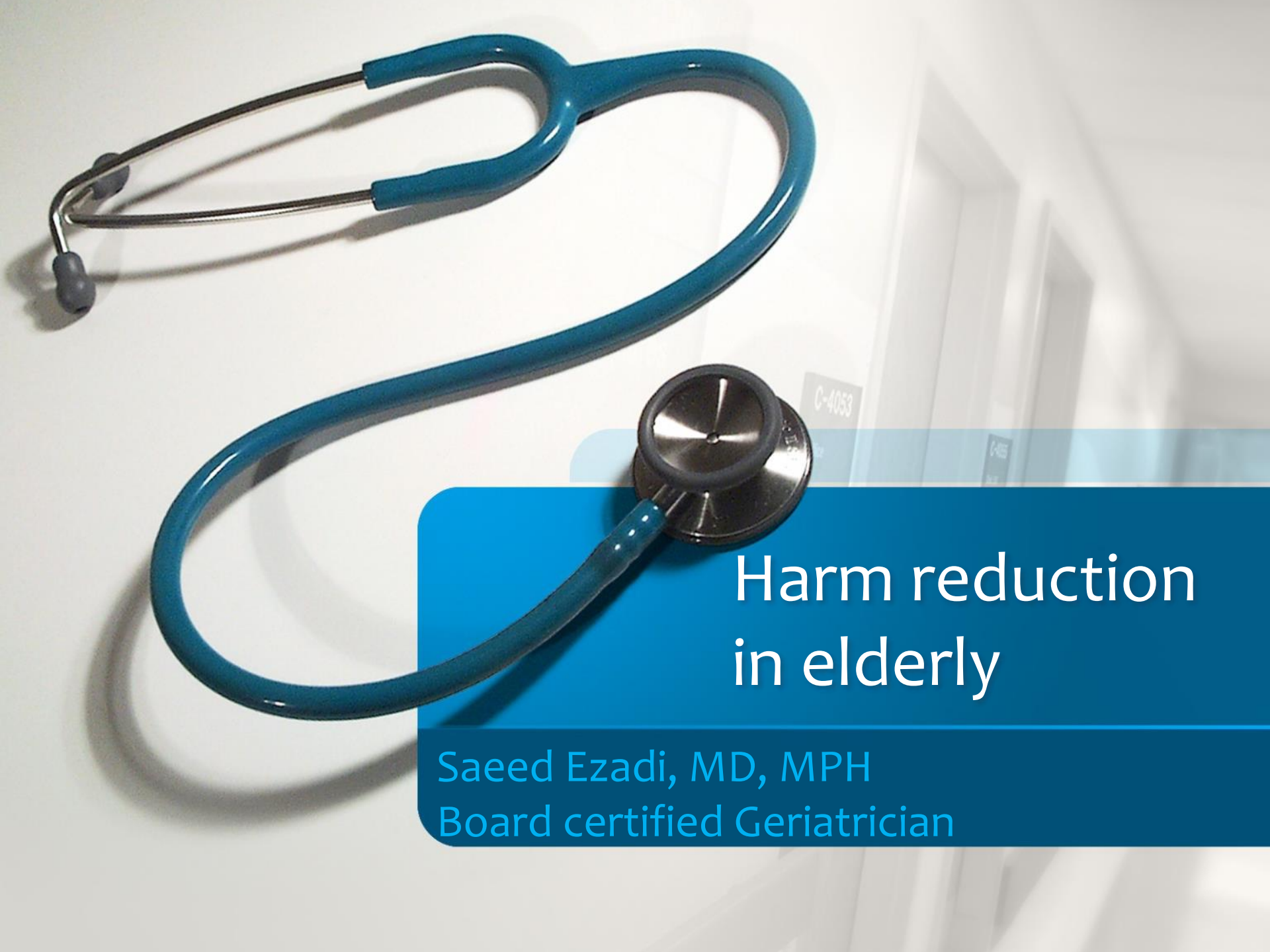


Harm reduction in elderly

Saeed Ezadi, MD, MPH
Board certified Geriatrician

General Consideration in senior population

SUBSTANCE USE DISORDERS in Elderly

Some estimates indicate about

- **60%use of alcohol,**
- **2.6% use of marijuana,**
- **0.41% use of cocaine**

in those above the age of 50

- By 2020 there will be **2.7 million prescription drug** abusers among those who are older

- Studies suggest a **gradual increase in prevalence** rates of drug misuse as younger cohorts age

overall impact on the health care system

- By 2020 an estimated 4.4 million older individuals will need treatment of substance abuse

- Unfortunately, this rise in need has not led to increasing emphasis on substance treatment for older adults.

