Medication Problems in the Elderly

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Promises

1) I will get you out on time!
I’m a walking drugstore!

“...since I ran out of those pills you gave me.”

Can You Guess?

- Darvocet N 100 is a safe and effective medication in the elderly?

- People over 65 do not use many medications?

- Side-effects and adverse drug reactions are the same thing?
Can You Guess?

- Over 20% of those over 80 have been prescribed an inappropriate medication?
- Valium is a safe medication in the elderly because it has a short half-life?
- Demerol has a toxic metabolite?

Can You Guess?

- Dalmane is a good sleeping pill in the elderly because it does not lose effectiveness?
- Robaxin is a muscle relaxant that does not cause falls?
- Lasix stands for last six hours?
Can you Guess

• Viagra is covered by most Medicare Part D plans?

Older Adults and Medications

• Older adults make up 13% of the population.
• Account for:
  – About 30% of prescribed medications.
  – About 40% of over-the-counter medications.
• At least 90% take at least one prescription medication.
• 12% use ten or more per week.
If Projected to All Medicare Enrollees:

- 1,900,000 Adverse Drug Effects (ADE’s) each year, among the 38 million Medicare enrollees.
- Of these ADE’s:
  - More than 180,000 will be life-threatening or fatal.
  - More than half of those could have been prevented.

Definitions

- **Side effect**: an action of a drug other than the one for which it is being used.
- **Adverse drug event (ADE)**: injury resulting from the medical use of a drug.
  - **Preventable ADE** = those that result from a medication error in prescribing, dispensing, administering, or monitoring.
  - **Non-preventable ADE** = Adverse drug reaction. An injury resulting from the medical use of a drug where no error is involved.
Classifications of ADE’s

- **Significant** – falls without fractures, over-sedation, rashes, hemorrhages not requiring transfusion or hospitalization without hypotension.
- **Serious** – delirium, falls with fractures, hemorrhages requiring transfusions or hospitalization without hypotension.
- **Life-threatening** – hemorrhage with associated hypotension, liver failure, hypoglycemic (low blood sugar) encephalopathy (brain disorder).
- **Fatal**

Adverse Drug Reactions

*“If you remember, I did mention possible side-effects.”*
Why Do We Need to Know About ADE’s?

• Most common type of adverse event in hospital.
• About 1/3 of drug-related hospitalizations and ½ drug-related deaths occur in people over age 60.
• 3 to 10% of all hospital admissions for older patients are due to ADE’s.
• Reported incidence higher for older adults
  – 2 to 10% in younger adults
  – 20 to 25% in older adults
• In study of elderly veterans, 35% had at least one ADE in past year, and ¼ of those required visit to ER or a hospital admission.

ADE’s by Classification:

• 578 (38%) were categorized as serious, life-threatening, or fatal:
  • Significant  945  (62.0%)
  • Severe     431  (28.3%)
  • Life-threatening 136  ( 8.9%)
  • Fatal      11   ( 0.7%)
11 Fatalities

- 4 fatal bleeding
- 1 peptic ulcer
- 1 neutropenia/infection
- 1 hypoglycemia (low blood sugar)
- 1 drug toxicity relating to lithium
- 1 drug toxicity relating to digoxin
- 1 anaphylaxis
- 1 from complications of antibiotic-associated diarrhea
- Of the more severe events, in addition to the fatalities, five (5) resulted in permanent disability, including a stroke.

Drug Interactions

- Drug-drug interaction: effects of a drug are altered when taken at the same time with one or more other drugs. The drug does not perform as expected.
  - Example: aspirin and prescription blood thinners such as Coumadin
Other Drug Interactions

- Drugs can interact with other things as well:
  - A physical condition
  - Food
  - Alcohol

Examples of Drug-Drug Interactions

<table>
<thead>
<tr>
<th>Patients taking:</th>
<th>Who ended up in hospital with:</th>
<th>Were:</th>
<th>To have taken this drug in past week:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyburide</td>
<td>Hypoglycemia</td>
<td>6 times more likely</td>
<td>Co-trimoxazole</td>
</tr>
<tr>
<td>Digoxin</td>
<td>Digoxin toxicity</td>
<td>12 times more likely</td>
<td>Clarithromycin</td>
</tr>
<tr>
<td>(ACE) inhibitor</td>
<td>Hyperkalemia</td>
<td>20 times more likely</td>
<td>Potassium-sparing diuretic</td>
</tr>
</tbody>
</table>
“Anticholinergic” Effects

- Dry mouth
- Dry eyes
- Dry skin
- Constipation
- Urinary retention
- Ataxia
- Can also bring on dementia/delirium

Other Issues With Medication Use and Older Adults

- Appropriateness
- Multiple medical conditions
- Multiple physicians
- Polypharmacy
- Under use
- Cost
- Noncompliance
- Lack of research
Factors Modifying Compliance

"Your green pills are all gone. Do you wanna take a blue and a yellow?"

