Down Syndrome, Aging & Challenging Behaviors

SOLUTION·S
www.solution-s.ca

Terry Broda
RN[EC], BScN, NP-PHC, CDDN

AGING with DD – Some Key Issues

SOLUTION·S

Physical Health

- Earlier development of some of the chronic conditions or diseases (dementia, arthritis);
- More severe degrees of sensory impairment;
- More severe loss of flexibility in joint function
- Lack of basic knowledge about healthy lifestyle behaviors;
- Receive less preventive health measures (e.g., Pap smears and mammograms)

Preventative Health Care checklists

SOLUTION·S

- http://www.surreyplace.on.ca/Documents/Preventive%20Care%20Checklist%20-%20Females.pdf
- http://www.surreyplace.on.ca/Documents/Preventive%20Care%20Checklist%20-%20Males.pdf

AGING with DD – Key Issues

SOLUTION·S

Mental Health

- 30-60% of older persons with moderate to severe DD have a mental disorder.
- Challenge: differentiation between dementia, depression and behavioral conditions related to developmental disability. Why?
  - Seniors will DD will have difficulty in expressing their psychological problems.
  - Care providers' lack of expertise

AGING with DD – Key Issues

SOLUTION·S

Social Well-being

- De-institutionalization & community living Challenge: Aging parents/siblings providing care to an aging family member with DD.
- Support services for caregivers
- Caregivers' access to information
- Community participation & leisure opportunities
- Substitute decision makers
- Abuse/Neglect

AGING with DD – Key Issues

SOLUTION·S

Living Arrangements

- There is no specific data on living arrangements of Canadian seniors with DD.
- "Group Homes" are the most frequent type of residential services provided by the community-based agencies across Canada (Pedler et al., 2000).
- More specialized LTC beds required for persons w/ DD

Geriatric Issues (Medical/Physical)

1. Sensory issues:

Vision (near/far, cataracts, depth perception, glaucoma, dark & light adaptation, night vision, lens yellowing, peripheral vision loss, increased glare)

Hearing (loss, cerumen/wax: more men; tinnitus, dizziness/vertigo)

Taste & smell (loss, dysphagia, probs w/ dentures!)

Touch (temperature, fragile skin: pressure sores; decreased sebum = dry & itchy skin; assess for skin Ca)

2. Mobility: osteoporosis, arthritis, Parkinson's
3. Gastrointestinal problems: reflux, motility, constipation, Celiac , lactose intolerance

www.solution-s.ca

Geriatric Issues

4. Dental problems & dentures
5. Lung disease: increased risk of infection, decreased cough
6. Heart disease: SOBOE & fatigue, arrhythmias, BP changes, inflamed varicosities
7. Endocrine disorders: diabetes, hypothyroidism
8. Neurological issues: Side effects of drugs (polypharmacy), CVA, memory & reaction time, cognitive changes: dementia? delirium? depression?
9. Obstructive Sleep Apnea
10. Immune system: decreased function of T & B cells (infections & Ca), Baseline oral temp in older adults is 36.3 ° C versus 37 ° C in younger adults . And > 37.2 ° C indicates fever in elderly!

www.solution-s.ca

Meds: Polypharmacy

- Medication reconciliation:

1. interview with patient or a caregiver
2. medication vials or blister packs
3. current medication list (i.e., from the pharmacy or provincial records)
4. Warfarin/coumadin, insulin, digoxin!
5. Anticholinergics!
6. Tranquilizers and other sedating Rx: risk of FALLS

- Bisoprolol & bisacodyl!
- Pharmacokinetics in the elderly…

www.ismp-canada.org/beers_list/#l=tab1

www.solution-s.ca

Anticholinergic Side Effects

- Blurry vision
- Nasal congestion
- Dry mouth
- Urinary retention
- Constipation
- Confusion

Caution: antipsychotics, older antidepressants

www.solution-s.ca

Pharmacology in the Elderly

Determinant	*Effect of Aging*	*Clinical Implications*
Absorption	**Increased gastric emptying time**	**Little**
Distribution	**Increased body fat** **Decreased body water**	**Decreased elimination of fat-soluble drugs** **Increased effect of water-soluble drugs**
Protein Binding	**Decreased serum albumin**	**Increased free fractions of some drugs leading to toxicity**

www.solution-s.ca

Determinant	*Effect of Aging*	*Clinical Implications*
Hepatic Metabolism and Clearance	**Decreased oxidative metabolism**	**Decreased clearance of most drugs**
Renal Metabolism and Clearance	**Decreased renal blood flow**	**Decreased clearance of water-soluble drugs**
End-organ sensitivity	**Increased**	**Increased effects at lower doses**

Reduce daily dosage for elderly!

www.solution-s.ca

Medications

- Safe storage
- Safe administration, limit errors
- Name & photos well-indicated
- Clear & precise documentation :
  - Regular Rx
  - PRNs
- Effects of the PRNs well-documented
- Observational Pain checklist
- Medication history & regular Rx review

Geriatric issues (social)

- "Retirement" (Social isolation, loneliness, boredom, depression)
- Role change (retirement)
- Cultural/socioeconomic changes
- Losses (main caregivers, home, friends, staff)
- Increased vulnerability
- Safety issues: falls, getting lost, wandering, etc…
- Triple-D risk!

RECOGNIZING DELIRIUM, DEPRESSION AND DEMENTIA (3D's)

Residents may have more than 1D present at the same time and symptoms may overlap.

	DELIRIUM	DEPRESSION	DEMENTIA
DEFINITION	Delirium is a medical emergency which is characterized by an acute and fluctuating onset of confusion, disturbances in attention, disorganized thinking and/or decline in level of consciousness. Delirium cannot be accounted for by a preexisting dementia; however, can co-exist with dementia.	Depression is a term used when a cluster of depressive symptoms (as identified on the SIG E CAPS depression criteria) is present on most days, for most of the time, for at least 2 weeks and when the symptoms are of such intensity that they are out of the ordinary for that individual. Depression is a biologically based illness that affects a person's thoughts, feelings, behaviour, and even physical health.	Dementia is a gradual and progressive decline in mental processing ability that affects short-term memory, communication, language, judgment, reasoning, and abstract thinking. Dementia eventually affects long-term memory and the ability to perform familiar tasks. Sometimes there are changes in mood and behaviour.
ONSET	▪Sudden Onset: Hours to days	▪Recent unexplained changes in mood that persist for at least 2 weeks.	▪Gradual deterioration over months to years
COURSE	▪Often reversible with treatment ▪Often fluctuates over 24 hour period and often worse at night	▪Usually reversible with treatment ▪Often worse in the morning	▪Slow, chronic progression, and irreversible

DEPRESSION, DELIRIUM & DEMENTIA

- Depression (*pseudodementia) (S/S: insomnia, fatigue, loss of appetite, weight loss, constipation, loss of interest in people & activities)
- Delirium (acute : "variety of conditions can impair circulation to brain & cause disturbances in cognitive function")
- Dementia ("clinical syndrome of usually progressive cognitive deterioration that eventually causes functional impairment) (Ex: SDAT, Vascular, AIDS-related, Parkinson's, Creutzfeldt-Jacob)

What is Down Syndrome?

- A common genetic variation (3 genetic ways)
- So certain genes on chromosome 21 are "overexpressed" & this usually causes health problems & intellectual & developmental disabilities (I/DD)
- Exact causes currently unknown
- Most common cause of I/DD
- Not related to race, nationality, religion or socio-economic status.

What is it?

- Incidence: about one in 700-900 live births
- Likelihood of giving birth to a child w/ DS increases with maternal age

BUT:

- 80% of bbs w/ DS are born to women <35yrs (because women <35yrs give birth to more babies overall!).
- Wide variation in I/DD, behavior & physical development. Each has his/her own unique personality, capabilities & talents!

How?