- **Ways Opioid Addiction and Treatment Differ in Older Adults**

Chronic-pain

- When given an opiate drug, most people will feel some *nausea and physical discomfort, and wake with an unpleasant sensation.*
- "But about 20 percent of the population will say, 'Oh, that feels amazing,'" he continues. "**Those are the people we worry about.**

Opioid as Pain Killer

- For most patients, these drugs should be used for **short periods only to ease acute pain**, like after surgery, and as a last resort for hard-to-treat chronic pain.

- Age-related conditions like arthritis, with its debilitating joint pain, can also contribute to opioid overreliance.

Other substances complicate opioid addiction

- "Many, many times it comes **with benzodiazepines** for older adults – **anxiety and sleeping drugs**. Usually, there's **alcohol**, too. Sometimes pot – that's the No. 1 illicit drug older adults are using.“

- It's never a good idea, at any age, to take sedative and opioid drugs together

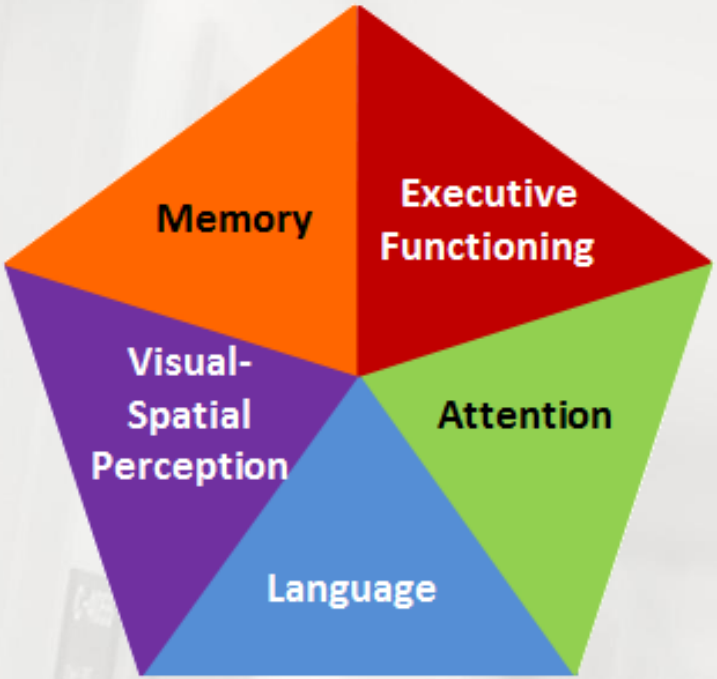
- As a physician whats your problem with these two?
- BZD
- Sleeping drugs

Risks with opioids

- Older adults, who are already more prone to falls, broken bones and cognitive impairment, increase all these risks with opioids.

- As a physician whats your problem with Fall?

- What is Cognitive impairment?



Drug-sharing is a problem

- "You got a bad hip? I do too – here, I've got some of these old pills left.“
- That's what seniors may hear from well-intentioned friends

Overdoses are rising

- In Naples, Florida, an area with a high concentration of seniors, up to **half of recent overdoses** have occurred in people over 50

Shame prevents some seniors from seeking treatment.

- Especially among "older, older" adults in their 70s, 80s and beyond, even the need to be in a treatment center causes "huge shame,“

- They're often traditionalists, some from families with Prohibition-era attitudes. Addiction can feel like a major failure for someone who's led a long, successful life

Opiate Misuse

- A disturbing trend in the United States is opiate pain medication misuse

Opiate Misuse

- **Over 11% of older adults use opiates** on regular basis
- **opiate use accounts for 22% of inpatient admissions that are related to substance misuse.**

The best treatment for opiate misuse?

