Optimizing Medication Use in Older Adults

Tom Bartol, NP
Nurse Practitioner
Richmond Area Health Center
Richmond, ME
bartolNP@gmail.com
On Twitter: @tombartol
Disclosures

- The presenter has no affiliations with drug companies or financial conflict of interests
Objectives

A the end of this presentation the attendee will be able to implement strategies to involve the elderly patient in the decision making process about medications.

At the end of this presentation the attendee will be able to discuss with a patient how clinical guidelines apply to them based on their age and preferences.
Keys to Transforming Health Care

- Building Relationships
- Sharing Information
### Patient Involvement in Decisions

<table>
<thead>
<tr>
<th>Decision Topic</th>
<th>Explained Choices</th>
<th>Asked Patient Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure medications</td>
<td>66%</td>
<td>35%</td>
</tr>
<tr>
<td>Cholesterol medications</td>
<td>75%</td>
<td>43%</td>
</tr>
<tr>
<td>Depression medications</td>
<td>77%</td>
<td>66%</td>
</tr>
<tr>
<td>Colon cancer screening</td>
<td>69%</td>
<td>61%</td>
</tr>
<tr>
<td>Breast cancer screening</td>
<td>54%</td>
<td>40%</td>
</tr>
<tr>
<td>Prostate cancer screening</td>
<td>64%</td>
<td>60%</td>
</tr>
<tr>
<td>Knee replacement surgery</td>
<td>86%</td>
<td>72%</td>
</tr>
<tr>
<td>Hip replacement surgery</td>
<td>71%</td>
<td>60%</td>
</tr>
<tr>
<td>Low back surgery</td>
<td>90%</td>
<td>78%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>36%</td>
<td>70%</td>
</tr>
</tbody>
</table>
Patient Involvement in Decisions

<table>
<thead>
<tr>
<th>Decision Topic</th>
<th>Explained Choices</th>
<th>Asked Patient Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure medications</td>
<td>66%</td>
<td>35%</td>
</tr>
<tr>
<td>Cholesterol medications</td>
<td>75%</td>
<td>43%</td>
</tr>
<tr>
<td>Depression medications</td>
<td>77%</td>
<td>66%</td>
</tr>
<tr>
<td>Colon cancer screening</td>
<td>69%</td>
<td>61%</td>
</tr>
<tr>
<td>Breast cancer screening</td>
<td>54%</td>
<td>40%</td>
</tr>
<tr>
<td>Prostate cancer screening</td>
<td>64%</td>
<td>60%</td>
</tr>
<tr>
<td>Knee replacement surgery</td>
<td>86%</td>
<td>72%</td>
</tr>
<tr>
<td>Hip replacement surgery</td>
<td>71%</td>
<td>60%</td>
</tr>
<tr>
<td>Low back surgery</td>
<td>90%</td>
<td>78%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>36%</td>
<td>70%</td>
</tr>
</tbody>
</table>

# Patient Involvement in Decisions

<table>
<thead>
<tr>
<th>Decision Topic</th>
<th>Explained Choices</th>
<th>Asked Patient Preferences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure medications</td>
<td>66%</td>
<td>35%</td>
</tr>
<tr>
<td>Cholesterol medications</td>
<td>75%</td>
<td>43%</td>
</tr>
<tr>
<td>Depression medications</td>
<td>77%</td>
<td>66%</td>
</tr>
<tr>
<td>Colon cancer screening</td>
<td>69%</td>
<td>61%</td>
</tr>
<tr>
<td>Breast cancer screening</td>
<td>54%</td>
<td>40%</td>
</tr>
<tr>
<td>Prostate cancer screening</td>
<td>64%</td>
<td>60%</td>
</tr>
<tr>
<td>Knee replacement surgery</td>
<td>86%</td>
<td>72%</td>
</tr>
<tr>
<td>Hip replacement surgery</td>
<td>71%</td>
<td>60%</td>
</tr>
<tr>
<td>Low back surgery</td>
<td>90%</td>
<td>78%</td>
</tr>
<tr>
<td>Cataract surgery</td>
<td>36%</td>
<td>70%</td>
</tr>
</tbody>
</table>
Shared Decision Making

In Practice

- Baseline risk with patient: What happens if you don’t do anything
- Risk reduction with intervention
- Potential risks with intervention
- Cost (both to patient and to system)

Give the patient information, a perspective, from which to make a choice about health care

Do We Tell Them The Potential Risks?