3 genetic ways:

- 95% have trisomy 21 (an extra chromosome 21 in all their cells),
- 3-4% have a translocation form of the extra chromosome (where the extra chromosome 21 is attached to one of a different chromosome pair)
- about 1-2% are mosaic (only some cells are trisomic, the rest are normal)

Physical features

- Upward slanting eyes w/ epicanthal folds
- Brushfield spots (eyes)
- Flat nasal bridge
- Simean crease (hands)
- Clinodactyly (hands)
- Short stature
- Small ears & mouth
- Protruding tongue w/ high arched palate

DS: Health Watch Table

- http://www.surreyplace.on.ca/Primary-Care/Pages/Tools-for-primary-care-providers.aspx

DS & Az

- DVD clip => 7:22-8:50
- New resource for screening: http://aadmd.org/ntg/screening

YouTube: Garth Home Society

- In Victoria, B.C.
- http://www.youtube.com/watch?v=k_x9zJyQzu8

Mental Health

- Depression (6-11%, & higher levels if they have dementia, too)
- OCD :obsessional slowness & "the groove"
- GAD (anxiety)
- ASD, ADHD
- Self-talk (81%!): typical or a sign of mental health issues: psychosis, depression or anxiety?
- Early-onset Alzheimer's dementia (>40yrs: 15-45%)

Depression?

Changes in:

- Behavior (irritability, listless, paranoia, decrease in skills (ADLs), more self-talk)
- Appetite
- Sleep patterns
- Activity level
- Interactions: passivity, withdrawal & mutism
- Changes in memory?

DM-ID, (2007), p.30-32.
NDSC website:
www.ndsccenter.org/?page_id=778

Case

Differentials?

- Sleep apnea
- Hypothyroidism
- Vitamin B12 deficiency
- Depression
- Cerumen impaction
- Hearing loss
- Dementia
- Pain

12 minute experiment!

http://www.youtube.com/watch?v=LL_Gq7Shc-Y

Derek & dementia..

HTTP://WWW.YOUTUBE.COM/WATCH?V=O3EKO4QDKXU

ADL's

- Bathing:
  - Skip it for a day
  - ALWAYS verify H2O temp
  - Remove lock on BR door
  - Reassure pt ++
  - Remember modesty & privacy
  - Alter time of bath/shower
  - Verify if pt has pain somewhere
  - Distraction: food, conversation
  - *be flexible!

Pain Assessment in Advanced Dementia (PAINAD) Scale

Items*	0	1	2
Breathing independent of vocalization	Normal	Occasional labored breathing. Short period of hyperventilation.	Noisy labored breathing. Long period of hyperventilation. Cheyne-Stokes respirations.
Negative vocalization	None	Occasional moan or groan. Lowlevel speech with a negative or disapproving quality.	Repeated troubled calling out. Loud moaning or groaning. Crying.
Facial expression	Smiling or inexpressive	Sad. Frightened. Frown.	Facial grimacing.
Body language	Relaxed	Tense. Distressed pacing. Fidgeting.	Rigid. Fists clenched. Knees pulled up. Pulling or pushing away. Striking out.
Consolability	No need to console	Distracted or reassured by voice or touch.	Unable to console, distract or reassure.
			Total**

* Five-item observational tool (see the description of each item below).
** Total scores range from 0 to 10 (based on a scale of 0 to 2 for five items), with a higher score indicating more severe pain (0="no pain" to 10="severe pain").

www.solution-s.ca

ADL's

- Feeding:
  - Positioning & Equipment: spoons better
  - Timing: more at 8 & 12 d/t fatigue at 17
  - Serve food pre-cut or switch to puree or thick-it, & choose food pt likes
  - Respond to emotion & reassure that he'll be well fed
  - Distraction may be helpful
  - 'forgot', try verbal prompt : open-chew-swallow, or massage jaw

www.solution-s.ca

ADL's

- Dressing
  - Loose-fitting, comfortable clothing
  - Easy zippers, velcro or snaps, & avoid small buttons
  - Limit choice: remove old clothes from closet
  - Lay out one item of clothing at a time
  - Remove soiled clothes from room
  - Don't argue if person wears the same clothes again

www.solution-s.ca

STRATEGIES r/t:

- Communication
- Wandering
- Incontinence
- Agitated behavior
- Perseveration
- Paranoia
- Travel
- ADL's

www.solution-s.ca

General principles or the 5Ps:

- Person: habits, preferences, level of dementia, PMHx : SCRAPBOOK!
- Problem –W5
- Possible causes: fear, cold, pain, approach, discomfort, what makes it better/worse
- Plan: focus on pt & relax!
- Pass it on !

www.solution-s.ca

P.I.E.C.E.S approach

- Physical
- Intellectual
- Emotional
- Capabilities
- Environmental
- Social

www.solution-s.ca

Communication

- Watch YOUR body language !
- Approach slowly & say pt's name
- Use touch to help convey message
- Eye contact to get pt's attention
- Eye level when speaking
- Introduction & reason for presence
- Begin conversation in a social manner (relaxed, gentle, calm approach)
- Try humor rather than barking orders

www.solution-s.ca

Communication

- Avoid speaking in areas with many distractions
- Speak slowly & pronounce clearly
- Keep sentences short & simple (but don't infantalize!)
- Ask yes/no questions or choices
- Ask one question at a time & wait for response
- Use concrete terms & avoid slang
- Keep voice low-pitched
- Observe THEIR body language!

www.solution-s.ca

Approach to hearing difficulties

- Face the person
- Speak slowly, pronounce words clearly
- Do not shout
- Lower pitch of voice (esp women)
- Use touch & non-verbal communication

www.solution-s.ca

Aphasia

- Receptive (comprehension)
- Expressive:

www.solution-s.ca

Therapies

- Reminiscence:
- Validation:
- Reality Orientation:
-
- Milieu Tx:

www.solution-s.ca

To AVOID…

- Do not argue w/ pt
- Do not boss or order pt around
- Do not tell pt what they cannot do, rephrase in a positive phrase
- Do not refuse but rather provide alternative
- Do not patronize
- Do not talk about the person in front of them as if they're not there
- Do not ask questions that require a good memory

www.solution-s.ca

Communication failure?

- Distract pt: scrapbook, photos
- Do not focus on disturbing behavior
- Sometimes no answer is best answer
- Ignore insults
- Help person to save face
- Try other means of communication (walks, music, animals, songs – sensory stimulation)
- ***PATIENCE!!!

www.solution-s.ca

"Sundowning"

- Can include: insomnia, restlessness, agitation, wandering & confusion
- Causes include:
  - sensory deprivation
  - reduction of p.m. activities
  - reduced personal interactions
  - false perceptions (shadows)
  - fatigue
  - increasing pain

www.solution-s.ca

"Sundowning"

- Interventions:
  - Plan afternoon rest
  - Turn lights on before dark outside
  - Soft music or social stimulation in p.m.
  - Frequent visits in p.m.
  - Allow pt to sit by RN station
  - Avoid sedatives & restraints
  - Record incidences & what helps/worsens situation
  - Occupy pt: assign a small task

www.solution-s.ca

Wandering

- May be Goal-related so figure out their goal!
- Change locks
- Try barriers: curtains, painted shelves, STOP sign or Do Not Enter sign
- Black mat or black space on floor
- Child-safe plastic doorknobs
- Anti-fugue device
- Put away keys, coat purse
- ID bracelet on pt & keep recent photo of pt
- Regular exercise to decrease restlessness

www.solution-s.ca

Incontinence

- BR Routine, every 2 hr
- Schedule fluid intake to avoid dehydration & avoid diuretics: coffee, tea, cola, beer
- Commode at bedside
- Incontinence pads
- ID BR w/ sign
- Have pt wear easy-to-remove clothing to avoid accidents

www.solution-s.ca

Agitated behavior

- FUNCTIONAL ANALYSIS ! *check for medical problems!
- Reduce noise levels
- Maintain structure & routine
- Gentle touch, soothing music, reading, walking
- Nite light
- Distract pt w/ snack or activity

www.solution-s.ca

Inappropriate sexual behavior

- Relocate to private area
- Distract w/ other activities
- Set limits & remind pt of acceptable behaviors
- Provide acceptable means of human touch & contact
- Make sure clothing clean & dry!
- Inspect skin & clothing for possible irritation
- Comment on appearance when pt remains clothed
- Redress pt

www.solution-s.ca

Perseveration:

