


Medication Overdose Considerations for Older Adults

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“Older adults face unique challenges when it comes to medications, and those challenges increase as medication lists grow. Overdose, specifically accidental overdose, is a particularly concerning issue for our aging population.”

This session will discuss medication challenges we face as we age, ways to prevent or reduce the risk of accidental overdose in older adults, and strategies to reduce harm if overdose occurs.”

Medication Consumption

- Older adults are the highest consumers of medication
- The National Center for Health Statistics conducted a survey of older adults about their medications
 - 90% of people aged 65+ take at least one prescription drug
 - About **half** of people aged 65+ take **5 or more medicines**
 - About **20%** of people aged 65+ have **5 or more chronic medical conditions**
 - More than 40% of people aged 65+ take at least one over-the-counter medicine and at least one supplement



“Medications play an important role in the health and wellbeing for many older people.”

Donna M. Fick – expert panel for the 2019 AGS Beers Criteria®

- Medications are a mainstay of modern medicine
 - Used to manage many health conditions
 - Relieve symptoms
 - Reduce risks of future problems
 - Help correct a life-threatening illness
 - But ...
 - Medications can also come with risks and side effects
-

Polypharmacy

(Often defined as 5 or more medications daily)

Increases the risk of adverse events from medications



Adverse Drug Events (ADEs)

Unfavorable or unintended reactions or symptoms associated with the use of a medicine

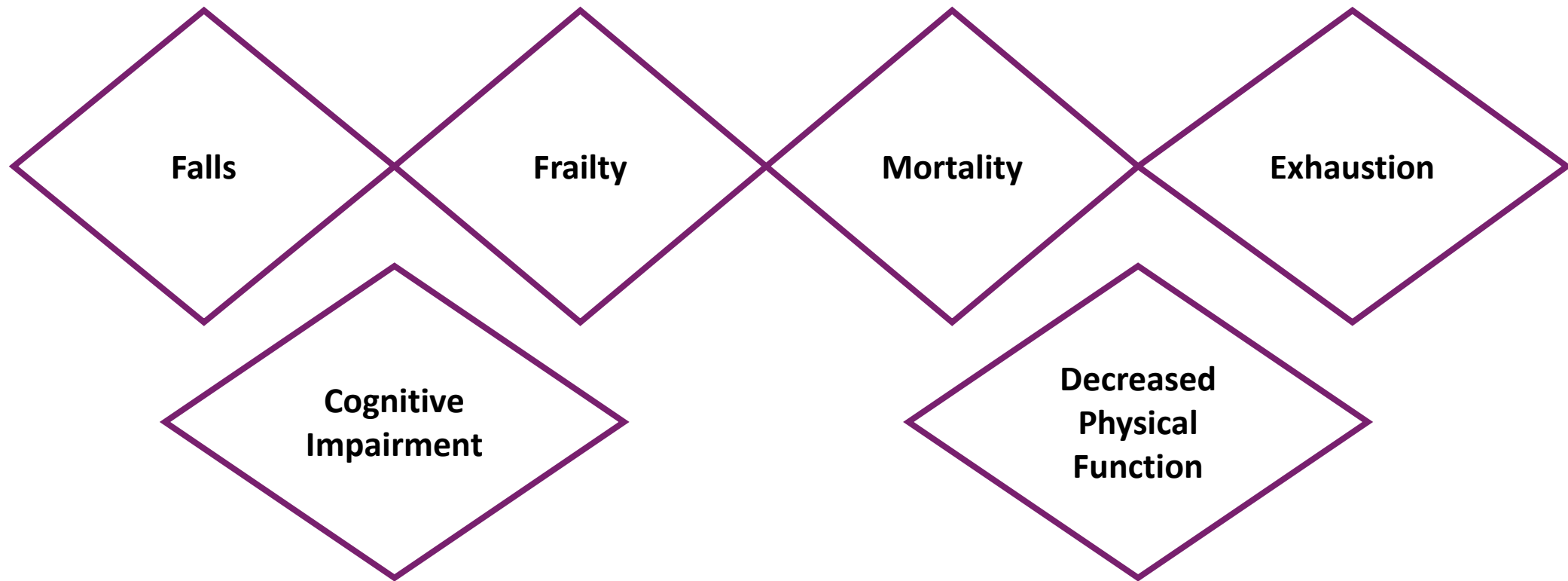
In other words ...

