Safe Medication Management in Older ED patients

Don Melady MD CCFP (EM) FCFP
Mount Sinai Hospital Toronto
Personalized e-learning in Geriatric Emergency Medicine: http://geri-em.com
Twitter: @geri_EM

An increasing proportion of our ED patients are over the age of 65: the fastest-growing demographic in Canada is the segment over 80! However there is little focussed attention on this segment from a medical or a user point-of-view. Curiously older patients are often the first mentioned "exclusion group" on many research protocols both of medications and of outcomes – even though they are the group that we're most interested in because of their complexity and resource-intensive use of EDs. As a result a general disclaimer of this presentation is that it's largely "expert-based medicine" or at least "experience-based medicine" and largely NOT "evidence-based medicine;" the simple fact is that there is not a lot of published evidence available on this topic. The reading list will provide you with some basic articles.

Communication:

Many medication "errors" are not actually errors but simply "negative outcomes" as a result of less than optimal communication. This patient group is marked by a high prevalence of cognitive impairment (often not identified), hearing and vision impairment and – even with normal cognition – a slower ability to process new information. Many older ED patients are already on >5 medications, each one with complex drug-drug and drug-disease interactions. These combinations often test the ability of a sophisticated physician let alone an elderly layman. Finally most ED interactions with older patients involve some CHANGE of medications – adding a medication, dropping a medication, changing a dose, often all three. It's not surprising that the potential for things to go wrong is high!

This is the time to pull out your excellent communication skills. Yes, this does take a little longer (maybe 2-4 minutes). And yes, the standard of care does require excellent communication when managing the most complex people in your department!

- Use a teach-back strategy – ask the patient or care-giver to explain back to you what they understand of the changes being made.
- Involve the accompanying care-giver, usually a spouse or offspring, in the discussions and plans.
- Use simple layman's language (avoid terms like "baseline" and "cognitive changes" in favour of "not his usual self" and "confused"). Think about what your grandmother would understand!

- Ask the patient what word they use for their medication ("the little blue puffer" or "Ventolin" or "salbutamol" or "the breathing medication") then stick with that usage so that THEY know what you're talking about.
- Send some written instructions with the patient. A copy of the chart may suffice IF your handwriting is legible AND you point out where on the chart the patient can look for directions. It takes as little as two minutes to type a quick Word document, print it and give it to the patient. That strategy often avoids much longer explaining time. Plus the patient and family then have something at home to refer to when the ED-stress induced amnesia kicks in.
- Be sure to involve other members of the care team – especially the family physician! Caring for old people is a team sport – almost always with the family doc as the quarterback. If often involves 3 or 4 doctors and assorted other providers, all of whom almost certainly are more knowledgeable and involved in the patient's care than you are. Ask the ward clerk to fax a copy of the chart (which now includes your Word document!). Leave a voice mail on the office machine (at 2 am that can take as little as 30 seconds "Your patient Mr. X was here. He doesn't look great. I started him on Cipro.") Fax the results of any investigations which might explain medication changes. Ask the patient to call their family doctor the next day – it may take weeks to actually get an appointment but at least the process is started.

Awareness of normal age-related changes in physiology

Three points:

- Normal CNS changes mean the brain's cognitive motor and regulatory functions are more vulnerable to any change in the physiologic milieu. The blood-brain barrier is diminished; there are fewer cells around still doing all the tasks formerly accomplished by more; there is a net decrease in all neuro-transmitters especially acetylcholine making the aging brain much more sensitive to anti-cholinergic effects. Like other organ systems the CNS is often working close to its functional threshold: a slight change can tip it below that threshold – that's why the second most common cause of delirium is medication changes. For the same reasons a much lower dose can have a greater effect than in a younger brain (for example, narcotics).
- Normal liver changes: there is a decrease in size and number of liver cells and therefore a net decrease in enzymatic activity. While all the enzyme systems continue functioning they are also at the limit of their functional capacity. They are easily overwhelmed by the addition of a new medication producing a much greater than expected effect on other drug levels.
- **True** renal function decreases steadily from age the age of 30. Because muscle bulk (the source of creatinine) also decreases, serum creatinine is **not** an accurate indicator of

kidney function in the frail elderly. It is not necessary to do GFR or Cr Clearance calculation on every older patient you see (though if you do it a few times you'll get enough surprises that you'll never forget!) It is necessary to remember that renal **function** (not just creatinine) varies inversely with increasing age, and directly with decreasing weight, and female gender. So even with a "normal" creatinine, that little and old lady probably has a renal **function** half of "normal." Keep that in mind when dosing any renally excreted drug (all narcotics, many antibiotics, digoxin, gabapentin, some beta-blockers).

