Drug-Nutrient Interactions in the Elderly: Beyond the Prescription

Megan Finnie, RDN, CSG, LD
Chief Operations Officer
Dietary Consultants, Inc.

Learning Objectives

- Drug-Nutrient Interaction in the Elderly: Beyond the Prescription
  1.) Discuss the importance of recognizing the potential for a drug-nutrient interaction
  2.) Understand the importance of gathering all data regarding medications and supplements when completing recalls and interviews
  3.) Review drug-nutrient interactions of common supplements and prescription medications for the aging population

1.0 hour CE

Note that all references utilized are cited at the end of the presentation, some are also cited on the slides throughout the presentation.
Recognizing the potential for a drug-nutrient interaction

Drug-Nutrient Interaction Definition

- "Drug-nutrient interactions are defined as physical, chemical, physiologic, or pathophysiologic relationships between a drug and a nutrient.
- The causes of most clinically significant drug-nutrient interactions are usually multifactorial.
- Failure to identify and properly manage drug-nutrient interactions can lead to very serious consequences and have a negative impact on patient outcomes."
Nutrient Definition

**NUTRIENT:**
A substance that provides nourishment essential for growth and the maintenance of life.

Types of Nutrients?

<table>
<thead>
<tr>
<th>Class</th>
<th>Composition</th>
<th>Calories</th>
<th>Essential</th>
<th>Other notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.) Carbohydrate</td>
<td>C, H, O</td>
<td>4 kcal/g</td>
<td>&quot;No&quot;</td>
<td>Body does better with carbs, different types of carbs noted</td>
</tr>
<tr>
<td>2.) Fat</td>
<td>C, H, O</td>
<td>9 kcal/g</td>
<td>Yes</td>
<td>Essential FA; different types of fats</td>
</tr>
<tr>
<td>3.) Protein</td>
<td>C, H, O, N</td>
<td>4 kcal/g</td>
<td>Yes</td>
<td>8 (9) Essential amino acids</td>
</tr>
<tr>
<td>4.) Vitamins</td>
<td>Inorganic</td>
<td>0 kcals</td>
<td>Yes</td>
<td>13 vitamins (4 Fat-soluble, 9 water soluble)</td>
</tr>
<tr>
<td>5.) Minerals</td>
<td>Inorganic</td>
<td>0 kcals</td>
<td>Yes</td>
<td>Ca, Na, K are most abundant, many needed</td>
</tr>
<tr>
<td>6.) Water</td>
<td>H, O</td>
<td>0 kcals</td>
<td>Yes</td>
<td>H2O – Mostly what your body is made up of</td>
</tr>
<tr>
<td>7.) Alcohol?</td>
<td>C, H, O</td>
<td>7 kcal/g</td>
<td>No</td>
<td>Ethanol, ETOH; NOT essential, but arguably a nutrient as it provide kcals and some possible health benefits</td>
</tr>
</tbody>
</table>
Vitamins – There are ONLY 13!

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Fat-soluble</td>
</tr>
<tr>
<td>D</td>
<td>Fat-soluble</td>
</tr>
<tr>
<td>E</td>
<td>Fat-soluble</td>
</tr>
<tr>
<td>K</td>
<td>Fat-soluble</td>
</tr>
<tr>
<td>C</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-1</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-2</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-3</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-5</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-6</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-7</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-9</td>
<td>Water-soluble</td>
</tr>
<tr>
<td>B-12</td>
<td>Water-soluble</td>
</tr>
</tbody>
</table>

Roughly 13% of the U.S. population is 65 years or older
- Yet over 33% of all prescription medications are used by this group
- The combination of alcohol and medication misuse has been estimated to affect up to 19% of older Americans.
- Approximately 25% of older adults use prescription psychoactive medications that have a potential to be misused and abused.
Potential for drug-nutrient interaction

- Increases with polypharmacy
- As age increases, usually = increase in need for meds
- Changing digestion and absorption

Additional Risk Factors

- Dementia/cognitive status change
- Drugs contributing to cognitive status changes
- Availability of food/food insecurity (will eat or drink what is available)
- Not taking drugs as prescribed (cost, sense of time, lack of routine schedule, depression/self-neglect, etc.)
- Alcohol and/or drug abuse
- Organ systems not working at max capacity, may compromise ability to break down or effectively use the drug, the drug may stay in the body longer than in a younger person
Why is it important to watch for potential drug-nutrient interactions?

- Prevention of negative outcomes, including:
  - Death
  - Dehydration, Malnutrition
  - Decreased quality of life
  - Skin integrity deficits
  - Vitamin or mineral toxicity, or deficiency
  - Drug toxicity, or decreased efficiency of the drug
  - Elimination pattern changes (constipation or diarrhea, excessive or inadequate urine output)
  - Change in PO intake patterns
  - And more...

Isn’t that the MD’s job? Isn’t that the pharmacist’s job? Isn’t that the nurse’s job? Isn’t that the dietitian’s job? Isn’t that the resident/patient/client’s job? Isn’t that the family’s job?

