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Comprehension of Top 200 Prescribed Drugs in the US as a Resource for Pharmacy Teaching, Training and Practice

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Abstract: Pharmacists have access to a plethora of information related to drugs. Online compendia concerning top 200 prescribed drugs are readily-accessible, comparatively-easy to search. While these resources provide some information about the commonly prescribed drugs, they lack in furnishing in-depth knowledge to pharmacy students, pharmacists and other healthcare professionals. The aim of this paper is to present the relevant details of top 200 most prescribed drugs in the United States. The names and therapeutic classes of top 200 prescribed drugs were compiled from online resources. The pharmacological actions of drugs, any reported adverse reactions and black box warnings are collected from drug bank resources, such as AccessPharmacy and Lexicomp. The paper provides comprehensive information about top 200 prescribed drugs, which includes generic names, pharmacological action, route of administration and adverse reaction profile including black box warning when applicable. Overall, the drug list may serve as an easy access of ideas for pharmacists, researchers and other healthcare professionals interested in developing new strategies for treating patients with various ailments.

Keywords: black box warning; oral administration; cardiovascular; central nervous system; endocrine; gastrointestinal; antibiotics; antihypertensive; inhalers; biologics; nasal; injection

1. Introduction

Over the past few decades, the health care needs of our population changed along with the role of pharmacists [1]. Historically, pharmacists' role in healthcare was centered on dispensing medications and ensuring the accurate delivery of medications to patients. In addition to allocating medications and safeguarding patient safety, today pharmacists are an integral part of our health care team and also are considered the most accessible health care professionals [2]. This approachability enables them to perform their pharmacists' patient care process (PPCP), such as collect, access, plan, implement and follow-up to monitor and evaluate the appropriateness and effectiveness of medications and obtain patient feedback [3]. Additionally, pharmacists advise other health professionals concerning medication therapy decisions, the composition of drugs, their physicochemical and biological properties. Pharmacists also ensure the drug purity, efficacy, their interactions and side effects [4].

As per the survey conducted by National Pharmacist Workforce in 2014, over a decade pharmacists providing medication therapy management increased from 13% to 60% and those performing immunizations incremented from 15% to 53% respectively [5,6].

To deliver excellent pharmacy services to patients, pharmacists need to have complete knowledge of commonly prescribed drugs [7,8]. In 2014, the total number of prescriptions dispensed were approximately 4.325 billion, out of which the top 200 most prescribed drugs accounted for

approximately 2.87 billion [9,10]. The top 200 drugs represent 66.6% (2/3) of total prescriptions filled in the US. The topic on top 200 most prescribed drugs in the US has been previously compiled in number of resources [11,12]. They offer a short comprehensive review of this topic [13,14]. However, in order to maximize studying, these guide/books/chapters, it is critical that a student has a firm grasp on the complete knowledge of the most commonly used medications [15]. This includes generic drugs as wells as mechanism of action (MOA), side effects, first line therapy indication, black box warning, and most common routes of administration. Therefore, the purpose of this article is to summarize the most commonly prescribed medications in the US and provide pharmacists and pharmacy students a resource before undertaking the task of practicing and studying for North American Pharmacist Licensure Examination (NAPLEX).

2. Materials and Methods

To accomplish the study objectives, this study was divided into two phases. Phase I consisted of gathering information on the drug names and therapeutic classes, which were compiled from the Clincalc.com. The Clinicalc.com website obtains its data annually from medical expenditure panel survey [MEPS] which is conducted by the US government [10]. Phase II entails collecting information on the drugs, their pharmacological actions, adverse reactions, and any possible black box warnings from resources, such as Clinical Drug Information from AccessPharmacy database on drug monographs and Lexicomp [16,17]. The prescribed drugs in the Figure 1a–d are numerically arranged based on the number of prescriptions filled and dispensed for each generic drug in the US. A set of inclusion and exclusion criteria was developed to select 200 commonly prescribed drugs. We included generic drugs obtained from the ClinCalc website, pharmacological actions and drug classes when applicable, most frequently used routes of administration, top two body systems affected by adverse drugs reactions, and the most advocated black box warming. Chemicals and biologics are included. The drugs not listed as top 200 drugs in the ClinCalc website were excluded. Additionally, if a drug is used in combination with another drug it is treated as a separate drug entity from the parent drug.

