



Medication Management Improvement System

Protocol #3: Falls and Dizziness Related to the Use of Central Nervous System-Active Medications

Problem: *Use of medications that increase risk of falls and dizziness.*

Goal: *Reduce risk of falls and dizziness by decreasing or eliminating use of certain medications*

Alert Trigger: Falls or dizziness identified at initial assessment, reassessment, or entered as an event in progress notes will trigger a medication alert when certain classes of medication are entered into MSSPCare (primarily psychotropics such as benzodiazepines, anti-psychotics, and antidepressants)

Procedure: *Assessment for falls and dizziness should be entered into MSSPCare before entering the medication list*

The basics:

1. Verify accuracy of medications noted in the alert

- ✓ Is the client taking the medications as ordered and listed in the medication list?
 - What dosage are they taking?
 - How often are they taking it?
 - For what (e.g. as needed for anxiety or sleep)
- ✓ Document in MSSPCare medication notes any variation from medication use as indicated by bottles/containers

2. Contact pharmacist per agency procedure

- ✓ Document contact and pharmacist recommendations

3. Case conference – develop medication-related care plan

4. Inform the physician

- ✓ Fax medication report (Patient Risk Assessment report), current medication list and pharmacist recommendations to:
 - Primary care physician; *and*
 - Any other prescribers of affected medications

5. Documentation of pharmacist consultation, physician notification, care plan steps

6. Ask client/caregiver about medication changes at each phone call

7. Re-inventory medications at each home visit, including verification of dose & frequency

Enhanced “Gold Standard” Practice:

1. Assess for history of falls

- a. How does client explain the fall (e.g. tripped on rug, felt dizzy, lost balance)
- b. Is there current or a past history of *alcohol use* or *abused substances*, e.g. what type, how much, how often, when?

2. Do environmental assessment (see below)

3. **Assess for possible causes of medication related dizziness, including orthostasis (2-position BP – reported by client).**
4. **If possible, obtain additional information to rule out other causes of dizziness (e.g. vertigo or inner ear problems).**
5. **Call physician for follow-up instructions** – After fax is sent to physician, call to inquire about possible follow-up instructions, e.g. client to see physician, home health to oversee taper, client/caregiver education, psychiatric evaluation. Implement instructions and document.
6. **Discuss with patient/caregiver (see information below)**
 - ✓ Discuss fall safety
 - ✓ Discuss reasons for using sleeping medications and possible alternatives
 - ✓ Discuss other lifestyle changes such as diet, exercise, stress management in relation to use of anti-anxiety medications

Guidelines to Prevent Falls in the Home

Problem

Lighting

- Too dim
- Too direct, glare
- Inaccessible light switches

Correction

- Provide ample lighting in all areas; use night-lights in bedrooms, bathrooms, hallways, and stairwells.
- Evenly distribute light; use indirect light; or translucent shades.
- Wear sunglasses to reduce glare when outside.
- Make switches or lamps accessible upon entering room and at both top and bottom of stairways.

Carpets, rugs

- Torn
- Loose

- Repair or replace.
- Add nonskid backs; use double sided tape; or tack down to prevent curling. Remove throw rugs.

Thresholds

- Too high

- Remove or replace with threshold $\leq \frac{1}{2}$ inch high.

Furniture

- Obstructs path
- Improper height

- Rearrange furniture to clear pathways. Avoid cluttered hallways. Tape electrical cords to floor or wall. Coil extra cord and tie securely.
- Use furniture which is at a height for easy lowering and rising by patient.

Chairs, tables

- Unstable
- Lack of armrests

- Use furniture that supports weight of person leaning on table edges or chair arms and backs. Repair unstable legs and avoid furniture with wheels.
- Use chairs with armrests that extend forward for leverage during rising and lowering.

Kitchen

- High shelves, cabinets
- Wet or highly polished floor
- Keep frequently used items at waist level or a level which is easy for patient to reach.
- Place rubber mat or nonskid strips in sink area; use nonslip wax; do not buff floors. Clean up spills immediately.

