Care Coordination/Medication Safety

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Objectives

› Discuss the different terms used in describing poor medication outcomes.
› Discuss High-alert medications and the BEERS list.
› Discuss Hazardous Medications.
› Discuss medication management, transition, and coordination of care.
› Outline future trends in medication management.
Adverse Medication Issues - Definitions

- **Adverse drug event**
  - Injury resulting from drug-related medical interventions.

- **Adverse drug reaction**
  - Unwanted, uncomfortable or dangerous effect that a drug may have.

- **Side Effect**
  - An effect of a medication that is secondary to the one intended.

- **Med Error**
  - Preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or customer.
Adverse Medication Issues

Adverse Drug Event
- Injury resulting from drug-related medical interventions.
- Failure by patient to take the medicine as intended.
- Medication discrepancies at transfer of care. E.g. hospital admission and discharge.
- Most common causes of post-discharge complication
  - 50% of Preventable post-discharge complications.
- Drugs causing most ADE
  - Anticoagulants, Anti-platelets, NSAIDS, Diuretics, Diabetes Agents, Opiods
Adverse Drug Events - Anticoagulants

- Coumadin, Heparin, Lovenox, Eliquis, Xarelto
- Excessive Bleeding
- 10.2 percent of all adverse drug events in Hospital.
- Warfarin second most commonly implicated drug in Emergency rooms. 60,000 visits.
- 68% ER visits acute hemorrhage (GI tract, fall with bleed)
- 27% ER visits lab/inr abnormality
- 40% ER visit resulted in hospital admission
Anticoagulants are underutilized in US population

Warfarin
- Less than on-half of AF patient eligible warfarin receive it
- Over 75% of patient with VTE may be non-adherent with warfarin
- Patient Education
  - Drug interactions- Antibiotics, Many others.
  - Routine INR
  - Foods that lessen effect of Coumadin- Spinach, Brussels Sprouts, Kale, Green Tea.
  - Foods that can increase effect of Coumadin- Cranberry Juice, Alcohol

Prevention of ADE
- INR monitoring
- Anticoagulation Clinics
- Delivery model

Newer agents for Atrial Fib and DVT

- Eliquis, Xarelto, Pradaxa
  - Still can cause life threatening bleed.
  - No need for INR
  - No reversal of medication with vitamin K. (Eliquis, Xarelto)
    - Pradaxa – higher risk in age 75 older and Kidney decline. Does have agent that can reverse effects. (Praxibind)
Adverse Drug Event- Hypoglycemic medication

- Insulin 1\textsuperscript{st} most common drug implicated in ED visits for ADE.
- Diabetes drugs implicated in %25 of ER hospitalizations in older adults.
  - Hospitalized Patients- Hypoglycemia 3\textsuperscript{rd} most common ADE
  - Skilled Nursing Facility- Hypoglycemia was 1\textsuperscript{st} most common ADE.
  - Sliding Scale insulin in the elderly-
  - Kidney function issues with oral drugs-
    - Metformin(CHF, renal issues) (lactic acidosis and death)
      - Side effects may include Loss of appetite gas and metallic tastes
    - Januvia – dose adjustment needed.
    - Glyburide – Prolonged hypoglycemia- Better alternatives.
    - Actos- Causes edema and can worsen heart failure.
### Table 1. A Framework for Considering Treatment Goals for Glycemia, Blood Pressure, and Dyslipidemia in Older Adults with Diabetes

