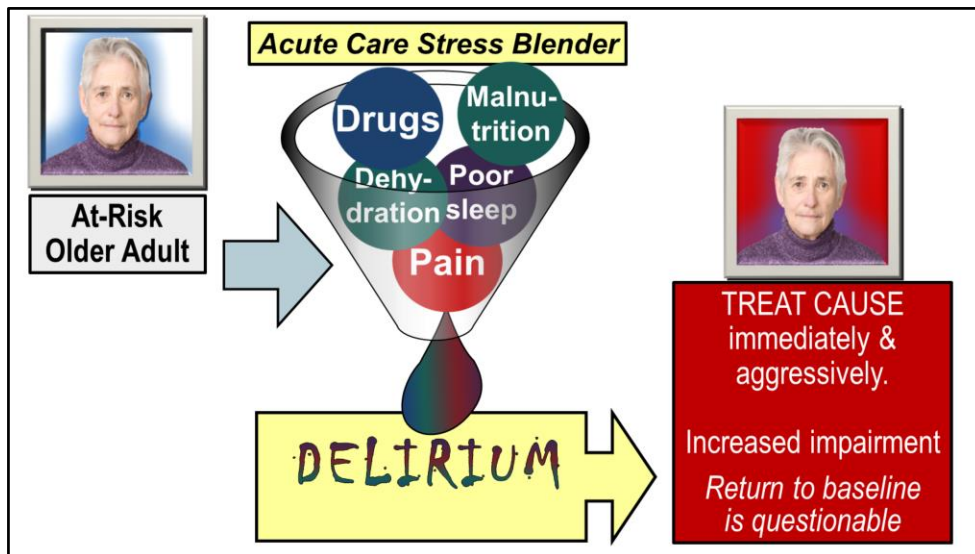


Delirium and Dementia

Elder Friendly Care in Acute Care

Seniors Health Strategic Clinical Network



Delirium is common, distressing, costly, and often preventable.

Approximately half of all hospital days are spent caring for older patients in delirium. Delirium complicates hospital stays for at least 20 percent of patients 65 years of age or older who are hospitalized each year (Inouye 2006)

Delirium may develop in the community, Emergency Department, after surgery, or on an inpatient unit. It occurs in up to 60% of older adults in nursing homes or post-acute care settings.

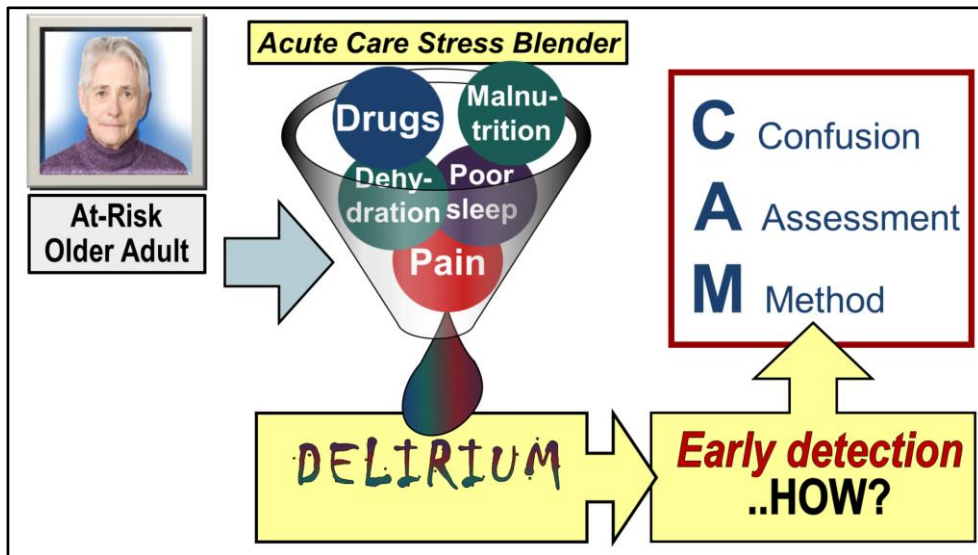
The cost to the patient includes loss of cognition (may be irreversible), distress (agitation, psychosis), hospitalization, functional decline, cognitive decline and death (McCusker 2014, Fong 2012)

Cost to the taxpayer/health care system:

- Increased length of stay, increased demand for acute care beds and nursing home placement.
- Total cost estimates attributable to delirium ranged from \$16 303 to \$64 421 per patient (US dollars) (Leslie 2008)

References

Inouye SK. (2006). Delirium in Older Persons. *New England Journal of Medicine*, 354(11), 1157-65
 McCusker J; Cole MG; Voyer P; et al. (2014). Six-month outcomes of co-occurring delirium, depression, and dementia in long-term care. *Journal of the American Geriatrics Society*, 62(12), 2296-302.
 Fong TG; Jones RN; Marcantonio ER; et al. (2012). Adverse outcomes after hospitalization and delirium in persons with Alzheimer disease. *Ann Intern Med*, 156(12), 848-56.
 Leslie DL; Marcantonio ER; Zhang Y; Leo-Summers L; & Inouye SK. (2008). One-year health care costs associated with delirium in the elderly population. *Archives of Internal Medicine*, 168(1), 27-32.



What causes Delirium in a older adults, especially those with dementia?

> A vulnerable patient + a precipitating factor

Who is vulnerable? Those with advanced age, frailty, dementia or depression, functional dependence, immobility, coexisting medical conditions and illnesses, problems with hearing and vision (Ahmed 2014). Does this sound like patients you work with?

If the patient is very vulnerable, one dose of sleeping medication can cause delirium. If less vulnerable, delirium may develop only after exposure to multiple insults (e.g. too many medications, dehydration, sleep deprivation, infection, stress, surgery). All of the causes need to be addressed to resolve the delirium.

Precipitating factors for delirium: there are many. Roughly 94 possible causes are included in various delirium acronyms. Our focus is on several of the most common precipitating factors: medications, dehydration, stress (e.g. restraints, pain, sleep interruptions), malnutrition, infection and surgery.

It's also important to recognize that delirium often has more than one cause. Laurila et al (2008) discovered an average of 8 possible causes for each patient.

Significant precipitating factors were identified, including physical restraint use, malnutrition, adding more than three drugs, bladder catheter use, and any iatrogenic event. (Inouye 2000)

References:

Ahmed S; Leurent B; Sampson EL. (2014). Risk factors for incident delirium among older people in acute hospital medical units: A systematic review and meta-analysis. *Age & Ageing*, 43(3), 326-33

Laurila, JV; Laakkonen M; Laurila JV; et al. (2008). Predisposing and precipitating factors for delirium in a frail geriatric population. *Journal of Psychosomatic Research*, 65(3), 249-54.

Inouye SK. (2000). Prevention of delirium in hospitalized older patients: Risk factors and targeted intervention strategies. *Annals of Medicine*, 32(4):257-63.



Signs of delirium are often missed in chaotic environments.

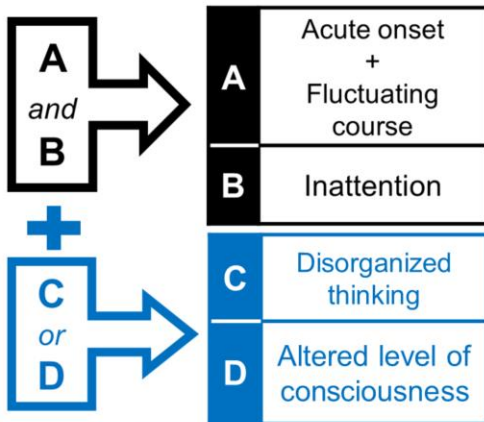
The Appropriate Use of Antipsychotics project has demonstrated that as we reduce chaos, it becomes easier to detect subtle changes.

Supplemental Information:

A chaotic environment causes delirium and masks the changes that signal delirium. These are some of the ways the AUA Project has supported teams to reduce chaos:

- Reduce reliance on antipsychotics
- Look for needs behind behaviours, such as pain and constipation
- Use consistent staffing to get to know persons with dementia
- Be less task focused, more relational: start every interaction with “hello, and friendly conversation” instead of “open up for your pills”
- Engage older adults in meaningful activities
- Support sleep at night – don’t wake up for scheduled care if possible, more light and activity in the daytime, reduce night time light and noise.
- Reduce use of sleeping pills
- Reduce overstimulation from chair and bed alarms, overhead paging, television noise, loud talking etc.

Confusion Assessment Method (CAM)



Delirium is often discounted as the person's "normal"

To detect delirium, we need to know their baseline

The Confusion Assessment Method (CAM) Tool is a validated tool for delirium assessment. A diagnosis of delirium is made when the patient demonstrates both acute onset/fluctuating course and inattention, and either disorganized thinking or inattention.