Harm caused by a drug even if its used appropriately and at a normal dose

Accidental overdose is an example of an ADE

More Medications, More Problems ?

- With each additional medication used, the risk of potential harm increases:



Most Adverse Drug Events are
preventable!

Specifically, accidental overdose.

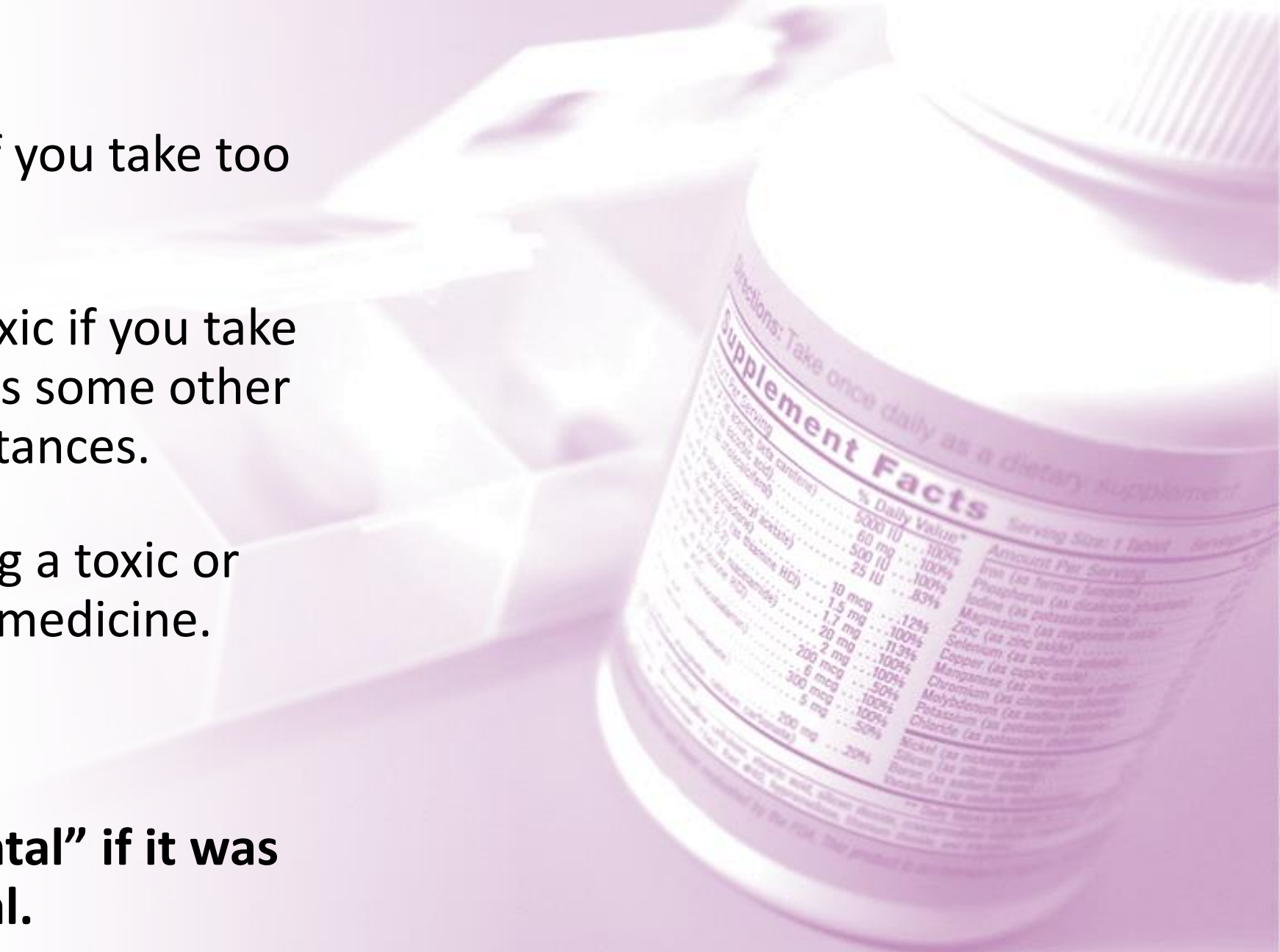
Accidental Overdose

Medicines can be toxic if you take too much.