- The best treatment for opiate misuse is
- **prevention** by utilizing **alternative treatments for pain in older adults**

Sustained, long-term use of opiate

- Although undertreatment of pain continues to be problem for older adults,
- **there is no evidence that sustained, long-term use of opiate family pain medications lead to better outcomes.**

Older adults are very sensitive to medications

- Opiate misuse often causes:

❑ sedation,

❑ constipation,

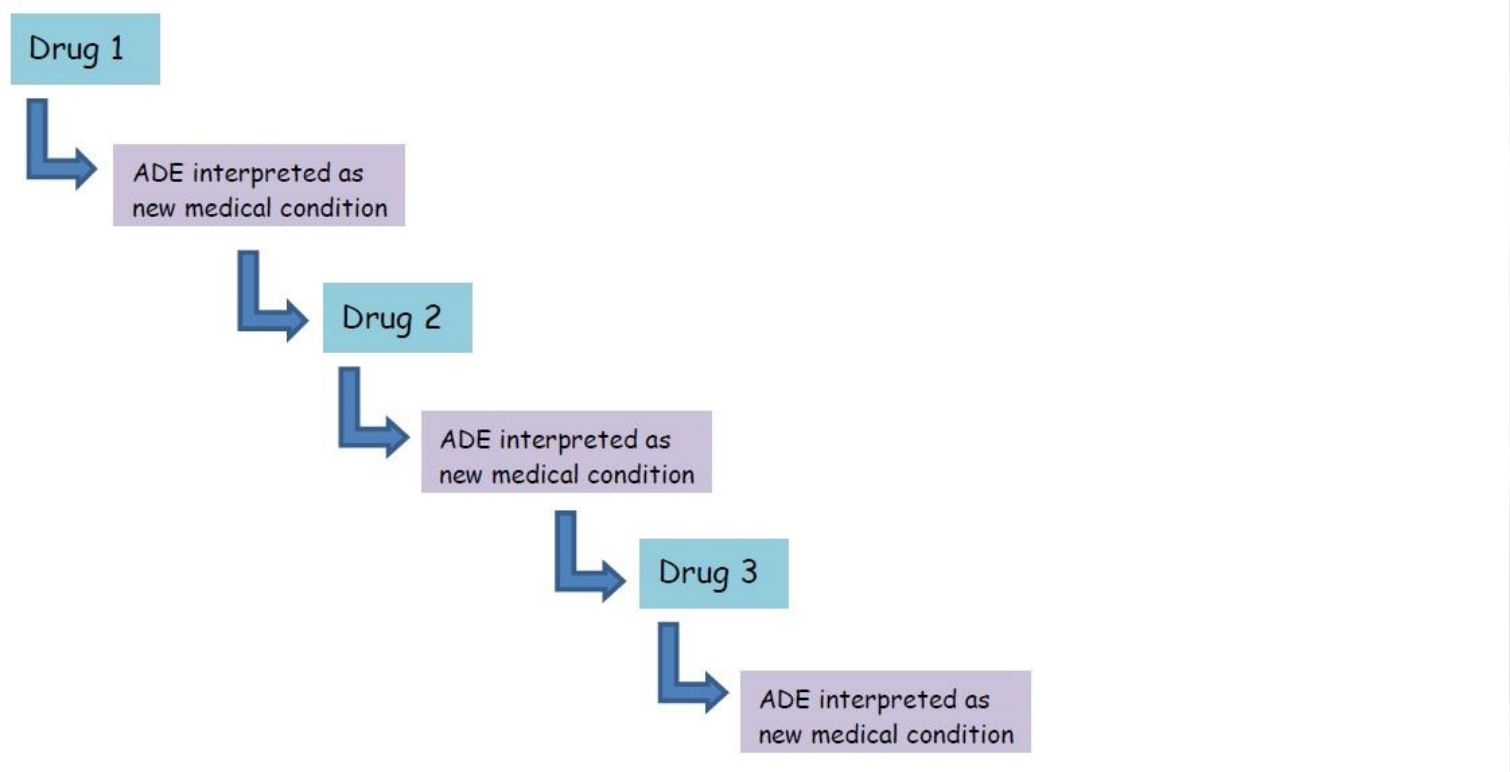
❑ cognitive impairment,

❑ respiratory suppression,

❑ especially in context of *polypharmacy* and concurrent alcohol use.

Polypharmacy ?

Prescription cascade



As a result…

Figure 1b. The Prescribing Cascade – Loperamide

*Adapted from: Rochon PA, Gurwitz JH. Lancet 1995; **346**: 32-36 and Rochon PA, Gurwitz JH. BMJ 1997; **315**: 1096-9.*
This figure defines the original Prescribing Cascade concept, and illustrates expanded Prescribing Cascade components.

Loperamide

- Common side effects include :
- abdominal pain,
- constipation,
- sleepiness,
- vomiting,
- dry mouth
- urinary retention

- Even the medication alternatives to opiates for pain control also have potential serious adverse reactions and side effects.