- Reassure or distract person. Don't remind him that he just asked that question! Sometimes ignoring may be helpful but this could frustrate pt even more!
- Do not discuss plans until just before the event
- Place sign: "dinner at 6:30" to decrease anxiety
- Learn behavioral indicators: pulling at clothes may mean BR time!
- Verify w/ MD that pt not in pain or having SE of Rx

www.solution-s.ca

Paranoia

- MD to adjust Rx
- Allow pt to keep small amts of $ if he says $ has gone missing
- Assist pt in looking for 'lost' object. **Avoid arguing**. Learn favorite hiding places
- Explain to family that this is part of pt's illness
- Respond to the feeling behind the accusation: you must miss your mother, if accusation is of hurting mom
- Try gentle non-verbal reassurance: touch

www.solution-s.ca

Travel

- Do not negotiate: here's your coat, we're going in the car now
- Reassure pt
- Plan the route (elevators, parking, etc) & leave extra early to avoid rushing
- If vacationing, bring respite caregiver
- Distractions for pt during waiting time: cards, food, picture book

www.solution-s.ca

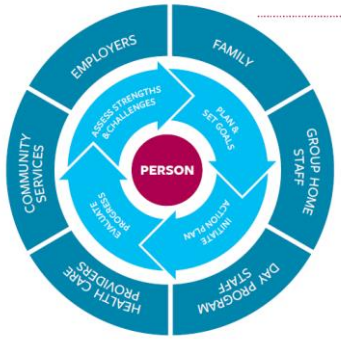

FIGURE 1
Example of person-centered care. The team members surround the center person, and the steps of care coordination are an ongoing and evolving process between all members.

www.solution-s.ca

Intervention strategies

- Scrapbook
- Supporting person in their home
- Adapting the home environment
- Collaboration among other community resources: Alzheimer's society, police, first responders
- & eventually LTC bed, as required

www.solution-s.ca

Environment

- Provide a safe environment for pt.
- Eliminate clutter in the room
- Use name tags, pictures to help client to orient him/her self
- Snoezelen room helps to calm the pt

www.solution-s.ca

Snoezelen Room

- combines lights, bubbles, colours, soothing music and ambient sounds, textures, aroma, and vibration to create a multi-sensory environment that is both relaxing and stimulating
- Main goal is to help calm the individual & promote relaxation by allowing them to enjoy the sensory stimulation
- Used with persons with dementia but also with persons with autism & developmental disabilities

www.solution-s.ca

Intervention strategies

- Improving DSO & CCAC collaboration regarding respite or placement
- Accessing $$
- Passport funding
- Aging at home funding
- Availability of discretionary funds in DS Sector

www.solution-s.ca

Websites

Health Watch tables for several genetic syndromes & other tools from the Canadian Consensus Guidelines developed at Surrey Place in Ontario, Canada:

www.surreyplace.on.ca/Clinical-Programs/Medical-Services/Pages/PrimaryCare.aspx

www.solution-s.ca

DS Websites (Cdn)

- Canadian Down Syndrome Society Website: www.cdss.ca/
- Down Syndrome Research Foundation (Canada) website: www.dsrf.org
- Down Syndrome Association of Ontario website: www.dsao.ca/
- Down Syndrome Association - National Capital Region website: www.dsancr.com/

www.solution-s.ca

DS Websites: (USA & UK)

- National Down Syndrome Congress Website: www.ndsccenter.org
- National Down Syndrome Society Website: www.ndss.org
- National Association for Down Syndrome Website: www.nads.org
- Down Syndrome Association-UK Website: www.dsa-uk.com
- Down Syndrome Education Website: www.down-syndrome.org
- International Mosaic Down Syndrome Association Website: www.imdsa.org

www.solution-s.ca

Genetics Websites

- Geneclinics : http://geneclinics.org/ (see: Gene Reviews)
- Your Genes, Your Health: http://www.ygyh.org/
- Online Mendelian Inheritance in Man: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=OMIM

www.solution-s.ca

Genetics Websites

- Genetics Education Center, University of Kansas Medical Center: http://www.kumc.edu/gec/support/
-
- The Family Village: http://www.familyvillage.wisc.edu
-

www.solution-s.ca

Websites

Genetics Website

(In English, French, Spanish, German, Italian & Portuguese!):

- Orphanet: http://www.orpha.net/consor/cgi-bin/index.php

www.solution-s.ca

29-2450 Lancaster
Ottawa, Ontario K1B 5N3
T 613 249-8593
F 613 249-0198
info@solution-s.ca
www.solution-s.ca

AGS BEERS CRITERIA
FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS

FROM THE AMERICAN GERIATRICS SOCIETY

This clinical tool, based on T*he AGS 2012 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS 2012 Beers Criteria)*, has been developed to assist healthcare providers in improving medication safety in older adults. Our purpose is to inform clinical decision-making concerning the prescribing of medications for older adults in order to improve safety and quality of care.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the *Beers Criteria* catalogues medications that cause adverse drug events in older adults due to their pharmacologic properties and the physiologic changes of aging. In 2011, the AGS undertook an update of the criteria, assembling a team of experts and funding the development of the AGS 2012 *Beers Criteria* using an enhanced, evidence-based methodology. Each criterion is rated (quality of evidence and strength of evidence) using the American College of Physicians' Guideline Grading System, which is based on the GRADE scheme developed by Guyatt et al.

The full document together with accompanying resources can be viewed online at www.americangeriatrics.org.

INTENDED USE

The goal of this clinical tool is to improve care of older adults by reducing their exposure to Potentially Inappropriate Medications (PIMs).

- This should be viewed as a guide for identifying medications for which the risks of use in older adults outweigh the benefits.
- These criteria are not meant to be applied in a punitive manner.
- This list is not meant to supersede clinical judgment or an individual patient's values and needs. Prescribing and managing disease conditions should be individualized and involve shared decision-making.
- These criteria also underscore the importance of using a team approach to prescribing and the use of non-pharmacological approaches and of having economic and organizational incentives for this type of model.
- Implicit criteria such as the STOPP/START criteria and Medication Appropriateness Index should be used in a complementary manner with the 2012 AGS *Beers Criteria* to guide clinicians in making decisions about safe medication use in older adults.

The criteria are not applicable in all circumstances (eg, patient's receiving palliative and hospice care). If a clinician is not able to find an alternative and chooses to continue to use a drug on this list in an individual patient, designation of the medication as potentially inappropriate can serve as a reminder for close monitoring so that the potential for an adverse drug effect can be incorporated into the medical record and prevented or detected early.

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Anticholinergics (excludes TCAs)	
First-generation antihistamines (as single agent or as part of combination products) ■ Brompheniramine ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine ■ Diphenhydramine (oral) ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine	**Avoid.** Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; increased risk of confusion, dry mouth, constipation, and other anticholinergic effects/ toxicity. Use of diphenhydramine in special situations such as acute treatment of severe allergic reaction may be appropriate. *QE = High (Hydroxyzine and Promethazine), Moderate (All others); SR = Strong*
Antiparkinson agents ■ Benztropine (oral) ■ Trihexyphenidyl	**Avoid.** Not recommended for prevention of extrapyramidal symptoms with antipsychotics; more effective agents available for treatment of Parkinson disease. *QE = Moderate; SR = Strong*

Table 1 (continued on page 2)