Bathroom

- Slippery tub area
- Side of bathtub used for support
- Unstable towel racks, sink tops
- Low toilet seat
- Add nonskid strips or rubber mat to tub and area around tub. Use shower shoes or bath seat.
- Install portable grab bar on side of tub or inside of shower area.
- Do not use towel racks for support during transfer or ambulation. Add handrails by securing into wall studs.
- Install raised toilet seat

Stairways

- Poor handrails
- Slippery steps
- Improper height or width
- Anchor cylindrical rails firmly 1½ inches from wall. Install handrails on both sides of the stairways. Rails should extend beyond top and bottom step.
- Add nonskid tread on all steps.
- Make sure step height is even and no greater than 8". Make sure width of steps is not less than 10". Mark first and last step with brightly colored tape.

Footwear

- No tread
- High heel
- Poorly fitted shoes
- Use shoes and slippers with tread such as tennis shoes or walking shoes.
- Use shoes with low even heels.
- Use well fitting shoes which stay on feet and do not slip at the heel.

Benzodiazepines:

Facts:

1. The most common side effects of benzodiazepines are related to depression of the central nervous system and include:
 - Drowsiness
 - Confusion
 - Gait disturbance
 - Dizziness
 - Impaired motor coordination
2. Benzodiazepines are metabolized primarily in the liver. In general, hepatic metabolism slows as people age, although in many older adults, BZDP are cleared by the liver as well as in younger patients. Elderly persons may experience increased toxicity from side effects as a result of delayed elimination. Much of the prolonged duration is due to age-associated increases in body fat. Another issue related to long-acting agents is the presence of multiple active metabolites.
3. Long-acting benzodiazepines are more likely than short-acting benzodiazepines to produce serious side effects in elderly persons because of their longer elimination half-life.
 - Elderly persons using benzodiazepines may have two to three times the risk of falls and two times the risk of hip fracture when compared to elderly nonusers. These rates are increased in women and especially in women 65 years of age or older. Moreover, women also have two to three times as many hip fractures as do men.

Guidelines for Use:

- Benzodiazepines should only be used for short term management of sleep problems and anxiety particularly during stressful or transitional events, and should otherwise be avoided.
- Shorter-acting benzodiazepines should be used in preference to longer-acting compounds.

Long-acting Benzodiazepines		Shorter-acting Benzodiazepines	
Generic Name	Trade Name	Generic Name	Trade Name
chlordiazepoxide	Librium	alprazolam	Xanax, Xanax XR
chorazepate	Tranxene	lorazepam	Ativan
clonazepam	Klonopin	oxazepam	Serax
diazepam	Valium	temazepam	Restoril
flurazepam	Dalmane	triazolam	Halcion
halazepam	Paxipam	estazolam	Prosom
prazepam	Centrax		
quazepam	Doral		

- Small doses should be used

- Avoid use with confused or demented patients.
- Be aware of potential interactions with other CNS-depressants (alcohol, other hypnotics, sedatives, narcotic analgesics).
- When used as a hypnotic, the drug should be taken an hour before bed-time; Xanax & Halcion should be taken no more than 15 minutes before bedtime, due to very rapid onset. Repeated doses should generally be avoided and should not be repeated for at least an hour.

References:

1. Ensrud KE, Blackwell TL, Mangione CM, et al. Central nervous system-active medications and risk for falls in older women. *Journal of the American Geriatrics Society* 2002;50(10):1629-37.
2. American Medical Association. *Drug Evaluations Annual* 1995
3. Salzman C. *Clinical Geriatric Psychopharmacology*. 2nd ed. Baltimore: Williams & Wilkins, 1992.
4. Tideiksaar R. Preventing falls: Home hazard checklists to help older patients protect themselves. *Geriatrics* 1986; **41**: 26-28.
5. Ray WA, Griffin MR, Downey W. Benzodiazepines of long and short elimination half-life and the risk of hip fracture. *JAMA* 1989; **262**: 3303-3307.
6. Ray WA, Griffin MR, Schaffner W, et al. Psychotropic drug use and the risk of hip fracture. *New Eng J Med* 1987; **316**: 363-369.

Guidelines for Improving Sleep

1. Encourage patient to reduce daytime napping.
2. When approved by the physician, instruct patient to include regular periods of daily exercise at the level appropriate for that patient.
3. Encourage patient to eliminate drinks and food containing caffeine from late afternoon and evening menus (caffeinated coffee and tea, chocolate, and caffeinated sodas).
4. Remind the patient that elderly persons need fewer hours sleep. Remind patient not to set a bedtime that is too early.
5. Encourage the patient to create a relaxing bedtime routine such as a warm bath or snack.