Medicines can also be toxic if you take them at the same time as some other medicines or substances.

An “overdose” is taking a toxic or dangerous dose of a medicine.

An overdose is “accidental” if it was unintentional.



How do accidental overdoses happen?

When a medication is **not** taken as prescribed or intended

OR

When a medication **is** taken as prescribed, but other factors are at play

How do accidental overdoses happen?

When a medication is not taken as prescribed or intended:

- Wrong **number** of pills or wrong **volume** of liquid medicine
- Incorrect number of **times per day**
- Continuing to take a medicine after it's been **discontinued** or stopped by the prescriber
- Taking the **wrong medicine**
 - Intended for a different member of the household
 - Grabbing the wrong bottle or device

How do accidental overdoses happen?

When a medication is taken as prescribed, but other factors are at play

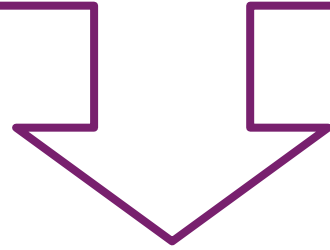
- Unknown **interaction with another medicine**
 - Can cause levels of one drug to be higher than anticipated
 - Can cause side effects of one medicine to be intensified
- Interaction with **other substances (alcohol, food, etc.)**
- Changes in other factors that impact how a drug is processed in the body
 - Organ function, fat distribution, etc.

How do accidental overdoses happen?

Common errors which can lead to accidental overdose:

- Pill box gets filled incorrectly
- Forget if a dose was taken, end up with double the dose
- New prescription is filled with a dose change, old bottle isn't removed from the pill box (or from the rotation)
- Taking medicines that go by different names but contain the same drug or ingredient – leading to too high of a dose
- Over-the-counter (OTC) medicines
 - Can contain ingredients that are the same or similar to a medicine the patient is already taking
 - Can cause a drug interaction – patient may not be aware

Commonly reported medications involved in accidental overdose:



Opioids

Acetaminophen

Insulin

Blood Thinners

What substances are *actually* involved when a call is made to a poison center?

- A majority of calls made to the WA Poison Center in 2023 for adults 65+ involving medicines fell into the following categories:
 - Cardiovascular Drugs = 17.8%
 - Analgesics = 8.9%
 - Hormones = 6.7%
 - Antidepressants = 5.2%
 - *Household cleaning substances* = 4.0%
 - Anticonvulsants = 3.6%
 - Sedatives/antipsychotics = 3.5%

Specific medicines identified

Beta blockers = 4.7%

Hypoglycemic medicines = 3.9%

Anticoagulants = 3.3%

Acetaminophen = 2.5%

ACE and ARB = 2.2%, 2.4%

Pharmaceutical & illegal **opioids** = 2.1%



Reasons for calls relating to medications

- **“Adverse drug reactions”** consistent since 2010
 - About 5.5% of calls
- **“Intentional - abuse / misuse”** remains low
 - Around 4% of calls
- **“Unintentional therapeutic error”** Almost half of calls in 2023
 - 49.6% of calls

Unfortunately, overdose is sometimes intentional

- “Intentional – suspected suicide” as a reason for a call to the Washington Poison Center has increased significantly since 2010 (more than doubled)
 - 2010 – 75 calls per year (2.6% of total calls)
 - 2023 – 215 calls per year (5.4% of total calls)

Opioids

- Opioids are a class of medication, sometimes called narcotics

Examples of prescription opioids:

- Oxycodone
- Hydrocodone
- Morphine
- Fentanyl
- Codeine

- Opioids can reduce feeling of pain, increase feelings of pleasure, cause drowsiness
- If taken at too high of a dose, can slow or stop breathing, decrease heart rate

Increased risk of adverse events with opioids if they are taken with:

- Alcohol
- Benzodiazepines
 - (e.g. Xanax/alprazolam, Valium/diazepam, Ativan/lorazepam)
- Antipsychotics
 - (e.g. Risperdal/risperidone, Seroquel/quetiapine, Zyprexa/olanzapine, Ability/aripiprazole)

Opioid Overdose

- What can opioid overdose look like?
 - Small “pinpoint” pupils
 - Falling asleep or losing consciousness
 - Slow breathing, or no breathing
 - Choking or gurgling sounds
 - Limp limbs and body
 - Cold or clammy skin
 - Discolored skin
 - Blue, especially lips or nails