Table 1 (continued from page 1)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Antispasmodics ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine	**Avoid except in short-term palliative care to decrease oral secretions.** Highly anticholinergic, uncertain effectiveness. *QE = Moderate; SR = Strong*
Antithrombotics	
Dipyridamole, oral short-acting* *(does not apply to the extended-release combination with aspirin)*	**Avoid.** May cause orthostatic hypotension; more effective alternatives available; IV form acceptable for use in cardiac stress testing. *QE = Moderate; SR = Strong*
Ticlopidine*	**Avoid.** Safer, effective alternatives available. *QE = Moderate; SR = Strong*
Anti-infective	
Nitrofurantoin	**Avoid for long-term suppression; avoid in patients with CrCl <60 mL/min.** Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCl <60 mL/min due to inadequate drug concentration in the urine. *QE = Moderate; SR = Strong*
Cardiovascular	
Alpha$_1$ blockers ■ Doxazosin ■ Prazosin ■ Terazosin	**Avoid use as an antihypertensive.** High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/ benefit profile. *QE = Moderate; SR = Strong*
Alpha agonists ■ Clonidine ■ Guanabenz* ■ Guanfacine* ■ Methyldopa* ■ Reserpine (>0.1 mg/day)*	**Avoid clonidine as a first-line antihypertensive. Avoid others as listed.** High risk of adverse CNS effects; may cause bradycardia and orthostatic hypotension; not recommended as routine treatment for hypertension. *QE = Low; SR = Strong*
Antiarrhythmic drugs (Class Ia, Ic, III) ■ Amiodarone ■ Dofetilide ■ Dronedarone ■ Flecainide ■ Ibutilide ■ Procainamide ■ Propafenone ■ Quinidine ■ Sotalol	**Avoid antiarrhythmic drugs as first-line treatment of atrial fibrillation.** Data suggest that rate control yields better balance of benefits and harms than rhythm control for most older adults. Amiodarone is associated with multiple toxicities, including thyroid disease, pulmonary disorders, and QT interval prolongation. *QE = High; SR = Strong*
Disopyramide*	**Avoid.** Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic; other antiarrhythmic drugs preferred. *QE = Low; SR = Strong*
Dronedarone	**Avoid in patients with permanent atrial fibrillation or heart failure.** Worse outcomes have been reported in patients taking dronedarone who have permanent atrial fibrillation or heart failure. In general, rate control is preferred over rhythm control for atrial fibrillation. *QE = Moderate; SR = Strong*
Digoxin >0.125 mg/day	**Avoid.** In heart failure, higher dosages associated with no additional benefit and may increase risk of toxicity; decreased renal clearance may increase risk of toxicity. *QE = Moderate; SR = Strong*

Table 1 (continued on page 3)

Table 1 (continued from page 2)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Nifedipine, immediate release*	**Avoid.** Potential for hypotension; risk of precipitating myocardial ischemia. *QE = High; SR = Strong*
Spironolactone >25 mg/day	**Avoid in patients with heart failure or with a CrCl <30 mL/min.** In heart failure, the risk of hyperkalemia is higher in older adults if taking >25 mg/day. *QE = Moderate; SR = Strong*
Central Nervous System	
Tertiary TCAs, alone or in combination: ■ Amitriptyline ■ Chlordiazepoxide-amitriptyline ■ Clomipramine ■ Doxepin >6 mg/day ■ Imipramine ■ Perphenazine-amitriptyline ■ Trimipramine	**Avoid.** Highly anticholinergic, sedating, and cause orthostatic hypotension; the safety profile of low-dose doxepin (≤6 mg/day) is comparable to that of placebo. *QE = High; SR = Strong*
Antipsychotics, first- (conventional) and second- (atypical) generation *(see online for full list)*	**Avoid use for behavioral problems of dementia unless non-pharmacologic options have failed and patient is threat to self or others.** Increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. *QE = Moderate; SR = Strong*
Thioridazine Mesoridazine	**Avoid.** Highly anticholinergic and greater risk of QT-interval prolongation. *QE = Moderate; SR = Strong*
Barbiturates ■ Amobarbital* ■ Butabarbital* ■ Butalbital ■ Mephobarbital* ■ Pentobarbital* ■ Phenobarbital ■ Secobarbital*	**Avoid.** High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages. *QE = High; SR = Strong*
Benzodiazepines *Short- and intermediate-acting:* ■ Alprazolam ■ Estazolam ■ Lorazepam ■ Oxazepam ■ Temazepam ■ Triazolam *Long-acting:* ■ Chlorazepate ■ Chlordiazepoxide ■ Chlordiazepoxide-amitriptyline ■ Clidinium-chlordiazepoxide ■ Clonazepam ■ Diazepam ■ Flurazepam ■ Quazepam	**Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium.** Older adults have increased sensitivity to benzodiazepines and decreased metabolism of long-acting agents. In general, all benzodiazepines increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents in older adults. May be appropriate for seizure disorders, rapid eye movement sleep disorders, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, periprocedural anesthesia, end-of-life care. *QE = High; SR = Strong*
Chloral hydrate*	**Avoid.** Tolerance occurs within 10 days and risk outweighs the benefits in light of overdose with doses only 3 times the recommended dose. *QE = Low; SR = Strong*
Meprobamate	**Avoid.** High rate of physical dependence; very sedating. *QE = Moderate; SR = Strong*

Table 1 (continued on page 4)

Table 1 (continued from page 3)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zolpidem ■ Zaleplon	**Avoid chronic use (>90 days)** Benzodiazepine-receptor agonists that have adverse events similar to those of benzodiazepines in older adults (e.g., delirium, falls, fractures); minimal improvement in sleep latency and duration. *QE = Moderate; SR = Strong*
Ergot mesylates* Isoxsuprine*	**Avoid.** Lack of efficacy. *QE = High; SR = Strong*
Endocrine	
Androgens ■ Methyltestosterone* ■ Testosterone	**Avoid unless indicated for moderate to severe hypogonadism.** Potential for cardiac problems and contraindicated in men with prostate cancer. *QE = Moderate; SR = Weak*
Desiccated thyroid	**Avoid.** Concerns about cardiac effects; safer alternatives available. *QE = Low; SR = Strong*
Estrogens with or without progestins	**Avoid oral and topical patch. Topical vaginal cream: Acceptable to use low-dose intravaginal estrogen for the management of dyspareunia, lower urinary tract infections, and other vaginal symptoms.** Evidence of carcinogenic potential (breast and endometrium); lack of cardioprotective effect and cognitive protection in older women. Evidence that vaginal estrogens for treatment of vaginal dryness is safe and effective in women with breast cancer, especially at dosages of estradiol <25 mcg twice weekly. *QE = High (Oral and Patch), Moderate (Topical); SR = Strong (Oral and Patch), Weak (Topical)*
Growth hormone	**Avoid, except as hormone replacement following pituitary gland removal.** Effect on body composition is small and associated with edema, arthralgia, carpal tunnel syndrome, gynecomastia, impaired fasting glucose. *QE = High; SR = Strong*
Insulin, sliding scale	**Avoid.** Higher risk of hypoglycemia without improvement in hyperglycemia management regardless of care setting. *QE = Moderate; SR = Strong*
Megestrol	**Avoid.** Minimal effect on weight; increases risk of thrombotic events and possibly death in older adults. *QE = Moderate; SR = Strong*
Sulfonylureas, long-duration ■ Chlorpropamide ■ Glyburide	**Avoid.** Chlorpropamide: prolonged half-life in older adults; can cause prolonged hypoglycemia; causes SIADH Glyburide: higher risk of severe prolonged hypoglycemia in older adults. *QE = High; SR = Strong*
Gastrointestinal	
Metoclopramide	**Avoid, unless for gastroparesis.** Can cause extrapyramidal effects including tardive dyskinesia; risk may be further increased in frail older adults. *QE = Moderate; SR = Strong*
Mineral oil, given orally	**Avoid.** Potential for aspiration and adverse effects; safer alternatives available. *QE = Moderate; SR = Strong*
Trimethobenzamide	**Avoid.** One of the least effective antiemetic drugs; can cause extrapyramidal adverse effects. *QE = Moderate; SR = Strong*

Table 1 (continued on page 5)

Table 1 (continued from page 4)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Pain Medications	
Meperidine	**Avoid.** Not an effective oral analgesic in dosages commonly used; may cause neurotoxicity; safer alternatives available. *QE = High; SR = Strong*
Non-COX-selective NSAIDs, oral ■ Aspirin >325 mg/day ■ Diclofenac ■ Diflunisal ■ Etodolac ■ Fenoprofen ■ Ibuprofen ■ Ketoprofen ■ Meclofenamate ■ Mefenamic acid ■ Meloxicam ■ Nabumetone ■ Naproxen ■ Oxaprozin ■ Piroxicam ■ Sulindac ■ Tolmetin	**Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).** Increases risk of GI bleeding/peptic ulcer disease in high-risk groups, including those ≥75 years old or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents. Use of proton pump inhibitor or misoprostol reduces but does not eliminate risk. Upper GI ulcers, gross bleeding, or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3–6 months, and in about 2%–4% of patients treated for 1 year. These trends continue with longer duration of use. *QE = Moderate; SR = Strong*
Indomethacin Ketorolac, includes parenteral	**Avoid.** Increases risk of GI bleeding/peptic ulcer disease in high-risk groups *(See Non-COX selective NSAIDs)* Of all the NSAIDs, indomethacin has most adverse effects. *QE = Moderate (Indomethacin), High (Ketorolac); SR = Strong*
Pentazocine*	**Avoid.** Opioid analgesic that causes CNS adverse effects, including confusion and hallucinations, more commonly than other narcotic drugs; is also a mixed agonist and antagonist; safer alternatives available. *QE = Low; SR = Strong*
Skeletal muscle relaxants ■ Carisoprodol ■ Chlorzoxazone ■ Cyclobenzaprine ■ Metaxalone ■ Methocarbamol ■ Orphenadrine	**Avoid.** Most muscle relaxants poorly tolerated by older adults, because of anticholinergic adverse effects, sedation, increased risk of fractures; effectiveness at dosages tolerated by older adults is questionable. *QE = Moderate; SR = Strong*

