Please sign in and be sure to fill out an evaluation before you leave.

• Final talk in this series today:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/19/2019</td>
<td>Ed2N 1206</td>
<td>Lightening the Load: Personalizing substantive, high-volume decisions in primary care with targeted, brief shared decisions making</td>
<td>Tanner Caverly, PhD</td>
</tr>
</tbody>
</table>

• Behavioral Science in Health and Health Care: An ACCORDS Seminar Series

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Title</th>
<th>Presenter</th>
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<tr>
<td>3/21/2019</td>
<td>ED2S 2305</td>
<td>Developing Multi-level Change Capacity: Leveraging Physician Vanguards in Medical Home Transformation</td>
<td>Georges Potworoski, PhD</td>
</tr>
<tr>
<td>4/24/2018</td>
<td>ED2N 2307</td>
<td>Interdisciplinary Approaches to Physical Activity: Built Environment Research and Translation to Policy</td>
<td>Jim Sallis, PhD</td>
</tr>
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Recorded seminars can be found on our website https://goo.gl/1q9nUx

Request a Planning or Support Consultation with the Education Program
Lightening the Load

Personalizing Substantive, Everyday Decisions
(like lung cancer screening)

Tanner Caverly, MD, MPH

Data Science to Patient Value Seminar Series
Room for one more?

A typical Jeepney ride in the Philippines


Substantive everyday decisions

Lung cancer screening (LCS)

Routine Tasks:
- ETOH
- Tobacco
- Diet/Activity
- Depression
- Suicide
- Domestic violence
- Risky behaviors
- Cognitive decline
- Mobility
- Immunizations
- Advanced directives
Substantive, everyday decisions (like LCS)

Occur very frequently in primary care (on a daily basis)

Not major, but have important consequences

Personalizing these decisions can add a lot of value

But, they pop up very frequently in primary care and time for personalizing these decisions is scarce
Time is very scarce: Among 1,000 clinicians with typical panels...

None could come close to discussing all highly-recommended preventive services (like LCS)

Applied even to those working long hours and carrying a smallish patient panel.

Clinicians fall 5.6 hours behind each day completing SDM for all highly-recommended preventive services

Caverly TJ, Hayward RA, Burke JF. BMJ 2018.
Much to do with nothing: microsimulation study on time management in primary care
Our VA research initiative: Implementing Shared Decision Making (SDM) for Lung Cancer Screening (LCS)
Overview

Lung cancer screening: a model to study personalized decision-making

3 things to enhance clinician’s capacity to personalize
1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: targeted, brief SDM

Caveats
Lung Cancer Screening: A good model to study personalized decision-making

1. Strong evidence that it reduces the risk of total mortality
2. Mortality benefit varies dramatically across the population
3. False positive results carry major consequences
4. It is expensive
5. Current guidelines recommend and CMS payment require SDM
~2% of eligible screened in 2016

Eligible if:

Age 55-80
Smoked \( \geq 30 \) pack-years
Current or former smoker quitting < 15 yrs ago
Healthy enough to get curative lung resection

Pham et al. JCO 2016.
Strong rationale for population screening for lung cancer

Most deadly solid tumor cancer in the US:
155,870 died from lung cancer in 2017
More than colon, prostate, breast, and melanoma combined

Concentrated on a relatively small, easily identifiable high-risk group: heavy smokers
Lower education, lower income, and higher incidence of mental illness
Strong evidence that screening helps some patients a great deal

For ideal candidates:
- LCS >> mammography
- LCS ~ CRC screening

*Among eligible patients with life expectancy > 10 years

Lung Decision Precision

Web based tool developed as part of our initiative

Studying how to help screening coordinators and primary care teams personalize LCS at 8 VA sites

 Lowest risk among eligible patients

| Screening is preference sensitive* | Screening is high benefit (if life expectancy > 10 years) |

* Best option depends on patient preferences
3 things to enhance our capacity to personalize

1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: targeted, brief SDM
Overview

Lung cancer screening as a good model to study personalized decision-making in primary care

3 things to enhance clinician capacity to personalize
1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: targeted, brief SDM

Caveats
Premise for our work:

Clinicians could use a practical approach that enhances their capacity to be skilled health advocates \textit{and} strong supporters of autonomy.