Signals of Possible Medication Problems

- Falls
- Restlessness
- Confusion
- Loss of memory
- Constipation
- Sleep disorders
- Weight loss
- Bowel changes
- Incontinence
- Dizziness
Drug Allergies - Anaphylaxis

- **Anaphylactic** (an-uh-fuh-LAK-tik) reaction: A severe allergic reaction that can be life-threatening!
- Rare responses but **dangerous**!
- Medical help is needed and should be sought immediately.
- Call 911 or take the individual to the emergency room.

Anaphylaxis Symptoms

- Hives
- Itching
- Feeling warm
- Flushing
- Wheezing
- Dizziness or lightheadedness
- Swelling in the throat
- Irregular heartbeat
- Nausea and vomiting
- Diarrhea
- Abdominal cramping
Most Common Culprits:

- Penicillin-related antibiotics are the #1 most common – and penicillin allergies kill 400 people in the U.S. every year!
- Sulfa drugs
- Anti-seizure drugs
- Allopurinol (a drug for gout)
- Drugs for heart rhythm problems
- Local anesthetics

Most at Risk of Allergic Reaction:

- Already have allergies in general
- Take a drug often
- Take a drug in large doses
- Take a drug in shots rather than pills
Most Commonly Involved Drugs:

- Cardiovascular 26.0%
- Antibiotics/anti-infectives 14.7%
- Diuretics 13.3%
- Nonopioid analgesics 11.8%
- Anticoagulants 7.9%
- Hypoglycemics 6.8%

Most Common ADE’s:

- Gastrointestinal tract events 22.1%
- Electrolyte/renal 16.7%
- Hemorrhagic 12.7%
- Metabolic/endocrine 9.5%
- Dermatologic (skin) /allergic 7.9%
Individuals at Increased Risk of ADE’s:

- Older, especially age 80+
- More co-morbidity
- Multiple medications
- Individuals taking medications in these categories:
  - Anticoagulants
  - Antidepressants
  - Antibiotics
  - Cardiovascular drugs
  - Diuretics
  - Hormones
  - Corticosteroids

Study (Feb. 2004) Showed:

- Inappropriate medications were prescribed for older patients in 8% of their doctor visits in 2000
- Most likely:
  - If on multiple medications
  - Women twice as likely
- Most common:
  - Pain reliever propoxyphene (Darvon)
  - Antihistamine hydroxyzine (Vistaril, Atarax)
  - Anti-anxiety diazepam (Valium)
  - Antidepressant amitriptyline (Elavil)
  - Urinary tract relaxer oxybutynin (Ditropan)
Study (Aug. 2004) Showed:

• Looked at medication records for over 750,000 older patients for 1999.
• Found 21% filled a prescription for one or more inappropriate medications
  – 80% filled one prescription
  – 16% filled two or more
  – 4% filled three or more

Study (Aug. 2004) Showed:

• Two medications responsible for 28.5% of total claims for Beers list drugs:
  – amitriptyline (Elavil)
  – diazepam (Valium)
• Others among the most common:
  – cyclobenzaprine (Flexeril)
  – doxepin (Sinequan)
  – hydroxyzine (Vistaril, Atarax)
  – oxybutynin (Ditropan)
  – promethazine (Phenergan)
  – indomethacin (Indocin and Indocin SR)
Should “Always Be Avoided” for 65+

- Barbituates
- Flurazepam (Dalmane)
- Meprobamate (Miltown and Equanil)
- Chlorpropamide (Diabinese)
- Meperidine (Demerol)
- Pentazocine (Talwin)
- Trimethobenzamide (Tigan)
- Belladonna alkaloids (Donnatal and others)
- Dicyclomine (Bentyl)
- Hyoscyamine (Levsin and Levsinex)
- Propantheline (Pro-Banthine)

“Rarely Appropriate” for 65+

- Chlordiazepoxide (Librium)
- Diazepam (Valium)
- Propoxyphene (Darvon products)
- Carisoprodol (Soma)
- Chlorzoxazone (Paraflex)
- Cyclobenzaprine (Flexeril)
- Metaxalone (Skelaxin)
- Methocarbamol (Robaxin)
Management of Agitation

“How long does it take to walk down to the dispensary and get him a sleeping pill?”