Opioid Overdose Treatment

- **Naloxone**[®] - drug that reverses the effects of opioid medications
 - For use when an overdose causes breathing to slow or stop
 - Acts quickly (within 2 to 3 minutes), but wears off quickly too
 - May require multiple doses, especially for stronger opioid medications
 - Available as a nasal spray or an injection

Opioid Overdose Treatment

- **Naloxone[®]**

- Available at many pharmacies, even without a prescription
 - *(all pharmacies in Washington are able to provide naloxone to people directly, without a prescription!)*
 - Anyone can carry it!
- You can also order free naloxone kits by mail – help people who do not have insurance coverage or who may not be able to get to a pharmacy easily
- Good to have on hand if patient have a prescription for something like high-dose opioids, or prescriptions for opioids and benzodiazepines together, for example
 - Patient education point: Can be used if *you* accidentally overdose, **or** a *visitor or child* accidentally gets into your medications
- Once administered, should get emergency help (911 should be called first)

Acetaminophen

- Acetaminophen (pain relieving and fever reducing medication)
 - Brand name: Tylenol®
- One of the most common medications found in households
 - Common ingredient in many cough and cold products, allergy medicines, sleep aids, etc.
- Safe and effective if used appropriately

Acetaminophen

- If taken in excess, can be life-threatening
 - Biggest concern is liver damage
 - Especially concerning for heavy alcohol users
- Recommended maximum daily dose = 3,000mg per day
 - *Reduced from previous recommendation of 4,000mg*
- Toxic dose as low as 7,500mg in 8 hours or less

Acetaminophen Overdose

- What can acetaminophen overdose (poisoning) look like?
 - Nausea or vomiting
 - Not feeling well
 - Poor appetite
 - Abdominal pain (right upper quadrant)
 - Confusion
 - Low blood pressure
 - Jaundice
 - Altered lab values (especially liver function tests)
- **Could be asymptomatic** (especially if it's within 24 hours of ingestion)

Acetaminophen Overdose Treatment

- Different ways to approach acetaminophen overdose
 - 1: prevent absorption of the medicine
 - Activated charcoal
 - 2: Reversal agent / Antidote
 - N-acetylcysteine or NAC (also called “acetylcysteine”)
 - 3: Supportive care
 - Including IV fluids or medications to manage other symptoms
- All should be done in a hospital/emergency care setting

Blood Sugar Lowering Medications

- Insulin
 - Injectable (or inhaled) medication used to lower blood sugar for patients with diabetes
 - Increased risk of overdose if taken with certain other blood sugar lowering medications
 - (e.g. sulfonylureas like glipizide, glyburide, etc.)
 - Severity of overdose depends on the amount taken, the type of insulin (long acting vs short/rapid acting), time since carbohydrates were consumed (and how many grams)
- Every body responds differently to different amounts of insulin
 - For one person, 10 units could be considered toxic, but another may have to inject more than 100 units to have toxic effects

Insulin Overdose

What can taking too much insulin look like?

Low Blood Sugar (defined as < 70 mg/dL)

- Confusion
- Extreme hunger
- Feeling tired
- Irritable
- Sweating or clammy skin
- Shaky or trembling
- In severe cases, loss of consciousness or seizure

Insulin Overdose Treatment

- First step: Check your blood sugar
- Treatment: Sugar! (or glucose)

Standard treatment of a low blood sugar if not severe:

- If blood sugar is less than 80 mg/dL:
 - eat 15 grams of fast sugar
 - (15 skittles, ½ cup juice, 6 oz soda)
- Wait 15 minutes and check blood sugar level again
- If still less than 80 mg/dL, repeat 15 grams of fast sugar, check in 15 minutes
- Continue until blood sugar is 80 mg/dL or higher
 - Then follow up with a meal or a carb + protein snack
- Continue to monitor blood sugar more frequently

Rescue medications for extremely low blood sugar

If severe low blood glucose (number is **very low** (50s, 40s) or **seizure** or **loss of consciousness**):

- Call 911
- Glucagon/rescue medication if on hand, and call 911
- May require IV or injected glucose

- **Rescue glucose medications:**

- Glucagon
 - Available as a ready-to-inject autoinjector pen (HypoPen) or Pre-Filled Syringe
 - (SubQ injection)
 - Older versions contain a vial of powder and a vial of diluent requiring reconstitution prior to injecting (Emergency Kit or Hypo Kit)
 - (SubQ or IM)
 - Nasal powder (Baqsimi)



Administer into upper arm, stomach, or thigh.



