antipsychotics	Promethazine
OMOP Typical antipsychotics	Phenoxybenzamine
OMOP Typical antipsychotics	Phentolamine
OMOP Typical antipsychotics	Terazosin
OMOP Typical antipsychotics	Ergonovine
OMOP Typical antipsychotics	carvedilol
OMOP Typical antipsychotics	Prazosin
OMOP Typical antipsychotics	Tolazoline
OMOP Typical antipsychotics	Triflupromazine
OMOP Typical antipsychotics	acetophenazine
OMOP Typical antipsychotics	piperacetazine
OMOP Typical antipsychotics	Promazine
OMOP Typical antipsychotics	dapiprazole
OMOP Typical antipsychotics	Chlorprothixene
OMOP Warfarin	Dicumarol
OMOP Warfarin	anisindione
OMOP Warfarin	Phenprocoumon

Comparator 3: select all drugs within a different mechanism of action that share the same primary indication as the DOI

Table 6 highlights all drugs with the comparator mechanism of action which shares the same primary indication as the DOI.

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP ACE Inhibitor	Timolol
OMOP ACE Inhibitor	Triamterene
OMOP ACE Inhibitor	Trichlormethiazide
OMOP ACE Inhibitor	Methyclothiazide
OMOP ACE Inhibitor	Metolazone
OMOP ACE Inhibitor	Bumetanide
OMOP ACE Inhibitor	torseamide
OMOP ACE Inhibitor	Polythiazide
OMOP ACE Inhibitor	Carteolol
OMOP ACE Inhibitor	Furosemide
OMOP ACE Inhibitor	Spironolactone
OMOP ACE Inhibitor	Hydrochlorothiazide
OMOP ACE Inhibitor	Indapamide
OMOP ACE Inhibitor	Amiloride
OMOP ACE Inhibitor	Chlorothiazide
OMOP ACE Inhibitor	Methyldopa
OMOP ACE Inhibitor	Metoprolol
OMOP ACE Inhibitor	Verapamil
OMOP ACE Inhibitor	valsartan
OMOP ACE Inhibitor	eplerenone
OMOP ACE Inhibitor	Nadolol
OMOP ACE Inhibitor	Atenolol
OMOP ACE Inhibitor	Bendroflumethiazide
OMOP ACE Inhibitor	telmisartan
OMOP ACE Inhibitor	Nicardipine
OMOP ACE Inhibitor	Nifedipine
OMOP ACE Inhibitor	Angelica sinensis preparation
OMOP ACE Inhibitor	Bepidil
OMOP ACE Inhibitor	Nisoldipine
OMOP ACE Inhibitor	Acebutolol
OMOP ACE Inhibitor	Betaxolol
OMOP ACE Inhibitor	Isradipine
OMOP ACE Inhibitor	Penbutolol
OMOP ACE Inhibitor	Diltiazem
OMOP ACE Inhibitor	allyl sulfide
OMOP ACE Inhibitor	Amlodipine
OMOP ACE Inhibitor	Bisoprolol
OMOP ACE Inhibitor	Terazosin

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP ACE Inhibitor	trandolapril
OMOP ACE Inhibitor	Guanfacine
OMOP ACE Inhibitor	Mibefradil
OMOP ACE Inhibitor	Pindolol
OMOP ACE Inhibitor	eprosartan
OMOP ACE Inhibitor	carvedilol
OMOP ACE Inhibitor	irbesartan
OMOP ACE Inhibitor	Prazosin
OMOP ACE Inhibitor	coenzyme Q10
OMOP ACE Inhibitor	candesartan
OMOP ACE Inhibitor	Propranolol
OMOP ACE Inhibitor	Felodipine
OMOP ACE Inhibitor	Reserpine
OMOP ACE Inhibitor	Doxazosin
OMOP ACE Inhibitor	Guanabenz
OMOP ACE Inhibitor	Guanethidine
OMOP ACE Inhibitor	Losartan
OMOP ACE Inhibitor	Hydroflumethiazide
OMOP ACE Inhibitor	deserpidine
OMOP ACE Inhibitor	Chlorthalidone
OMOP ACE Inhibitor	Clonidine
OMOP ACE Inhibitor	guanadrel
OMOP ACE Inhibitor	desflurane
OMOP ACE Inhibitor	benzothiazide
OMOP ACE Inhibitor	esmolol
OMOP ACE Inhibitor	quinethazone
OMOP ACE Inhibitor	cyclothiazide
OMOP Amphotericin B	Nystatin
OMOP Amphotericin B	Gentian Violet
OMOP Amphotericin B	Ketoconazole
OMOP Amphotericin B	Itraconazole
OMOP Amphotericin B	terbinafine
OMOP Amphotericin B	Fluconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Bacitracin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Neomycin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Povidone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Silver Sulfadiazine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Amoxicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Nafcillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ampicillin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	linezolid
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefprozil
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Levofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefepime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefaclor
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefazolin

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefoperazone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefotaxime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefotetan
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefoxitin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ceftazidime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ceftizoxime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ceftriaxone
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephalexin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephradine
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefixime
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	cefdinir
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ciprofloxacin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	methylbenzethonium
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cefamandole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephalothin
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Cephapirin
OMOP Antiepileptics: carbamazepine, phenytoin	Mephobarbital
OMOP Antiepileptics: carbamazepine, phenytoin	Phenobarbital
OMOP Antiepileptics: carbamazepine, phenytoin	topiramate
OMOP Antiepileptics: carbamazepine, phenytoin	Thioridazine
OMOP Antiepileptics: carbamazepine, phenytoin	Thiothixene
OMOP Antiepileptics: carbamazepine, phenytoin	Mesoridazine
OMOP Antiepileptics: carbamazepine, phenytoin	Trifluoperazine
OMOP Antiepileptics: carbamazepine, phenytoin	Molindone
OMOP Antiepileptics: carbamazepine, phenytoin	Perphenazine
OMOP Antiepileptics: carbamazepine, phenytoin	Droperidol
OMOP Antiepileptics: carbamazepine, phenytoin	Pimozide
OMOP Antiepileptics: carbamazepine, phenytoin	Prochlorperazine
OMOP Antiepileptics: carbamazepine, phenytoin	Fluphenazine
OMOP Antiepileptics: carbamazepine, phenytoin	Haloperidol
OMOP Antiepileptics: carbamazepine, phenytoin	quetiapine
OMOP Antiepileptics: carbamazepine, phenytoin	olanzapine
OMOP Antiepileptics: carbamazepine, phenytoin	Lorazepam
OMOP Antiepileptics: carbamazepine, phenytoin	Loxapine
OMOP Antiepileptics: carbamazepine, phenytoin	Chlorpromazine
OMOP Antiepileptics: carbamazepine, phenytoin	Clozapine
OMOP Antiepileptics: carbamazepine, phenytoin	Triflupromazine
OMOP Antiepileptics: carbamazepine, phenytoin	acetophenazine
OMOP Antiepileptics: carbamazepine, phenytoin	Promazine
OMOP Antiepileptics: carbamazepine, phenytoin	Chlorprothixene
OMOP Benzodiazepines	Meprobamate
OMOP Benzodiazepines	Midazolam
OMOP Benzodiazepines	Amobarbital
OMOP Benzodiazepines	Nortriptyline
OMOP Benzodiazepines	Buspirone
OMOP Benzodiazepines	Doxepin
OMOP Benzodiazepines	Prochlorperazine

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Benzodiazepines	Hydroxyzine
OMOP Benzodiazepines	Chlorazepate
OMOP Benzodiazepines	Chlorpromazine
OMOP Benzodiazepines	Diphenhydramine
OMOP Benzodiazepines	bromodiphenhydramine
OMOP Benzodiazepines	Kava preparation
OMOP Benzodiazepines	Methotrimeprazine
OMOP Benzodiazepines	Chlormezanone
OMOP Beta blockers	Timolol
OMOP Beta blockers	Trichlormethiazide
OMOP Beta blockers	Methyclothiazide
OMOP Beta blockers	Metolazone
OMOP Beta blockers	Bumetanide
OMOP Beta blockers	torseamide
OMOP Beta blockers	Polythiazide
OMOP Beta blockers	Furosemide
OMOP Beta blockers	Spironolactone
OMOP Beta blockers	Hydrochlorothiazide
OMOP Beta blockers	Indapamide
OMOP Beta blockers	Chlorothiazide
OMOP Beta blockers	Lisinopril
OMOP Beta blockers	valsartan
OMOP Beta blockers	moexipril
OMOP Beta blockers	Nadolol
OMOP Beta blockers	Bendroflumethiazide
OMOP Beta blockers	telmisartan
OMOP Beta blockers	Digoxin
OMOP Beta blockers	quinapril
OMOP Beta blockers	Ramipril
OMOP Beta blockers	benazepril
OMOP Beta blockers	Bisoprolol
OMOP Beta blockers	Captopril
OMOP Beta blockers	Enalapril
OMOP Beta blockers	trandolapril
OMOP Beta blockers	eprosartan
OMOP Beta blockers	carvedilol
OMOP Beta blockers	coenzyme Q10
OMOP Beta blockers	candesartan
OMOP Beta blockers	Nitroglycerin
OMOP Beta blockers	Fosinopril
OMOP Beta blockers	Losartan
OMOP Beta blockers	Milrinone
OMOP Beta blockers	Perindopril
OMOP Beta blockers	Hydralazine
OMOP Beta blockers	Hydroflumethiazide
OMOP Beta blockers	Isosorbide
OMOP Beta blockers	Labetalol

