ANTICHOLINERGICS: Reference List of Drugs with Potential Anticholinergic Effects [1, 2, 3, 4, 5]

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WHENEVER POSSIBLE, AVOID DRUGS WITH MODERATE TO HIGH ANTICHOLINERGIC ACTIVITY IN OLDER ADULTS (>65 YEARS OF AGE)

Low Anticholinergic Activity; Moderate/High Anticholinergic Activity - B in combo Beers

Antibiotics

ampicillin	☑	*ALL AVAILABLE AS GENERIC
cefOXitin ✗	☑	
clindamycin	☑	
gentamicin (Oint & Sol'n NIHB covered)	☑	
piperacillin ✗ ⊗	☑	
vancomycin ☎ ✆	☑	

Antidepressants

TCA

amitriptyline	ELAVIL	☒
clomiPRAMINE	ANAFRANIL	☒
desipramine	NORPRAMIN	☒
doxepin >6mg	SINEQUAN	☒
imipramine	TOFRANIL	☒
nortriptyline	AVENTYL	☒

-less anticholinergic effects than amitriptyline & imipramine

trimipramine	SURMONTIL	☒

SSRI

citalopram ☆	CELEXA	☑
escitalopram ☆	CIPRALEX	☑
FLUoxetine	PROZAC	☑
fluvoxaMINE	LUVOX	☑
PARoxetine	PAXIL	☒
sertraline ☆	ZOLOFT	☑

Other

buPROPion ☆	WELLBUTRIN, ZYBAN	☑
desvenlafaxine	PRISTIQ ✗ ⊗	☑
DULoxetine	CYMBALTA	☑
mirtazapine ☆	REMERON	☑
moclobemide ☆	MANERIX	☑
phenelzine	NARDIL	☑
traZODone ☆	TRAZOREL	☑
venlafaxine ☆	EFFEXOR	☑

In the elderly, citalopram CELEXA & sertraline ZOLOFT are the usually preferred SSRIs.

Antihistamines/Antipruritics

brompheniramine	COUGH&COLD PRODUCTS OTC ✗	☒
chlorpheniramine	CHLOR-TRIPOLON OTC ✗	☒
cyproheptadine	PERIACTIN OTC ✗ ⊗	☒
diphenhydrAMINE	BENADRYL OTC ✗	☒
doxylamine	UNISOM ✗ ⊗	☒
hydrOXYzine	ATARAX	☒
pyrilamine	MIDOL, PAMPRIN OTC ✗ ⊗	☒
trimeprazine ◇	PANECTYL ⊗	☒
triprolidine	COTRIDIN ✗ ⊗	

Preferred Alternatives: cetirizine REACTINE ✗ ▼ & fexofenadine ALLEGRA ✗ ▼ (controversial rating as medium/high activity), desloratadine AERIUS ✗ ▼, loratadine CLARITIN ✗ ▼.

Antimuscarinics

darifenacin	ENABLEX ☎ ✆	☒
fesoterodine	TOVIAZ ☎ ✆	☒
flavoxate	URISPAS ✗	☒
mirabegron ◇	MYRBETRIQ ☎ ✆	☒
oxybutynin	DITROPAN (✗ ⊗ on XL only)	☒
propiverine	MICTORYL PEDIATRIC ☎ ▼	☒
solifenacin	VESICARE on SPDP ▼	☒
tolterodine l-tartrate	DETROL LA on SPDP ▼	☒
trospium	TROSEC ☎ ✆	☒

Antiparkinsonian

amantadine	SYMMETREL	☑
benztropine mesylate	COGENTIN	☒
bromocriptine	PARLODEL	☑
carbidopa/levodopa ☆	SINEMET	☑
entacapone	COMTAN	☑
ethopropazine	PARSITAN	☒
phenelzine	NARDIL	
pramipexole	MIRAPEX	☑
procyclidine	KEMADRIN	☒
selegiline	ELDEPRYL ☎ ▼	☑
trihexyphenidyl	ARTANE	☒

Antipsychotics

ARIPiprazole ☆	ABILIFY ☎ ✆ & MAINTENA ☎ ▼	☑
asenapine	SAPHRIS (☎-BPAD)	⊗
chlorproMAZINE	LARGACTIL	☒
cloZAPine	CLOZARIL ☎ ▼	☒
flupentixol	FLUANXOL	☒
fluPHENAZine	MODITEN	☒
haloperidol	HALDOL	☑
loxapine	LOXAPAC	☒
lurasidone ◇	LATUDA ☎ ✆	
methotrimeprazine	NOZINAN	☒
OLANZapine	ZYPREXA	☒
paliperidone	INVEGA (☎ ✆ on injection only)	☑
pericyazine	NEULEPTIL	☒
perphenazine	TRILAFON	☒
pimozide	ORAP	☒
QUEtiapine	SEROQUEL	☒
risperiDONE ☆	RISPERDAL (☎ ✆ on injection)	☑
trifluoperazine	STELAZINE	☒
ziprasidone ☆	ZELDOX	☑
zuclopenthixol ◇	CLOPIXOL	☒