*Infrequently used drugs. Table 1 Abbreviations: ACEI, angiotensin converting-enzyme inhibitors; ARB, angiotensin receptor blockers; CNS, central nervous system; COX, cyclooxygenase; CrCl, creatinine clearance; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Cardiovascular		
Heart failure	NSAIDs and COX-2 inhibitors Nondihydropyridine CCBs (avoid only for systolic heart failure) ■ Diltiazem ■ Verapamil Pioglitazone, rosiglitazone Cilostazol Dronedarone	**Avoid.** Potential to promote fluid retention and/or exacerbate heart failure. *QE = Moderate (NSAIDs, CCBs, Dronedarone), High (Thiazolidinediones (glitazones)), Low (Cilostazol); SR = Strong*

Table 2 (continued on page 6)

Table 2 (continued from page 5)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	**Recommendation**, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Syncope	Acetylcholinesterase inhibitors (AChEIs) Peripheral alpha blockers ■ Doxazosin ■ Prazosin ■ Terazosin Tertiary TCAs Chlorpromazine, thioridazine, and olanzapine	**Avoid.** Increases risk of orthostatic hypotension or bradycardia. *QE = High (Alpha blockers), Moderate (AChEIs, TCAs and antipsychotics); SR = Strong (AChEIs and TCAs), Weak (Alpha blockers and antipsychotics)*
Central Nervous System		
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	**Avoid.** Lowers seizure threshold; may be acceptable in patients with well-controlled seizures in whom alternative agents have not been effective. *QE = Moderate; SR = Strong*
Delirium	All TCAs Anticholinergics *(see online for full list)* Benzodiazepines Chlorpromazine Corticosteroids H_2-receptor antagonist Meperidine Sedative hypnotics Thioridazine	**Avoid.** Avoid in older adults with or at high risk of delirium because of inducing or worsening delirium in older adults; if discontinuing drugs used chronically, taper to avoid withdrawal symptoms. *QE = Moderate; SR = Strong*
Dementia & cognitive impairment	Anticholinergics *(see online for full list)* Benzodiazepines H_2-receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	**Avoid.** Avoid due to adverse CNS effects. Avoid antipsychotics for behavioral problems of dementia unless non-pharmacologic options have failed and patient is a threat to themselves or others. Antipsychotics are associated with an increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. *QE = High; SR = Strong*
History of falls or fractures	Anticonvulsants Antipsychotics Benzodiazepines Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zaleplon ■ Zolpidem TCAs/SSRIs	**Avoid unless safer alternatives are not available; avoid anticonvulsants except for seizure.** Ability to produce ataxia, impaired psychomotor function, syncope, and additional falls; shorter-acting benzodiazepines are not safer than long-acting ones. *QE = High; SR = Strong*
Insomnia	Oral decongestants ■ Pseudoephedrine ■ Phenylephrine Stimulants ■ Amphetamine ■ Methylphenidate ■ Pemoline Theobromines ■ Theophylline ■ Caffeine	**Avoid.** CNS stimulant effects. *QE = Moderate; SR = Strong*
Parkinson's disease	All antipsychotics (see online publication for full list, except for quetiapine and clozapine) Antiemetics ■ Metoclopramide ■ Prochlorperazine ■ Promethazine	**Avoid.** Dopamine receptor antagonists with potential to worsen parkinsonian symptoms. Quetiapine and clozapine appear to be less likely to precipitate worsening of Parkinson disease. *QE = Moderate; SR = Strong*

Table 2 (continued on page 7)

Table 2 (continued from page 6)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Gastrointestinal		
Chronic constipation	Oral antimuscarinics for urinary incontinence ■ Darifenacin ■ Fesoterodine ■ Oxybutynin (oral) ■ Solifenacin ■ Tolterodine ■ Trospium Nondihydropyridine CCB ■ Diltiazem ■ Verapamil First-generation antihistamines as single agent or part of combination products ■ Brompheniramine (various) ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine (various) ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine (various) ■ Diphenhydramine ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine Anticholinergics/antispasmodics *(see online for full list of drugs with strong anticholinergic properties)* ■ Antipsychotics ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine ■ Tertiary TCAs (amitriptyline, clomipramine, doxepin, imipramine, and trimipramine)	**Avoid unless no other alternatives.** Can worsen constipation; agents for urinary incontinence: antimuscarinics overall differ in incidence of constipation; response variable; consider alternative agent if constipation develops. *QE = High (For Urinary Incontinence), Moderate/Low (All Others); SR = Strong*
History of gastric or duodenal ulcers	Aspirin (>325 mg/day) Non–COX-2 selective NSAIDs	**Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).** May exacerbate existing ulcers or cause new/additional ulcers. *QE = Moderate; SR = Strong*
Kidney/Urinary Tract		
Chronic kidney disease stages IV and V	NSAIDs Triamterene (alone or in combination)	**Avoid.** May increase risk of kidney injury. May increase risk of acute kidney injury. *QE = Moderate (NSAIDs), Low (Triamterene); SR = Strong (NSAIDs), Weak (Triamterene)*
Urinary incontinence (all types) in women	Estrogen oral and transdermal (excludes intravaginal estrogen)	**Avoid in women.** Aggravation of incontinence. *QE = High; SR = Strong*

Table 2 (continued on page 8)

Table 2 (continued from page 7)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Lower urinary tract symptoms, benign prostatic hyperplasia	Inhaled anticholinergic agents Strongly anticholinergic drugs, except antimuscarinics for urinary incontinence (see Table 9 for complete list).	**Avoid in men.** May decrease urinary flow and cause urinary retention. *QE = Moderate; SR = Strong (Inhaled agents), Weak (All others)*
Stress or mixed urinary incontinence	Alpha-blockers ■ Doxazosin ■ Prazosin ■ Terazosin	**Avoid in women.** Aggravation of incontinence. *QE = Moderate; SR = Strong*

Table 2 Abbreviations: CCBs, calcium channel blockers; AChEIs, acetylcholinesterase inhibitors; CNS, central nervous system; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SR, Strength of Recommendation; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 3: 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Aspirin for primary prevention of cardiac events	**Use with caution in adults ≥80 years old.** Lack of evidence of benefit versus risk in individuals ≥80 years old. *QE = Low; SR = Weak*
Dabigatran	**Use with caution in adults ≥75 years old or if CrCl <30 mL/min.** Increased risk of bleeding compared with warfarin in adults ≥75 years old; lack of evidence for efficacy and safety in patients with CrCl <30 mL/min *QE = Moderate; SR = Weak*
Prasugrel	**Use with caution in adults ≥75 years old.** Greater risk of bleeding in older adults; risk may be offset by benefit in highest-risk older patients (eg, those with prior myocardial infarction or diabetes). *QE = Moderate; SR = Weak*
Antipsychotics Carbamazepine Carboplatin Cisplatin Mirtazapine SNRIs SSRIs TCAs Vincristine	**Use with caution.** May exacerbate or cause SIADH or hyponatremia; need to monitor sodium level closely when starting or changing dosages in older adults due to increased risk. *QE = Moderate; SR = Strong*
Vasodilators	**Use with caution.** May exacerbate episodes of syncope in individuals with history of syncope. *QE = Moderate; SR = Weak*

Table 3 Abbreviations: CrCl, creatinine clearance; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin–norepinephrine reuptake inhibitors; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

The American Geriatrics Society gratefully acknowledges the support of the John A. Hartford Foundation, Retirement Research Foundation and Robert Wood Johnson Foundation.