The CAM is most reliable when we:

- Know the patient's baseline, in order to recognize changes in e.g. speech, social behaviour, concentration, mood, ability and appetite.
- Support normal sleep-wake and activity patterns in order to differentiate between sleeping/napping, low mood/depression and hypoactive delirium
- Understand that agitation is a form of communication in persons with dementia. Address the reasons for agitation and other responsive behaviours.

“Stop & Watch”

- Early delirium detection
- Supports communication
- Reduces acute care admissions

Complete Stop and Watch Early Warning Tool: available from Med-Pass.com

© 2011 Florida Atlantic University



Stop and Watch Early Warning Tool



If you have identified a change while caring for or observing a resident, please **circle** the change and notify a nurse. Either give the nurse a copy of this tool or review it with her/him as soon as you can.

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Seems different than usual

Talks or communicates less

Overall needs more help

Pain – new or worsening; Participated less in activities

Ate less

No bowel movement in 3 days; or diarrhea

Drank less

Weight change

Agitated or nervous more than usual

Tired, weak, confused, or drowsy

Change in skin color or condition

Help with walking, transferring, toileting more than usual

The Stop and Watch Tool is an early warning tool designed for care staff. It supports conversations about subtle changes in patients and residents that may signal delirium. Often it is health care aides who notice “something is off”. By circling and sharing the observations on this form, staff members are able to initiate discussions with the nurse and/or care team about changes they observe.

Feedback from the Covenant Health Supportive Living team recommending it:

- Consistently effective in identifying issues early; the tool increased communication and decreased Emergency Department admissions
- Once people became comfortable with it, they passed on information without the tool, but still passed on the same info
- The majority of experienced staff were already informally passing this information on, but it was still helpful in clarifying what to communicate with each other, especially with inexperienced/new staff.
- Helped the HCAs to feel heard
- Education support for the tool included keeping it as a standing agenda item at staff meetings

Tool available from Med Pass: <http://www.med-pass.com/stop-and-watch-early-warning-tool-1-part-100-per-pack-2-pads-of-50.html>

Delirium Information for Patients and Families

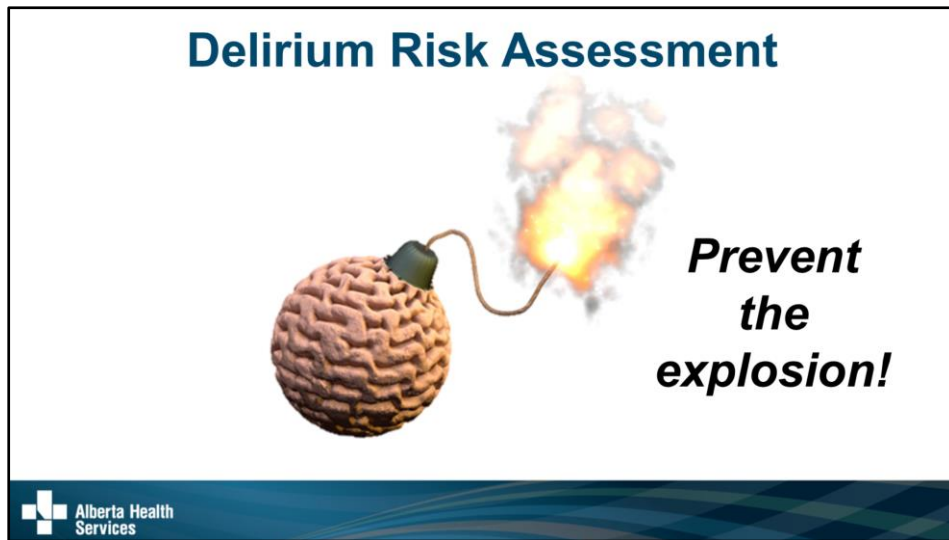
The screenshot shows the MyHealth Alberta.ca website page for "Delirium Information for Patients and Families". The page has a blue header with navigation links: Home, Health Information & Tools, MyHealth Videos, Healthcare Locator, and About MyHealth Alberta.ca. Below the header is a secondary navigation bar with links: Health A-Z, Healthy Living, Tests & Treatments, Medications, Find Healthcare, Health Alerts, and Patient Care Handouts. The main content area is titled "Delirium: Information for Patients and Families" and includes a breadcrumb trail: Health Information & Tools > Health A-Z > Delirium: Information for Patients and Families. On the left, there is a sidebar with a "What is delirium?" section containing links for Causes, Delirium and Dementia, Risks for Delirium, Recognizing Delirium, Prevention, Comfort Rounds, Treatment, How can I help?, After Delirium, and Print Booklet & Resources. The main content area is titled "Senior's Health" and "What is delirium?". It defines delirium as a sudden, confused state of mind that may come and go over the day. It also states that delirium is a warning sign that the person needs help right away. On the right, there is a "Related to Delirium" section with links for "Confusion, Memory Loss, and Altered Alertness" and "Temporary Confusion or Decreased Alertness". At the bottom right, there is a "CAUSES >" button and the MyHealth Alberta.ca logo.

Care partners, the family and friends who know the patient well, are able to notice subtle changes in behaviours, concentration, ability and conversation. They can also help to prevent delirium.

In a LTC centre, a visiting family member noticed her mom was confused, sat with her, and encouraged her to drink water. The confusion cleared after 1-2 litres. If the dehydration had been left unchecked, it may have progressed to delirium.

Delirium topics on MyHealth.Alberta.ca include causes, delirium and dementia, recognizing delirium, prevention and treatment.

A print booklet combines all the topics, and can be downloaded and printed, or ordered: #605837 ©Alberta Health Services, (2016/11)



Delirium education has traditionally focused on recognizing and quickly responding to a developing delirium. This is still important – but it's not enough. Why wait for the brain to “blow up” with a delirium, when we could snuff out the fuse?

Delirium Prevention focuses on identifying and addressing risk factors.

Some of the risks for delirium are not in our control – e.g. a very vulnerable older adult developed delirium from a skin infection in her finger. But some of the risks of delirium are in our control and may even be caused by us directly or indirectly. Polypharmacy is an example:

- Older people taking five or more medications are at higher risk of delirium and falls, independent of medication indications. (Hubbard 2013)
- Drug-induced delirium is being increasingly identified in hospitalized patients. The findings suggest that interventions focusing on adverse drug effects have the greatest potential for preventing delirium. (Lin 2010)
- In patients discharged to non-home settings, the number of discharge medications and polypharmacy predicted re-hospitalization (Wimmer 2014)

References:

Hubbard RE; O'Mahony MS; Woodhouse KW. (2013). Medication prescribing in frail older people. *European Journal of Clinical Pharmacology*, 69(3), 319-26.

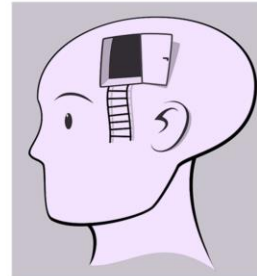
Lin RY; Heacock LC; Fogel JF. (2010). Drug-Induced, Dementia-Associated and Non-Dementia, Non-Drug Delirium Hospitalizations in the United States, 1998-2005. *Drugs & Aging*, 27(1), 51-61.

Wimmer BC; Dent E; Visvanathan R; et al. (2014). Polypharmacy and medication regimen complexity as factors associated with hospital discharge destination among older people: a prospective cohort study. *Drugs & Aging*, 31(8), 623-30.

Delirium and Brain Neurotransmitters

Blocking of neurotransmitters can effect:

- Learning and memory
- REM sleep cycle regulation
- Neuroendocrine function
- Smooth muscle (intestines, bladder, arteries)
- Heart rate and contraction strength
- Movement (muscle contraction)
- Sweat glands



Delirium is something serious happening in the brain. This is why we see confusion, difficulty paying attention and increased agitation and/or drowsiness. Delirium can be caused by imbalances in brain chemical messengers such as Dopamine, Serotonin, Melatonin, Cortisol, Norepinephrine, Glutamate, GABA.

Too little acetylcholine is one important cause of delirium. This is the neurotransmitter we'll focus on. Acetylcholine is responsible for many crucial brain and body functions, including:

- Learning and memory
- REM sleep cycle regulation
- Neuroendocrine function
- Smooth muscle function (intestines, bladder, arteries)
- Heart rate and contraction strength
- Sweat glands
- Movement (muscle contraction)

Supplemental Information

Sleep impacts and is impacted by levels of serotonin, melatonin, GABA, acetylcholine and cortisol. Support of sleep is crucial for preventing delirium. (For resources on non-pharmacologic strategies to support sleep, see the EFC Toolkit).

In general, the most commonly described neurotransmitter changes associated with delirium include deficiencies in acetylcholine and/or melatonin availability; excess in dopamine, norepinephrine, and/or glutamate release; and variable alterations (e.g., either a decreased or increased activity, depending on delirium presentation and cause) in serotonin, histamine, and/or gamma-aminobutyric acid. In the end, it is unlikely that any one of these theories is fully capable of explaining the etiology or phenomenologic manifestations of delirium but rather that two or more of these, if not all, act together to lead to the biochemical derangement and, ultimately, to the complex cognitive and behavioral changes characteristic of delirium. (Maldonado 2013)

References:

Maldonado JR. (2013). Neuropathogenesis of delirium: Review of current etiologic theories and common pathways. *The American Journal of Geriatric Psychiatry*, 21(12),1190-222.