Antiseizure Drugs

carBAMazepine	TEGRETOL	☑
divalproex ☆	EPIVAL	☑
OXcarbazepine	TRILEPTAL ☎ ▼	☑
valproic acid ☆	DEPAKENE	☑

Preferred Alternatives: divalproex EPIVAL, gabapentin NEURONTIN, lamotrigine LAMICTAL, levetiracetam KEPPRA.

Antispasmotics

dicyclomine	FORMULEX, BENTYLOL ⊗	☒
glycopyrrolate	ROBINUL ✗ ⊗ ⌂	☒
hyoscine butylbromide	BUSCOPAN ⊗ ⌂	☒

Benzodiazepines

ALPRAZolam	XANAX half-life: ~12 hr	☑
chlordiazePOXIDE	LIBRIUM half-life: ~100 hr ⊗	☑
clonazePAM	RIVOTRIL half-life: ~34 hr	☑
clorazepate	TRANXENE half-life:~100 hr ⊗	☑
diazePAM	VALIUM half-life: ~100 hr	☑
flurazepam	DALMANE half-life:~100 hr ⊗	☑
LORazepam ☆	ATIVAN half-life: ~15 hr	☑
midazolam	VERSED half-life: ~3 hr ✗ ⊗	☑
oxazepam ☆	SERAX half-life: ~8 hr	☑
temazepam ☆	RESTORIL half-life: ~11 hr	☑
triazolam	HALCION half-life: ~2 hr	☑

Avoid long- & ultra-short acting agents in the elderly.
(Clonazepam ok, if long-acting required e.g. chronic anxiety)

Cardiovascular Agents

atenolol	TENORMIN	☑
captopril	CAPOTEN	☑
chlorthalidone	GENERIC ONLY	☑
digoxin	LANOXIN, TOLOXIN	☑
dilTIAZem ☆	CARDIZEM, TIAZAC	☑
dipyridamole	PERSANTINE, AGGRENOX ☎ ▼	☑
disopyramide	RYTHMODAN	☒
furosemide	LASIX	☑
hydrALAZINE	APRESOLINE	☑
isosorbide	ISORDIL	☑
metoprolol ☆	LOPRESOR	☑
NIFEdipine	ADALAT	☑
quiNIDine	GENERIC ONLY ✗ ⊗	☑
triamterene	DYRENIUM	☑
warfarin ☆	COUMADIN	☑

Gastrointestinal Agents

atropine	LOMOTIL on SPDP, ⊗ ⌂	☒
belladonna	GENERIC ONLY ✗ ⊗	☒
bisacodyl	BISACODYL ✗ ▼ OTC	
chlordiazepoxide/clidinium	LIBRAX ✗ ⊗	☒
cimetidine	TAGAMET	☒
dicyclomine	BENTYLOL ⊗	☒
dimenhyDRINATE	GRAVOL OTC	☒
diphenoxylate/atropine	LOMOTIL on SPDP, ⊗ ⌂	☒
domperidone	MOTILIUM	
famotidine ☆	PEPCID OTC & Rx	☑
loperamide	IMODIUM OTC ☑ if used short term	☒
meclizine	BONAMINE	☒
metoclopramide	MAXERAN	☑
nizatidine	AXID	☑
prochlorperazine	STEMETIL ☑ if used short term	☒
promethazine	PHENERGAN OTC ✗ ⊗	☒
raNITIdine	ZANTAC OTC & Rx	☑

-low anticholinergic activity if adjusted for renal function

scopolamine	TRANSDERM V OTC on SPDP, ⊗ ⌂	☒

Preferred Alternatives: bisacodyl ✗, PPIs, domperidone; famotidine, or ranitidine if ≤150mg/day