1 **Lisinopril** *ACEi* **Antihypertensive** **PO** ADR: CV, CNS ***BB: Pregnancy***	2 **Levothyroxine** **Hypothyroidism** **PO** ADR: CV, CNS ***BB: Weight Loss***	3 **Atorvastatin** *HMG-CoA Reductase Inhibitor* **Antihyperlipidemic** **PO** ADR: GI, Neuromuscular	4 **Metformin** *Biguanide* **Antidiabetic** **PO** ADR: GI, Diarrhea ***BB: Lactic Acidosis***	5 **Simvastatin** *HMG-CoA Reductase Inhibitor* **Antihyperlipidemic** **PO** ADR: CV, CNS	6 **Omeprazole** *PPI* **Anti-GERD** **PO** ADR: Carcinoma, CDAD	7 **Amlodipine Besylate** *CCB* **Antihypertensive** **PO** ADR: CV, Respiratory	8 **Metoprolol** *Beta Blocker* **Antihypertensive** **PO** ADR: CV, Dermatologic ***BB: CV***	9 **Acetaminophen; Hydrocodone** *Opioid* **Analgesic** **PO** ADR: CV, CNS ***BB: Respiratory Depression***	10 **Albuterol** *Beta-2 Agonist* **Bronchodilator** **Inh.** ADR: Respiratory, CNS
11 **Hydrochlorothiazide** *Diuretic* **Antihypertensive** **PO** ADR: CV, Endocrine	12 **Losartan** *ARB* **Antihypertensive** **PO** ADR: Respiratory ***BB: Fetal Toxicity***	13 **Gabapentin** **Anticonvulsant** **PO** ADR: CNS, Viral infection	14 **Sertraline** *SSRI* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***	15 **Furosemide** *Loop Diuretic* **Antihypertensive** **PO** ADR: CV, Endocrine ***BB: Electrolyte Loss***	16 **Acetaminophen** **Analgesic** **PO** ADR: Endocrine, Renal ***BB: Hepatotoxicity***	17 **Atenolol** *Beta Blocker* **Antihypertensive** **PO** ADR: CV, CNS ***BB: Abrupt Withdrawal***	18 **Pravastatin** *HMG-CoA Reductase Inhibitor* **Antihyperlipidemic** **PO** ADR: CV, CNS	19 **Amoxicillin** **Antibiotic** **PO** ADR: CV, GI	20 **Fluoxetine** *SSRI* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***
21 **Citalopram** *SSRI* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***	22 **Trazodone** *SSRI* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***	23 **Alprazolam** *Benzodiazepine* **Antianxiety** **PO** ADR: CNS ***BB: Concomitant with Opioids***	24 **Fluticasone** **Corticosteroid** **Nasal** ADR: CNS	25 **Bupropion** *Dopamine/Norepinephrine Reuptake Inhibitor* **Antidepressant** **PO** ADR: CV, CNS ***BB: Suicidal Thoughts***	26 **Carvedilol** *Beta Blocker* **Antihypertensive** **PO** ADR: CV, CNS	27 **Potassium Chloride** **Electrolyte Supplement** **PO** ADR: Dermatologic, Endocrine	28 **Tramadol** **Opioid** **Analgesic** **PO** ADR: CNS, GI ***BB: Respiratory Depression***	29 **Pantoprazole** *PPI* *Anti-GERD* **PO** ADR: CNS	30 **Montelukast** *Leukotriene Receptor Antagonist* **Anti-asthmatic** **PO** ADR: CNS, Dermatologic
31 **Escitalopram** *SSRI* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***	32 **Prednisone** *Corticosteroid* **Anti-inflammatory** **PO** ADR: CV, Endocrine	33 **Rosuvastatin** *HMG-CoA Reductase Inhibitor* **Antihyperlipidemic** **PO** ADR: Neuromuscular	34 **Ibuprofen** *NSAID* **Analgesic** **PO** ADR: CV, GI ***BB: Thrombotic events***	35 **Meloxicam** *NSAID* **Analgesic** **PO** ADR: CNS, GI ***BB: Thrombotic Events***	36 **Insulin Glargine** **Antidiabetic** **Inj.** ADR: Primarily Hypoglycemia	37 **Hydrochlorothiazide & Lisinopril** *ACEi/Diuretic* **Antihypertensive** **PO** ADR: CV, CNS ***BB: Fetal Toxicity***	38 **Clonazepam** *Benzodiazepine* **Anticonvulsant** **PO** ADR: CNS ***BB: Concomitant with Opioids***	39 **Aspirin** *Salicylate* **Antiplatelet** **PO** ADR: CV, CNS	40 **Clopidogrel** **Antiplatelet** **PO** ADR: Hematologic, Dermatologic ***BB: CYP2C9 Poor Metabolizer***
41 **Glipizide** *Sulfonylurea* **Antidiabetic** **PO** ADR: CNS, Dermatologic	42 **Warfarin** **Anticoagulant** **PO** ADR: Hematologic, CV ***BB: Bleed Risk***	43 **Cyclobenzaprine** *Muscle Relaxant* **Analgesic** **PO** ADR: CNS, GI	44 **Insulin Human** **Antidiabetic** **Inj.** ADR: CV, Endocrine	45 **Tamsulosin** *Alpha-1-Antagonist* **Urinary Retention** **PO** ADR: CV, CNS	46 **Zolpidem** **Hypnotic** **PO** ADR: CNS	47 **Ethinyl Estradiol/ Norgestimate** **Contraceptive** **PO** ADR: CV, CNS ***BB: Cigarette Smoking***	48 **Duloxetine** *SNRI* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***	49 **Ranitidine** *Histamine H2 Antagonist* **Antiulcerant** **PO** ADR: CV, CNS	50 **Venlafaxine** *SNRI* **Antidepressant** **PO** ADR: CNS, Dermatologic ***BB: Suicidal Thoughts***