AGS THE AMERICAN GERIATRICS SOCIETY
Geriatrics Health Professionals.
Leading change. Improving care for older adults.

40 Fulton Street, 18th Floor
New York, NY 10038
800-247-4779 ot 212-308-1414
www.americangeriatrics.org

National Task Group on Intellectual Disabilities and Dementia Practices

NTG-EDSD

v.1/2013.2

The **NTG-Early Detection Screen for Dementia**, adapted from the DSQIID*, can be used for the early detection screening of those adults with an intellectual disability who are suspected of or may be showing early signs of mild cognitive impairment or dementia. The NTG-EDSD is not an assessment or diagnostic instrument, but an administrative screen that can be used by staff and family caregivers to note functional decline and health problems and record information useful for further assessment, as well as to serve as part of the mandatory cognitive assessment review that is part of the Affordable Care Act's annual wellness visit for Medicare recipients. This instrument complies with Action 2.B of the US National Plan to Address Alzheimer's Disease.

It is recommended that this instrument be used on an annual or as indicated basis with adults with Down syndrome beginning with age 40, and with other at-risk persons with intellectual or developmental disabilities when suspected of experiencing cognitive change. The form can be completed by anyone who is familiar with the adult (that is, has known him or her for over six months), such as a family member, agency support worker, or a behavioral or health specialist using information derived by observation or from the adult's personal record.

The estimated time necessary to complete this form is between 15 and 60 minutes. Some information can be drawn from the individual's medical/health record. Consult the NTG-EDSD Manual for additional instructions (www.aadmd.org/ntg/ screening).

---

(1) File #: _____ (2) Date: _____

Name of person: (3) First_____ (4) Last: _____

(5) Date of birth: _____ (6) Age: _____

(7) Sex:

	Female
	Male

Instructions:
For each question block, <u>check the item that best applies</u> to the individual or situation.

(8) Best description of level of intellectual disability

	No discernible intellectual disability
	Borderline (IQ 70-75)
	Mild ID (IQ 55-69)
	Moderate ID (IQ 40-54)
	Severe ID (IQ 25-39)
	Profound ID (IQ 24 and below)
	Unknown

(9) Diagnosed condition (*check all that apply*)

	Autism
	Cerebral palsy
	Down syndrome
	Fragile X syndrome
	Intellectual disability
	Prader-Willi syndrome
	Other:

Current living arrangement of person:

- □ Lives alone
- □ Lives with spouse or friends
- □ Lives with parents or other family members
- □ Lives with paid caregiver
- □ Lives in community group home, apartment, supervised housing, etc.
- □ Lives in senior housing
- □ Lives in congregate residential setting
- □ Lives in long term care facility
- □ Lives in other: _____

(10) General characterization of current physical health:

	Excellent
	Very good
	Good
	Fair
	Poor

(11) Compared to one year ago, current physical health is:

	Much better
	Somewhat better
	About the same
	Somewhat worse
	Much worse

(12) Compared to one year ago, current mental health is:

	Much better
	Somewhat better
	About the same
	Somewhat worse
	Much worse

(13) Conditions present (*check all that apply*)

	Vision impairment
	Blind (very limited or no vision)
	Vision corrected by glasses
	Hearing impairment
	Deaf (very limited or no hearing)
	Hearing corrected by hearing aids
	Mobility impairment
	Not mobile – uses wheelchair
	Not mobile – is moved about in wheelchair

(14) Significant recent [in past year] life event (*check all that apply*)

	Death of someone close
	Changes in living arrangement, work, or day program
	Changes in staff close to the person
	New roommate/housemates
	Illness or impairment due to accident
	Adverse reaction to medication or over-medication
	Interpersonal conflicts
	Victimization / abuse
	Other:

(15) Seizures

	Recent onset seizures
	Long term occurrence of seizures
	Seizures in childhood, not occurring in adulthood
	No history of seizures

If MCI or dementia is documented complete 16, 17, &18

(16) **Diagnostic History**

Mild cognitive impairment [MCI] or dementia previously diagnosed (Dx)?:

[ ] No

[ ] Yes, MCI

Date of Dx:

[ ] Yes, dementia

Date of Dx:

Type of dementia:

Diagnosed by:
□ Geriatrician
□ Neurologist
□ Physician
□ Psychiatrist
□ Psychologist
□ Other:

(17) Reported date of onset of MCI/dementia
[When suspicion of dementia first arose]
Note approximate year and month:

(18) Comments / explanations about dementia suspicions:

[Check column option as appropriate]

	Always been the case	Always but worse	New symptom in past year	Does not apply
[19] **Activities of Daily Living**				
Needs help with washing and/or bathing				
Needs help with dressing				
Dresses inappropriately (e.g., back to front, incomplete, inadequately for weather)				
Undresses inappropriately (e.g., in public)				
Needs help eating (cutting food, mouthful amounts, choking)				
Needs help using the bathroom (finding, toileting)				
Incontinent (including occasional accidents)				
[20] **Language & Communication**				
Does not initiate conversation				
Does not find words				
Does not follow simple instructions				
Appears to get lost in middle of conversation				
Does not read				
Does not write (including printing own name)				
[21] **Sleep-Wake Change Patterns**				
Excessive sleep (sleeping more)				
Inadequate sleep (sleeping less)				
Wakes frequently at night				
Confused at night				
Sleeps during the day more than usual				
Wanders at night				
Wakes earlier than usual				
Sleeps later than usual				
[22] **Ambulation**				
Not confident walking over small cracks, lines on the ground, patterned flooring, or uneven surfaces				
Unsteady walk, loses balance				
Falls				
Requires aids to walk				

	Always been the case	Always but worse	New symptom in past year	Does not apply
[23] **Memory**				
Does not recognize familiar persons (staff/relatives/friends)				
Does not remember names of familiar people				
Does not remember recent events (in past week or less)				
Does not find way in familiar surroundings				
Loses track of time (time of day, day of the week, seasons)				
Loses or misplaces objects				
Puts familiar things in wrong places				
Problems with printing or signing own name				
Problems with learning new tasks or names of new people				
[24] **Behavior and Affect**				
Wanders				
Withdraws from social activities				
Withdraws from people				
Loss of interest in hobbies and activities				
Seems to go into own world				
Obsessive or repetitive behavior				
Hides or hoards objects				
Does not know what to do with familiar objects				
Increased impulsivity (touching others, arguing, taking things)				
Appears uncertain, lacks confidence				
Appears anxious, agitated, or nervous				
Appears depressed				
Shows verbal aggression				
Shows physical aggression				
Temper tantrums, uncontrollable crying, shouting				
Shows lethargy or listlessness				
Talks to self				
[25] **Adult's Self-reported Problems**				
Changes in ability to do things				
Hearing things				
Seeing things				
Changes in 'thinking'				
Changes in interests				
Changes in memory				
[26] **Notable Significant Changes Observed by Others**				
In gait (e.g., stumbling, falling, unsteadiness)				
In personality (e.g., subdued when was outgoing)				
In friendliness (e.g., now socially unresponsive)				
In attentiveness (e.g., misses cues, distracted)				
In weight (e.g., weight loss or weight gain)				
In abnormal voluntary movements (head, neck, limbs, trunk)				

[Check column option as appropriate]

	[27]Chronic Health Conditions*	Recent condition (past year)	Condition diagnosed in last 5 years	Lifelong condition	Condition not present
	Bone, Joint and Muscle				
1	Arthritis				
2	Osteoporosis				
	Heart and Circulation				
3	Heart condition				
4	High cholesterol				
5	High blood pressure				
6	Low blood pressure				
7	Stroke				
	Hormonal				
8	Diabetes (type 1 or 2)				
9	Thyroid disorder				
	Lungs/breathing				
10	Asthma				
11	Chronic bronchitis, emphysema				
12	Sleep disorder				
	Mental health				
13	Alcohol or substance abuse				
14	Anxiety disorder				
15	Attention deficit disorder				
16	Bipolar disorder				
17	Dementia/Alzheimer's disease				
18	Depression				
19	Eating disorder (anorexia, bulimia)				
20	Obsessive-compulsive disorder				
21	Schizophrenia				
22	Other:				
	Pain / Discomfort				
23	Back pain				
24	Constipation				
25	Foot pain				
26	Gastrointestinal pain or discomfort				
27	Headaches				
28	Hip/knee pain				
29	Neck/shoulder pain				
	Sensory				
30	Dizziness / vertigo				
31	Impaired hearing				
32	Impaired vision				
	Other				
33	Cancer – type:				
34	Chronic fatigue				
35	Epilepsy / seizure disorder				
36	Heartburn / acid reflux				
37	Urinary incontinence				
38	Sleep apnea				
39	Tics/movement disorder/spasticity				
40	Dental pain				