- Injury or harm from procedure
  - Serious (e.g. colon rupture or bleed with colonoscopy)
  - Inconvenient (hospitalization, missed work)

- False positive
  - Resultant testing and possibly treatment (and complications)
  - Resultant stress

- Cost/Inconvenience (Just because it’s “covered” doesn’t mean it is free)

- “Incidentalomas”

- Will the results make a difference?
  - What would you do if the test were positive?
  - What would you do if the test were negative?
Shared Decision Making: Advantages

- The patient is empowered to participate in his/her care and may motivate to change
- Patient satisfaction, feeling involved in process
- Patient makes more choices and understands choices so less likely for litigation
- Less surprises with false positives or information not expected
- It helps patients to realize medicine is an inexact science, the answers aren’t black and white

## My Practice Changes with SDM

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2013</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Patient Encounters</td>
<td>1758</td>
<td>1654</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Total Prescriptions Written</td>
<td>3699</td>
<td>2298</td>
<td>-38%</td>
</tr>
<tr>
<td>Diagnostic Tests Ordered</td>
<td>244</td>
<td>98</td>
<td>-60%</td>
</tr>
<tr>
<td>Consult Referrals Ordered</td>
<td>269</td>
<td>169</td>
<td>-37%</td>
</tr>
<tr>
<td>Prescriptions per Encounter</td>
<td>2.1</td>
<td>1.4</td>
<td>-33%</td>
</tr>
<tr>
<td>Diagnostic Tests per Encounter</td>
<td>0.14</td>
<td>0.06</td>
<td>-57%</td>
</tr>
<tr>
<td>Referrals per Encounter</td>
<td>0.15</td>
<td>0.10</td>
<td>-33%</td>
</tr>
</tbody>
</table>

Data on file with speaker
Are we following Guidelines blindly?

- Do risks suddenly go up at a certain age?
- Does one set of guidelines fit everyone, regardless of lifestyle, weight, risk factors?
- Most don’t take into account culture differences or SES status.
- They are *guidelines, not mandates*.
- What is the benefit of the intervention in the guidelines?
- What is really important is a patient’s baseline risk for any condition!
Lovastatin 20-40 mg/day, (mean dose 30 mg/day) significantly reduced the risk of the first acute major coronary event by 37% \((p<0.001)\)

\(21.5\%\) of participants >65 years of age

What does this evidence mean?
Consider the risk reduction...
AFCAPS/TexCAPS: 5 Year Results

<table>
<thead>
<tr>
<th></th>
<th>3304 Lovastatin</th>
<th>3301 Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number with Primary Endpoint (1&lt;sup&gt;st&lt;/sup&gt; Acute Major Coronary Event)</td>
<td>116/3304 (3.5%)</td>
<td>183/3301 (5.5%)</td>
</tr>
<tr>
<td>Relative Risk Ratio</td>
<td>$3.5 \div 5.5 = 0.63$</td>
<td></td>
</tr>
<tr>
<td>Relative Risk Reduction</td>
<td>$(5.5 - 3.5)/5.5 = 0.37$ or 37%</td>
<td></td>
</tr>
<tr>
<td>Absolute Risk Reduction (ARR)</td>
<td>$5.5 - 3.5 = 2%$</td>
<td></td>
</tr>
</tbody>
</table>