Acetylcholine and Delirium



Acetylcholine “powers up” the brain

Acetylcholine levels are lower in older adults (90% lower in Alzheimer's)

Stress increases demand for acetylcholine

Many medications block acetylcholine



This is a photo of power lines in Kathmandu, Nepal. If you needed electricity to charge your cell phone, some brave soul would connect your wire to the nest of wires on the pole. Nepal doesn't have as many wind turbines, coal plants and hydroelectric dams as Canada. The supply can't keep up with the demand, and therefore power in Katmandu is sporadic.

Think of acetylcholine as a neurotransmitter that “powers up” activity in the brain and body. Now consider that acetylcholine levels are already lower in older adults – and people with Alzheimers have only a small fraction of what they need. This is why the circuits of persons with dementia are easily overloaded by any stressor.

We need to protect the limited power supply of acetylcholine – and yet, many commonly prescribed medications block the actions of acetylcholine. Think of how you feel after a dose of Gravalol or Benadryl – a little fuzzy and foggy? That's what happens when just ONE medication blocks acetylcholine in a healthy person (with normal acetylcholine levels.)

References:

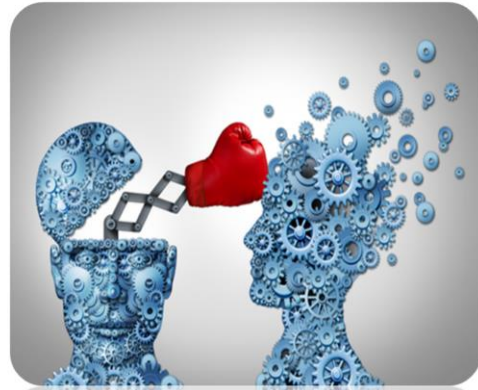
<https://web.williams.edu/imput/synapse/pages/IA1.htm>

Anticholinergic Cognitive Burden (ACB)

Anticholinergic = medication that blocks acetylcholine

Many commonly prescribed medications have anticholinergic properties (some strong, some weaker)

Taking multiple medications with anticholinergic properties adds up to a higher cognitive burden



Refer to the back of the Pharmacologic Restraint Management Worksheet, available at <http://www.albertahealthservices.ca/frm-19676.pdf>

The medications with an asterisk block acetylcholine.

Medications can be highly anticholinergic e.g. antipsychotics, some antidepressants, dimenhydrinate (Gravol) and medications for bladder control such as oxybutynin (Ditropan).

Many medications have weaker anticholinergic properties – but the additive effect of multiple medications knocks the brain for a loop.

MORE IS NOT ALWAYS BETTER

The same is true for medical tests and treatments. Talk with your health care provider about what you need, and what you don't. To learn more, visit www.choosingwisely.ca

Choosing Wisely Canada

Medications and Delirium

5 or more medications = higher risk of delirium and falls

Older people taking five or more medications are at higher risk of delirium and falls, independent of medication indications (Hubbard 2013). Adverse drug reactions are the cause of 12% of all hospital admissions (Al Hamid 2014)

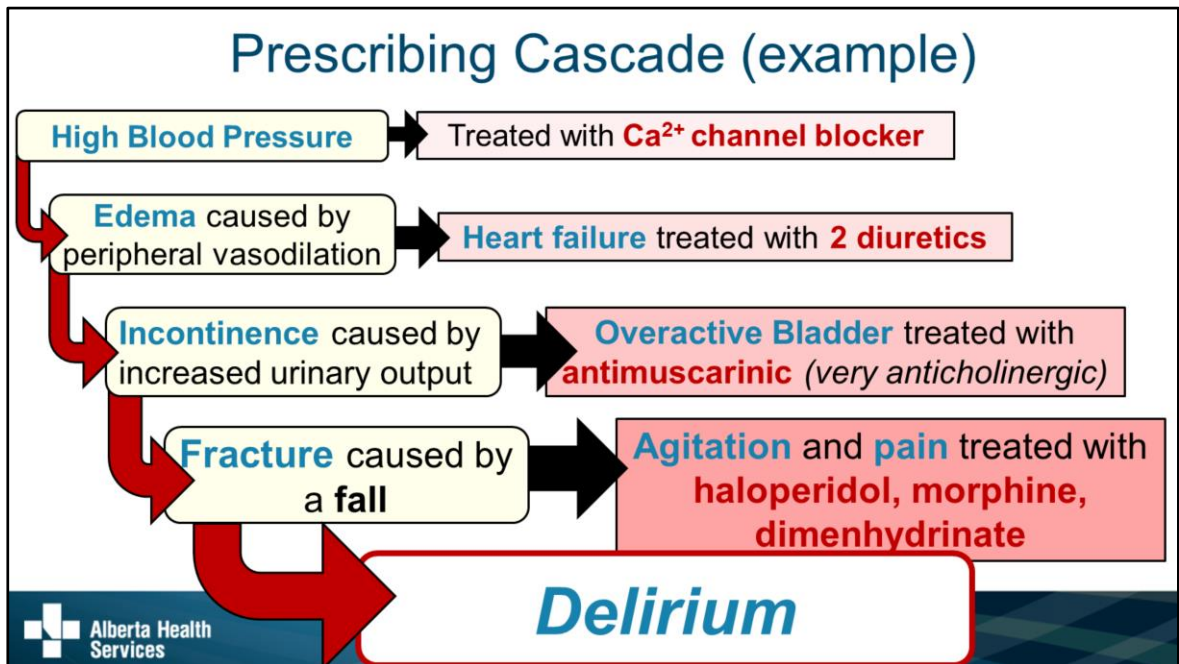
If you see multiple medications in older adults, a prescribing cascade is likely. “Any new symptom in an older adult should be considered a drug side effect until proven otherwise.” Commission for Certification in Geriatric Pharmacy

Supplemental Information:

- Metoclopramide HCL – 3 times more likely to be prescribed Parkinson’s meds
- Cholinesterase inhibitors: 50% more likely to receive “overactive bladder” drug
- ACE inhibitor: side effect is dry cough resulting in cough medicines
- Statins: heart failure>>BP meds, diuretics>> falls, weakness, dehydration, agitation
- NSAID for arthritis>> amlodipine for blood pressure>>furosemide and spironolactone for edema of lower limbs>>fesoterodine for overactive bladder>>anetholtrithion for dry mouth >> fall, fracture, head injury and hospital admission resulting in delirium
- Antipsychotics cause agitation, confusion and interfere with sleep – which can result in the addition of sedatives and increased doses of antipsychotics.

References:


Key Resources in Geriatric Pharmacotherapy: <http://www.ccgp.org>
 Hubbard RE; O’Mahony MS; Woodhouse KW. (2013). Medication prescribing in frail older people. *European Journal of Clinical Pharmacology*, 69(3), 319-26.
 Al Hamid A; Ghaleb M; Aljadhey H; et al. (2014). A systematic review of hospitalization resulting from medicine-related problems in adult patients. *British Journal of Clinical Pharmacology*, 78(2), 202-17.



Drug side effects or adverse reactions can be misinterpreted as new medical conditions, resulting in new medication being prescribed for a medical condition the patient doesn't naturally suffer from. This is called a **prescribing cascade**.

In the above example, what contributed to delirium? What contributed to a fall?

- Dehydration from diuretics
- Anticholinergic burden from multiple medications
- Visual disturbances (from anticholinergic effects)
- Dizziness (Hypotension from dehydration from diuretics)
- Urinary urgency (Rushing to bathroom)
- Sleep deprivation (from urinary frequency and medication side effects)
- Muscle pain (weakness) from edema
- Dry mouth (from overdiuresis from diuretics and anticholinergic effects)
- Other?



**MORE IS
NOT
ALWAYS
BETTER**

The same is true for medical tests and treatments. Talk with your health care provider about what you need, and what you don't. To learn more, visit www.choosingwisely.ca

**Choosing Wisely
Canada**

Medication Reconciliation

What kinds of questions do we need to ask about medications?

Whose job is it to evaluate medications?

How/when does your team assess medications e.g. with higher risk than benefit, or prescribing cascades?

How are patients and families involved in conversations around medications?