OTC Sleeping Medications

Facts:

The most common side effects include:

- Drowsiness
- Risk of falls due to gait disturbance
- Dizziness
- Impaired motor coordination
- Anticholinergic side effects (dry eyes & mouth, urinary retention, constipation)
- Worsening of confusion in patients with dementia

Guidelines for Use of OTC Sleep Aids:

- Any OTC sedative-hypnotic (diphenhydramine, doxylamine) should be discontinued
- Physician should assess if patient truly needs a sleeping agent
- If needed physician may choose Ambien®, Sonata®, or Restoril®, a benzodiazepine known not to accumulate due to the decreased hepatic metabolism in the elderly. Other sedatives to be considered as hypnotics are lorazepam (Ativan®) or Serax®.
- If using antihistamine to treat emergency allergic reactions, it should be used in the smallest possible dose
- If needing an antihistamine to treat allergies, use prescription non-sedating antihistamines like Allegra® and Clarinex® or OTC Claritin® or generic equivalent.

Cyclic and other antidepressants

Facts:

1. Side effects of cyclic antidepressants are frequent in elderly persons. They are due to drug actions on the central and peripheral autonomic nervous systems and include:
 - Orthostatic hypotension (≥ 20 mmHg drop in systolic blood pressure on standing)
 - Sedation
 - Anticholinergic reactions (dry mouth, constipation, urinary retention, narrow angle glaucoma, increased anxiety and agitation, confusion)
 - Cardiac toxicity (tachycardia, abnormal cardiac rhythms)
2. Side effects of SSRIs are frequent in elderly persons. They include:
 - GI complaints (nausea)
 - Nervousness and insomnia
 - Sexual dysfunction
3. Elderly persons are more likely to experience toxic effects of antidepressants due to age-related changes in drug absorption, binding, distribution, metabolism, and excretion which may elevate blood levels. In addition, they may be more sensitive to the effects of antidepressants at therapeutic levels. As a result, the majority of elderly persons need lower doses than do younger adults.
4. Elderly persons using cyclic and other antidepressants including SSRIs may have almost two times the risk of hip fracture and falls when compared to elderly nonusers. Minimizing the use of the CNS-active medications may decrease the risk of future falls.
5. Cyclic and other antidepressants including SSRIs interact with a number of other drugs to produce adverse effects.

Guidelines for Use:

- Initial therapy should begin with very low doses. Dose increases should be made in small increments with close patient monitoring for changes in blood pressure, pulse or sedation.
- Antidepressants classified as secondary amines generally cause fewer side effects in elderly persons than do those classified as tertiary amines and are therefore preferred.

Secondary amines		Tertiary amines	
Generic name	Trade name	Generic name	Trade name
desipramine	Norpramin, Pertofrane	amitriptyline	Elavil, Endep
nortriptyline	Aventyl, Pamelor	Imipramine	Tofranil
protriptyline	Vivactil	Doxepin	Adapin, Sinequan
amoxapine	Asendin	Trimipramine	Surmontil
maprotiline	Ludiomil	Others: SARIs* Trazodone	Desyrel

*Serotonin Antagonist and Reuptake Inhibitors

- Cyclic and other antidepressants should be used with caution in elderly persons with preexisting cardiac conduction defects. Such patients should have ECG monitoring during treatment.
- Be aware of potential interactions with other drugs which may increase risk of sedation, confusion, falls or postural blood pressure changes.

Drugs Which Interact with Cyclic Antidepressants	Result of Interaction
Antihypertensives	hypotension, especially orthostatic
calcium channel blockers, cimetidine, estrogen, quinidine, SSRIs	intensified CNS and peripheral antidepressant side effects
all CNS depressants - sedatives - narcotic analgesics - alcohol	excessive CNS depression
other drugs with anticholinergic (atropine-like) effects: e.g. <u>some antispasmodics</u> - hyoscyamine sulphate (Anaspaz, Levsin) <u>some anti-Parkinson drugs</u> - procyclidine HCl (Kemedrin) - trihexyphenidyl HCl (Artane)	CNS depression, confusion and delirium Peripheral anticholinergic effects - dry mouth, constipation, urinary retention, narrow angle glaucoma
MAOIs	serotonin syndrome

- Serotonin reuptake inhibitors (SSRIs) may be preferable in some patients.
e.g.: fluoxetine (Prozac), starting dose 10mg in the morning
paroxetine (Paxil), starting dose 10mg in the morning
sertraline (Zoloft), starting dose 25mg daily.
citalopram (Celexa), starting dose 10mg daily.
escitalopram (Lexapro), starting dose 10mg daily.