IT’S EVERYONE’S JOB AS PART OF THE INTERDISCIPLINARY TEAM!
Dietary managers, food service directors, and dietary staff are all valued members of the team!
Gathering all data regarding medications and supplements when completing recalls and interviews

Medications and nutritional recalls and interviews

- Ask individual or family member to bring a list of all medications they currently take
- Record all meds, even ones that may not “seem” important
Over-the-Counter (OTC)

- Ask about over-the-counter drugs and supplements they may either routinely take, or take from time to time
  - NSAIDs - anti-inflammatories (Acetaminophen, ibuprofen, aspirin, etc.)
  - Vitamins and minerals
  - Fiber supplements
  - Herbs and other plant-based supplements
  - Antihistamines (Claritin, Benadryl, etc.)
  - Others?

When completing a dietary recall or interview with someone:

- The number of meds can provide great clues as to what is going on. Recognizing categories of drugs and their common uses can also provide great insight as to health conditions.
Suggested Interview/Recall Questions

- Are you taking any vitamin or mineral supplements? What and how often?

- Do you smoke or chew tobacco? How many cigarettes (cigars or chewing tobacco, e-cigs) per day?

- Do you drink any alcohol? How much per day and when?

- Are there any foods your doctor or pharmacist has told you to avoid due to drug-nutrient interactions?

Review the list of meds with others, such as the dietitian, and the IDT
Drug-nutrient interactions of some common supplements and prescription medications for the aging population

1.) Grapefruit juice
2.) Leafy green vegetables
3.) Salt substitutes
4.) Natural Black Licorice (Glycyrrhiza)
5.) Tyramine-containing foods
   ▪ Includes: chocolate, aged and mature cheeses, smoked and aged/fermented meats, hot dogs, some processed lunch meats, fermented soy products and draft beers (canned and bottled beers are OK)

http://www.eatright.org/resource/health/wellness/preventing-illness/common-food-drug-interactions
Most common plant/herb supplements r/t drug-nutrient interactions

- Gingko Biloba
- Garlic
- St. John’s Wort
- Milk Thistle
- Echinacea
- Ginseng
- Hawthorne
- Saw Palmetto

Common prescription medications r/t drug-nutrient interactions

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name</th>
<th>Type of drug/Use</th>
<th>Drug-nutrient interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>Coumadin</td>
<td>Blood thinner</td>
<td>Vit. K r/t blood clotting</td>
</tr>
<tr>
<td>Digoxin</td>
<td>Lanoxin</td>
<td>Treat HF, A-Fib</td>
<td>Avoid black licorice (Natural)</td>
</tr>
<tr>
<td>Prednisone</td>
<td>Deltasone</td>
<td>Corticosteroid, immunosuppressant</td>
<td>Ca, K+, Mg, other losses</td>
</tr>
<tr>
<td>Maxzide</td>
<td>HCTZ</td>
<td>Diuretic</td>
<td>K+ wasting</td>
</tr>
<tr>
<td>Spironolactone</td>
<td>Aldactone</td>
<td>Diuretic</td>
<td>K+ sparing</td>
</tr>
<tr>
<td>Torsemide</td>
<td>Burnex</td>
<td>Diuretic</td>
<td>K+ wasting, Mg, Ca, others</td>
</tr>
<tr>
<td>Furosemide</td>
<td>Lasix</td>
<td>Diuretic</td>
<td>K+ wasting, Mg, Ca, others</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>Dilantin</td>
<td>Anticonvulsant</td>
<td>Vit D needs increase</td>
</tr>
<tr>
<td>Cholestyramine</td>
<td>Questran</td>
<td>Cholesterol-lowering drug</td>
<td>Can bind with fat-soluble vit</td>
</tr>
<tr>
<td>Glucophage</td>
<td>Metformin</td>
<td>Oral agent r/t diabetes</td>
<td>B12 Def.</td>
</tr>
<tr>
<td>Rheumatrex</td>
<td>Methotrexate</td>
<td>Cancer drug, RA and psoriasis control</td>
<td>Folic acid needs increase</td>
</tr>
</tbody>
</table>
Common prescription medications r/t drug-nutrient interactions

<table>
<thead>
<tr>
<th>Classes of drugs</th>
<th>Drug Names</th>
<th>Drug Use</th>
<th>Drug Nutrient interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAOI</td>
<td>phenelzine, tranylcypromine</td>
<td>Psychotropic meds</td>
<td>Tyramine-containing foods can raise blood pressure dangerously</td>
</tr>
<tr>
<td>STATINS</td>
<td>pravastatin, simvastatin, atorvastatin, lovastatin, etc.</td>
<td>Cholesterol lowering meds</td>
<td>Grapefruit juice</td>
</tr>
</tbody>
</table>

In Conclusion:

- Elderly more at risk for drug-nutrient interactions r/t change in metabolism/physiological function, and likelihood of polypharmacy

- Drug metabolism changes are not well understood in the elderly

- Alcohol and caffeine interfere with most prescription and OTC meds
In Conclusion (Cont.)

- Your healthcare facility should not serve: grapefruit juice or natural licorice products

- Your menu should have consistent amounts of high Vitamin K foods (cabbage, broccoli, greens)

- Refer to your diet manual, contact your pharmacist and dietitian with questions on drug-nutrient interactions

Questions?

THANK YOU!
Megan Finnie, RDN, CSG, LD
Email: mfinnie@dietaryconsultants.com
References