Enhance clinician capacity to be \textit{skilled health advocates}

But, most patients are also \textit{quite} uninterested in being told what to do.
The goshawk: *Accipiter gentilis*

A species hawk found in many places including North America.

*Accipiter* is "hawk", from *accipere*, "to grasp"

*gentilis* is "noble"
  genteel, refined, worldly-wise, & sophisticated
3 things to enhance our capacity to personalize

1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: targeted, brief SDM

Caveats

To be elegant and refined like a goshawk (skilled communicator)
3 things to enhance our capacity to personalize

1) Individualized estimates of benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: targeted, brief SDM

Caveats
The visual acuity to find, and the instincts to move directly toward, the most valuable targets
What’s the most valuable thing for this patient?

- Start statin
- Stop glyburide
- Start aspirin
- Add 2nd anti-hypertensive
- Lung cancer screening
- Prostate cancer screening
- Colon cancer screening
- AAA screening
Clinicians can use individualized estimates of benefit to see like a goshawk.
Benefit (ARR) = \text{risk}_{\text{NoRx}} \times \text{RRR}_{\text{Rx}}
“...relative reduction in mortality from lung cancer with low-dose CT screening of 20.0% (95% CI, 6.8 to 26.7; P=0.004)”
Benefit (ARR) = \text{risk}_{\text{NoRx}} \times \text{RRR}_{\text{Rx}}

Estimated using validated prediction models from observational studies
4 models most accurately predict lung cancer risk across race/ethnicity groups

Best Models:
Bach model
PLCO_{M2012}
LCRAT
LCDRAT

Benefit (ARR) = \text{risk}_{\text{NoRx}} \times \text{RRR}_{\text{Rx}}
3 things to enhance our capacity to personalize

1) Individualized estimates of benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: *Targeted, brief SDM*

Caveats
The difference between color vision and black & white
Clinicians can use bounds on the preference-sensitive zone to see like a goshawk

<table>
<thead>
<tr>
<th>Chance of benefit</th>
<th>&lt; 0.05%</th>
<th>10%</th>
<th>&gt;50%</th>
</tr>
</thead>
</table>

Current model

Recommend against

Recommend for

Terrible idea!

Great idea!
A more realistic model

Uncertainty in benefits & harms
Variation in patient preferences
**Green zone** (Go, high benefit):
Benefit so large it clearly outweighs downsides

**Red zone** (Stop, net harm):
Benefit so small that treatment harms dominant

**Everything else is yellow zone** (Caution, uncertain):
Benefit uncertain, depends on context/preferences
Individualized estimates of benefit
Clarity on likely preference-sensitive zone
Negligible benefit | Intermediate benefit | Very large benefit
3 things to enhance our capacity to personalize

1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: *targeted, brief SDM*

Caveats
Clinicians need an efficient process for everyday decisions like LCS

Caverly TJ, Hayward RA, Burke JF. BMJ 2018.
And a way to make these decisions like LCS more patient-centered

Proposals that promote full SDM are not good fit for substantive, everyday decisions

Progress is unlikely until we have feasible alternatives
Without a feasible alternative to full SDM, clinicians will usually default to...