Blood Thinning Medications

- Blood thinners are sometimes called “anticoagulant” or “antiplatelet” medicines
 - Prevent blood clots from forming, or prevent clots from getting bigger
- Help reduce risk of heart attack and stroke
- Used to treat blood clots in the legs or lungs
- Blood thinners may be prescribed for:
 - Abnormal heart rhythm
 - Heart valve replacement
 - Deep vein thrombosis (DVT)
 - Certain heart or blood vessel diseases
- Most common:
 - warfarin (Coumadin)
- Others:
 - apixaban (Eliquis)
 - dabigatran (Pradaxa)
 - edoxaban (Savaysa)
 - rivaroxaban (Xarelto)

Blood Thinning Medication Overdose

- What can blood thinner overdose cause?
 - Bleeding
 - Internal bleeding
 - Gastrointestinal (GI) bleeding
 - Stroke
 - “Brain bleed”
 - Can be especially concerning if taken with other medications
 - Specifically, NSAIDS (aspirin, ibuprofen, etc.)

Blood Thinning Medication Overdose

- If too much of a blood thinner is taken, patients may experience:
 - Heavy bleeding after injury, or bleeding that won't stop
 - Pink, red, or dark brown urine
 - Black and tarry or bloody bowel movements
 - Severe stomach pain
- There are MANY drug, food, and alcohol interactions with warfarin
- Changes in diet or changes to other medications can cause warfarin to thin the blood too much
 - This increases the chance of toxicity or overdose

Blood Thinning Medication Overdose Treatment

- All of these reversal agents need to be administered in a healthcare/emergency setting
 - warfarin reversal agent: **vitamin K**
 - dabigatran reversal agent: **idarucizumab**
 - apixaban, rivaroxaban reversal agent: **andexanet alfa**
- Other blood thinners do not have reversal agents (though there are some in development), so supportive care is our only option

Harm Reduction Strategies



When are problems most likely to arise?

- **Transitions of care**

For example:

- From hospital to nursing home or rehab facility
- From nursing home or rehab facility to home
- From hospital or Emergency Room to home

When are problems most likely to arise?

- After a doctor's appointment
 - Especially if there is a change in medications, or new prescriptions are sent to the pharmacy
- With a new diagnosis requiring treatment
 - Problems could also arise if the new diagnosis causes physiologic changes



PREVENTION

How can I help prevent accidental overdose?

- Encourage patients to keep a medication list, and update it regularly
 - When a medicine changes or is discontinued, make sure to educate patients to remove and properly dispose of the old medication

Medication lists should include:

- Name of medication
 - (consider brand and generic name)
- Strength (mg, mcg, units, etc.)
- Dose (number of pills, ml, puffs, etc.)
- Frequency
- What is the medicine used for

How can I help prevent accidental overdose relating to medication lists?

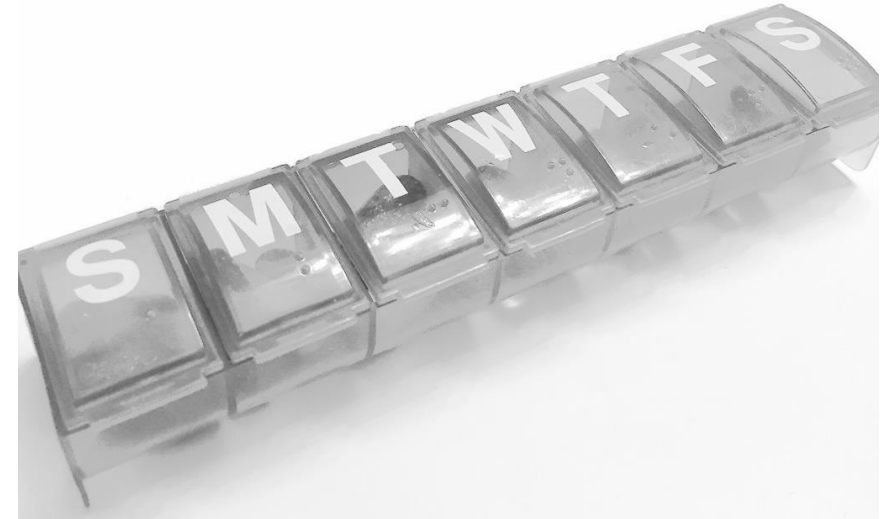
- Accurate medication lists at every visit and patient encounter!!
 - Prescriptions
 - Over-the-counter (OTC) medications
 - Vitamins and supplements
 - Devices (inhalers, nasal sprays, injections, etc.)
 - Topical medications (creams, ointments, etc.)

