

ATC CODE	DRUG	Reason for PIM
A02BA01	Cimetidine	CNS adverse effects including confusion
A02BA02	Ranitidine	CNS adverse effects including confusion
A02BA03	Famotidine	CNS adverse effects including confusion
A02BC01	Omeprazole (PPI>8 weeks)	Long-term high dose PPI therapy is associated with an increased risk of C. difficile infection and hip fracture. Inappropriate if used >8 weeks in maximal dose without clear indication
A02BC02	Pantoprazole (PPI>8 weeks)	Long-term high dose PPI therapy is associated with an increased risk of C. difficile infection and hip fracture. Inappropriate if used >8 weeks in maximal dose without clear indication
A02BC03	Lansoprazole (PPI>8 weeks)	Long-term high dose PPI therapy is associated with an increased risk of C. difficile infection and hip fracture. Inappropriate if used >8 weeks in maximal dose without clear indication
A02BC04	Rabeprazole (PPI>8 weeks)	Long-term high dose PPI therapy is associated with an increased risk of C. difficile infection and hip fracture. Inappropriate if used >8 weeks in maximal dose without clear indication
A02BC05	Esomeprazole (PPI>8 weeks)	Long-term high dose PPI therapy is associated with an increased risk of C. difficile infection and hip fracture. Inappropriate if used >8 weeks in maximal dose without clear indication
A03FA01	Metoclopramide	Antidopaminergic and anticholinergic effects; may worsen peripheral arterial blood flow and precipitate intermittent claudication
A03FA05	Alizapride	No proven efficacy; muscarinic-blocking agents; side effects such as confusion and sedation
A10A	Insulin, sliding scale	No benefits demonstrated in using sliding-scale insulin. Might facilitate fluctuations in glycemic levels
A10BB01	Glibenclamide	Risk of protracted hypoglycemia
A10BB07	Glipizide	Risk of protracted hypoglycemia
A10BB12	Glimepiride	Risk of protracted hypoglycemia
A10BF01	Acarbose	No proven efficacy
A10BG03	Pioglitazone	Age-related risks include bladder cancer, fractures and heart failure. Use for more than one year has been associated with an increased risk of bladder cancer. May increase the incidence of fractures of the upper arms, hands and feet in female diabetics (compared to other oral antidiabetic agents). Can cause fluid retention in older adults, which may exacerbate or precipitate heart failure
A10BH01	Sitagliptine	Limited safety data is available for adults aged ≥75 years old. Subjects aged 65 to 80 years had higher plasma concentrations than younger subjects. Risk of hypoglycemia, dizziness, headache and peripheral oedema
A10BH02	Vildagliptine	Limited safety data available in older subjects. In healthy older adults (≥70 years) the overall exposure of vildagliptin (100 mg once daily) was increased by 32%, with an 18% increase in peak plasma concentration as compared to young healthy subjects (18-40 years). Adverse events (general population) include risk of hypoglycemia, dizziness, headache and peripheral oedema
B01AA07	Acenocoumarol	Risk of bleeding, especially in people with difficult control of INR value
B01AC05	Ticlopidine	Risk of altered blood counts
B01AC22	Prasugrel	Unfavourable risk/benefit profile, especially for adults aged 75 and older
B01AE07	Dabigatran	Limited information on use for older adults and on the risk of bleeding events in this population; no reversal agent is available in case of overdose
B01AF01	Rivaroxaban	Limited information on use for older adults; risk of bleeding events; no reversal agent available in case of overdose; risk of bleeding may be higher in cases of severe renal failure
B01AF02	Apixaban	Limited information on use for older adults; risk of bleeding events; no reversal agent available in case of overdose
C01AA05	Digoxin	Elevated glycoside sensitivity in older adults (women >men); risk of intoxication
C01AA08	Metildigoxin	Elevated glycoside sensitivity in older adults (women>men); risk of intoxication
C01BA03	Disopyramide	Potent negative inotrope; anticholinergic side effects; may induce heart failure; may cause sudden cardiac death. Data suggest that for most older adults rate control yields better balance of benefits and harms than rhythm control
C01BC03	Propafenone	High risk of drug interactions. Data suggest that for most older adults rate control yields better balance of benefits and harms than rhythm control
C01BC04	Flecainide	Higher rate of adverse effects, especially in older adults. Data suggest that for most older adults rate control yields better balance of benefits and harms than rhythm control
C01BD01	Amiodarone	Associated with QT interval problems and risk of provoking torsades de pointes. Data suggest that for most older adults rate control yields better balance of benefits and harms than rhythm control