JAMA 1998;279:1615-1622
Relative Risk Reduction (RRR)

\[
\text{RRR}(\%) = \frac{\text{Baseline Risk}(\%) - \text{Treatment Risk}(\%)}{\text{Baseline Risk}(\%)}
\]

Think of it as % saved…

\[
\text{% Savings (20\%) = } \frac{\text{Regular Price}^*(25.00) - \text{Sale Price}^* (20.00)}{\text{Regular Price}^* (25.00)}
\]

*Price is “risk” to your pocketbook

Absolute Risk Reduction (ARR)

ARR = AR Placebo – AR Intervention

Think of it as amount saved…

Amount Saved(5.00) = Regular Price*(25.00) – Sale Price* (20.00)

*Price is “risk” to your pocketbook

50% off any 1 item in the store

- 50% Relative Price Reduction
- How much do you save?
  ...It depends on how much you spend
  $1.00 Candy Bar—Save 50% or $0.50
  $1000.00 Flat Screen TV—Save 50% or $500.00

- Both save 50%, but who saved more?
Framing: The Way the Data is Presented

“Honey, I saved $300.00 at the store today!

37% reduction in 1st major coronary events

3304 patients treated with lovastatin for 5 years:
  – prevent 67 1st major coronary events
  – Has no preventive effect on 3118 patients (3301 in placebo – 183 events in placebo = 3118)

Taking lovastatin for ~5 years can reduce risk of 1st major coronary event from 5.5 in 100 to 3.5 in 100

Risk of **NOT** having 1st major coronary event
  – 94.5 out of 100 without taking simvastatin
  – 96.5 out of 100 with taking simvastatin

*JAMA 1998;279:1615-1622*
Baseline Risk

- Risk of outcome in the control/placebo group
- What is the person’s chance of having the specified event (endpoint) at the beginning of the study?
- Absolute risk reduction is lower if baseline risk is low
  - savings is low if original price is low
  - but baseline risk doesn’t effect relative risk reduction
- Baseline risk depends on individual risk factors

Accessed 6/11/12
Statin Therapy for Primary Prevention

AFCAPS/TexCAPS (1998)
- Lovastatin 20-40mg/d
- 5.2 yr f/u, 1st CAD event
- 37% RRR of events
- 5.5% events in control
- ARR 2% (98/100 no effect)

Another way of saying it:
- ~3000 people treated for 5 years to prevent 67 events
- Treat ~2933 with no effect

Neither study reduced CHD mortality or All Cause Mortality

WOSCHOS (1995)
- Pravastatin 40mg/d
- 4.9 year f/u, 1st CAD event
- 30% RRR of events
- 7.5% events in control
- ARR 2.5% (97.5/100 no effect)

Another way of saying it:
- Treat 3300 people for 4.9 years to prevent 74 events
- Treat ~3226 with no effect

What is the your patient’s baseline risk?