How can I help prevent accidental overdose?

- Encourage patients (when feasible) to use one pharmacy for all prescriptions
 - Allows the pharmacist to review medications too – with a complete list
 - Check for drug interactions, helps keep patients safe

How can I help prevent accidental overdose?

- Encourage use of a pill organizer (“pill box”)
- Only fill pill boxes one week at a time



****Keep out of reach of children and pets****
(no longer “child proof”)



How can I help prevent accidental overdose?

- Educate patients! Encourage taking medications as prescribed
 - Follow instructions
 - Read the prescription label carefully
 - Read the informational leaflet
 - You can recommend or provide magnifying glass, as needed, and instruct patients never to take medication in the dark, for example.
 - Measure medicines accurately
 - Liquids, injections, etc.
 - Use provided measuring cups (not a household spoon)



How can I help prevent accidental overdose?

- **Deprescribing**

- Patients should be encouraged to talk to their providers about reducing the number of medicines they're taking or reducing the dose of some medicines, especially if they note a significant pill burden, or health status has changed
- This is a common consideration for patients as they age
- Prescribers should take into account:
 - Indications for medicines, overall medication or pill burden, doses of medicines, risks associated (specifically falls, cognitive impairment, etc.) life expectancy, cost, and alternative options

How can I help prevent accidental overdose?

- **Educate patient to avoid interactions**

- When in doubt, avoid mixing prescription medicines with alcohol
- Avoid mixing with other supplements and vitamins without first talking to the prescriber or pharmacist
- Do not start, stop, or change the dose of a medicine without talking to a prescriber or pharmacist

- **Understand what can or cannot be done while taking a medicine**

- Ask a pharmacist
- Ask a prescriber

How can I help prevent accidental overdose?

- **Appropriate storage of medicines**
 - Cool, dry location, **out of reach from kids** and pets
 - **“Up and Away and Out of Sight”**
 - Medicine cabinets are NOT a good place to keep medicines
 - Lots of moisture and heat in the bathroom is not good for the integrity of medications
 - Instead, consider:
 - Kitchen cabinet (high – out of reach from children)
 - Top shelf of a closet
 - Bedside table drawer (if able to lock)

How can I help prevent accidental overdose?

- “Take extra care” with the following medications
 - Acetaminophen
 - Opioids
 - Diabetes medication (especially insulin)



Sometimes accidents still happen.

What then?

What should I do if I suspect an accidental overdose?

- **Call 911**

- First step, especially if someone is experiencing concerning symptoms, or is found down with a suspected overdose

What should I do if I suspect an accidental overdose?

- **Call The Poison Center**
 - **800-222-1222**
 - If there's been a poisoning but the person has NOT stopped breathing, collapsed, or had a seizure
 - If you're concerned about a possible poisoning
 - Helpful if you realize you've taken too much of a medication but no symptoms requiring immediate medical attention yet
 - (Examples: an accidental second dose, the wrong number of pills, wrong number of units, too many puffs of an inhaler, etc.)

What should I do if I suspect an accidental overdose?

- **Talk to a prescriber or pharmacist**
 - Helpful in non-emergent situations
 - Perhaps you realize a patient has been taking the wrong dose of a medicine for a while, or you believe they are having side effects that might be attributable to taking too much of a medication

Summary

- Accidental overdoses do happen, and can be scary
 - The risk associated with prescription medications can increase with age
 - The risk of accidental overdose can increase as the number of daily medications increases
- There are actions you can take to reduce your risk and patient risk of an accidental overdose
 - When in doubt, talk to a prescriber or pharmacist
- It's always important to know what to do in case of an accidental overdose
 - When in doubt, call 911

Q & A

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