C01BD07	Dronedarone	Frequent drug interactions; prolonged QT interval; not recommended in permanent atrial fibrillation; increased mortality due to cardiovascular causes. Data suggest that for most older adults rate control yields better balance of benefits and harms than rhythm control
C01EB17	Ivabradine	Common adverse events (1-10% of patients) may include first-degree AV block, ventricular extrasystoles, dizziness and blurred vision
C02AB01	Methyldopa	Risk of orthostatic hypotension, bradycardia, syncope, CNS side effects (sedation, depression, cognitive impairment)
C02AC01	Clonidine	Risk of orthostatic hypotension, bradycardia, syncope, CNS side effects (sedation, depression, cognitive impairment)
C02AC05	Moxonidine	Risk of orthostatic hypotension, bradycardia, syncope, CNS side effects (sedation, depression, cognitive impairment)
C02CA04	Doxazosin	Higher risk of orthostatic hypotension, dry mouth, urinary incontinence/ impaired micturition, CNS side effects (e.g. vertigo, light-headedness, somnolence) and cerebrovascular and cardiovascular disease
C07AA03	Pindolol	Non-selective beta-adrenergic blocker; may exacerbate or cause respiratory depression; possible CNS adverse events
C07AA05	Propranolol	Non-selective beta-adrenergic blocker; may exacerbate or cause respiratory depression; possible CNS adverse events
C07AA07	Sotalol	Non-selective beta-adrenergic blocker; may exacerbate or cause respiratory depression; possible CNS adverse events
C07AG01	Labetalol	Non-selective beta-adrenergic blocker; may exacerbate or cause respiratory depression
C07CA02	Oxprenolol	Non-selective beta-adrenergic blocker; may exacerbate or cause respiratory depression; possible CNS adverse events
C08CA04	Nicardipine	Risk of orthostatic hypotension, myocardial infarction or stroke

C08CA05	Nifedipine (non-sustained-release)	Increased risk of hypotension; myocardial infarction; increased mortality
C08CA05	Nifedipine (sustained-release)	Increased risk of hypotension; myocardial infarction; increased mortality
C08DA01	Verapamil	May worsen constipation; risk of bradycardia
C08DB01	Diltiazem	May worsen constipation; risk of bradycardia
G02CB03	Cabergoline	CNS side effects
G03BA03	Testosterone	
G03CA01	Ethinylestradiol	Evidence for carcinogenic potential (breast and endometrial cancer) and lack of cardioprotective effect in older women
G03CA03	Estradiol	Evidence for carcinogenic potential (breast and endometrial cancer) and lack of cardioprotective effect in older women
G03CA04	Estriol	Evidence for carcinogenic potential (breast and endometrial cancer) and lack of cardioprotective effect in older women
G03CA09	Promestriene	Evidence for carcinogenic potential (breast and endometrial cancer) and lack of cardioprotective effect in older women
G03CX01	Tibolone	Evidence for carcinogenic potential (breast and endometrial cancer) and lack of cardioprotective effect in older women
G04BD04	Oxybutynine (non-sustained-release)	Anticholinergic side effects (e.g. constipation, dry mouth, CNS side effects); ECG changes (prolonged QT)
G04BD04	Oxybutynine (sustained-release)	Anticholinergic side effects (e.g. constipation, dry mouth, CNS side effects); ECG changes (prolonged QT)
G04BD07	Tolterodine (non-sustained-release)	Anticholinergic side effects (e.g. constipation, dry mouth, CNS side effects); ECG changes (prolonged QT)
G04BD07	Tolterodine (sustained-release)	Anticholinergic side effects (e.g. constipation, dry mouth, CNS side effects); ECG changes (prolonged QT)
G04CA03	Terazosin	Higher risk of orthostatic hypotension, dry mouth, urinary incontinence/ impaired micturition, CNS side effects (e.g. vertigo, light-headedness, somnolence) and cerebrovascular and cardiovascular disease
H01BA02	Desmopressin	
L01AA01	Cyclophosphamide	
L02AB01	Megestrol	Evidence for carcinogenic potential (breast and endometrial cancer) and lack of cardioprotective effect in older women
M01AB01	Indometacin	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; risk of CNS disturbances
M01AB05	Diclofenac	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M01AB15	Ketorolac	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal
M01AB16	Aceclofenac	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M01AC01	Piroxicam	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal
M01AC05	Lornoxicam	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M01AC06	Meloxicam	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal
M01AE03	Ketoprofen	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal
M01AE09	Flurbiprofen	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M01AH01	Celecoxib	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M01AH05	Etoricoxib	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M01AX01	Nabumetone	Very high risk of GI bleeding, ulceration, or perforation, which may be fatal; cardiovascular contraindications
M03BX01	Baclofen	Risk of anticholinergic and CNS side effects including orthostatic hypotension, falls, sedation, weakness, confusion, amnesia
M04AC01	Colchicin	Higher risk of toxicity in older adults, particularly in cases of existing renal, GI or cardiac disease
M05BX03	Strontium ranelate	Higher risk of venous thromboembolism in persons who are temporarily or permanently immobilised. Evaluate the need for continued therapy for patients over 80 years old with increased risk of venous thromboembolism
N02AD01	Pentazocine	Risk of delirium and agitation
N02AX02	Tramadol (non-sustained-release)	More adverse effects in older adults; CNS side effects such as confusion, vertigo and nausea
N02AX02	Tramadol (sustained-release)	More adverse effects in older adults; CNS side effects such as confusion, vertigo and nausea
N02CC01	Sumatriptan	Safety and efficacy in older adults have not been established. Sumatriptan use for older adults has an increased risk of decreased hepatic function and reduced clearance due to renal dysfunction, higher risk for coronary artery disease, and increases in blood pressure
N02CC03	Zolmitriptan	Safety and efficacy in older adults have not been established. Sumatriptan use for older adults has an increased risk of decreased hepatic function and reduced clearance due to renal dysfunction, higher risk for coronary artery disease, and increases in blood pressure
N02CC04	Rizatriptan	Safety and efficacy in older adults have not been established. Sumatriptan use for older adults has an increased risk of decreased hepatic function and reduced clearance due to renal dysfunction, higher risk for coronary artery disease, and increases in blood pressure
N02CC05	Almotriptan	Safety and efficacy in older adults have not been established. Sumatriptan use for older adults has an increased risk of decreased hepatic function and reduced clearance due to renal dysfunction, higher risk for coronary artery disease, and increases in blood pressure
N02CC06	Eletriptan	Safety and efficacy in older adults have not been established. Sumatriptan use for older adults has an increased risk of decreased hepatic function and reduced clearance due to renal dysfunction, higher risk for coronary artery disease, and increases in blood pressure
N02CC07	Frovatriptan	Safety and efficacy in older adults have not been established. Sumatriptan use for older adults has an increased risk of decreased hepatic function and reduced clearance due to renal dysfunction, higher risk for coronary artery disease, and increases in blood pressure
N03AA02	Phenobarbital	Risk of sedation, paradoxical excitation, High rate of physical dependence, tolerance to sleep benefits, greater risk of overdose at low dosages
N03AB02	Phenytoin	Narrow therapeutic window; increased risk of toxicity in older adults (e.g. CNS and hematologic toxicity)

N03AE01	Clonazepam	Risk of falls, paradoxical reactions
N03AF01	Carbamazepine	Increased risk of SIADH-like syndrome; adverse events like carbamazepine-induced confusion and agitation, atrioventricular block and bradycardia
N03AF02	Oxcarbazepine	
N03AX11	Topiramate	Risk of cognitive-related dysfunction (e.g., confusion, psychomotor slowing)
N04AA01	Trihexyphenidyl	Risk of anticholinergic and CNS side effects including orthostatic hypotension, falls, sedation, weakness, confusion, amnesia
N04AA02	Biperiden	Risk of anticholinergic and CNS side effects including orthostatic hypotension, falls, sedation, weakness, confusion, amnesia
N04AB02	Orphenadrine	Risk of anticholinergic and CNS side effects including orthostatic hypotension, falls, sedation, weakness, confusion, amnesia
N04BC01	Bromocriptine	Risk of CNS side effects
N04BC04	Ropinirole	Risk of orthostatic hypotension, hallucinations, confusion, somnolence, nausea
N04BC05	Pramipexole	Side effects include orthostatic hypotension, GI tract symptoms, hallucinations, confusion, insomnia, peripheral oedema
N04BC09	Rotigotine	Side effects include orthostatic hypotension, headache, nausea, fatigue, sleep disorder, sudden onset of sleep, somnolence
N04BD01	Selegiline	Increased risk of orthostatic hypotension and dizziness
N05AA01	Chlorpromazine	Muscarinic-blocking drug; risk of orthostatic hypotension and falls; may lower seizure thresholds in patients with seizures or epilepsy
N05AA02	Levomepromazine	Anticholinergic and extrapyramidal side effects (tardive dyskinesia); parkinsonism; hypotonia; sedation; risk of falling; increased mortality in persons with dementia