Drug-induced delirium is being increasingly identified in hospitalized patients. The findings suggest that interventions focusing on adverse drug effects have the greatest potential for preventing delirium. (Lin 2010)

In patients discharged to nonhome settings, the number of discharge medications and polypharmacy predicted rehospitalization (Wimmer 2014), so if you don't want patients to bounce back to acute care, it's important that they're on the fewest number of the most beneficial medications. Of course, we don't usually just stop all anticholinergic medications— we have to weigh risks/benefits

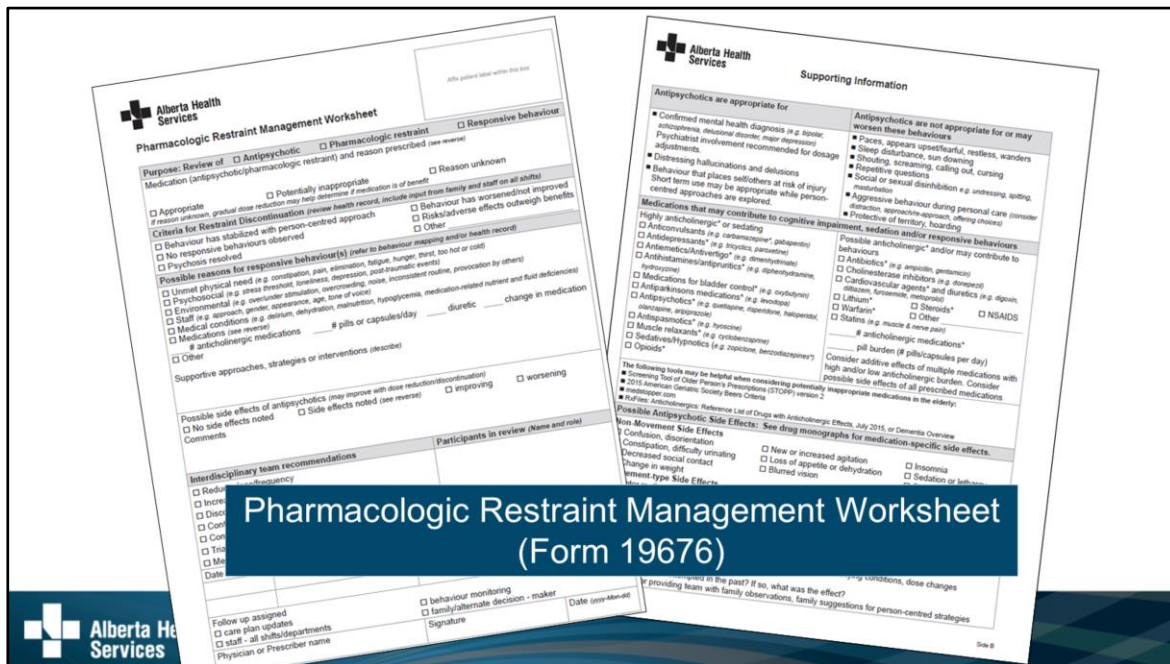
Supplemental Information

One study of 3538 residents used a computerised system to identify medications that may contribute to delirium risk. This triggered a pharmacist-led medication review. They reported a large reduction in delirium incidence

Other interesting findings: no clear evidence of reduction in hospital admissions (HR 0.89, CI 0.72 to 1.10, moderate quality evidence), in mortality (HR 0.88, CI 0.66 to 1.17, moderate quality evidence) or in falls risk (HR 1.03, CI 0.92 to 1.15, moderate quality evidence). Lapane 2011 Quoted in Clegg 2014 (it may not be enough to discontinue anticholinergic medications alone).

References:

- Lapane KL, Hughes CM, Daiello LA, et al. (2011). Effect of a pharmacist-led multicomponent intervention focusing on the medication monitoring phase to prevent potential adverse drug events in nursing homes. *Journal of the American Geriatrics Society*, 59(7),1238-45.
- Clegg A, Siddiqi N, Heaven A, et al. (2014). Interventions for preventing delirium in older people in institutional long-term care. *Cochrane Database of Systematic Reviews*, (1)CD009537
- Culp K, Mentis J, Wakefield B. (2003). Hydration and acute confusion in long-term care residents. *Western Journal of Nursing Research*, 25(3):251-66.
- Lin RY; Heacock LC; Fogel JF. (2010). Drug-Induced, Dementia-Associated and Non-Dementia, Non-Drug Delirium Hospitalizations in the United States, 1998-2005. *Drugs & Aging*, 27(1), 51-61.
- Wimmer BC; Dent E; Visvanathan R; et al. (2014). Polypharmacy and medication regimen complexity as factors associated with hospital discharge destination among older people: a prospective cohort study. *Drugs & Aging*, 31(8), 623-30.



This resource can be used for a variety of purposes:

- To investigate possible reasons for responsive behaviours
- To identify non-pharmacologic strategies for responsive behaviours
- To reduce antipsychotics and other chemical restraints
- To identify medications contributing to falls (and resulting in mechanical restraints)
- To identify anticholinergics and other medications that increase risk of delirium and interfere with sleep

A good medication review considers factors such as:

- Medications that are not essential, are part of prescribing cascades, lack a valid clinical indication, are no longer required, are potentially inappropriate or are no longer safe/therapeutic
- Medications that are important for the patient's goals; for which there is good evidence of effectiveness vs risk/harm. This discussion should involve the patient and supportive or substitute decision-maker.
- Pill burden (# of pills) and anticholinergic burden
- Interruptions to sleep, meals etc.
- A simple schedule to support independence and discharge.

Reference:

<http://www.albertahealthservices.ca/frm-19676.pdf>

Dehydration and Delirium

Dehydration:

- Lowers blood pressure
- Increases risk of falls
- Damages brain cells
- Increases risk of urinary tract infections and constipation



Risks for Dehydration with Aging & Dementia

- Decreased thirst, confusion, impaired swallow



Did you know that mental performance deteriorates even in mildly dehydrated younger adults? If you've only had coffee so far today, you may not be thinking at your best! Pour yourself a drink of water!

Dehydration can contribute to delirium.

- Dehydration decreases blood pressure, which decreases brain perfusion, which contributes to confusion and increased risk of falls (Wimmer 2014)
- Severe dehydration can damage the mitochondria – the energy producing parts of the brain cells.
- Dehydration can increase the risk of urinary tract infections, which may result in delirium.

There are risks for dehydration that come with aging and dementia: e.g. decreased thirst, inattention (may not sit and complete a full serving of fluids) and swallowing difficulties.

Interesting end of life delirium info:

Davies et al (2015) found that in end stage dementia, limited hydration (e.g. 1 litre/day for 2 days by hypodermoclysis) can help to prevent delirium.

References:

- Wilson, MM; Morley JE. (2003). Impaired cognitive function and mental performance in mild dehydration. *European Journal of Clinical Nutrition*, 57 Suppl 2, S24-9.
- Wimmer BC; Dent E; Visvanathan R; et al. (2014). Polypharmacy and medication regimen complexity as factors associated with hospital discharge destination among older people: a prospective cohort study. *Drugs & Aging*, 31(8), 623-30.
- Davies A; Waghorn M; Boyle J; et al. (2015) Alternative forms of hydration in patients with cancer in the last days of life: study protocol for a randomised controlled trial. *Trials* [Electronic Resource], 16:464.
<http://www.trialsjournal.com/content/16/1/464>
- Singler K; Hafner M; Sieber C. (2010). Delirium is a very common and life-threatening condition. *Therapeutische Umschau*, 67(2), 63-7.

Dehydration, Drugs and Delirium

- Diuretics
- Sedatives and antipsychotics
- Drug induced diarrhea e.g. laxatives, acid-blocking drugs, metformin, motility drugs, antibiotics, digoxin (at toxic levels)
- Drugs for bone density (Esophageal swelling and ulceration from incomplete swallowing)



There's a relationship between dementia, dehydration and polypharmacy (many drugs) in the elderly (Lorenzl 2012) There was a patient who never stopped screaming, day or night, until she received 2 mg of Haldol. She was already on 19 regularly scheduled medications, including 2 other antipsychotics. She was sedated for 8 hours – which is not the same as a good 8 hour rest. It was so quiet for the nurses and patients. But that was an extra 8 hours without drinking any fluid, which put her at risk to awaken dehydrated and delirious. Antipsychotics aren't the only medication that can increase risk of dehydration.

Supplemental Information:

Sedatives can leave a person too sleepy to drink enough fluids to hydrate adequately

Diuretics increase excretion of water and electrolytes, and dehydration can injure the kidneys. Older adults are often reluctant to drink, due to extra trips to the bathroom.

Laxatives: Prolonged constipation often results in laxatives such as **lactulose and sennosides**. What happens after repeated doses? Diarrhea and dehydration. What works better? Hydration and fiber, and reduction of anticholinergic burden.

Acid-blocking drugs such as Proton Pump Inhibitors alter the pH of the bowel, impair absorption of key minerals, vitamins (such as B12 which supports brain function) and electrolytes and are associated with an increased risk of Clostridium Difficile diarrhea (C-Diff). The elderly often have very low stomach acid.