Respiratory Meds

aclidinium bromide	TUDORZA GENUAIR ☎ ✆
aclidinium/formoterol	DUAKLIR GENUAIR ☎ ✆
fluticasone/salmeterol	ADVAIR ☎ ✆ ☑
ipratropium/salbutamol	ATROVENT/COMBIVENT ☑
glycopyrronium	SEEBRI BREEZHALER ☎ ✆
glycopyrronium/Indacaterol	ULTIBRO BREEZHALER ☎ ✆
pseudoephedrine	COUGH & COLD PRODUCTS OTC ✗ ⊗
theophylline	THEOLAIR, UNIPHYL ☑
tiotropium	SPIRIVA ☎ ✆ ☑
tiotropium/olodaterol	INSPIOLTO ☎ ✆
umeclidinium	INCRUSE ELLIPTA ☎ ✆
umeclidinium/vilanterol	ANORO ELLIPTA ☎ ✆
umeclidinium/vilanterol/fluticasone	TRELEGY ELLIPTA ✗ ⊗

TO MINIMIZE SYSTEMIC EFFECTS OF INHALATIONAL MEDS: AVOID OVERUSE, USE AEROCHAMBER FOR IPRATROPIUM INHALER.

Immunosuppressants

azaTHIOprine	IMURAN	☑
cyclosporine	NEORAL ☎ ✆	☑
hydrocortisone	CORTEF	
methylprednisolone	MEDROL	
prednisone	WINPRED	

Muscle Relaxants

baclofen	LIORESAL (☎ on intrathecal only)	☑
cyclobenzaprine	FLEXERIL ☎ ✆	☒
methocarbamol	ROBAXIN OTC ✗ ⊗	☒
orphenadrine	NORFLEX OTC ✗ ⊗	☒
tiZANidine	ZANAFLEX ☎ ✆	☒

Baclofen is the preferred agent of the above listed muscle relaxants however, it does display moderate to high anticholinergic activity.

Opioids

meperidine	DEMEROL *Not for chronic use ✗ ⊗	☒
codeine	(☎ on controlled release only, ✆, inj & liquid)	☑
fentaNYL	DURAGESIC ☎ ✆ ⌂	☑
HYDROmorphone ☆	DILAUDID, HYDROMORPH CONTIN ✆ on CR only	☑
morphine ☆	STATEX, M.O.S., KADIAN ✆	☑
oxyCODONE	SUPEDOL, OXY IR, OXYNEO ☎ ⊗	☑
traMADol ☆	ULTRAM, RALIVIA, TRIDURAL, ZYTRAM XL ✗ ⊗	☑

Preferred Alternatives:
acetaminophen ✗, NSAIDs (e.g. ibuprofen, naproxen)

Miscellaneous

busPIRone ◇	BUSPAR	☑
celecoxib	CELEBREX	
colchicine	GENERIC ONLY	☑
ketotifen ophthalmic	ZADITOR ☎ ⊗	☑
lithium	CARBOLITH, DURALITH	☑
metformin	GLUCOPHAGE, GLYCON, g	
methotrexate	GENERIC ONLY	
naratriptan	AMERGE ☎ ▼	
pancuronium	GENERIC ONLY ✗ ⊗	☑
SUMAtriptan	IMITREX ☎ ▼	
ZOLMitriptan	ZOMIG ☎ ▼	

_____ = Possible preferred alternatives

☆ = Denotes agents with anticholinergic activity that may be better tolerated than others. Whenever possible, anticholinergic drugs should be avoided, & the preferred agents used.

◇ = Unable to confirm anticholinergic activity (**black** font)

AChEI = Acetylcholinesterase Inhibitor (e.g. donepezil ARICEPT, galantamine REMINYL, rivastigmine EXELON) ☎ ✆

CR = Controlled Release Formulation

PPI = Proton Pump Inhibitor (e.g. rabeprazole)

OTC = Over-the-counter

☑ = Saskatchewan Health finds co-administration of this agent **with a AChEI acceptable**

☒ = If patient is currently on this medication, Saskatchewan Health will **NOT cover AChEI**

Drugs with Anticholinergic Effects [5,6,7,8]

Diseases associated with an essential cholinergic deficit include Alzheimer's dementia, Lewy body dementia & to some extent other dementias (not frontal). Anticholinergic drugs worsen the deficit & are therefore highly problematic. **Donepezil** ARICEPT, **rivastigmine** EXELON, and **galantamine** REMINYL are reversible inhibitors of the enzyme acetylcholinesterase. Because of the mechanism of action, medications with anticholinergic effects can interfere with the activity of donepezil, rivastigmine and galantamine. The reverse page of this document contains a list of drugs with anticholinergic effects, with an emphasis on those with moderate to high activity. Drug coverage (in Sask.) may be affected if a patient is using a drug on this list concurrently with donepezil, rivastigmine or galantamine.