JAMA. 1998;27:1615-1622
## Primary Prevention of CAD with Satins

### Table 1
Primary prevention trials of statins including elderly patients

<table>
<thead>
<tr>
<th>Study</th>
<th>Agents</th>
<th>Follow-up</th>
<th>Elderly participants</th>
<th>Women</th>
<th>Inclusion criteria</th>
<th>Primary outcome measures</th>
<th>Result of primary outcome</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AFCAPS/TEXCAPS [5]</td>
<td>Lovastatin 20–40 mg vs placebo</td>
<td>5.2 years</td>
<td>≥65 years (21.5%)</td>
<td>5.0%</td>
<td>No previous CVD + LDL-cholesterol 3.36–4.91 mmol l⁻¹</td>
<td>Rate of first fatal or nonfatal MI, UA or SCD 3.5% 5.5% 2.0% P &lt; 0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASCOT-LLA [11]</td>
<td>Atorvastatin 10 mg vs placebo</td>
<td>3.3 years</td>
<td>&gt;60 years (63.8%)</td>
<td>13.8%</td>
<td>HT + total cholesterol ≤6.5 mmol l⁻¹</td>
<td>Non-fatal MI and fatal CHD 1.9% 3.0% 1.1% P = 0.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARDS [12]</td>
<td>Atorvastatin 10 mg vs placebo</td>
<td>3.9 years</td>
<td>&gt;60 years (62.6%)</td>
<td>31.0%</td>
<td>T2D and LDL-cholesterol ≤4.14 mmol l⁻¹ plus one of the following: HT, retinopathy, microalbuminuria, smoking</td>
<td>Time to first occurrence of acute CHD events, coronary revascularization or stroke 5.8% 9.0% 3.2% P = 0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHS [10] (retrospective cohort study)</td>
<td>Statin use vs nonstatin use</td>
<td>7.2 years</td>
<td>≥65 years (100%)</td>
<td>66.2%</td>
<td>No previous CVD</td>
<td>Combined endpoint of MI, stroke, CHD death 16.7% 20.4% 3.7% P = 0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CVD cardiovascular disease; MI myocardial infarction; UA unstable angina; SCD sudden cardiac death; CHD coronary heart disease; HT hypertension; T2D type 2 diabetes; ARR absolute risk reduction.
## Statins for Secondary Prevention of CAD

### Table 2
Secondary prevention trials of statins including elderly patients

<table>
<thead>
<tr>
<th>Study</th>
<th>Agents</th>
<th>Follow-up</th>
<th>Elderly participants</th>
<th>Women</th>
<th>Inclusion criteria</th>
<th>Primary outcome measures</th>
<th>Result of primary outcome</th>
<th>Incidence in active group</th>
<th>Incidence in placebo group</th>
<th>ARR% value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4S [1]</td>
<td>Simvastatin 20 mg vs. placebo</td>
<td>5.4 years</td>
<td>≥60 years (51.3%)</td>
<td>8.5%</td>
<td>Previous CHD</td>
<td>All-cause mortality</td>
<td>8.2%</td>
<td>11.5%</td>
<td>3.3%</td>
<td>P = 0.0003</td>
</tr>
<tr>
<td>CARE [2]</td>
<td>Pravastatin 40 mg vs. placebo</td>
<td>5 years</td>
<td>≥60 years (51.1%)</td>
<td>14.0%</td>
<td>Previous MI</td>
<td>CHD death and nonfatal MI</td>
<td>10.2%</td>
<td>13.2%</td>
<td>3.0%</td>
<td>P = 0.003</td>
</tr>
<tr>
<td>LIPID [3]</td>
<td>Pravastatin 40 mg vs. placebo</td>
<td>6.1 years</td>
<td>65–69 years (24.0%)</td>
<td>17.0%</td>
<td>Previous MI or hospitalization for UA</td>
<td>CHD death</td>
<td>12.3%</td>
<td>15.9%</td>
<td>3.6%</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td>HPS [13]</td>
<td>Simvastatin 40 mg vs. placebo</td>
<td>5 years</td>
<td>65–69 years (25.0%)</td>
<td>24.7%</td>
<td>CVD, DM, or treated HT</td>
<td>Cardiovascular and all-cause mortality</td>
<td>12.9%</td>
<td>14.7%</td>
<td>1.8%</td>
<td>P = 0.0003</td>
</tr>
<tr>
<td>PROSPER [14]</td>
<td>Pravastatin 40 mg vs. placebo</td>
<td>3.2 years</td>
<td>&gt;65 years (100%)</td>
<td>8.3%</td>
<td>Subjects with CVD or at high CVD risk</td>
<td>Combined endpoint of CHD death, MI, and fatal and nonfatal stroke</td>
<td>14.1%</td>
<td>16.2%</td>
<td>2.1%</td>
<td>P = 0.014</td>
</tr>
</tbody>
</table>

CVD cardiovascular disease; MI myocardial infarction; UA unstable angina; CHD coronary heart disease; HT hypertension; DM diabetes mellitus; ARR absolute risk reduction.
Do We Share about Lifestyle?