NSAID &TCA

- Overuse of **NSAIDs** can lead to gastropathies
- **Tricyclic antidepressants** and are not well-tolerated in the older population

First Line Analgesic?

- Which drug is safe?

- **Acetaminophen** as the first-line agent for pain control is recommended.

Other Choices for treatments for chronic pain ?

- SNRIs,
- Gabapentin,
- Pregabalin

opiate dependence

- Clinician is advised to consider community substance abuse programs that include peer support and educational groups

Treatment for opiate dependence

- Methadone,
- Naltrexone, and
- Buprenorphine
- as treatment for opiate dependence has not been well studied in the older population.

Age & Physical Health

- normal age-associated physical and physiologic changes, the higher rate of comorbid medical issues and the greater use of various medications in older adults, also significantly increase the risk for serious adverse consequences from alcohol consumption

- **Your age and physical health are going to impact your body's ability to manage drugs**

- Older people and/or those with longer drug using careers are at **increased risk for *fatal* overdose**.

Cumulative effects of long term substance use

- Include illnesses,
- like **viral hepatitis** or **HIV** or **infections**, like **endocarditis** or **cellulitis**, may hinder resiliency

- Older people who overdose are less likely than younger people to survive their overdose

More Risk for overdose

- Dehydration,
- not eating
- not sleeping
- also puts you more at risk for overdose.

Stimulant user at risk

- If you are a stimulant user, you are more at risk for a **seizure, stroke, or heart attack**

- If you also have other health issues like **high blood pressure, heart disease, diabetes, high cholesterol** or if you **smoke cigarettes**

Liver and Lung Health

- Liver and lung health, **negatively** impacted by hepatitis and smoking respectively, play an important role in overdose.

- **The liver filters substances** in the body and is involved in their metabolism, so a poorly functioning liver means less capacity to do that in a timely manner.
- When your liver is not working so great it can't process drugs and alcohol as easily, leading to "build-up" of drugs in your system.

EFFECTS OF AGE ON THE LIVER

- **Liver chemistry tests and coagulation factors:** unaffected by age
- **Serum albumin:** slightly decreased but within the normal range
- **Serum cholesterol and triglycerides:** increase with age
- **Phase I drug metabolism:** significantly decreased with age
- **Phase II metabolism:** unaffected by age
- **Hepatic proliferation after surgical resection:** diminished by age
- **Hepatotoxicity:** (hepatitis viruses, drug reactions) more severe in the elderly

Phases of Metabolism

- **Phase I**
  - Functionalization reactions
  - Converts the parent drug to a more polar metabolite by introducing or unmasking a functional group (-OH, -NH2, -SH).
- **Phase II**
  - Conjugation reactions
  - Subsequent reaction in which a covalent linkage is formed between a functional group on the parent compound or Phase I metabolite and an endogenous substrate such as glucuronic acid, sulfate, acetate, or an amino acid

DRUGS WITH EXTENSIVE PHASE I METABOLISM

- Alprazolam, diazepam, midazolam, triazolam
  Amitriptyline, imipramine
  Atorvastatin, lovastatin, simvastatin
  Carbamazepine, phenytoin
  Clozapine, olanzapine
  Corticosteroids
  Cyclosporine, tacrolimus
  HIV protease inhibitors
  Sildenafil, tadalafil, vardenafil
  Theophylline
  Warfarin

- **Downers** cause your breathing to slow down,
- if you have **asthma or other breathing problems**, you could be at higher risk for overdose.

- **Poor lung function** decreases the body's capacity to replenish the oxygen supply, which is essential for a person to survive an overdose

- **Elderly who uses opioids, *including people who take opioids for pain*, should be aware of increased overdose risk if they have any of the following health characteristics**

- ❑ **Smoke** or have **COPD, emphysema, asthma, sleep apnea,** respiratory infection, or other respiratory illness
- ❑ Have **kidney or liver disease or dysfunction,** cardiac illness or HIV/AIDS
- ❑ **Drink alcohol heavily**
- ❑ Currently **taking benzodiazepines or other sedative** prescription or antidepressant medication

Prevention Tips:

- **Drink lots of water** or other fluids, try to eat
- Pharmaceuticals, like opioids and benzos, especially with Tylenol (**acetaminophen**) in them, are harder for your **liver** to break down because of a lot of the stuff that's in them. If you have liver damage, stay away from pharmaceuticals with a lot of acetaminophen in them, like Vicodin and Percocet

- **Carry your inhaler** if you have asthma, tell your friends where it is, and that you have trouble breathing
- **Go slow** if you've been sick, lost weight, or have been feeling under the weather or weak—this can affect your tolerance.