*Items drawn from the Longitudinal Health and Intellectual Disability Survey (University of Illinois at Chicago)

(28) **Current Medications**

Yes	No	Indicate type
□	□	Treatment of chronic conditions
□	□	Treatment of mental health disorders or behavior problems
□	□	Treatment of pain

For reviews, attach list of current medications, dosage, and when prescribed

□ List is attached for reviews

(29) **Comments related to other notable changes or concerns:**

(30) **Next Steps / Recommendations**

□ Refer to treating physician for assessment

□ Review internally by clinical personnel

□ Include in annual review / annual wellness visit

□ Repeat in _____ months

Form completion information

(31) Date completed	(32) Organization / Agency
Name of person completing form	
Relationship to individual (staff, relative, assessor, etc.)	
Date(s) form previously completed	

Acknowledgement: Derived from the DSQIID (*Dementia Screening Questionnaire for Individuals with Intellectual Disabilities; Deb, S., 2007) as adapted into the Southeast PA Dementia Screening Tool (DST) – with the assistance of Carl V. Tyler, Jr., MD – and the LHIDS (Longitudinal Health and Intellectual Disability Survey; Rimmer & Hsieh, 2010) and as further adapted by the National Task Group on Intellectual Disabilities and Dementia Practices as the NTG Early Detection Screen for Dementia for use in the USA.

Institute for Safe Medication Practices Canada
Institut pour l'utilisation sécuritaire des médicaments du Canada

Drug-Drug Interactions in the Geriatric Population – Summary of Selected Pharmacoepidemiological Studies in Ontario (Nested Case-Control, Retrospective Cohort, and Case Cross-Over Studies)*

Drug-Interaction Pair		Demographics / Background Information	Comments
Continuous Medication	**Added Medication**		
Glyburide[1]	Trimethoprim-sulfamethoxazole (TMP-SMX)	**Study Population:** Older than 66 years treated with glyburide. A total of 909 cases. **Drug Toxicity/ Adverse Event:** Hypoglycemia **Possible Mechanism of Action:** Sulfamethoxazole can directly cause pancreatic insulin release (at higher doses due to structural similarity to sulfonylurea) in patients with renal impairment. Sulfonamide antibiotics inhibit CYP 2C9. Glyburide is metabolized by CYP 2C9.	The concomitant use of TMP-SMX with glyburide was associated with increased risk of hospitalization due to hypoglycemia in the elderly. Juurlink et al. estimated that patients who were hospitalized due to hypoglycemia while using glyburide were around 6 times more likely to have been treated with TMP-SMX within 1 week.
Digoxin[1]	Clarithromycin	**Study Population:** Older than 66 years treated with digoxin. A total of 1,051 cases. A total of 51,896 controls. **Drug Toxicity/ Adverse Event:** Digoxin toxicity **Possible Mechanism of Action:** Clarithromycin inhibits P-glycoprotein which leads to decreased renal clearance of digoxin.	The concomitant use of clarithromycin and digoxin was associated with increased risk of hospitalization due to digoxin toxicity in the elderly. Juurlink et al. estimated that patients who were hospitalized due to digoxin toxicities while using digoxin were around 12 times more likely to have been treated with clarithromycin.
Angiotensin-converting enzyme inhibitors	Potassium-sparing diuretics (amiloride, triamterene, or	**Study Population:** Older than 66 years treated with an ACEI. A total of 523 cases. A total of 25,807	The concomitant use of ACEIs and potassium sparring diuretics was associated with an increased risk of hospitalization

Drug-Interaction Pair		Demographics / Background Information	Comments
Continuous Medication	Added Medication		
(ACEIs)[1]	spironolactone)	controls. **Drug Toxicity/ Adverse Event:** Hyperkalemia **Possible Mechanism of Action:** ACEIs and potassium sparing diuretics both increase serum potassium levels. When used together they may precipitate hyperkalemia.	due to hyperkalemia in the elderly. Juurlink et al. estimated that patients who were hospitalized due to hyperkalemia while using ACEIs are 20 times more likely to have been treated by potassium sparing diuretics.
Lithium[2]	ACEIs or loop diuretics	**Study Population:** Older than 66 years treated with lithium. A total of 413 cases and 1,651 controls. **Drug Toxicity/ Adverse Event:** Lithium toxicity **Possible Mechanism of Action:** ACEIs reduce glomerular perfusion via inhibition of angiotensin II.	Concomitant use of lithium and ACEIs or loop diuretics was associated with increased risk of hospitalization due to lithium toxicities in the elderly. Juurlink et al. estimated that patients who were hospitalized due to lithium toxicity while using lithium are 2 times more likely to have been treated by ACEIs or loop diuretics.
Warfarin[3]	Nonsteroidal anti-inflammatory drugs (NSAIDs) [nonselective NSAIDs or COX-2 inhibitors (celecoxib and rofecoxib)]	**Study Population:** Older than 66 years treated with warfarin. A total of 361 cases. A total of 1,437 controls **Drug Toxicity/ Adverse Event:** Upper gastrointestinal (GI) hemorrhage **Possible Mechanism of Action:** S-warfarin (active enantiomer) and NSAIDs are substrates for CYP 2C9. Both NSAIDs and warfarin can increase risk of GI bleeding.	Concomitant use of warfarin and NSAID or COX-2 inhibitor was associated with increased risk of upper GI hemorrhage in the elderly. Battistella et al. estimated that patients who were hospitalized due to an upper GI bleed while using warfarin were around 2 times more likely to have used an NSAID or COX-2 inhibitor within 90 days.
Digoxin[4]	Macrolide antibiotics	**Study Population:** Over the age of 66 treated with digoxin. A total of 1,659 cases. A total of 6,439 control cases. **Drug Toxicity/ Adverse Event:**	Concomitant use of digoxin and macrolide antibiotics may lead to increased risk of hospitalization in the elderly. Gomes et al. estimated that

Drug-Interaction Pair		Demographics / Background Information	Comments
Continuous Medication	**Added Medication**		
		Digoxin toxicity **Possible Mechanism of Action:** Macrolide antibiotics can reduce re-circulation of digoxin by reducing *Eubacterium lentum* in the gut. Clarithromycin may inhibit P-glycoprotein-mediated tubular secretion of digoxin.	patients who are hospitalized due to digoxin toxicity are 15 times more likely to be taking clarithromycin and 4 times more likely to be taking azithromycin or erythromycin.
Clopidogrel[5]	Proton pump inhibitors (PPIs)	**Study Population:** Over the age of 66 years treated with clopidogrel. A total of 734 cases. A total of 2,057 controls. **Drug Toxicity/ Adverse Event:** Re-infarction **Possible Mechanism of Action:** Clopidogrel is a pro-drug requiring activation by CYP 2C19. Omeprazole, lansoprazole and rabeprazole inhibit CYP 2C19 which leads to reduced anti-platelet action.	Concomitant use of clopidogrel and PPIs (except pantoprazole) is associated with increased risk of re-infarction in the elderly. Juurlink et al. report in patients who are hospitalized for a re-infarct and using clopidogrel are more likely to be using a PPI within 30 days. Pantoprazole was not associated with increased hospitalization.
ACEIs/ Angiotensin receptor blockers (ARBs)[6]	TMP-SMX	**Study Population:** Over the age of 66 years treated with ACEI or ARBs. A total of 369 cases. A total of 1,417 controls. **Drug Toxicity/ Adverse Event:** Hyperkalemia **Possible Mechanism of Action:** ACEIs and ARBs impair urinary potassium excretion TMP reduces urinary potassium excretion.	Concomitant use of TMP-SMX and ACEIs or ARBs is associated with increased risk of hospitalization due to hyperkalemia in the elderly. Antoniou et al. estimated in patients who are hospitalized for hyperkalemia and using ACEIs or ARBs are about 7 times more likely to have received TMP-SMX.
Warfarin[7]	TMP-SMX, ciprofloxacin	**Study Population:** Over the age of 66 years	Concomitant use of TMP-SMX or ciprofloxacin with warfarin