(**a**)

Figure 1. *Cont.*

51 **Fluticasone; Salmeterol** *Beta-2 Agonist* **Corticosteroid** **Inh.** ADR: CNS, Respiratory	52 **Oxycodone** *Opioid* **Analgesic** **PO** ADR: CNS, Dermatologic	53 **Azithromycin** **Antibiotic** **PO** ADR: GI, Loose stools	54 **Amphetamine** **CNS Stimulant** **PO** ADR: GI, Respiratory	55 **Lorazepam** *Benzodiazepine* **Anticonvulsant** **IM** ADR: CV, CNS	56 **Allopurinol** *Xanthine Oxidase Inhibitor* **Antigout** **PO** ADR: Dermatologic, Endocrine	57 **Paroxetine** *SNRI* **Antidepressant** **PO** ADR: CNS, Endocrine ***BB: Suicidal Thoughts***	58 **Methylphenidate** **CNS Stimulant** **PO** ADR: CNS, GI	59 **Estradiol** **Estrogen Derivative** **PO** ADR: CNS, Endocrine	60 **Hydrochlorothiazide & Losartan K** *ARB/Diuretic* **Antihypertensive** **PO** ADR: CNS; Neuromuscular ***BB: Pregnancy***
61 **Ethinyl Estradiol/ Norethindrone** **Contraceptive** **PO** ADR: CNS, GI	62 **Fenofibrate** **Antihyperlipidemic** **PO** ADR: CV, CNS	63 **Propanolol** *Beta Blocker* **Antianginal** **PO** ADR: CV, CNS ***BB: CV***	64 **Glimepiride** *Sulfonylurea* **Antidiabetic** **PO** ADR: Endocrine, CNS	65 **Ergocalciferol** **Vitamin D Analog** **Liq.** ADR: Endocrine, GI ***BB: Electrolyte Imbalance***	66 **Esomeprazole** *PPI* **Anti-GERD** **PO** ADR: CNS, GI	67 **Spironolactone** *Diuretic* **Antihypertensive** **PO** ADR: CV, CNS ***BB: Tumorigenic***	68 **Loratadine** *Histamine H1 Antagonist* **Antihistamine** **PO** ADR: CNS, Dermatologic ***BB: Hepatic Impairment***	69 **Naproxen** *NSAID* **Analgesic** **PO** ADR: CV, CNS	70 **Lamotrigine** **Anticonvulsant** **PO** ADR: GI, CV ***BB: Skin Reactions***
71 **Hydrochlorothiazide/ Triamterene** *Diuretic/Thiazide* **Antihypertensive** **PO** ADR: CV, CNS ***BB: Hyperkalemia***	72 **Cetirizine** *Histamine H1 Antagonist* **Antihistamine** **PO** ADR: CNS, GI ***BB: CNS Depression***	73 **Sulfamethoxazole; Trimethoprim** **Antibiotic** **PO** ADR: CNS, CV	74 **Lovastatin** *HMG-CoA Reductase Inhibitor* **Antihyperlipidemic** **PO** ADR: Neuromuscular; CNS	75 **Diltiazem** *CCB* **Antianginal** **PO** ADR: CV, CNS	76 **Clonidine** *Alpha-2 Agonist* **Antihypertensive** **PO** ADR: CNS, Dermatologic	77 **Topiramate** **Anticonvulsant** **PO** ADR: CNS, Endocrine	78 **Amoxicillin** *Penicillin* **Antibiotic** **PO** ADR: GI	79 **Pregabalin** **Anticonvulsant** **PO** ADR: CV, CNS	80 **Folic Acid** **Essential Vitamin** **PO** ADR: CV, Dermatologic ***BB: Anemia***
81 **Alendronate Sodium** *Bisphosphonate* **Bone Health** **PO** ADR: Endocrine, CNS	82 **Hydrocodone Bitartrate** *Opioid* **Analgesic** **PO** ADR: GI, CV ***BB: Respiratory Depression***	83 **Amitriptyline** *TCA* **Antidepressant** **PO** ADR: CV, CNS ***BB: Suicidal Thoughts***	84 **Diclofenac** *NSAID* **Analgesic** **PO** ADR: CV, CNS	85 **Insulin Aspart** **Antidiabetic** **IV** ADR: Endocrine, CNS	86 **Tiotropium** **Anticholinergic** **Inh.** ADR: GI, Respiratory	87 **Quetiapine Fumarate** **Antipsychotic** **PO** ADR: CV, CNS ***BB: Suicidal Thoughts***	88 **Enalapril** *ACEi* **Antihypertensive** **PO** ADR: Renal, CV ***BB: Fetal Toxicity***	89 **Polymyxin B Sulfate** **Antibiotic** **IV** ADR: CV, CNS ***BB: Nephrotoxicity***	90 **Sitagliptin Phosphate** *DPP-4 Inhibitor* **Antidiabetic** **PO** ADR: Endocrine, GI
91 **Diazepam** *Benzodiazepine* **Anticonvulsant** **PO** ADR: CV, CNS ***BB: CNS depression***	92 **Latanoprost** **Antiglaucoma** **Ophthalmic** ADR: CNS, Dermatologic	93 **Ciprofloxacin** **Antibiotic** **PO** ADR: CNS, Dermatologic	94 **Budesonide/ Formoterol** *Beta-2 Agonist* **Corticosteroid** **Inh.** ADR: CNS, Respiratory ***BB: Asthma Related Death***	95 **Hydroxyzine** *Histamine H1 Antagonist* **Antihistamine** **Liq.** ADR: CNS, GI	96 **Ethinyl Estradiol/ Levonorgestrel** **Contraceptive** **PO** ADR: CNS, CV ***BB: Cigarette Smoking***	97 **Docusate** *Stool Softener* **Laxative** **PO** ADR: Throat irritation	98 **Valsartan** *ARB* **Antihypertensive** **PO** ADR: Renal ***BB: Fetal Toxicity***	99 **Finasteride** *5 Alpha-Reductase Inhibitor* **Urinary Retention** **PO** ADR: CV, CNS ***BB: Pregnancy***	100 **Ondansetron** *5HT3 Antagonist* **Antiemetic** **PO** ADR: CNS, GI

(**b**)