- **Try to find a good, nonjudgmental doctor** and get checked out for other health factors that increase your risk of stimulant overdose, like **high blood pressure, high cholesterol, heart disease** or other physical issues that could increase your risk for a stroke or heart attack

Pain Management

- Pain is one of the most common symptoms for which patients seek medical attention.
- Approximately **116 million Americans** are afflicted by **chronic pain.**
- Epidemiologic studies **suggest three in five persons over age 65 report pain** that lasted a year or more, and more than 15% report daily pain

Most common causes of pain in Elderly

- **musculoskeletal disorders** such as back pain and arthritis.
- **Neuralgia** is also common,
  stemming from diseases such as diabetes, herpes zoster, and
- **trauma** such as surgery, amputation, and other nerve injuries.
- **Nighttime leg pain** (eg, cramps and restless legs) is also common, as is claudication.
- **Cancer and its treatment**,
  although not as common as arthritis, is often a source of severe pain

- The approach to pain management is often **different in older versus younger persons.**

- Older persons may **underreport pain**

Pain assessment and management more difficult

- **They often present with concurrent illnesses** and multiple problems, making pain evaluation and treatment more difficult.
- **Dementia, delirium**, a higher incidence of **side effects to medications** and higher potential for complications and adverse events related to many treatment procedures

OPIOID-INDUCED HYPERALGESIA

- Opioid-induced hyperalgesia (OIH) is thought to result from **nociceptive sensitization** related to chronic opioid exposure.
- Result from neuroplastic changes in peripheral and central sensitization of pronociceptive pathways.
- Clinicians may suspect OIH when opioid treatment's effect seems to wane in the absence of disease progression or pain levels increase despite increasing opioid dosages.

OIH Treatment

- Treatment remains controversial, but may include reducing opioid doses,
- discontinuing opioids altogether,
- supplementing therapy with NMDA receptor modulators (memantin..),
- opioid rotation to methadone

COMMON ELEMENTS IN OPIOID-PRESCRIBING GUIDELINES

- 1. Higher doses require caution. Greater than 100–200 mg (oral morphine equivalents per day) may be associated with higher risk of overdose events

Drug	Brand	Relative strength	100 mg/d MED
Morphine	MS Contin, etc	1	100
Hydrocodone	Norco, Vicodin	1	100
Oxycodone	OxyCodone, Roxycodone	1.5	66
Hydromorphone	Dilaudid	4	25
Oxymorphone	Opana	5	20
Methadone	Methadose	8-12	10
Fentanyl transdermal patch	Duragesic	100	42

[a] Sometimes referred to as morphine milliequivalents (MME). Oral administration unless otherwise specified. Calculations were made using the Washington State Agency Medical Directors' Group's Opioid Dose Calculator (available from www.agencymeddirectors.wa.gov/Calculator/DoseCalculator.htm).[29]

Opioid Dose Calculator

← Back to AMDG Home

Instructions: Fill in the mg per day* for whichever opioids your patient is taking. The web page will automatically calculate the total morphine equivalents per day.

Patient's Name
Today's Date

Opioid (oral or transdermal):	mg per day:*	Morphine equivalents:
Codeine	100	15
Fentanyl transdermal (in mcg/hr)	100	240
Hydrocodone		0
Hydromorphone		0
Methadone†	100	1200
Morphine		100
Oxycodone	100	150
Oxymorphone		0
Tapentadol		0
Tramadol	100	10
	Total	**1715**

- 2. **Methadone** poses risks for:

- a. **Prolonged QTC ECG** abnormalities and risk for cardiac complications
- b. **Respiratory suppression** due to unique pharmacokinetics with risk for drug accumulation and overdose complications particularly during opioid rotation from other opioids to methadone

- 3. Reduce doses by 25%–30% during opioid rotation to avoid inadvertent overdose

- 4. Benzodiazepines and opioids are a high-risk combination particularly in older adults.

- 5. Risk-mitigating strategies for drug misuse and abuse may be helpful.
  a. Validated risk assessment questionnaires
  b. Urine drug testing in patients at high risk for abuse and diversion

Alcohol misuse

- Approximately **10% to 15% of men and 5% to 7%** of women above the age of 65 drink more than one drink per day in a given week

- Recommends no more than two drinks in one sitting for older adults. This means that those who use eight or more drinks per week would be considered at-risk for alcohol misuse

- Older adults experience significantly **higher blood alcohol concentrations** from a given quantity of alcohol as compared to younger

Special attention

- **Special attention** should be paid to

✓ the onset of use,

✓ the current and past use pattern,

✓ the frequency of use,

✓ the indications for tolerance,

✓ any evidence of withdrawal symptoms.