Stone NJ, et al.
2013 ACC/AHA Blood Cholesterol Guideline

2.1. Lifestyle as the Foundation for ASCVD Risk Reduction Efforts

It must be emphasized that lifestyle modification (i.e., adhering to a heart healthy diet, regular exercise habits, avoidance of tobacco products, and maintenance of a healthy weight) remains a critical component of health promotion and ASCVD risk reduction, both prior to and in concert with the use of cholesterol-lowering drug therapies. Healthy diet or lifestyle modifications were recommended as background therapy for the RCTs of cholesterol-lowering drug therapy. See the 2013 Lifestyle Management Work Group Guideline (10) for lifestyle recommendations for healthy adults.
### Table 3. Summary of Meta-analyses of Antithrombotic Therapy for Stroke Prevention in Atrial Fibrillation

<table>
<thead>
<tr>
<th>Treatment Comparisons</th>
<th>Relative Risk Reduction (%) (95% Confidence Interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted-dose oral anticoagulation versus no antithrombotic therapy</td>
<td>68 (50-79)</td>
</tr>
<tr>
<td>Aspirin versus no antithrombotic therapy</td>
<td>21 (0-38)</td>
</tr>
<tr>
<td>Adjusted-dose oral anticoagulation versus aspirin</td>
<td>52 (37-63)</td>
</tr>
</tbody>
</table>

Zostavax Shingles Vaccine

Vaccine efficacy:
- Age 60-69 a 64% reduction
- Age >70 a 38% reduction

Shingles Incidence per year based on Age
- <50 = 2:1000
- 50-59 = 5:1000
- 60-69 = 7:1000
- 70-79 = 10:1000
- 80-89 = 12:1000

Cost: ~ $200.00-300.00 cash price

Side effects Pain, swelling, itching at injection site, headaches

http://www.cdc.gov/vaccines/vpd-vac/shingles/hcp-vaccination.htm
ASA In Primary Prevention of CAD

- Risk of hemorrhagic stroke increased 32%
- Risk of serious brain bleed increased 50% with absolute risk of 1 in 1000 annually
- 10,000 patients treated for a year
  - 6 fewer coronary events
  - 2 fewer thrombotic strokes
  - 1 additional hemorrhagic stroke
  - 3 episodes of serious bleeding

Vorapaxar (zontivity)

- Oral platelet receptor antagonist to reduce risk for MI, stroke CV death, and need for revascularization in people with Hx of MI or PAD
- First in new class of protease-activated receptor-1 (PAR-1) antagonists
- Increases bleeding risk
- RRR 17% for heart attack, stroke, and CV death over 3 years in target population
- Risk goes from 9.5% (baseline) to 7.9% with Rx
The Guidelines Aren’t “Bad”

- Anyone may receive treatment based on guidelines
- Goal isn’t to limit interventions
- Goal is to allow the patient to make an informed choice about screening or testing: Shared Decision Making
- Start with an assessment for baseline risk

Baseline Risk Varies

- Family History (genetics)
- Lifestyle
  - Exercise
  - Dietary Intake
  - Habits (smoking, ETOH, etc)
- Other risk factors/or medical history
- Socioeconomic Status/Satisfaction with life (or “Are you happy?”)
Adding Value to our Practice

The evidence isn’t good or bad, it just is
- “Facts are stubborn things”  *Benjamin Franklin*
- Use relative risk reduction based on baseline risk

Patients deserve to make an informed choice about their care

Patients and the health care system are ready for a change in how we practice!
Optimizing Medication Use in Older Adults

Tom Bartol, NP
Nurse Practitioner
Richmond Area Health Center
Richmond, ME
bartolNP@gmail.com
On Twitter: @tombartol