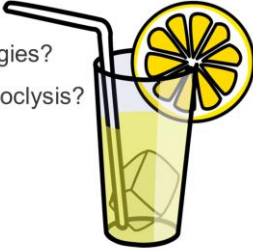
Bisphosphonates increase risk of severe fractures especially after 3 or more years of treatment. They must be taken sitting up with a full glass of water. Not only does this usually involve waking a person up, a sleepy patient won't likely drink the full glass of water. A pill lodged in the esophagus can cause erosion and swelling, making it difficult and even impossible to swallow/maintain hydration and nutrition.


References:

- Lorenzl S; Fusgen I; Noachtar S. (2012). Acute confusional states in the elderly--diagnosis and treatment. Deutsches Arzteblatt International, 109(21), 391-9.
- Diuretics and the acute risk of falls in the nursing home. Annual Scientific Meeting of the American Geriatrics Society (2011) : 11 May 2011.*
- Diuretics increase morbidity in elderly patients. Annual Scientific Meeting of the American Geriatrics Society (2011) : 11 May 2011.*
- Iyer, S; Naganathan, V; McLachlan, AJ; Le Couteur DB. (2008). Medication Withdrawal Trials in People Aged 65 Years and Older: A Systematic Review, Drugs & Aging, 25(12); 1021-31
- Hubbard RE; O'Mahony MS; Woodhouse KW. (2013). Medication prescribing in frail older people. European Journal of Clinical Pharmacology, 69(3), 319-26.
- Therapeutics Letters: A Systematic Review of the Efficacy of Bisphosphonates. A Systematic Review of the Harms of Bisphosphonates. www.ti.ubc.ca

Hydration Strategies

- What are some of your hydration strategies?
- What is your experience with hypodermoclysis?
- How do you measure hydration?
- Thickened fluids and dehydration




 Alberta Health Services

It's not easy to encourage fluid intake in those who aren't thirsty, don't like water, don't take initiative to drink, or have difficulty swallowing.

Delirium is associated with unsafe swallow on admission (McManus 2009). Thickened fluids are often prescribed for those prone to aspiration. It's possible to absorb enough fluids from thickened fluids, but unlikely, as there are many barriers to adequate hydration:

- Time to prepare, difficulties getting the right consistency (which varies with the substance being thickened, whether it is hot or cold and how long it sits)
- Taste, texture and eye appeal
- Time to assist patients. Staff offered almost a litre less per day: 2575 ml vs 1589 ml (McGrail 2015) due to having to spoon it versus offer a straw, etc.

Consider that unsafe swallow may be related to anticholinergic burden, which may improve with medication reductions. Consider the patient's wishes to swallow at risk.

Supplemental Information: How much is fluid is enough? At least 1500 ml per day to prevent dehydration: 1100-1200 as thick fluids, and 600 – 800 mls as high fluid foods through meals and snacks (e.g. hot cereal, applesauce).

Other strategies to support hydration include:

- hydrate with comfort rounds / with each encounter
- Water cooler available to patients
- Rec therapist or physiotherapist offers juice/water after activities
- Families involved in drinking fluids with patients/encouraging fluids
- Medication passes – require patients to complete 120 ml cup of water rather than sips from a larger cup
- For patients who tend to drop cups – adult noney cups with handles allow independence
- Volunteers do “hydration rounds” – pass out drinks to patients
- Fluids of choice – what people actually like
- Consider flavoured drops in water instead of juice

References:

- McGrail A; Kelchner L. (2015). Barriers to oral fluid intake: beyond thickened liquids. *The Journal of Neuroscience Nursing*, 47(1), 58-63.
- McManus J; Pathansali R; Hassan H; et al. (2009). The course of delirium in acute stroke. *Age & Ageing*, 38(4), 385-389.

Nutrition and Delirium

Healthy brain function requires many essential nutrients

Acetylcholine production requires choline, found in eggs, meat, fish, cruciferous vegetables (e.g. broccoli), milk

Delirium risk increases with malnutrition:
e.g. lower levels of Vitamin B 12,
iron, proteins



Chronic nutrient deficiencies increase risk of developing delirium

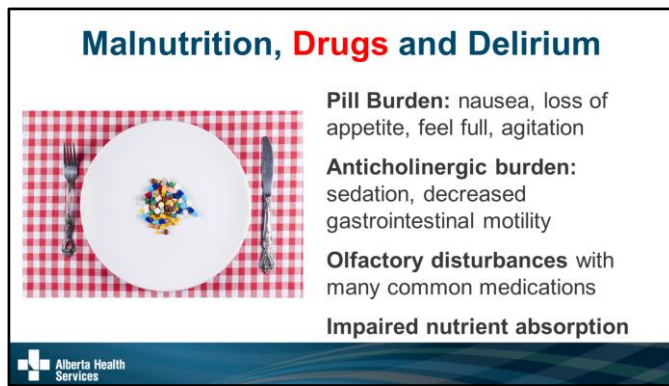
Supplemental information:

- Choline is required for the cell mitochondria to manufacture acetylcholine – choline is found in eggs, meat, fish, cruciferous vegetables (broccoli), milk and peanuts.
- Low cobalamin (B12) levels associated with delirium (Sevuk 2015)
- Hemoglobin less than 12 associated with delirium (Foroughan 2015, Chen 2015)
- Low amino acids associated with delirium e.g. tryptophan and tyrosine (Pandharipande 2008, Robinson 2008)
- Low albumin associated with delirium (Adamis 2007)

Pantoprazole blocks stomach acid, which means the person can't absorb key vitamins such as B12 and essential minerals such as zinc, iron, magnesium and calcium. They're mysteriously anemic, and may be booked for endoscopy to rule out GI bleed. And they're prescribed iron, which they can't absorb, resulting in constipation, leading to laxatives. With PPIs there's a higher risk of C-difficile due to alterations in bowel pH... There's a national campaign to reduce PPIs

References:

- Sevuk U; Baysal E; Ay N; Altas Y; et al. (2015). Relationship between cobalamin deficiency and delirium in elderly patients undergoing cardiac surgery. *Neuropsychiatry Disease & Treatment*, 11. 2033-9
- Foroughan M; Delbari A; Said SE; AkbariKamrani AA; Rashedi V; Zandi T. (2015). Risk factors and clinical aspects of delirium in elderly hospitalized patients in Iran. *Aging-Clinical & Experimental Research*, 28(2); 313-9.
- Chen YL; Lin HC; Lin KH; et al. (2015). Low hemoglobin level is associated with the development of delirium after hepatectomy for hepatocellular carcinoma patients. *PLoS ONE [Electronic Resource]*, 10(3):e0119199
- Pandharipande, PP; Morandi, A; Admas JR; et al. (2009). Plasma tryptophan and tyrosine levels are independent risk factors for delirium in critically ill patients. *Intensive Care Medicine*, 35(11), 1886-92.
- Robinson, TN; Raeburn, CD; Angles, EM; & Moss, M. (2008). Low tryptophan levels are associated with postoperative delirium in the elderly. *American Journal of Surgery*, 196(5), 670-674.
- Adamis, D; Treloar, A; Darwiche, F; et al. (2007). Associations of delirium with in-hospital and in 6-months mortality in elderly medical inpatients. *Age and Ageing*, 36(6), 644-649.



Think about a typical morning on your unit. A patient has just sat down to a hot breakfast when her 11 pills arrive, crushed in applesauce. By the time she coughs and sputters her way through bitter, crunchy applesauce and 120 mls of orange juice:

- Her blood sugar is up (that's close to 20 grams of sugar)
- She feels full
- Her stomach is upset (she vomits 20 minutes later)
- Her appetite is gone (lingering bitter aftertaste)
- Her breakfast is cold

In addition to this patient's experience, pills interfere with nutrition in other ways. Daily intake of ≥ 3 drugs interferes with important vitamins such as D, K, B and folate (Fabian 2011):

- Anticholinergic burden slows down the bowel and causes sedation
- Many medications disrupt sense of smell: ACE inhibitors, Beta blockers, Calcium-channel blockers, corticosteroids, gemfibrozil, levodopa, methotrexate
- Many drugs interfere with nutrient absorption or accelerate nutrient excretion:

Supplemental Information

Acid-blocking drugs: Stomach acid is required to absorb e.g. iron, magnesium, calcium, zinc, B vitamins, proteins

Statins: Cholesterol is required to absorb fat-soluble vitamins such as A, E and D.

Metformin: Decrease in B12, folic acid resulting in increased homocysteine and cardiovascular risk

Antibiotics: destroy the "good bacteria" in the gut that play a role in digestion and absorption of vitamins and minerals (e.g. Vitamin K), some can reduce iron absorption (tetracycline)

Diuretics: Drain the body of water-soluble nutrients (B vitamins, magnesium, potassium, sodium, calcium, zinc, Vitamin C)

Beta Blockers: block synthesis of melatonin. See references below for more...