Figure 1. *Cont.*

101 **Ferrous Sulfate** **Iron Supplement** **PO** ADR: GI, Genitourinary ***BB: GI Diseases***	102 **Cephalexin** **Antibiotic** **PO** ADR: CNS, Dermatologic	103 **Ezetimibe** **Antihyperlipidemic** **PO** ADR: CNS, GI	104 **Buspirone** **Antianxiety** **PO** ADR: CNS, CV	105 **Donepezil Hydrochloride** *Acetylcholinesterase Inhibitor* **PO** ADR: CNS, GI	106 **Lisdexamfetamine** **CNS Stimulant** **PO** ADR: CNS, GI ***BB: Abuse and Dependence***	107 **Insulin Detemir** **Antidiabetic** **SQ** ADR: CNS, Endocrine	108 **Tizanidine** *Alpha-2 Agonist* **Muscle relaxer** **PO** ADR: CV, CNS	109 **Celecoxib** *NSAID* **PO** **Analgesic** ADR: CV, GI ***BB: Cardiovascular, GI***	110 **Amlodipine Besylate** *ACEi* **Antihypertensive** **PO** ADR: Dry Cough ***BB: Fetal Toxicity***
111 **Doxycycline** *Tetracycline* **Antibiotic** **PO** ADR: GI, Respiratory	112 **Cyanocobalamin** *Vitamin, Water Soluble* **PO** ADR: CNS, CV	113 **Oxybutynin** *Antispasmodic* **PO** ADR: CNS, GI	114 **Isosorbide Mononitrate** *Vasodilator* **Antianginal** **PO** ADR: CNS, CV	115 **Morphine** *Opioid* **Analgesic** **Liq.** ADR: CNS, GI ***BB: Respiratory depression***	116 **Insulin Lispro** **Antidiabetic** **SQ** ADR: CV, CNS	117 **Hydralazine Hydrochloride** *Vasodilator* **Antihypertensive** **PO** ADR: CNS, GI	118 **Levetiracetam** **Anticonvulsant** **PO** ADR: CV, GI	119 **Benazepril Hydrochloride** *ACEi* **Antihypertensive** **PO** ADR: CV, CNS ***BB: Fetal Toxicity***	120 **Divalproex Sodium** *Histone Deacetylase Inhibitor* **Anticonvulsant** **PO** ADR: CNS, GI ***BB: Fetal Risk***
121 **Cholecalciferol** **Vitamin D Analog** **PO** ADR: CNS, CV	122 **Ramipril** *ACEi* **Antihypertensive** **PO** ADR: CV, Respiratory ***BB: Fetal Toxicity***	123 **Nifedipine** *CCB* **PO** **Antihypertensive** ADR: CV, CNS	124 **Drospirenone/ Ethinyl Estradiol** **Contraceptive** **PO** ADR: CNS, GI ***BB: Cigarette Smoking***	125 **Valsartan** *ARB* **Antihypertensive** **PO** ADR: Renal ***BB: Fetal Toxicity***	126 **Pioglitazone Hydrochloride** *Thiazolidinedione* **Antidiabetic** **PO** ADR: CV, Endocrine ***BB: CHF***	127 **Famotidine** *Histamine H2 Antagonist* **Anti-GERD** **PO** ADR: CNS, GI	128 **Methylprednisolone** *Glucocorticoid* **Anti-inflammatory** **PO** ADR: Endocrine, CNS	129 **Clindamycin** *Lincosamide* **Antibiotic** **PO** ADR: CV, Dermatologic ***BB: Colitis***	130 **Risperidone** **Antipsychotic** **PO** ADR: CNS, GI ***BB: Increased mortality in elderly***
131 **Rivaroxaban** *Factor Xa Inhibitor* **Anticoagulant** **PO** ADR: Hematologic, CNS ***BB: Thrombotic Events***	132 **Hydroxychloroquine Sulfate** *Aminoquinoline* **Antimalarial** **PO** ADR: CNS, Dermatologic	133 **Aripiprazole** **Antipsychotic** **PO** ADR: CNS, Endocrine ***BB: Increased mortality in elderly***	134 **Mometasone** **Corticosteroid** **Inh.** ADR: CNS, GI	135 **Sumatriptan** *Serotonin 5HT1B,1D Receptor Agonist* **Antimigraine** **PO** ADR: CNS	136 **Dextroamphetamine** **CNS Stimulant** **PO** ADR: CV, CNS ***BB: High Abuse Potential***	137 **Lansoprazole** *PPI* **Anti-GERD** **PO** ADR: CNS, GI	138 **Baclofen** **Muscle Relaxant** **PO** ADR: CNS, GI ***BB: Abrupt Withdrawal***	139 **Mirtazapine** *Alpha-2 Agonist* **Antidepressant** **PO** ADR: CNS, GI ***BB: Suicidality***	140 **Promethazine Hydrochloride** *H1 Antagonist* **Antiemetic** **Liq.** ADR: CV, Otic ***BB: Respiratory depression***
141 **Nitroglycerin** *Vasodilator* **Antianginal** **TD** ADR: CNS, CV	142 **Digoxin** **Antiarrhythmic** **PO** CV ADR: CV	143 **Albuterol Sulfate/Ipatropium Bromide** *Beta-2 Agonist* **Anticholinergic** **Inh.** ADR: CNS, Neuromuscular	144 **Prednisolone** **Corticosteroid** **Anti-inflammatory** **PO** ADR: CV, CNS	145 **Hydrocortisone** **Corticosteroid** **Inj.** ADR: CNS, CV	146 **Verapamil Hydrochloride** *CCB* **Antianginal** **PO** ADR: CNS; GI	147 **Ropinirole Hydrochloride** *Dopamine Agonist* **Anti-Parkinson** **PO** ADR: CV, CNS	148 **Carisoprodol** **Muscle Relaxant** **PO** ADR: CNS	149 **Glyburide** *Sulfonylurea* **Antidiabetic** **PO** ADR: GI, Hypersensitivity	150 **Nebivolol Hydrochloride** *Beta Blocker* **Antihypertensive** **PO** ADR: CV, CNS