NOTE: Older depressed patients on SSRIs may be still at risk for falls. (1)

References:

1. Ensrud KE, Blackwell TL, Mangione CM, et al. Central Nervous System-Active medications and risk for falls in older women. *Journal of the American Geriatrics Society*. 2002;50(10):1629-37
2. Salzman C. *Clinical Geriatric Psychopharmacology*. Baltimore, Williams & Wilkins, 1992.
3. Shafler M. *The Nurse, Pharmacology, and Drug Therapy*. Addison-Wesley Nursing, 1993.
4. Ray WA, Griffin MR, Malcolm E. Cyclic antidepressants and the risk of hip fracture. *Arch Intern Med* 1991; **151**: 754-756.
5. Tideiksaar R. Preventing falls. *Geriatrics* 1986; **41**: 26-28.

Antipsychotics

Facts:

1. Side effects of antipsychotics are frequent in elderly persons. They involve the autonomic and central nervous systems and include:
 - Sedation
 - Orthostatic hypotension (≥ 20 mmHg drop in systolic blood pressure on standing)
 - Anticholinergic reactions (dry mouth, constipation, urinary retention, narrow angle glaucoma, increased anxiety and agitation, confusion)
 - Akathisia (motor restlessness especially in the legs, extreme desire to move)
 - Parkinsonism (slowness of movement, rigidity and tremor)
 - Tardive dyskinesia (tremors of the tongue, tongue thrusting, lip smacking, twisting movements, frequent blinking)
 - Dystonia (neck contractions-relaxations, upper torso and pelvic thrusting)
2. Elderly persons are more likely to experience toxic effects of antipsychotics due to age-related changes in drug absorption, binding, distribution, metabolism, and excretion which may elevate blood levels. In addition, they may be more sensitive to the effects of antipsychotics at therapeutic levels. As a result, the majority of elderly persons need lower doses than do younger adults.
3. Elderly persons using antipsychotics have two times the risk of falls and hip fracture when compared to elderly nonusers.

Guidelines for Use:

- Antipsychotics are recommended in elderly persons for the management of symptoms of (1) psychosis and (2) severe late-life behavior disorders related to dementia.

Antipsychotic Drugs			
Generic Name	Trade Name	Generic Name	Trade Name
*aripiprazole	*Abilify	Perphenazine w/ *amitriptyline	Trilafon
chlorpromazine	Thorazine	pimozide	Orap
*clozapine	*Clozaril	*quetiapine	*Seroquel
fluphenazine	Prolixin	*risperidone	*Rispedal
haloperidol	Haldol	*thioridazine	*Mellaril
loxapine	Loxitane	thiothixene	Navane
*mesoridazine	*Serentil	trifluoperazine	Stelazine
molindone	Moban	*ziprasidone	*Geodon
*olanzapine	*Zyprexa		Ertafon, Triavil

- The lowest dose needed to control symptoms should be used.
- All patients on long term antipsychotic therapy should undergo periodic trials of gradual withdrawal to determine if the drug can be discontinued or the dose reduced. Be aware of potential interactions with other drugs which may increase risk of sedation, confusion, falls or postural blood pressure changes, such as antihypertensive medications, antidepressants, sedatives, narcotic analgesics and alcohol.

* Medications with a “black box warning” pertaining to the elderly.

References:

1. Salzman C. *Clinical Geriatric Psychopharmacology*. 2nd ed. Baltimore: Williams & Wilkins, 1992.
2. Shafler M. *The Nurse, Pharmacology, and Drug Therapy*. 2nd ed. California: Addison-Wesley Nursing, 1993.
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5. Taylor JA, Ray WA, Meador KG. *Managing Behavioral Symptoms in Nursing Home Residents: A Manual for Nursing Home Staff*. 3rd ed. Nashville: Vanderbilt University School of Medicine, 1995.