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Beta blockers	Chlorthalidone
OMOP Beta blockers	somatrem
OMOP Beta blockers	Somatropin
OMOP Beta blockers	Deslanoside
OMOP Beta blockers	Digitoxin
OMOP Beta blockers	benzothiazide
OMOP Beta blockers	Digitalis preparation
OMOP Beta blockers	esmolol
OMOP Beta blockers	quinethazone
OMOP Beta blockers	cyclothiazide
OMOP Beta blockers	Fenoldopam
OMOP Bisphosphonates	calcium acetate
OMOP Bisphosphonates	Calcium Glycerophosphate
OMOP Bisphosphonates	pamidronate
OMOP Bisphosphonates	Raloxifene
OMOP Bisphosphonates	Risedronate
OMOP Bisphosphonates	Teriparatide
OMOP Bisphosphonates	Calcium Carbonate
OMOP Bisphosphonates	Calcium Gluconate
OMOP Bisphosphonates	calcium phosphate
OMOP Bisphosphonates	Calcium Citrate
OMOP Bisphosphonates	Calcium gluceptate
OMOP Bisphosphonates	calcium lactate
OMOP Bisphosphonates	CALCIUM LEVULINATE
OMOP Bisphosphonates	glubionate calcium
OMOP Tricyclic antidepressants	Tranlycypromine
OMOP Tricyclic antidepressants	Trazodone
OMOP Tricyclic antidepressants	Methylphenidate
OMOP Tricyclic antidepressants	Amoxapine
OMOP Tricyclic antidepressants	nefazodone
OMOP Tricyclic antidepressants	Escitalopram
OMOP Tricyclic antidepressants	Pramipexole
OMOP Tricyclic antidepressants	Paroxetine
OMOP Tricyclic antidepressants	Mirtazapine
OMOP Tricyclic antidepressants	Buspirone
OMOP Tricyclic antidepressants	Phenelzine
OMOP Tricyclic antidepressants	Sertraline
OMOP Tricyclic antidepressants	venlafaxine
OMOP Tricyclic antidepressants	Bupropion
OMOP Tricyclic antidepressants	Fluvoxamine
OMOP Tricyclic antidepressants	Fluoxetine
OMOP Tricyclic antidepressants	Selegiline
OMOP Tricyclic antidepressants	Alprazolam
OMOP Tricyclic antidepressants	Isocarboxazid
OMOP Tricyclic antidepressants	Isoflurane
OMOP Tricyclic antidepressants	Lorazepam
OMOP Tricyclic antidepressants	Maprotiline

DOI_CONCEPT_NAME	C1_CONCEPT_NAME
OMOP Tricyclic antidepressants	Citalopram
OMOP Tricyclic antidepressants	Temazepam
OMOP Tricyclic antidepressants	Kava preparation
OMOP Tricyclic antidepressants	Lithium
OMOP Typical antipsychotics	Mesoridazine
OMOP Typical antipsychotics	Droperidol
OMOP Typical antipsychotics	Carbamazepine
OMOP Typical antipsychotics	quetiapine
OMOP Typical antipsychotics	olanzapine
OMOP Typical antipsychotics	Lorazepam
OMOP Typical antipsychotics	Clozapine
OMOP Typical antipsychotics	Triflupromazine
OMOP Typical antipsychotics	acetophenazine
OMOP Typical antipsychotics	Promazine
OMOP Typical antipsychotics	Chlorprothixene
OMOP Warfarin	Enoxaparin
OMOP Warfarin	Dalteparin
OMOP Warfarin	tinzaparin
OMOP Warfarin	argatroban
OMOP Warfarin	Dicumarol
OMOP Warfarin	Papaverine
OMOP Warfarin	anisindione
OMOP Warfarin	Heparin
OMOP Warfarin	danaparoid
OMOP Warfarin	Phenprocoumon
OMOP Warfarin	ardeparin
OMOP Warfarin	lepirudin

Comparator 4: select the most prevalent drug within a different mechanism of action that shares the same primary indication as the DOI

Table 7 highlights the most prevalent drugs with the comparator mechanism of action which shares the same primary indication as the DOI.

DOI_DRUG_NAME	Comparator drug (most prevalent among MoA class)
OMOP ACE Inhibitor	Valsartan
OMOP Amphotericin B	Fluconazole
OMOP Antibiotics: erythromycins, sulfonamides, and tetracyclines	Ciprofloxacin
OMOP Antiepileptics: carbamazepine, phenytoin	Pentobarbital
OMOP Benzodiazepines	Fluoxetine
OMOP Beta blockers	Lisinopril
OMOP Bisphosphonates	Raloxifene
OMOP Tricyclic antidepressants	Bupropion
OMOP Typical antipsychotics	olanzapine
OMOP Warfarin	Heparin