(**c**)

Figure 1. *Cont.*

151 **Triamcinolone** **Corticosteroid** **IM** ADR: CV, CNS	152 **Gemfibrozil** **Antilipemic** **PO** ADR: GI	153 **Omega-3-acid Ethyl Ester** **Antilipemic** **PO** ADR: GI	154 **Budesonide** **Corticosteroid** **Inh.** ADR: Otic, Respiratory	155 **Brimonidine Tartrate** *Alpha-2 Agonist* **Antiglaucoma** **Ophthalmic** ADR: CNS, Ophthalmic	156 **Doxazosin Mesylate** *Alpha 1 Antagonist* **Antihypertensive** **PO** ADR: CNS	157 **Metformin Hydrochloride /Sitagliptin Phosphate** *DPP-4 Inhibitor* **Antidiabetic** **PO** ADR: CNS, GI ***BB: Lactic Acidosis***	158 **Phenytoin** *Hydantoin* **Anticonvulsant** **PO** ADR: CNS, Dermatologic ***BB: CV Risk***	159 **Solifenacin Succinate** **Anticholinergic** **PO** ADR: GI, CV	160 **Gluconate/ Carbonate** **Electrolyte** **Inj.** ADR: GI, CV
161 **Levofloxacin** *Fluoroquinolone* **Antibiotic** **PO** ADR: CV, CNS	162 **Canagliflozin** *SGLT2 Inhibitor* **Antidiabetic** **PO** ADR: Endocrine, Genitourinary ***BB: Lower Limb Amputation***	163 **Irbesartan** *ARB* **Antihypertensive** **PO** ADR: Endocrine, CV ***BB: Fetal Toxicity***	164 **Polyethylene Glycol 3350** **Laxative** **PO** ADR: Dermatologic, GI	165 **Acyclovir** **Antiviral** **PO** ADR: CNS, GI	166 **Methocarbamol** **Muscle Relaxant** **PO** ADR: CNS, CV	167 **Terazosin** *Alpha 1 Blocker* **Antihypertensive** **PO** ADR: CNS	168 **Estrogens, Conjugated** *Hormone* **PO** ADR: Allergy, Chest pain	169 **Meclizine Hydrochloride** *H1 Antagonist* **Antiemetic** **PO** ADR: CNS, GI	170 **Mesalamine** *NSAID* **Analgesic** **PO** ADR: CNS, GI
171 **Testosterone** *Androgen Replacement Therapy* **PO** ADR: Dermatologic, Endocrine	172 **Desogestrel/ Ethinyl Estradiol** **Contraceptive** **PO** ADR: CV, CNS ***BB: Cigarette Smoking***	173 **Lithium** **Antimanic** **PO** ADR: CV, Dermatologic ***BB: Lithium Toxicity***	174 **Temazepam** *Benzodiazepine* **Antianxiety** **PO** ADR: CNS, GI ***BB: Concomitant with Opioids***	175 **Memantine Hydrochloride** *NMDA Receptor Antagonist* **Alzheimer's Disease** **PO** ADR: CV, CNS	176 **Oxcarbazepine** **Anticonvulsant** **PO** ADR: CNS, GI	177 **Metronidazole** *Antiprotozoal* **Antibiotic** **PO** ADR: CNS, GI ***BB: Carcinogenic***	178 **Valacyclovir** **Antiviral** **PO** ADR: CNS, GI	179 **Magnesium** **Electrolyte** **Inj.** ADR: CV, Endocrine	180 **Nitrofurantoin** **Antibiotic** **PO** ADR: CV, CNS
181 **Benzonatate** **Antitussive** **PO** ADR: CV, CNS	182 **Liraglutide** *Glucagon-Like Peptide 1 Receptor Agonist* **Antidiabetic** **SQ** ADR: CV, CNS ***BB: Thyroid C-cell Tumor Risk***	183 **Guanfacine** *Alpha-2 Adrenergic Antagonist* **Antihypertensive** **PO** ADR: CNS, GI	184 **Sodium Hydrochloride** **Electrolyte** **Inj.** ADR: CV, CNS	185 **Apixaban** *Factor Xa Inhibitor* **Anticoagulant** **PO** ADR: Hematologic, Endocrine ***BB: Discontinuation***	186 **Olmesartan Medoxomil** *ARB* **Antihypertensive** **PO** ADR: CNS, Endocrine ***BB: Fetal Toxicity***	187 **Pramipexole Dihydrochloride** *Dopamine Agonist* **Anti-Parkinson** **PO** ADR: CV, CNS	188 **Thyroid** **Thyroid product** **PO** ADR: Hyperthyroidism ***BB: Decreased Weight***	189 **Adalimumab** **Antirheumatic** **SQ** ADR: CNS, Dermatologic ***BB: Serious Infections***	190 **Dicyclomine Hydrochloride** **Anticholinergic** **Inj.** ADR: CNS, GI
191 **Anastrozole** *Aromatase Inhibitor* **Antineoplastic** **PO** ADR: CV, CNS	192 **Timolol** *Beta Blocker* **Antiglaucoma** **Ophthalmic** ADR: Ophthalmic, CV	193 **Chlorthalidone** *Diuretic* **Antihypertensive** **PO** ADR: Endocrine, Dermatologic	194 **Lidocaine** *Local Anesthetic* **Antiarrhythmic** **IV** ADR: CV, CNS	195 **Phentermine** *Anorexiant* **CNS stimulant** **PO** ADR: CV, CNS	196 **Amiodarone Hydrochloride** **Antiarrhythmic** **PO** ADR: CV, Endocrine ***BB: Arrhythmias***	197 **Atomoxetine Hydrochloride** *NRI* **CNS Stimulant** **PO** ADR: CNS, GI ***BB: Suicidal Thoughts***	198 **Ethinyl Estradiol; Etonogestrel** **Contraceptive** **Vaginal** ADR: CNS, CV ***BB: Cigarette Smoking***	199 **Fluconazole** **Antifungal** **PO** ADR: CNS, Dermatologic	200 **Clobetasol Propionate** **Corticosteroid** **Topical** ADR: CNS, Dermatologic