Drug-Interaction Pair		Demographics / Background Information	Comments
Continuous Medication	Added Medication		
		treated with warfarin. A total of 2,151 cases. A total of 10,201 controls. **Drug Toxicity/ Adverse Event:** Hemorrhagic complications **Possible Mechanism of Action:** TMP-SMX inhibits CYP 2C9. S-warfarin (active enantiomer) metabolized predominantly by CYP 2C9.	increases the risk of hospitalization due to hemorrhagic complications Fischer et al. estimated patients, who were hospitalized with hemorrhagic complications while using warfarin, are 3 times more likely to have been exposed to TMP-SMX and 2 times more likely to have been using ciprofloxacin
Tamoxifen[8]	Paroxetine	**Study Population:** 2,430 women over the age of 66 years treated with tamoxifen for breast cancer on concurrent treatment with a single selective serotonin reuptake inhibitor (SSRI). **Drug Toxicity/ Adverse Event:** Breast cancer mortality **Possible Mechanism of Action:** Tamoxifen is a pro-drug metabolized by CYP 2D6 to the active endoxifen. Paroxetine is a potent CYP 2D6 inhibitor and may reduce the activation of tamoxifen.	Kelly et al. report paroxetine use during tamoxifen treatment increases breast cancer mortality. The median overlap time of tamoxifen and paroxetine treatment in this study was 41%. It is estimated that this level of overlap would result in one additional breast cancer death at 5 years for every 20 women treated. This is a retrospective cohort study.
Calcium channel blockers (CCBs) (verapamil, diltiazem, nifedipine, amlodipine, or felodipine)[9]	Macrolide antibiotics (erythromycin, clarithromycin, and azithromycin)	**Study Population:** Over the age of 66 years treated with CCBs. A total of 7100 in cohort. A total of 176 cases. **Drug Toxicity/ Adverse Event:** Hypotension **Possible Mechanism of Action:** Two macrolides, erythromycin and clarithromycin, inhibit CYP 3A4. Azithromycin does not inhibit CYP 3A4. Calcium	Concomitant use of CCBs and macrolide antibiotics are associated with increased risk of hospitalization due to hypotension. Wright et al. found in patients who are admitted to hospital due to hypotension while using a CCB are more likely to have received clarithromycin or erythromycin prior to hospitalization. Azithromycin was not associated with

Drug-Interaction Pair		Demographics / Background Information	Comments
Continuous Medication	Added Medication		
		channel blockers are CYP 3A4 substrates.	hypotension. This is a case cross-over study.
Theophylline[10]	Ciprofloxacin	**Study Population:** Over the age of 66 treated with theophylline. A total of 180 cases. A total of 9,000 controls. **Drug Toxicity/ Adverse Event:** Theophylline toxicity **Possible Mechanism of Action:** Theophylline is metabolized by CYP 1A2. Ciprofloxacin is a potent inhibitor of CYP 1A2. Ciprofloxacin is a commonly used antibiotic given to chronic obstructive pulmonary disease (COPD) patients.	Concomitant use of theophylline and ciprofloxacin may lead to increased risk of hospitalization due to theophylline toxicity. Antoniou et al. estimated that patients hospitalized due to theophylline toxicity were 2 times more likely to have been treated with ciprofloxacin.
Phenytoin[11]	TMP-SMX	**Study Population:** Over the age of 66 years treated with phenytoin. A total of 796 cases. A total of 3,148 controls. **Drug Toxicity/ Adverse Event:** Phenytoin toxicity **Possible Mechanism of Action:** Phenytoin is metabolized by CYP 2C8. TMP-SMX is a potent CYP 2C8 inhibitor and may lead to increase in phenytoin level.	Concomitant use of phenytoin and TMP-SMX increases the risk of hospitalization due to phenytoin toxicity. Antoniou et al. estimated patients who are hospitalized due to phenytoin toxicity are 2 times more likely to have received TMP-SMX within 30 days.
Spironolactone[12]	TMP-SMX, Nitrofurantoin	**Study Population:** Over the age of 66 years treated with spironolactone. A total of 248 cases (median age, 82 years). A total of 783 controls (median age, 81 years). **Drug Toxicity/ Adverse Event:** Hyperkalemia	Concomitant use of TMP-SMX or nitrofurantoin with spironolactone has been associated with increased risk of hospitalization due to hyperkalemia. Antoniou et al. estimated that patients hospitalized due to hyperkalemia while using spironolactone are 12 times

Drug-Interaction Pair		Demographics / Background Information	Comments
Continuous Medication	Added Medication		
		Possible Mechanism of Action: Spironolactone and TMP-SMX both decrease urinary excretion of potassium.	more likely to have been using TMP-SMX and 2 times more likely to have been using nitrofurantoin.

*The information in this chart was taken from the individual drug interaction studies and does not necessarily represent the opinion of ISMP Canada. Healthcare organizations are encouraged to critically appraise these studies to determine the applicability to their specific practice settings.

References

1. Juurlink DN, Mamdani M, Kopp A, Laupacis A, Redelmeier DA. Drug-drug interactions among elderly patients hospitalized for drug toxicity. JAMA. 2003;289(13):1652-1658.
2. Juurlink DN, Mamdani MM, Kopp A, Rochon PA, Shulman KI, Redelmeier DA. Drug-induced lithium toxicity in the elderly: a population-based study. J Am Geriatr Soc. 2004;52(5):794-798.
3. Battistella M, Mamdani MM, Juurlink DN, Rabeneck L, Laupacis A. Risk of upper gastrointestinal hemorrhage in warfarin users treated with nonselective NSAIDs or COX-2 inhibitors. Arch Intern Med. 2005;165(2):189-192.
4. Gomes T, Mamdani MM, Juurlink DN. Macrolide-induced digoxin toxicity: a population-based study. Clin Pharmacol Ther. 2009;86(4):383-386.
5. Juurlink DN, Gomes T, Ko DT, Szmitko PE, Austin PC, Tu JV, et al. A population-based study of the drug interaction between proton pump inhibitors and clopidogrel. CMAJ. 2009;180(7):713-718.
6. Antoniou T, Gomes T, Juurlink DN, Loutfy MR, Glazier RH, Mamdani MM. Trimethoprim-sulfamethoxazole-induced hyperkalemia in patients receiving inhibitors of the renin-angiotensin system: a population-based study. Arch Intern Med. 2010;170(12):1045-1049.
7. Fischer HD, Juurlink DN, Mamdani MM, Kopp A, Laupacis A. Hemorrhage during warfarin therapy associated with cotrimoxazole and other urinary tract anti-infective agents: a population-based study. Arch Intern Med. 2010;170(7):617-621.
8. Kelly CM, Juurlink DN, Gomes T, Duong-Hua M, Pritchard KI, Austin PC, et al. Selective serotonin reuptake inhibitors and breast cancer mortality in women receiving tamoxifen: a population based cohort study. BMJ. 2010;340:c693.
9. Wright AJ, Gomes T, Mamdani MM, Horn JR, Juurlink DN. The risk of hypotension following co-prescription of macrolide antibiotics and calcium-channel blockers. CMAJ. 2011;183(3):303-307.
10. Antoniou T, Gomes T, Mamdani M, Juurlink DN. Ciprofloxacin-induced theophylline toxicity: a population-based study. Eur J Clin Pharmacol. 2011;67(5):521-526.
11. Antoniou T, Gomes T, Mamdani M, Juurlink DN. Trimethoprim/sulfamethoxazole-induced phenytoin toxicity in the elderly: a population-based study. Br J Clin Pharmacol. 2011;71(4):544-549.
12. Antoniou T, Gomes T, Mamdani MM, Yao Z, Hellings C, Garg AX, et al. Trimethoprim-sulfamethoxazole induced hyperkalemia in elderly patients receiving spironolactone: nested case-control study. BMJ. 2011;343:d5228.