References:

A practical guide to avoiding Drug-Induced Nutrient Depletion <http://nutritionreview.org/2013/04/practical-guide-avoiding-drug-induced-nutrient-depletion/>

Fabian E; Bogner M; Kicking A; et al. (2011). Intake of Medication and Vitamin Status in the Elderly. *Annals of Nutrition & Metabolism*, 58(2):118-25.

<https://www.merckmanuals.com/professional/nutritional-disorders/nutrition,-c-,-general-considerations/nutrient-drug-interactions>

do bugs need drugs?

For information and resources see www.dobugsneeddrugs.org

Urinary tract infections are frequently misdiagnosed in the elderly

Treatment with antibiotics has many unwanted side-effects

Misdiagnosis means underlying cause of delirium is missed

PUSH FLUIDS for 24 hours

Alberta Health Services

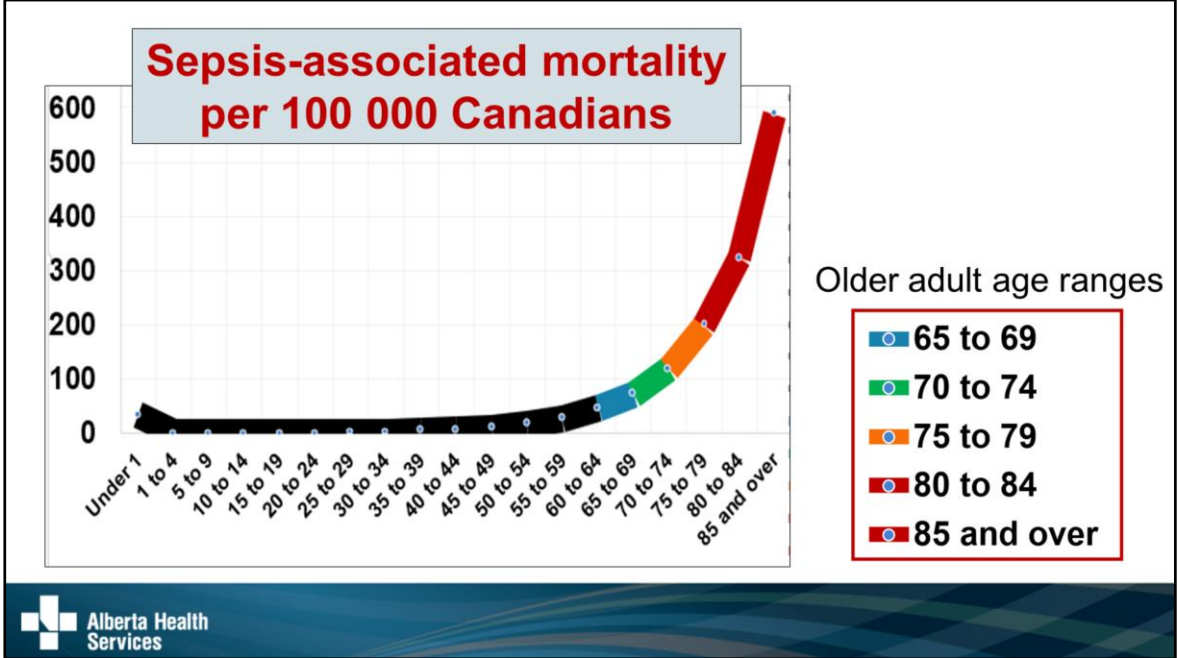
In the past, it was believed delirium was most commonly caused by urinary tract infections. We did a urine dip when we saw symptoms such as acute confusion, disorganized thinking, new or increased verbal or physical aggression or disorientation. This inevitably led to a false positive and a diagnosis of **Urosepsis**. But these common symptoms of encroaching delirium are *not* in the criteria for UTI. Typical symptoms of UTI include increased temp (over 38 or 1.1 above baseline) on 2 measures 6 hours apart; PLUS one of: new or increased urinary frequency, urgency, incontinence; new flank or suprapubic pain/tenderness; hematuria

UTIs are frequently misdiagnosed in the elderly

- At age 80 >50% of women and >30% of men have bacteria in their urine
- A negative urine dipstick rules out UTI, but a positive is not diagnostic.
 - Bacteria, pus and white blood cells in the urine are common in the elderly
 - Foul smell is not an indicator of UTI
 - Abnormal color is not suggestive of UTI
 - Gross hematuria is usually not caused by a UTI
- Urine C & S without typical signs of infection leads to false positives
 - Diagnosis of UTI is not made on the basis of Urine C&S – Urine C&S is to guide antibiotic selection
- Treatment with antibiotics has many unwanted side-effects
 - Antibiotic treatment of colonized bacteria leads to resistant bacteria, increased frequency of UTIs, diarrhea etc.
 - Antibiotic treatment of colonized bacteria is false assurance that the underlying problem is being treated – meanwhile, dehydration, malnutrition and/or anticholinergic burden may be the real culprits

References:



<http://www.dobugsneeddrugs.org/health-care-professionals/antimicrobial-stewardship-in-ltcf/>



Though there's a tendency to overdiagnose and overtreat urinary tract infections, it's still crucial to recognize the occasions when infections might put a patient at risk.

Sepsis is severe infection causing life threatening organ dysfunction. It often progresses to septic shock and death. More than 1/2 of all deaths from infectious disease are caused by sepsis. This graph is from Stats Canada and shows how sepsis-associated mortality increases greatly with age. In the elderly sepsis can be devastating.

There is a tool called the Suspected Septic Patient Screening Tool to aid the bedside caregiver in identifying early sepsis. (next page)

	 SUSPECTED SEPTIC PATIENT BEDSIDE SCREENING TOOL	patient label
	Urgent Care	
A. Known or Suspected Infection		
<input type="checkbox"/> Pneumonia, emphysema <input type="checkbox"/> Urinary tract infection <input type="checkbox"/> Acute Abdominal infection <input type="checkbox"/> Meningitis <input type="checkbox"/> Skin/soft tissue infection <input type="checkbox"/> Bone/joint infection <input type="checkbox"/> Wound infection <input type="checkbox"/> Infection from Catheter <input type="checkbox"/> Endocarditis <input type="checkbox"/> Implantable device infection <input type="checkbox"/> No known source other than clinical suspicion <input type="checkbox"/> Other <input type="checkbox"/> Severe pain associated with known or suspected source of infection		High Risk Patients: <ul style="list-style-type: none"> • Post operative • Diabetic • Splenectomy • Chemotherapy • Elderly • Neonates • Immunocompromised • Chronic Illness ex. COPD, Substance Abuse, Renal Failure • Postpartum
B. S.I.R.S. (Systemic Inflammatory Response Syndrome) criteria		
<input type="checkbox"/> Hyperthermia > 38° C <input type="checkbox"/> Hypothermia < 36° C <input type="checkbox"/> Tachycardia > 90 bpm <input type="checkbox"/> Tachypnea > 20 rpm <input type="checkbox"/> Acutely altered mental status (GCS <15) prior to sedation <input type="checkbox"/> Leukocytosis (WBC count >12.0 X 10E9/L) <input type="checkbox"/> Presence of any bands		
C. Primary RN: If patient has a Known or Suspected Infection from Section A, and ≥ 2 S.I.R.S. criteria from Section B, then:		
<input type="checkbox"/> Immediately notify charge nurse of patient. <input type="checkbox"/> Confirm patient's priority number and if required, have it changed. Ensure patients are seen quickly <input type="checkbox"/> Place Sepsis Package with patient's chart <input type="checkbox"/> Refer Suspected Septic Patient Nursing Guideline on back of form		
At anytime throughout a patient stay screening for suspected sepsis may occur.		
Draft dated March 2011		MD Notified at: _____

This tool helps us detect Suspected Inflammatory Response Syndrome (S.I.R.S.), the signs of possible early sepsis.

Part A identifies high risk patients/situations

Part B identifies clinical criteria that we can look for

Part C provides direction on what to do if sepsis is suspected from Parts A & B.

We are going to look at Parts A and B in more detail as they are the sections that help us detect these sick patients early

References:

Suspected Septic Patient Screening Tool

<http://insite.albertahealthservices.ca/assets/ucc/tms-ucc-protocol-resources-suspected-sepsis.pdf>

A. Known or Suspected Infection	
<ul style="list-style-type: none"> <input type="checkbox"/> Pneumonia, emphysema <input type="checkbox"/> Urinary tract infection <input type="checkbox"/> Acute abdominal infection <input type="checkbox"/> Meningitis <input type="checkbox"/> Skin/soft tissue infection <input type="checkbox"/> Bone/joint infection <input type="checkbox"/> Wound infection <input type="checkbox"/> Infection from catheter <input type="checkbox"/> Endocarditis <input type="checkbox"/> Implantable device infection <input checked="" type="checkbox"/> No known source other than clinical suspicion <input type="checkbox"/> Other <input type="checkbox"/> Severe pain associated with known or suspected source of infection 	<p style="text-align: center; margin: 0;">High Risk Patients</p> <ul style="list-style-type: none"> • Post-Operative • Diabetic <ul style="list-style-type: none"> • Splenectomy • Chemotherapy • Elderly <ul style="list-style-type: none"> • Neonates • Immunocompromised • Chronic Illness (e.g. COPD, Substance Abuse, Renal Failure) <ul style="list-style-type: none"> • Postpartum

Part A helps identify high risk patients and common sources of infection.