(**d**)

Figure 1. (**a**) List of 1–50 most prescribed drugs; (**b**) List of 51–100 most prescribed drugs; (**c**) List of 101–150 most prescribed drugs; (**d**) List of 151–200 most prescribed drugs.

3. Results and Discussion

Top 200 most prescribed drugs shown in Figure 1a–d, were developed using the data obtained from Clincalc website. The individual drugs are represented by generic name, drug class (when applicable), pharmacological action, major route of administration, adverse drug reactions and any applicable black box warnings [BB]. The lists contain many blockbuster drugs of the last 10 to 15 years, such as atorvastatin, simvastatin, etc. The most prescribed drugs based on systems were cardiovascular (49), central nervous system (42), endocrine (30) and musculoskeletal (19). They accounted for approximately 140 drugs (70%) of top 200 most prescribed drugs. Drug utilization by systems is shown in Figure 2.

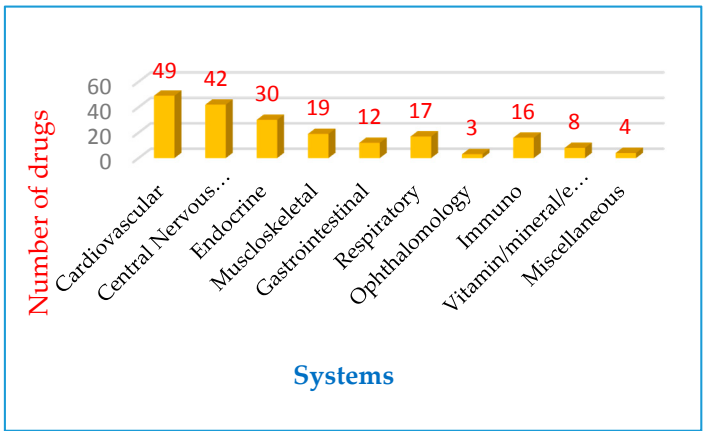

Figure 2. Lists the number drugs prescribed for each system.