Not only is drug coverage of concern, the use of drugs with anticholinergic activity can increase the risk of adverse effects (e.g., cognitive dysfunction, delirium) in the elderly. Drugs with low anticholinergic activity may be good alternatives to drugs with more anticholinergic activity. For example, SSRIs with lower anticholinergic activity are preferred over tricyclics for treatment of depression in the elderly. However, it's not just the use of single drugs with significant anticholinergic activity that can cause trouble. Individuals who take multiple medications with low anticholinergic activity may also have increased risk of adverse effects. In fact, even small increases in so-called anticholinergic burden or load increases the risk of morbidity & mortality in older individuals.[9]

Total Anticholinergic Load: both highly anticholinergic drugs plus others (e.g. digoxin, paroxetine, ranitidine) contribute to the anticholinergic load & cognitive impairment. Review each medication the patient is taking.

Spectrum of Anticholinergic Side-Effects

Mild	Moderate	Severe
• Dryness of mouth (modest)	• Moderately disturbing dry mouth/thirst • Speech problems • Reduced appetite	• Difficulty chewing, swallowing, speaking • Impaired perception of taste & texture of food • Dental decay, periodontal disease, denture misfit • Mucosal damage • Malnutrition • Respiratory infection
• Mild dilatation of pupils	• Inability to accommodate • Vision disturbances • Dizziness	• Increased risk of accidents & falls leading to decreased function • Exacerbation/precipitation of acute angle closure glaucoma
	• Esophagitis • Reduced gastric secretions, gastric emptying (atony) • Reduced peristalsis, constipation	• Fecal impaction (in patients with constipation) • Altered absorption of concomitant medications • Paralytic ileus, pseudo-obstruction
• Urinary hesitancy		• Urinary retention, urinary tract infection (in patients with urinary hesitancy)
	• Increased heart rate	• Conduction disturbances supraventricular tachyarrhythmias • Exacerbation of angina • Congestive heart failure
• Decreased sweating		• Thermoregulatory impairment leading to hyperthermia (heat stroke). {Additional risk if also on diuretic.}
• Drowsiness • Fatigue • Mild amnesia • Inability to concentrate	• Excitement • Restlessness • Confusion • Memory impairment	• Profound restlessness & disorientation, agitation • Hallucinations, delirium • Ataxia, muscle twitching, hyperreflexia, seizures • Exacerbation of cognitive impairment (in patients with dementia)

Tips to Deal with Anticholinergic Side-Effects

General approach:

- Identify the cause
- Discontinue unnecessary offending medications
- Reduce the dose
- Look for effective alternatives that are less likely to cause the side effect

Dry Mouth:

- 80% of the most commonly prescribed medications can cause dry mouth (e.g. incontinence meds, Parkinson's meds, antidepressants, antipsychotics, NSAIDs, opioids, muscle relaxants, antihistamines, benzodiazepines, antihypertensives [clonidine, alpha-blockers, beta-blockers, calcium channel blockers, diuretics, ACE inhibitors]).
- When appropriate, instruct patients to take meds associated with dry mouth early in the day since salivary production is lowest at night
- Divided doses may also be less likely to cause dry mouth than a single large dose
- Consider therapeutic alternatives that are less likely to cause dry mouth
- Avoid: alcohol-containing mouthwashes, alcoholic beverages, caffeine, tobacco
- Swish mouth with water every 2 hours
- Drink plenty of fluids while eating to make swallowing easier; avoid foods that are hard to chew
- Chewing sugar-free gum or sucking on sugar-free candy mechanically stimulates salivation and can be recommended to promote salivation in patients with functioning salivary glands
- Nondrug options: bedroom humidifier; artificial saliva or oral lubricants (**MOUTH KOTE**, **BIOTENE GEL**, **ORAL BALANCE GEL**, **MOI-STIR SPRAY** ▼ for Palliative care)
- Pharmacologic options: pilocarpine (muscarinic agonist) 5 to 10mg of pilocarpine 3 or 4 times daily to a max of 30mg daily – will cause salivation in patients with functioning salivary glands. Duration of action is 3 to 5 hours. Common side effects (dose-dependent): sweating, nausea, rhinitis, flushing, urinary frequency. CI: uncontrolled asthma, narrow-angle glaucoma, acute iritis. **Pilocarpine eye drops** cost significantly less than pilocarpine tablets and can be used orally for treatment of dry mouth. **4 drops of the 2% solution, directly on tongue or add to small amount of water & swish and swallow, 3 times daily** (can swish and spit to reduce systemic side effects).