OTC Pain Relievers

- Analgesics
- Antipyretics
- Nonsteroidal anti-inflammatory drug (NSAID)
- Acetaminophen
Dangers of OTC Pain Relievers

- **Acetaminophen** – too much can lead to liver damage, especially if person takes 3+ alcoholic drinks a day.
- **NSAIDS** – stomach bleeding. Increased risk:
  - Are over 60
  - Take prescription blood thinners (example, Coumadin)
  - Have previous stomach ulcers or other bleeding problems
  - Take steroid medications or other NSAIDs

Dangers of OTC Pain Relievers

- **NSAIDS** – also can cause reversible damage to the kidneys. Increased risk:
  - Over 60
  - Have high blood pressure, heart disease, or pre-existing kidney disease.
  - Take a diuretic.
Safe Use of OTC Pain Relievers

- Review the ACTIVE INGREDIENTS of any drug being considered.
- A person with any of the risk factors listed earlier should talk to the doctor.
- Take medication in the recommended doses – do not exceed them – and for only short periods of time.

Cholesterol-Lowering Drugs

- Can be very beneficial for a lot of people

**BUT...**

- Can have dangerous side effects:
  - Myositis, a severe muscle inflammation.
  - Can develop into rhabdomyolysis, which can be fatal.
How to Get Best Results With Medications for Self Administering Residents

- Legible prescription.
- Get prescriptions filled at the same pharmacy.
- Take the medicine in the exact amount and at the times that the doctor prescribes.
- Use a pill organizer if needed or store all medications in their original containers.
- Store medications in a place where they can be easily seen, but not in the bathroom.
- Contact the doctor right away if the individual has any problems with the medicine or any new symptoms.

Rules for OTC Medicines for Self Administering Residents

1. Always start by reading the label – all of it.
2. Look for an OTC medication that will treat only the current symptoms.
3. Know what to avoid when taking an OTC medicine.
4. When in doubt, ask before using an OTC medicine.
5. Take the medicine EXACTLY as stated on the label.
6. Use extra caution when taking more than one OTC drug product at a time.
7. Do not combine prescription medicines and OTC drugs without talking to the doctor first.
8. Make sure all doctors have a complete list of all the medicines being taken.
9. Don’t use OTC medicines after their expiration date.
DO NOT!

- Stop taking a prescription medicine unless the doctor says it is okay.
- Double up on a dose if one is forgotten.
- Mix alcohol with medicine unless the doctor says it is okay.
- Use or take medicines in the dark.
- Use or take medicines prescribed for someone else.
- Give one’s medicine to someone else.

Medication Record

- Keep an updated record of **ALL** medicines – including prescription, over-the-counter, vitamins, and herbal medicines or supplements.
- Dosage, frequency, and when the medicines were prescribed.
- Drug allergies.
- Always take this medication record when going to the doctor or the hospital.
- Review all medications with the doctor on every visit or every six months.
The Main Points

- Adverse drug events are common.
- Adverse drug events can be dangerous.
- Never take use of medications lightly – especially among older adults!
- Benefits vs. risks.

The Main Points

- Medications are not to be given or taken lightly – especially by older people.
- It is harder for older bodies to process and metabolize medications.
- It is all too easy to mistake a medication problem for another health problem!
- Benefits vs. risks.
Problems in Giving Medication

Do Not Crush

- Many residents have difficulty swallowing medication.
- Not all medications are available in a liquid form.
- Not all medication can be crushed.
- Crushing a non-crushable medication can cause harm.
Common Abbreviations for Extended Release Product

- CD  Controlled Dose
- CR  Controlled Release
- CRT Controlled Release Tablet
- LA  Long Acting
- SR  Sustained Release
- SA  Sustained Action
- TD  Time Delayed
- TR  Time Released
- XL  Extended Release
- XR  Extended Release

Enteric Coated

- Designed to pass through the stomach with the medication being released in the intestines.
  1) Prevent destruction of the medication.
  2) Prevent stomach irritation.
  3) Delay onset of action.
Extended Release

- Designed to release the medication over an extended period of time.
  1) Multiple-layered tablets releasing medication as each layer dissolves.
  2) Mixed release pellets that dissolve at different time intervals.
  3) Special matrixes that are themselves inert, but slowly release medication for the matrix.

Sublingual

- Designed to dissolve in oral fluids for rapid absorption by the abundant blood supply in the mouth.
Miscellaneous

- Medication that:
  1) Produce oral mucosa irritation.
  2) Are extremely bitter.
  3) Contain dyes or inherently could stain teeth and mucosal tissue.
  4) If handled without proper protection, may potentially be carcinogenic.

Questions?