<table>
<thead>
<tr>
<th>Lowest-Scoring Conversations</th>
</tr>
</thead>
</table>
| Physician: Because of the smoking history, um, I'd like to get a CT scan of the lungs and make sure there's nothing in there. Um, this is a new benefit now. Insurance companies are paying for it.  
Patient: Okay  
Physician: Okay? Now, I'll just get that set up and we'll move on. |

3 things to enhance our capacity to personalize

1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: targeted, brief SDM

To be refined, like a goshawk (skilled communicator)
Preference-sensitive zone
Our approach: targeted, brief SDM

Make a personalized recommendation

*Recommendation strength varies with evidence for and size of net benefit*

- Encourage high benefit care
- Discourage risky/trivial care
- Or inform about how the decision is preference-sensitive and how key factors can affect the decision

Fully respect patient requests for more information or disagreement with your initial guidance

*On request, ensure access to high-quality quantitative information*
*Fully support patient veto power*
### Initial approach in the preference-sensitive zone (1 min 7 seconds)

1. **Make a personalized recommendation**
   - "you are a candidate"
   - Inform the patient the decision is preference-sensitive
     - "for you it’s a tough decision"
     - "little bit of benefit with a little bit of downside"
   - Briefly present qualitative information about the most important factors affecting the decision
     - "if you’re the type of person that would feel..." Recognizes tough decision without being "wishy-washy"

2. **Fully respect patient requests for more information or disagreement**
   - Explicitly state there is a choice, and give patients permission to make the choice based on what matters most to them
     - "it’s really a personal choice between [the small chance of catching a lung cancer early] vs. the risk of false positives and unnecessary biopsies"
High-benefit
# High-benefit (40 seconds)

1. Make a personalized recommendation
   - "I think it’s a good idea for you"
   - "overall I’d recommend"

2. Fully respect patient requests for more information or disagreement with your initial guidance
   - "Strength varies with evidence for and magnitude of net benefit"
     - "benefits are fairly high but there are some downsides"
     - "I think this is worth it"
     - "risk of lung cancer is pretty high"
     - "what are your thoughts about that?"
Very high-benefit
Very high benefit *(43 seconds)*

<table>
<thead>
<tr>
<th></th>
<th>Make a personalized recommendation</th>
<th>“I would recommend that you get lung cancer screening”</th>
</tr>
</thead>
</table>
|   | **Strength**                        | “ideal candidate”  
|   |                                     | ”greatly improve your life-expectancy”            |
| 2. | Fully respect patient requests for more information or disagreement with your initial guidance | “unless you have strong objections” |
Caveats

1) Individualized estimates of net benefit
2) Bounds on the preference-sensitive zone
3) Patient-centered, feasible process that works in routine care: *targeted, brief SDM*

Caveats
Substantive everyday decisions are not major decisions

For high stakes decisions like major surgery or LVAD:
A neutral (no rec) or “full SDM” approach seems completely justifiable if preference-sensitive


Neutral approach not suitable for SE decisions like LCS:
1. Time, time, time…and volume
2. Payors unlikely to pay non-PCPs
3. Patient willingness to engage in repeated full SDM
Where are the numbers?

No numbers initially
Isn’t time in the current system
Patients have difficulty processing numbers

Patients should have access to high-quality quantitative information if desired
Paternalism in disguise?

This approach is NOT about telling patients what to do

Reject unchecked paternalism AND reject the idea clinicians should be passive suppliers of probabilities

Good clinicians make a personalized recommendation and then happily support patients as the final decider
How to identify preference-sensitive zone?

**Decreases** the stakes of setting thresholds compared to current the screen/don’t screen thresholds

Simulation analyses can put clinical outcomes and preferences together to help put bounds on P-S zone

Individual clinicians, expert panels, patients, how to incorporate modeling?

Best process still an open question

What’s new here?

Moving past providing quantitative information and focusing on improving how recommendations are made

Acknowledge that chance of benefit exists on spectrum and there is a preference-sensitive zone

Focus on feasibility, this is doable!