Information from family members

- extremely important as **older adults may not report accurate alcohol use patterns**
- Due to impairment from use itself or from cognitive deficits

Alcohol use in elderly can lead to

- falls
- other traumatic events
- confusion
- poor executive functioning
- sleep pattern changes
- short-term (blackouts) cognitive deficits
- long-term (dementia) cognitive deficits.

- In fact, often alcohol use treatment must take into account **concurrent mental health disorder treatment**.
- Notably, alcohol use is the second most common category of psychiatric **risk for suicide attempts** and **completions**.

The best treatments for alcohol misuse

- prevention,
- early screening,
- early intervention

Formal treatment

Combination of

Nonpharmacologic and **pharmacologic treatment**

12 Step program

1. Admitting powerlessness over the addiction
2. Believing that a higher power (in whatever form) can help
3. Deciding to turn control over to the higher power
4. Taking a personal inventory
5. Admitting to the higher power, oneself, and another person the wrongs done
6. Being ready to have the higher power correct any shortcomings in one's character
7. Asking the higher power to remove those shortcomings
8. Making a list of wrongs done to others and being willing to make amends for those wrongs
9. Contacting those who have been hurt, unless doing so would harm the person
10. Continuing to take personal inventory and admitting when one is wrong
11. Seeking enlightenment and connection with the higher power via prayer and meditation
12. Carrying the message of the 12 Steps to others in need

Pharmacologic options

- Designed to either **decrease craving** or **negatively reinforce use** so that individuals can reduce or abstain from use

Most important aspect of alcohol misuse management in older adults

- **Accurate recognition and appropriate treatment of withdrawal.**
- Alcohol withdrawal is especially dangerous in older patients due to the increased likelihood of :
- **seizures, irreversible damage to the brain, delirium**, and other potential clinical consequences of alcohol withdrawal

- Clinical assessment must be detailed and special **attention must be paid to comorbid medical conditions and associated medication use**

Naltrexone

- Naltrexone is an **opioid-receptor antagonist** that **decreases craving** by **attenuating pleasure derived from alcohol use**

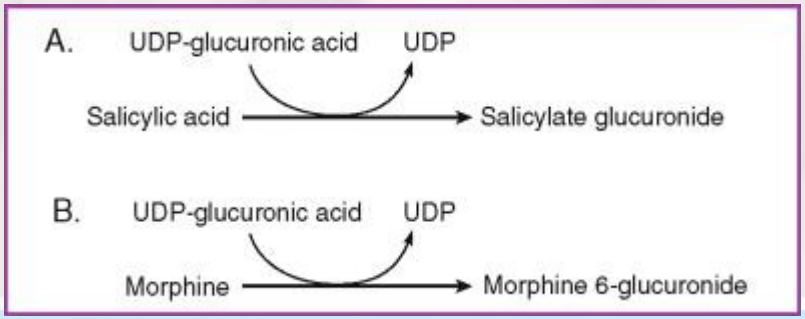
BZD

- Unlike in younger adults, **chlordiazepoxide is not the preferred or common choice among benzodiazepines.**
- **Lorazepam,**
- **Oxazepam,**
- **Temazepam**
- are preferred for older patients due to their intermediate halflife, relatively low lipid solubility

Caution with BZD

- **The use of one of these benzodiazepines must proceed with great care in order** to avoid compounding the problems of withdrawal by
- Increasing risks:
- **oversedation** and
- **delirium** including **falls** and
- **respiratory sedation**

- Minimizes undesirable accumulation in the lipid compartment and their major biotransformation pathway of conjugation with glucuronic acid resulting **in 70% to 75% of the administered dose being excreted as the glucuronide conjugate in the urine**



Disulfiram

- **Inhibits aldehyde** dehydrogenase leading to **uncomfortable accumulation of acetaldehyde** and is often used in younger adults to discourage alcohol consumptions
- **Seldom used in older adults** due to potential side effects such as **significant changes in blood pressure and heart rhythm**

Disulfiram significant drug-drug interactions

- **Inhibition of the metabolism of a number of medications** including :
- Warfarin,
- Phenytoin,
- Isoniazid,
- some Benzodiazepines (eg, diazepam).