N05AB02	Fluphenazine	Anticholinergic and extrapyramidal side effects (tardive dyskinesia); parkinsonism; hypotonia; sedation; risk of falling; increased mortality in persons with dementia
N05AB06	Trifluoperazine	Risk of hypotension and neuromuscular reactions
N05AC01	Propericiazine (=Periciazine)	Anticholinergic and extrapyramidal side effects (tardive dyskinesia); parkinsonism; hypotonia; sedation; risk of falling; increased mortality in persons with dementia
N05AE04	Ziprasidone	Risk of QTC-prolongation, torsades de pointes, sedation, insomnia and orthostatic hypotension. Not approved for the treatment of dementia-related psychosis. Risk of increased mortality, increased with higher doses, when used for behavioural problems in dementia may be similar to the risk for risperidone
N05AF05	Zuclopenthixol	Risk of hypotension, falls, extrapyramidal effects, QT-prolongation
N05AG02	Pimozide	Anticholinergic and extrapyramidal side effects (tardive dyskinesia); parkinsonism; hypotonia; sedation; risk of falling; increased mortality and risk of cerebrovascular accident in persons with dementia. More rarely: neuroleptic malignant syndrome and QT-prolongation
N05AH02	Clozapine	Anticholinergic and extrapyramidal side effects (tardive dyskinesia); parkinsonism; hypotonia; sedation; risk of falling; increased mortality in persons with dementia; increased risk of agranulocytosis and myocarditis
N05AN01	Lithium	Narrow therapeutic window; cumulation in renal failure
N05AX08	Risperidone (>6 weeks)	Problematic risk-benefit profile for the treatment of behavioural symptoms of dementia; increased mortality, with higher dose, in patients with dementia
N05AX12	Aripiprazole	Risk of increased mortality when used for behavioural problems in dementia
N05CD08	Midazolam	Risk of falls and hip fracture, prolonged reaction time, psychiatric reactions (which can be paradoxical, e.g. agitation, irritability, hallucinations, psychosis), cognitive impairment and depression
N06AA02	Imipramine	Peripheral anticholinergic side effects (e.g. constipation, dry mouth, orthostatic hypotension, cardiac arrhythmia); central anticholinergic side effects (drowsiness, inner unrest, confusion, other types of delirium); cognitive deficit; increased risk of falling
N06AA04	Clomipramine	Peripheral anticholinergic side effects (e.g. constipation, dry mouth, orthostatic hypotension, cardiac arrhythmia); central anticholinergic side effects (drowsiness, inner unrest, confusion, other types of delirium); cognitive deficit; increased risk of falling
N06AA06	Trimipramine	Peripheral anticholinergic side effects (e.g. constipation, dry mouth, orthostatic hypotension, cardiac arrhythmia); central anticholinergic side effects (drowsiness, inner unrest, confusion, other types of delirium); cognitive deficit; increased risk of falling
N06AA09	Amitriptyline	Peripheral anticholinergic side effects (e.g. constipation, dry mouth, orthostatic hypotension, cardiac arrhythmia); central anticholinergic side effects (drowsiness, inner unrest, confusion, other types of delirium); cognitive deficit; increased risk of falling
N06AA10	Nortriptyline	Peripheral anticholinergic side effects (e.g. constipation, dry mouth, orthostatic hypotension, cardiac arrhythmia); central anticholinergic side effects (drowsiness, inner unrest, confusion, other types of delirium); cognitive deficit; increased risk of falling
N06AB03	Fluoxetine	CNS side effects (nausea, insomnia, dizziness, confusion); hyponatremia
N06AB05	Paroxetine	Higher risk of all-cause mortality, higher risk of seizures, falls and fractures. Anticholinergic adverse effects
N06AB08	Fluvoxamine	Higher risk of all-cause mortality, self-harm, falls, fractures and hyponatraemia
N06AX11	Mirtazapine	
N06AX12	Bupropion	May lower seizure threshold
N06AX16	Venlafaxine	Higher risk of all-cause mortality, attempted suicide, stroke, seizures, upper gastrointestinal bleeding, falls and fracture
N06AX18	Reboxetine	Side effects (dry mouth, constipation, headache, drowsiness, dizziness, excessive sweating and insomnia). Higher risk of conduction disturbances, tachycardia, occasional atrial and ventricular ectopy
N06BA04	Methylphenidat	May cause or worsen insomnia; concern due to CNS-altering effects; concern due to appetite-suppressing effects
N07BC02	Methadone	Very long-acting especially in the elderly
R03DA04	Theophylline	Higher risk of CNS stimulant effects
R06AD02	Promethazine	Anticholinergic side effects (e.g. confusion, sedation)
R06AX22	Ebastine	Adverse events include impaired psychomotor performance with 50 mg or greater, somnolence, tachycardia, fatigue