Notice the list of conditions that can lead to infection. The highlighted items are commonly seen with older adults (pneumonia, emphysema, UTI, etc...)

It is important to look beyond the obvious to consider what else might be happening. For example, a patient may have been admitted with a UTI but has now developed a soft tissue infection due to a contaminated IV site. Subsequent unrelated sources of infection may be overlooked **and not treated** if one assumes if one assumes the initial infection (UTI) is responsible for all systemic infectious symptoms later on.

Next look at the yellow box of high risk patients. Conditions common in the elderly are highlighted (diabetic, chronic illness, renal failure, etc).

Notice Red highlights:

- 1) “Elderly” (age alone makes a patient high risk),
- 2) “No known source other than clinical suspicion”. In the elderly, atypical presentations due to normal aging changes can make recognition more tricky. You are never wrong to continue to part B and look for clinical signs of infection. If you have a suspicion – follow it.

B. SIRS CRITERIA

(Systemic Inflammatory Response Syndrome)

- Hyperthermia > 38°C
- Hypothermia < 36°C
- Tachycardia > 90 bpm
- Tachypnea >20 / min
- Acutely altered mental status (GCS <15) prior to sedation
- Leukocytosis (WBC count >12 X 10E9/L0
- Presence of any bands

This is a list of clinical signs that indicate possible systemic inflammatory response syndrome.

GCS = Glasgow Coma Scale

This list works very well for younger patients but for older patients we must consider factors such as age related changes and medication effects.

SIRS - Considerations for Older Adults	
Hyperthermia > 38°C Hypothermia < 36°C	1.3°C change from baseline (consider Normal Aging Changes, Medications)
Tachycardia >90 bpm	Heart Rate – change from baseline (consider Normal Aging Changes and Medication effects)
Tachypnea >20 min	Respiratory Rate – change from baseline
GCS <15	Delirium detection (e.g. CAM)
Leukocytosis (WBC>12)	Leukocytosis
Presence of any bands	Bands

We must think critically to detect sepsis in the elderly. Consider:

To detect significant temperature change you must know the person’s baseline for that time of day:

- Hyperthermia: 20-30% of the time, older adults have a blunted or completely absent fever response to serious infection. If you note a temperature rise 1.3°C above baseline consider this a fever response. Lack of fever does NOT indicate lack of infection in the elderly.
- Hypothermia: Basal body temperature is often lower in older adults. With normal circadian fluctuations or reduced thyroid function, an older adult’s temperature might be 36°C or lower during the night.

Tachycardia: Consider normal aging changes and whether HR response is suppressed by medications such as beta blockers. Look for a change from baseline vs target of 90 bpm. Tachypnea is metabolically driven. Look for a change from baseline especially with conditions such as COPD.

Glasgow Coma Scale works well for younger patients. For older patients, CAM helps detect a delirium that can be the atypical presentation of an infectious process. Remember, hypoactive delirium can be subtle and is frequently missed.

Leukocytosis and Presence of bands are significant at any age. “Bands” are immature WBCs. Bands lead to a rise in WBCs, so finding bands prior to an elevated white blood cell count allows early treatment to hopefully prevent progression to sepsis.

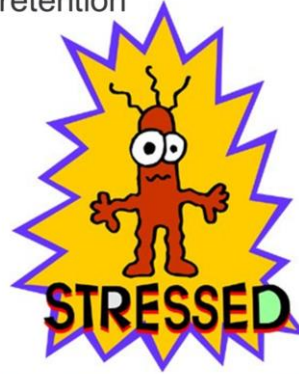
“...older severe sepsis survivors were more than three times more likely to see a drop in cognitive (mental) abilities that can make it impossible for them to return to their previous living arrangements”. (Iwashyna 2010)

References:

Sepsis Alliance <http://www.sepsis.org/sepsis-and/aging/>
 Chester JG; Rudolph JL. (2001). Vital Signs in Older Patients: Age-Related Changes. Journal of the American Medical Directors Association, 12(5), 337-343.
 Norman DC. (2000). Fever in the Elderly. Clinical Infectious Diseases, 31(1), 148-51.
 Green JE; Ariathianto Y; Wong SM; Aboltins C; Lim K. (2014). Clinical and inflammatory response to bloodstream infections in octogenarians. BMC Geriatrics, 14(55).
 Iwashyna TJ, Ely W, Smith DM (2010) Long-term Cognitive Impairment and Functional Disability Among Survivors of Severe Sepsis. JAMA 2010; 304(16):1787-1794.

Stress Prevention Strategies

- Assess for discomfort e.g. pain, urine retention
- Avoid physical restraints
- Support sleep
- Reduce noise and overstimulation
- Consistent caregivers
- Meaningful activities
- Therapeutic napping



Stress impacts brain neurotransmitters, and can be a precipitating factor in delirium development. E.g. Have you noticed that when you're under stress you feel uptight, and don't sleep well? When cortisol levels rise in response to stress, serotonin and melatonin levels drop.

Older adults in hospitals and care facilities experience biological, emotional and environmental sources of stress. This slide indicates ways we can reduce stress.

Supplemental Information:

Sources of stress include:

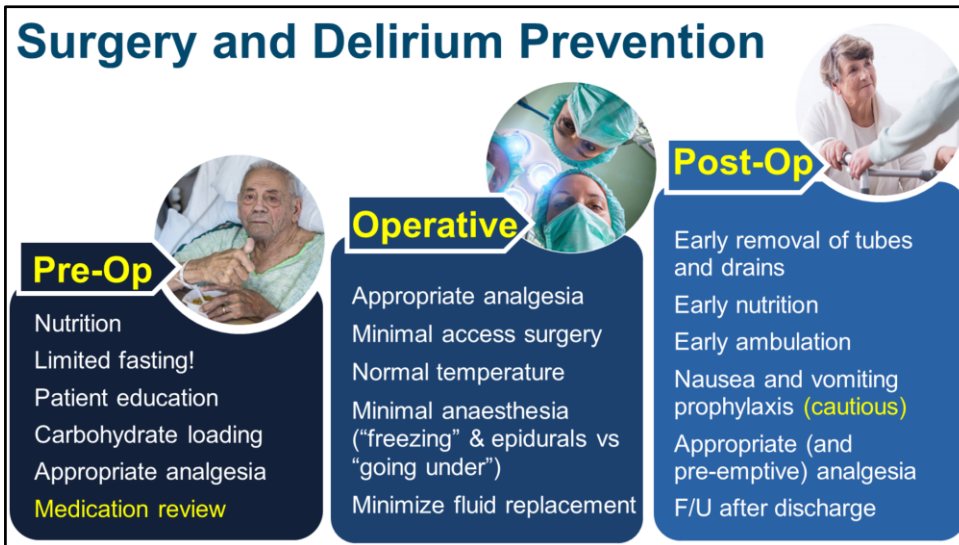
Biological – unresolved pain, chronic or acute medical illness, low oxygen levels, abnormal blood sugar levels, abnormal levels of calcium potassium or sodium in the blood, thyroid problems, liver or kidney disease, dehydration, lack of sleep

Emotional- e.g. mechanical restraints. Any kind of change in the everyday environment of a person with dementia can result in stress. Examples: unfamiliar environment, a move across the hallway to accommodate an isolation room, a change in roommates, death or loss of a familiar caregiver...

Environmental – environmental factors that contribute to stress include noise and stimulation (call bells, overhead paging, staff talking, fire alarm testing, bed alarms, equipment alarms), too cold or too hot, lack of stimulation

References:

- Piotrowicz K; Klich-Rączka A; Pac A; Zdzienicka A; Grodzicki T. (2015). The diurnal profile of melatonin during delirium in elderly patients-preliminary results. *Experimental Gerontology*, 72:45-9.
- Inouye SK. (2006). Delirium in Older Persons. *New England Journal of Medicine*, 354(11):1157-65.
- Chen S; Shi L; Liang F; Xu L; Desislava D; Wu Q; Zhang J. (2016). Exogenous Melatonin for Delirium Prevention: a Meta-analysis of Randomized Controlled Trials. *Molecular Neurobiology*, 53(6), 4046-53.
- Voyer, P; Richard, S; Doucet, L; Cyr, N; Carmichael, PH. (2009). Precipitating factors associated with delirium among long-term care residents with dementia. *Applied Nursing Research*, 24(3), 171-8.
- Inouye SK; Zhang Y; Jones RN; et al. (2007). Risk factors for delirium at discharge: development and validation of a predictive model. *Archives of Internal Medicine*, 167(13),1406–13.