<table>
<thead>
<tr>
<th>Patient Characteristics/Health Status</th>
<th>Rationale</th>
<th>Reasonable A1C Goal (A Lower Goal May Be Set for an Individual if Achievable without Recurrent or Severe Hypoglycemia or Undue Treatment Burden)</th>
<th>Fasting or Preprandial Glucose (mg/dL)</th>
<th>Bedtime Glucose (mg/dL)</th>
<th>Blood Pressure (mmHg)</th>
<th>Lipids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy (Few coexisting chronic illnesses, intact cognitive and functional status)</td>
<td>Longer remaining life expectancy</td>
<td>$&lt;7.5%$</td>
<td>$90–130$</td>
<td>$90–150$</td>
<td>$&lt;140/80$</td>
<td>Statin unless contraindicated or not tolerated</td>
</tr>
<tr>
<td>Complex/intermediate (Multiple coexisting chronic illnesses(^a) or 2+ instrumental ADL impairments or mild to moderate cognitive impairment)</td>
<td>Intermediate remaining life expectancy, high treatment burden, hypoglycemia vulnerability, fall risk</td>
<td>$&lt;8.0%$</td>
<td>$90–150$</td>
<td>$100–180$</td>
<td>$&lt;140/80$</td>
<td>Statin unless contraindicated or not tolerated</td>
</tr>
<tr>
<td>Very complex/poor health (Long-term care or end-stage chronic illnesses(^b) or moderate to severe cognitive impairment or 2+ ADL dependencies)</td>
<td>Limited remaining life expectancy makes benefit uncertain</td>
<td>$&lt;8.5%(^c)$</td>
<td>$100–180$</td>
<td>$110–200$</td>
<td>$&lt;150/90$</td>
<td>Consider likelihood of benefit with statin (secondary prevention more so than primary)</td>
</tr>
</tbody>
</table>
Adverse Drug Event - Opioids

- Falls, respiratory depression, confusion, addiction.
- Tramadol - Lowers seizure threshold.
- US consumes 80% of the world's opioid painkillers.
- 1999, 4,030 Americans lost lives due to overdose.
- 2014, 18,893 Americans lost lives due to overdose.
“Death was ruled an "accident," caused by an overdose of Fentanyl, a powerful opioid used to treat pain.”
“A proposal by the Centers for Medicare & Medicaid Services to remove pain management questions from hospitals' value-based purchasing scores drew the ire of some clinical advocates, who say the change would hurt patients.

CMS said their plan would help decrease the number of opioid prescriptions given by clinicians, and would address opioid overuse. Many physicians have told CMS they are pressured by patients to prescribe pain-relieving medications based on the questions they ask. Negative feedback from the questions results in lower scores, which in turn led to less revenue.

In response to the proposal, a coalition of pain medicine societies sent a letter to the CMS lobbying that the questions be retained until better ones could be written to replace them. The letter argued that there was no evidence linking the questions to overprescription of opioids and warned it would revert care back to a time where pain was not adequately treated. It added that eliminating the questions would "send the wrong message to clinicians and patients" and impact data used to improve pain management.”
Elderly predisposed to reactions due to physiological changes.

- Kidney - Decline in elimination of drug
- Liver - Decline in metabolism of drug
- Skin - Changes topical may reach system slower or faster
- CNS - Drugs have more pronounced effects.
- Stomach - Absorbed at a different rate
- Anticholinergic side effects.
Anticholinergic Medications in the Elderly

Anticholinergic Toxidrome

“Blind as a Bat”
I can’t see!
dilated pupils (mydriasis)

“Mad as a Hatter”
confused

“HOT as a Desert”
hyperthermia

“Dry as a Bone”
dry mouth
urinary retention

“Red as a Beet”
flushed skin

shaking

grabbing
invisible
objects

tachycardia
absent bowel
sounds

So Hot!
Anticholinergic Medications used in the Elderly

- Antiarrhythmic - Norpace (disopyramide)
- Antidepressants - Elavil, Doxepin
- Antiemetic's - Dramamine, Meclizine, Scopalamine patch, Promethazine, Metoclopramide
- Antiparkinson - Cogentin, Artane
- Antipsychotics - Clozaril, Mellaril
- Antitussives - Dextromethorphan
Antihistamines- Benadryl, Tylenol PM, hydroxyzine, **Loratadine (Claritin)**

Alternatives- Zyrtec (cetrazine), Allegra (Fexofenadine)

Gastrointestinal - Donnatal, Diphenoxylate, Hyoscayamine, Ditropan (oxybutynin), Detrol (tolterodine)

Analgesics- Demerol, Meperidine

Muscle Relaxants- Carisoprodol, Baclofen, Flexeril, Norflex,
Other medications potentially harmful in the elderly

- **Antidepressants**
  - Wellbutrin (bupropion)- Lowers seizure threshold
  - Remeron, SSRI’s- Low sodium
  - Paroxetine- Urinary retention, Cognitive impairment, Anticholinergic.
  - Amitriptyline, Doxpein- Anticholinergic
  - Alternatives- Cymbalta, Lexapro, Celexa, Effexor. Trazadone low dose