3.1. Blackbox Warning

As per FDA regulations any drug that may lead to adverse reactions and that might cause serious injury or result in death should be labeled by black box warning [18]. The number of drugs with black box warning are 81 drugs (40.5%) of 200 most prescribed medicines.

3.2. Dosage Forms

The lists also highlights the dosage forms of top 200 most prescribed drugs, they were oral, PO (166), inhalation, inh (7), intravenous, IV (3), intramuscular, IM (2), injections, inj (7), liquids, liq (4), subcutaneous, SQ (4), ophthamological, ophth (3), nasal, NAS (1), topical, TOP (1), transdermal, TM (1) and vaginal, VAG (1).

3.3. Biologicals and Chemicals

As per the lists, only 7 (3.5%) of drugs were biologicals among the top 200 most prescribed drugs, rest were chemical entities.

3.4. Opioids

Five opioids namely, acetaminophen/hydrocodone, tramadol, oxycodone, hydrocodone, and morphine are among the top 200 most prescribed drugs. In fact, Aacetaminophen/hydrocodone is 1 of the top 10 most prescribed drugs. Tramadol and oxycodone are listed among top 60 most prescribed drugs in the US.

3.5. Adverse Drug Reactions

Within top 200 drugs the most common ADRs and their range according to the systems are shown in Figure 3.

Cardiovascular	**Central Nervous System**	**Gastrointestinal**
Hyper/hypotension	Dizziness	Diarrhea
Chest pain	Headache	Constipation
Bradycardia	Anxiety/agitation	Nausea/vomiting
Tachycardia	Depression	Abdominal pain
Edema	Fatigue	Xerostomia
Arrhythmias	Confusion	Dyspepsia
Thrombosis	Drowsiness	
Flushing	Malaise	
Dermatological	**Respiratory**	**Endocrine**
Eczema	Nasopharyngitis	Hyper/hypocalcemia
Pruritus	Pulmonary edema	Hyponatremia
Diaphoresis	Bronchospasm	Hyper/hypokalemia
Alopecia	Cough	
Hypersensitivity	Upper respiratory infections	
Acne vulgaris	Allergic rhinitis	
Immunological	**Musculoskeletal**	**Hematological**
Viral infections	Arthralgia	Anemia
Fungal infections	Tremor	Neutropenia
	Myalgia	Hemorrhage
	Joint swelling	Bruising
Renal	**Genitourinary**	**Optic**
Increase in serum creatinine	Urinary tract infection	Impaired vision
Increase in BUN	Urine discoloration	Allergic conjunctivitis
Renal insufficiency		
Otic		
Tinnitus		
Otic infections		

Figure 3. The most common adverse drug reactions for top 200 drugs by systems

4. Conclusions

The visual language of the top 200 most prescribed drugs presented in the paper will foster long-term learning and enable students and residents to be more confident and competent before facing actual patients. Also will provide a quick reference about their therapeutic use, side effects, dosage forms and black box warning information of 66% of the total drugs prescribed in the US. Additionally, the drug lists will be handy for pharmacists, researchers and other healthcare professionals interested in developing new strategies for treating patients with various ailments.

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Abbreviations

CV	Cardiovascular
GI	Gastrointestinal
IM	intramuscular
Opth	Ophthalmic
Inj	Injection
ADR	Adverse Drug Reaction
CNS	Central Nervous System
PO	Oral
IV	Intravenous
Inh	Inhalation

Liq	Liquid
BB	Black Box Warning
SQ	Subcutaneous
TD	Transdermal
CDAD	Clostridium Difficile Associated Diarrhea
GERD	Gastroesophageal Reflux Disease
ACEi	Angiotensin-Converting-Enzyme Inhibitor
ARB	Angiotensin II Receptor Blockers
HMG-CoA Reductase Inhibitor	3-hydroxy-3-methyl-glutaryl-coenzyme A reductase Inhibitor
PPI	Proton Pump Inhibitor
CCB	Calcium Channel Blocker
SSRI	Selective Serotonin Reuptake Inhibitors
SNRI	Serotonin–Norepinephrine Reuptake Inhibitors
TCA	Tricyclic Antidepressant
NRI	Norepinephrine Reuptake Inhibitor
NSAID	Non-Steroidal Anti-Inflammatory Drug
SGLT2 Inhibitor	Sodium-Glucose co-Transporter-2 Inhibitor
DPP-4 Inhibitor	Dipeptidyl Peptidase-4 Inhibitor

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