Anaesthetic induces sedation, and thus by nature impacts brain neurotransmitters and is a precipitating factor for delirium development.

ERAS = Enhanced Recovery After Surgery. ERAS outlines interventions (pre-op, intra-operative and post-op) to expedite recovery and decrease complications such as delirium. Where ERAS has been implemented there has been decreased cost, length of stay, use of analgesia, and increased patient satisfaction.

Supplemental Information:

These are some of the interventions of ERAS being introduced in Alberta.

ERAS	
Securing modern care	
Surgeon: No bowel prep Food after surgery No drains Early removal u-catheter No iv fluids, no lines Early discharge <i>All evidence based!</i>	Anesthetist: Carbohydrates no fasting No premedication Thoracic Epidural Anesthesia (open) Balanced fluids Vasopressors No or short acting opioids

References:

ERAS Society Guidelines: <http://erassociety.org.loopiadns.com/guidelines/list-of-guidelines/>
 Alberta Innovates: <http://www.aihealthsolutions.ca/news-and-events/media-centre/delivering-surgical-care-sooner-safer-and-smarter-2/>

Acetylcholine and Parkinson's Disease

Parkinson's disease and the resulting medications increase risk of delirium

Best treatment is to reduce Parkinson's medications.



People with Parkinson's Disease are at high risk for delirium, and even higher risk if treated with antipsychotics for psychosis in delirium or responsive behaviours. Antipsychotics decrease dopamine and also block acetylcholine.

Because of the impact of the disease and medication treatment on acetylcholine and dopamine, it is usually preferable in end stages to reduce Parkinson's medications rather than add other drugs such as antipsychotics.

Supplemental Information:

In Parkinson's, the main area of brain that manufactures dopamine dies, resulting in difficulty starting movement and imbalances in acetylcholine.

Parkinson's medications replace the neurotransmitter dopamine. e.g. levodopa (Sinemet) is converted in the brain into dopamine. Dopamine agonists (bromocriptine, pramipexole, ropinirole) mimic the effects of dopamine.

What are the side effects of Parkinson's medications? Nausea, vomiting, dizziness due to hypotension, sleepiness, visual hallucinations, confusion, impulse control disorder (such as uncontrolled shopping, gambling, eating, and sexual urges).

Reference:

Holroyd S; Currie L; Wooten GF. (2001). Prospective study of hallucinations and delusions in Parkinson's disease, *Journal Neurology, Neurosurgery & Psychiatry*, 70(6), 734-8.

End of Life Delirium

Current practice supports antipsychotics at end of life

Evidence is unfolding to suggest supportive nursing care and gentle hydration (e.g. hypodermoclysis) may be more effective.



Current practice encourages antipsychotics for end of life delirium, but evidence is unfolding to suggest that supportive nursing care may be more effective.

Supplemental Information:

Treatment with antipsychotics and supportive nursing care vs placebo:

Distressing behavioral, communication and perceptual symptoms of delirium were significantly greater in those treated with antipsychotics (risperidone or haloperidol).

Those treated with antipsychotics also had:

Higher delirium scores (increased delirium severity)

More likely to die (and died sooner)

More “rescue” midazolam needed

Reference:

Agar MR; Lawlor PG; Quinn S; Draper B; et al. (2017). Efficacy of Oral Risperidone, Haloperidol, or Placebo for Symptoms of Delirium Among Patients in Palliative Care: A Randomized Clinical Trial. *JAMA Internal Medicine*, 177(1):34-42.

Do antipsychotics treat delirium?

Antipsychotic may cause or worsen delirium

Antipsychotics are a **last resort** when:

- Distressing/dangerous psychosis *and* non-pharmacologic strategies are ineffective
- Psychosis is an obstacle to crucial treatment
- Short term (e.g. one dose) while treating underlying causes
- Low dose: e.g. 0.25 to 0.5 mg haloperidol (Haldol)

Antipsychotics do not treat delirium.



Antipsychotics themselves may cause delirium. If primary cause of delirium is anticholinergic burden or medication toxicity, adding another drug will likely complicate the delirium.

Antipsychotics may worsen delirium: E.g. If the primary cause is dehydration, increased sedation will worsen dehydration unless parenteral fluids are provided. Try non-pharmacologic approaches first – e.g. hydrate, address pain. Use only for psychological distress, or if agitation/aggression and psychosis poses a safety risk *and* non-pharmacologic strategies are ineffective. Non-pharm strategies do not include physical restraints, the stress of which can contribute to delirium.

What is appropriate use of antipsychotics in delirium? If absolutely necessary, use only short term (less than 1 week – better yet, one low dose and re-evaluate). Have a plan in place to identify if the medication is helping or not, when to review it, and what to do if it's not effective (e.g. stop versus increase dose or add another medication) The dose of haloperidol for delirium is 0.25 to 0.5 mg q4h. Haloperidol is not recommended if there is pre-existing Parkinson disease or Lewy body dementia (2014 Canadian Coalition for Seniors Mental Health guideline update)

Supplemental Information

The literature before 2010 described antipsychotics a treatment for delirium. In 2010, NICE National Clinical Guideline Centre decided not to recommend antipsychotic treatment of delirium; risks outweighed benefits. **What we need more of:** research comparing medication treatment with non-pharmacologic alternatives, e.g. hydration, safe-wandering rooms with close observation.

The new Dutch Delirium Guideline makes a distinction between 'uncomplicated delirium' and 'complex delirium'. Uncomplicated delirium is delirium which is not complicated by disrupting behavioral disturbances, complex comorbidity or polypharmacy, which has a known etiology and responds to standard pharmacological and non-pharmacological treatment within a few days. Complicated delirium has one or more characteristics that make treatment more difficult, such as severe behavioral disturbances including agitation or aggression, concurrent medical, neurological or psychiatric comorbidity, or complex polypharmacy. (Leentjens 2014)

References:

NICE National Clinical Guideline Centre, Clinical Guideline 103, Delirium: prevention, diagnosis and management; Full Guideline July 2010. ; <http://www.nice.org.uk/guidance/cg103/evidence/full-guideline-134653069>

<http://www.ccsmh.ca/pdf/guidelines/2014-ccsmh-Guideline-Update-Delirium.pdf>

Leentjens AFG; Molag ML; Van Munster BC; et al. (2014). Changing perspectives on delirium care: The new Dutch guideline on delirium. *Journal of Psychosomatic Research*, 77(3):240-241.

Summary

Those with dementia are already at increased risk of delirium

Delirium has many causes, including:

- Too many medications
- Dehydration
- Malnutrition
- Stress
- Infection
- Surgery
- Parkinsons Disease



While delirium is a multifactorial process, it is estimated that medications alone may account for 12%-39% of all cases of delirium.

Alagiakrishnan and Wiens 2004

References:

- Alagiakrishnan K; Wiens CA. (2004). An approach to drug induced delirium in the elderly. *Postgraduate Medical Journal*, 80(945),388–93.
- Hubbard, RE; O'Mahony, MS; Woodhouse, KW. (2013). Medication prescribing in frail older people. *European Journal of Clinical Pharmacology*, 69(3),319-26.

DELIRIUM is a **MEDICAL EMERGENCY**



Like chest pain
Like anaphylaxis
Like stroke

Intervene IMMEDIATELY

Remember: If someone was bleeding, we would make every attempt to stop it. Delirium is like bleeding brain cells. It's a medical emergency! Immediate intervention/notification is required.

Site Assessment

What are you already doing well?

Where do you have room for improvement?

What are your priorities and next steps?



Team Action Plan for Delirium Prevention

How is your unit/facility doing in the following areas?	Needs Improvement	Average	Great
Medication review to reduce pill and anticholinergic burden, antipsychotics, sedatives			
Support sleep			
Appropriate use of Drugs for Bugs			
Reduce stress: pain			
Reduce stress: overstimulation (e.g. call bells, bed alarms, overhead paging)			
Reduce stress: person-centred care plan			
Reduce stress: minimal use of physical restraints			
Support of hydration			
Support of nutrition			
Early delirium detection			
Rapid delirium response			
Other:			

1. Place a check mark to indicate how you think your team is doing in each area listed.
2. Compare results as a team: what areas are you doing well? Celebrate!
3. Compare results as a team: where is improvement most needed?
4. Select at least 1 Quality Improvement Focus.
5. Determine next steps. (see reverse)



Seniors Health Strategic Clinical Network
Adapted from PROSCI, used under license

JULY 2017

Instructions:

- 1) Individually - Using the team Action Plan for Delirium Prevention complete the section called *rate your facility/unit*
- 2) As a team, compare and discuss results:
 - What are you doing well as a facility/unit?
 - Decide as a team what to focus on to reduce delirium in your facility/unit

Example: address overstimulation due to bed and chair alarms and call bells

- 3) On the reverse of the document, determine next steps and create an action plan for things you want to work on.