Awareness of high-risk medications

1. Anti-coagulants especially warfarin. Warfarin is nearly completely metabolized in the liver. Slight changes in the liver's ability to metabolize it will produce a large increase in anti-coagulant effect. Adding a new medication (which is also hepatically metabolized eg. ciprofloxacin or almost any antibiotic) will take away enzyme activity from warfarin meaning there is more free drug circulating with a greater anticoagulant effect. That doesn't mean you shouldn't prescribe warfarin but it does mean that if you're changing other medications, the patient needs to be warned that the dose of warfarin probably should be decreased AND the INR should be checked in 3-4 days.
2. Opioids: codeine is a very weak analgesic with the highest GI side effect profile (nausea and constipation). In most elderly its disadvantages clearly outweigh its analgesic benefits. Any of Oxycodone, Morphine, or Hydromorphone is probably more effective for acute pain. Go low. Go slow. But GO. Start with 2.5-5.0 mg of Oxycodone po OR 2.5-5.0 mg of morphine po OR 0.5-1.0 mg po of Hydromorphone and then double the dose if not effective or half if too drowsy. Patient and caregiver need clear written instructions. Everyone (young and old) develops constipation on Opioids: any opioid prescription should include a stool-softener AND a stimulant (senna). Be familiar with and use an Equianalgesic Table.
3. Benzodiazepines: BNZ are probably not the best medication for management of agitation or of anxiety in the elderly. They have a significant frontal lobe effect which is exactly what you don't want in the delirious patient with agitation. Low-dose haloperidol (0.5-1.0 mg im or po with a doubled dose q 30 minutes as necessary) is much safer and more effective. Anxiety and insomnia in the geriatric population are complex multi-factorial problems that do not lend themselves to management in an ED. Almost all of the BNZ are associated with an increase in fall risk and their use should be considered when assessing fall etiology.
4. NSAIDs: Unless a condition is clearly inflammatory and no other analgesic is available (two conditions that are rarely met), it is safe to say that **all NSAIDs/COX-2s are best avoided in the elderly**. All NSAIDs have a significant effect on decreasing renal function (because of prostaglandin-induced vasoconstriction of the

afferent arteriole) and increasing hypertension (because of water and salt retention). Because of decreased gastric pH (more acidic) and decreased motility their effect on peptic ulcer disease and GERD is more pronounced than in the young. Most studies suggest that NO NSAID or COX-2s is significantly superior to any other in the class.

5. Antihistamines/anti-cholinergics: Because of the decreased function of acetylcholine-mediated neurotransmission, the elderly are particularly sensitive to any anti-cholinergic medication – excess sedation weakness and delirium are often the result. A surprising number of regularly used medications (eg. indomethacin) have significant anti-cholinergic effects. Pure anti-cholinergics like dimenhydrinate (Gravol) can be effective for nausea but probably 12.5-25.0 mg is an effective dose. Anti-histamines probably should be limited to true histamine-mediated urticaria (not for generalized non-specific itch or angioedema and certainly not as a sleep aid). .
6. Hypoglycemics: insulin and OHG – if you're starting or altering either of these in the ED, make sure you scrupulously communicate a management plan both to the patient and to the primary care-giver. Chances for things to go wrong are infinite. Should you get some kind of community-based care involved? Specifically sulfonylureas (Glyburide) have been associated with precipitous drops in blood sugar even in the habituated patient. Keep that in mind when assessing etiology of syncope and falls.

Be the Sherlock Holmes of the Med List!

It is the physician's responsibility to know exactly what the patient is taking. That takes more than a cursory glance at the triage nurse's hasty transcription of a two-year old print-out and then writing "See list!"

- Do a "brown bag biopsy": go through all the pill bottles in the bag and ask if and how the patient is taking them. You'll get some big surprises!
- Ask about over-the-counter medications. Many older patients do not think of vitamin supplements as medications – nor the Gravol or Benadryl they take for sleep – nor of the Calcium or Tums they take with their ciprofloxacin.
- If from a Nursing Home or other institution, be sure to check the Medication Administration Record. There may be a connection between the now four-times-a-day lorazepam "prn" and the patient's "new confusion;" or the fact that the new nurse routinely gives the high end of the morphine range where the old nurse always gave the low end and "resident seems very drowsy!"
- Many provinces now have an accessible medication data base. Ontario has the ODB record which gives an accurate account of most prescriptions fill (not necessarily being taken.) It's an invaluable source of medication history and changes. However it does not include non-ODB-covered medication (eg dabagitran or the off-label alpha-agonists); and it does not mean the patient is actually taking them as prescribed or at all

- Call the pharmacist – often the only source of truly accurate information as to what the patient is getting – and the most easily accessed health care professional who sees the patient longitudinally.

I hope these random notes are helpful at keeping you – and your older patient – out of trouble.

References

(1) Budnitz D, et al Medication use leading to emergency department visits for adverse drug events in older adults. Ann Intern Med 2007; 147(11):755-765.
(2) Chan M, et al. Adverse drug events as a cause of hospital admission in the elderly. Intern Med J 2001 May-Jun; 31(4):199-205.
(3) Fick D et al. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. Arch Intern Med 2003; 163(22):2716-2724.
(4) Hafner JW, et al. Adverse drug events in emergency department patients. Ann Emerg Med 2002 Mar; 39(3):258-267.
(5) Hastings SN, et al. Quality of pharmacotherapy and outcomes for older veterans discharged from the emergency department. J Am Geriatr Soc 2008 May;56(5):875-880.
(6) Heard K et al. Inappropriate prescribing in elderly ED patients. Am J Emerg Med 2008 Mar;26(3):372-373.
(7) Hustey FM, et al. Inappropriate prescribing in an older ED population. Am J Emerg Med 2007 Sep;25(7):804-807.
(8) Nixdorff N et al. Potentially inappropriate medications and adverse drug effects in elders in the ED. Am J Emerg Med 2008 Jul;26(6):697-700.
(9) Salvi F, et al. The elderly in the emergency department: a critical review of problems and solutions. Intern emerg medicine 2007 Dec;2(4):292-301.
(10) Viallon A et al. Creatinine clearance and drug prescriptions for the elderly. A study of 419 patients older than 70 years admitted through the emergency department. Presse Med 2006 Mar;35(3 Pt 1):413-417.
(11) Zed PJ, et al. Incidence, severity and preventability of medication-related visits to the emergency department: a prospective study. CMAJ 2008 Jun 3;178(12):1563-1569.

For the UHN Emergency Medicine Conference

November 4, 2014