Systematic approach to support the principles of SDM and meet the transparency standard of informed consent

Conclusion

PCPs need a way to make SE decisions more patient-centered than what occurs now:

- Individualized estimates of net benefit
- Targeted, Brief SDM
  - Discourage trivial/risky
  - Inform about tough decision
  - Encourage high-benefit care
“I’ve thought about the degree of benefit for you specifically”

Strengthen the patient-clinician relationship

**Most patients:**
- Want their doctor to care for them as individuals
- Want information, a recommendation, and no-fault veto power
- Fine with us being gentle health advocates as long as we fully respect their autonomy

The goshawk: 
*Accipiter gentilis*

*Accipiter* is "hawk", from *accipere*, "to grasp"

*gentilis* is "noble"
The hawk: fiercely independent
“a creature whose defining trait is the capacity to fly away”
Acknowledgements

Rod Hayward
Angie Fagerlin, Julie Lowery and the Prove QUERI team including:
  Sarah Skurla
  Jeff Dewitt
  Joe Leishman
Eve Kerr
Brian Zikmund–Fisher
Laura Damschroder
Dan Matlock
Laura Scherer
The jeepney
AHRQ checklist for meeting CMS criteria for a LCS counseling and SDM visit

During...
The Clinical Encounter
Complete all of the following activities.

- Documented all elements in the patient's medical chart.
  - Used a decision aid
- Discussed potential benefits of lung cancer screening:
  - Reduced mortality from lung cancer
- Discussed potential harms of lung cancer screening, including:
  - False-positive results
  - Follow-up testing if an abnormality is found (and the possible complications of invasive testing)
  - Overdiagnosis
  - Total radiation exposure (screening and diagnostic testing, cumulative)
- Discussed other issues:
  - The impact of comorbidities on screening (the benefit of screening is reduced in patients with poor health)
  - The patient's ability or willingness to undergo invasive diagnostic procedures and treatment
- Counseled about:
  - The importance of adherence to annual lung cancer screening
  - The importance of maintaining cigarette-smoking abstinence or smoking cessation, as applicable
  - Tobacco cessation interventions (provided information, if appropriate)
Key feature:
The recommendation is not the final decision

Use language and tone to help communicate:

1. the strength of the recommendation
2. that the patient is makes the final decision and has no-fault veto power

Allows clinicians to continue being health advocates for their patients.

Add skilled communication: clear distinction between the PCP rec and the patients final decision
Current one-size-fits all discussions  
(mean time: 59 seconds)

<table>
<thead>
<tr>
<th>Highest-Scoring Conversations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician: Okay, so, [PATIENT NAME], one of the recommendations, now I just want to discuss this with you. You can decide. Um, one of the recommendations now is that if you have smoked more than 30 pack-years, which you have, and you've quit sometime within the last 15 y, which you have.</td>
</tr>
<tr>
<td>Patient: Yeah.</td>
</tr>
<tr>
<td>Physician: That you have a yearly chest CT. If you want to do that, I can make it available.</td>
</tr>
<tr>
<td>Patient: It's, it's a what?</td>
</tr>
<tr>
<td>Physician: A chest CT scan to look for cancer, early cancer. Um, before, we never had anything we could do. If you got lung cancer, bye.</td>
</tr>
<tr>
<td>Patient: Yeah.</td>
</tr>
<tr>
<td>Physician: Um, now we're finding that if we find these things really early by doing about a yearly CT scan on it, that we can actually intervene and do something about it. Are you interested in getting that done?</td>
</tr>
<tr>
<td>Patient: Yeah, yeah.</td>
</tr>
<tr>
<td>(later)</td>
</tr>
<tr>
<td>Physician: (to nurse) I need the code for the, um, smoker CT scan, please.</td>
</tr>
</tbody>
</table>

Persistent wide gap between expectations for full SDM and clinical reality

Table 2. Presence of Shared Decision Making Communication Behaviors in Lung Cancer Screening Conversation