- **Antihypertensive**
  - Doxazosin, Terazosin, Clonidine, Short acting Nifedipine
    - Orthostatic Hypotension (falls), CNS effects.
Other medications potentially harmful in the elderly

- **Antipsychotics**
  - Stroke, Death, Low sodium, Movement disorders, Constipation, Falls
  - Metabolic syndrome - Abilify has least potential for causing this
  - Quetiapine (Seroquel has least potential for movement disorder)

- **Anxiolytics**
  - Benzodiazepines (falls, cognitive impairment)

- **Cardiac Drugs**
  - Amiodorone - Pulmonary toxicity, hyperthyroid
  - Digoxin over .125mg/day. No additional efficacy vs lower doses.
  - Dilitazem, Verapamil - May worsen CHF and cause constipation.
Other medications potentially harmful in the elderly

- **Gastrointestinal Drugs**
  - Pepcid, Zantac - May cause or worsen delirium or Cognitive impairment.
  - Metoclopramide - EPS
  - Promethazine - Anticholinergic

- **Hypnotics**
  - Ambien, Benzodiazepine, Lunesta, Sonata - Cognative impairment unsteady gait, Minimal benefit.
Other medications potentially harmful in the elderly

- NSAIDS - Ibuprofen, Naproxen, Aspirin
  - GI side effects, Kidney injury,
- Respiratory Drugs
  - Ipratropium - Urinary Retention
- Urinary drugs
  - Nitrofurantoin - Pulmonary toxicity if CRCL<60
Adverse Drug Reactions

- Drug interactions
- Inadequate monitoring
- Inappropriate drug selection
- Inappropriate treatment (or no reason)
- Over dosage
- Poor communication-(drug should have been stopped etc.)
- Under prescribing
- Untreated Medical problem.
Prevention

- Consider nondrug treatment
- Discuss goals of care
- Document indication
- Consider age-related changes
- Choose the safest possible drug. Tylenol vs. NSAID, No Anticholinergic
- Check for drug-disease/ drug-drug interactions
- Start with low dose
- Use the fewest drugs necessary
- Explain the uses and adverse effects along with clear instructions about how to take each drug
After starting a drug

- Assume all new symptoms may be drug related until proved otherwise.
- Monitor patient for signs and symptoms of adverse drug effects.
- Document the response to therapy and increase doses as necessary.
- Regularly reevaluate the need to continue drug therapy.

Adverse drug reaction
Know the brand or generic name of the medication.
What is it supposed to do? How long will it be until results are seen.
What is the dose? How long should I take it?
Are there any food, drinks or other medications that should be avoided.
What are possible side effects?
What should you do if you miss a dose?
What should you do if accidentally take more than the recommended dose?
Will the medications interfere with other medications. And how
Health care prevention. Right, drug, dose, route, time, indication
Issues with Compliance

- Filling the prescription.
- Refilling the prescription.
- Missed dose.
- Wrong Time.
- Took lower or higher dose than prescribed.
- Stopped a medication early.
- Take old medications for new problem without consulting a doctor.
- Took someone else's medication.
- Forgot they already took the medication.
Issues that can contribute to non-compliance

- Mental Status- Cognition
- Literacy- Can person understand what is being described
- Vision loss
- Hearing Loss
- Manual Dexterity and Strength
Evidence of risk factor

There have been many reports describing the risk factors and/or reasons for nonadherence. One notable study was a CMS survey of unfilled prescriptions among community dwelling Medicare beneficiaries. This study reported that 4.4% of 14,464 survey respondents reported failure to fill or refill 1 or more prescriptions during the past year, and the main reasons for not filling prescriptions were cited as:

Main Reasons for not filling prescriptions

- Costs too much (55%)
- Not covered by insurance (20.2%)
- Believe medicine was unnecessary (18%)
- Afraid of reactions, ADR (11.8%)
<table>
<thead>
<tr>
<th>Questions</th>
<th>Scoring answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you know what each of your medications is for?</td>
<td>No</td>
</tr>
<tr>
<td>2. Do you ever have trouble remembering when to take your medications?</td>
<td>Yes</td>
</tr>
<tr>
<td>3. Do you ever not take a medication because you feel you do not need it?</td>
<td>Yes</td>
</tr>
<tr>
<td>4. Do you ever think that any of your medications is not helping you?</td>
<td>Yes</td>
</tr>
<tr>
<td>6. Do you have any physical problems that keep you from taking your medications as prescribed?</td>
<td>Yes</td>
</tr>
<tr>
<td>6. Do you think any of your medicines is causing a side effect?</td>
<td>Yes</td>
</tr>
<tr>
<td>7. Do you know the names of all of your medications?</td>
<td>No</td>
</tr>
<tr>
<td>8. Do you think that you need all of your medications?</td>
<td>No</td>
</tr>
<tr>
<td>9. In the past 6 months, have you missed getting a refill or new prescription filled on time?</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| 10. How often do you miss taking a dose of medication? 4 choices:  
a) never  
b) 1-2 times/month  
c) one time a week  
d) 2 or more times a week | C, d |
| 11. Have you forgotten to take any of your medications within the past week? (if so, which one and how frequent?) | Yes |
| 12. Is cost of your medication a concern to you?                          | Yes             |


The app calculates a risk score from zero to 10. There are three additional questions that test for serious adherence problems. Based on score results, the app recommends that the patient receive a comprehensive evaluation by a senior care pharmacist. A button is available on the results page that brings up a directory of senior care pharmacists in the area.
Taking Medication Safely

- Get Medical Advice
  - Review for possible drug interactions
  - Make sure all physicians involved know all medications
  - Make sure you are familiar with all medication's.

- Take medications as directed.
  - Do not change dose unless consulting Dr.
  - Avoid temptation to over report symptoms in order to persuade Dr. to change dose or drug.
  - Do not share medications.

- Rely on pharmacist for information

- Maintain accurate and ongoing records
Taking Medication Safely

- Develop a routine for giving the medication.
  - Never assume the individual will take medications on their own.

- Stay organized
  - Med planners
  - Computer “Aps”

- Adapt to the person
  - Can they swallow, do they spit, should the pill be in liquid or compounded form.

- Take safety precautions
  - Avoid leaving the person alone with medication bottles in the room.
  - Be sure to dispose of all medications that have expired or are no longer used.
  - Consult pharmacist or Dr. on safe disposal of medications.

- Be prepared for emergencies.
  - Local Poison Control number
  - Overdose call 911.
Tools to help with Med adherence

- Med Planners
  - Weekly reminders
  - Dispensing Machine
  - Pharmacy Special Packaging.

- Dispensing Machine
- Pharmacy Special Packaging.
Changing how Prescriptions are Administered in Wyoming

PRE-PACKAGED MEDICATIONS IN EXACT DOSES WITH FREE WEEKLY DELIVERY

GenevaWoods
PHARMACY • HEALTH • HOME

472-0597
2546 E. 2ND ST. STE 100 • CASPER
<table>
<thead>
<tr>
<th>Prescription</th>
<th>RX</th>
<th>Dose</th>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skittles</td>
<td>1</td>
<td>26</td>
<td>2</td>
<td>Vail Ranch Pharmacy</td>
</tr>
<tr>
<td>Skittles</td>
<td>1</td>
<td>26</td>
<td>3</td>
<td>Vail Ranch Pharmacy</td>
</tr>
<tr>
<td>Skittles</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>Vail Ranch Pharmacy</td>
</tr>
<tr>
<td>Skittles</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>Vail Ranch Pharmacy</td>
</tr>
</tbody>
</table>

**Instructions:**
- Tastes so fruity!!
- Taste the rainbow

**Date:** 7/16/2013

**Patient:** Test

**Birth:** 1/05/11-15

**Address:** 15 K State, Lincoln UT, 84502, 1-951-785-7720

**Pharmacy:** Vail Ranch Pharmacy, Temecula CA, 92590, 1-951-926-8300, Fax: 1-951-859-8302
**Details for Advil**

Take with food. Do not mix with alcohol.

**Doses per day:** 3

**Dose 1:** 7:15 am

**Dose 2:** 5:22 pm

**Dose 3:** 11:00 pm

**Quantity per dose:** 2.0

**Current quantity:** 145.0

**Quantity per refill:** 180.0

**Refills remaining:** 2
Relationship with your pharmacy

- Costs
- Mail Order
- Synchronized refills
- Importance of understanding and pharmacist involvement.
QUESTIONS???

THANK YOU
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