<table>
<thead>
<tr>
<th>Shared Decision Making Communication Behavior Item by the Clinician (Abbreviated Item Name)</th>
<th>Mean Item Score (of 0-4) (Range)a</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Draws attention to an identified problem as one that requires a decision making process (identifying problem)</td>
<td>0.43 (0-2)</td>
</tr>
<tr>
<td>2. States that there is more than one way to deal with the identified problem (&quot;equipoise&quot;) (explaining equipoise)</td>
<td>0.79 (0-2)</td>
</tr>
<tr>
<td>3. Assesses patient’s preferred approach to receiving information to assist decision making (eg, discussion in consultations, read printed material, assess graphical data, use videotapes or other media) (assessing preferred approach)</td>
<td>0</td>
</tr>
<tr>
<td>4. Lists options, which can include the choice of “no action” (listing options)</td>
<td>0.50 (0-2)</td>
</tr>
<tr>
<td>5. Explains the pros and cons of options to the patient (taking no action is an option) (explaining pros and cons)</td>
<td>0.14 (0-1)</td>
</tr>
<tr>
<td>6. Explores the patient's expectations (or ideas) about how the problem(s) are to be managed (exploring expectations)</td>
<td>0</td>
</tr>
<tr>
<td>7. Explores the patient’s concerns (fears) about how problem(s) are to be managed (exploring concerns)</td>
<td>0</td>
</tr>
<tr>
<td>8. Checks that the patient has understood the information (checking understanding)</td>
<td>0.07 (0-1)</td>
</tr>
<tr>
<td>9. Offers the patient explicit opportunities to ask questions during the decision making process (offers opportunities for questions)</td>
<td>0.21 (0-2)</td>
</tr>
<tr>
<td>10. Elicits the patient's preferred level of involvement in decision making (eliciting preferred involvement)</td>
<td>0.43 (0-1)</td>
</tr>
<tr>
<td>11. Indicates the need for a decision making (or deferring) stage (indicating need for decision)</td>
<td>0.36 (0-1)</td>
</tr>
<tr>
<td>12. Indicates the need to review the decision (or deferment) (indicating need to review or defer)</td>
<td>0</td>
</tr>
</tbody>
</table>
Simple “rules of thumb” for personalizing LDCT screening discussions based on estimating a person’s annual lung cancer risk

**Screening is likely to be high benefit if a person’s...**
- annual lung cancer risk is greater than ~0.3% and less than ~1.3%

**Screening is likely to be highly preference-sensitive if a person’s...**
- annual lung cancer risk is less than ~0.3% OR
- annual lung cancer risk is greater than ~1.3% (due to limited life-expectancy in this group) OR
- life-expectancy is limited (< 10.5 years)

**Exercise caution if a person’s...**
- annual lung cancer risk is very low (e.g., less than ~0.3%) AND their life-expectancy is limited (< 10.5 years). Screening may have negligible benefit or even net harm for these persons.
Spectrum of benefit for lung cancer screening

<table>
<thead>
<tr>
<th>Chance of benefit</th>
<th>&lt; 0.05%</th>
<th>0.3%</th>
<th>&gt;1%</th>
</tr>
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<tbody>
<tr>
<td>Payoff</td>
<td>&lt; 1 year</td>
<td></td>
<td>&gt; 20 years</td>
</tr>
</tbody>
</table>
Red zone (30 seconds)
Prevention App:
Help PCPs personalize multiple SE decisions

- Aspirin?
- Prostate cancer screening?
- Colon cancer screening?
- Add 2nd BP med?
- Start statin?
- Lung cancer screening?

Patient Concerns
Medication Review
Routine tasks
Targeting of Low-Dose CT Screening According to the Risk of Lung-Cancer Death

Stephanie A. Kovalchik, Ph.D., Martin Tammemagi, Ph.D., Christine D. Berg, M.D., Neil E. Caporaso, M.D., Tom L. Riley, B.Sc., Mary Korch, M.Sc., Gerard A. Silvestri, M.D., Anil K. Chaturvedi, Ph.D., and Hormuzd A. Katki, Ph.D.