Anatomy of a Tool:
Combining Decision Support and Shared Decision Making

iPrACTICE – 2017

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Founder & CEO

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# Disclosures: Jon Keevil, MD, CEO

<table>
<thead>
<tr>
<th>Role</th>
<th>Years</th>
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<td>Trainee</td>
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5 years in 15 minutes

- HealthDecision back story
- Map a Decision
- Build the Math
- Build the Interface
- Test and Refine & Measure
Backstory

- 1998 – HP Palmtop with Lotus 123 – CV risk
- 2002 – Excel on floppy disks
- 2004 – Web site #1
- 2010 – Site #2 linked to Epic
- 2014 – Atrial fib tool – SDM
- 2015 – Mammogram tool
- 2016 – Lung Cancer tool; Left practice
Map a Decision

• Eligibility
• Data
• Assessment
• Decision
• Documentation & Orders
Challenge for Healthcare Decision Making

Case Study: Breast Cancer Screening

“Guidelines conflict with each other and risks are inaccessible”

“I expect my doctor to know the guidelines and teach me about risk.”

Shared Decision Making (SDM)
Building the Math

- Choose a risk score (Gail, BCSC, Dr. Halls, NCI)
  - Data points
  - Index Events measured
  - Side effects of interest
- Choose Treatment Options
  - Annual vs. Biennial vs. No screening
- Identify impact of treatments on events
  - USPSTF
Physicians and Guidelines

Case Study: Breast Cancer Screening


- Women 40-49 should discuss risks & harms with doctor
- Women 50-74 should get biennial mammograms
Physicians and Guidelines

Breast Cancer Screening

USPSTF Breast Cancer Guidelines – 2016:

- Women 40-49 should discuss risks & harms with doctor
- Women 50-74 should get biennial mammograms
### Summarized USPSTF Data

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Number of screenings</th>
<th>% Breast Cancer Mortality Reduction</th>
<th>Number of All Cancers Averted per 1,000 Women</th>
<th>Number of Invasive and OCISB Averted per 1,000 Women</th>
<th>Number of OCISB Cancers Detected per 1,000 Women</th>
<th>Mortality #/1,000 Women Screening</th>
<th>Blowed Calc Mortality Rate No Screening (Includes OverDx)</th>
<th>Mort Rate Per Invasive Only</th>
<th>Mort Rate Per Invasive Only</th>
<th>Overdiagnosis of all including DCIS (Table 12 USPSTF)</th>
<th>OverDx Cases per 1,000</th>
<th>Calc OverDx</th>
<th>OverDx Cases (Invasive) per 1,000</th>
<th>% of OverDx that is Invasive</th>
<th>% of OverDx that is Invasive</th>
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**Tests**
- **Breast Cancer Mortality Reduction**: 28.0%
- **Mortality #/1,000 Women Screening**: 20.95%
- **OverDx Cases per 1,000**: 15.1%
- **Calc OverDx**: 16.5%
- **OverDx Cases (Invasive) per 1,000**: 20.9%
- **% of OverDx that is Invasive**: 14.5%

**Summary Numbers for the Mammo tool**

<table>
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<tr>
<th>Test Code</th>
<th>I27110R</th>
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<th>I37136</th>
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<th>SEST17_TY</th>
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<td>Median (range)</td>
<td>0.72 (0.60 to 0.75)</td>
<td>0.69 (0.60 to 0.75)</td>
<td>0.48 (0.40 to 0.50)</td>
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<td>Age Trial</td>
<td>28.0%</td>
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<td>28.0%</td>
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<td>13 year mortality reduction</td>
<td>17.6%</td>
<td>17.6%</td>
<td>17.6%</td>
<td>17.6%</td>
<td>17.6%</td>
<td>17.6%</td>
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</tbody>
</table>

**Other Notes**
Test Script– 140 cases, 72 #s
Example of Guideline logic (NOF)

• Used for
  • Design
  • Build
  • Testing
Build the Interface

- Icon Mapping
- “Instant Change” decisions
- Build Workflow
- Populate Text
- Populate References
Test, Refine & Measure

- Meet in person
- Watch data
- Get feedback
Mammography Use at UW
Demo
UW Usage

UW Health Use Per Month and Quarter

Unique Patients

Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17

Sum Month
Quarter
Three Takeaways from UW

#1. Patients have Better Satisfaction

![Bar chart showing % "Completely Satisfied" for various aspects of care with and without HealthDecision (HD).](chart_image)

- Provider showed concern*
- Answered questions*
- Recommended to family, friends*
- Explained tests so I could understand*
- Chance to provide input*
- Before visit expectations
- Staff helpful

Society Med Decision Making 2015 Conf. St Louis
Three Takeaways from UW

#2. Physician’s Use is “Sticky” and Habit Forming
Three Takeaways from UW

#3. The tools actually SAVE time.

UW User survey 8/16
SDM Needs: Education & Decision Support

- PDA
- Education
- Dec. Support
- Patient
- Clinician
- SDM
Physicians Responses*

- “The visual presentation of risks and benefits really helps [patients] own their decisions”
- “I love that it is synced with the EHR and my patient’s info automatically blows in”
- “Patients trust the numbers more when they see I am not making them up”
- “Thank you for making me a better doctor”

* At UW Health 76% of PCPs use tools with ≥3 patients. 99.5% chance they will return
Anatomy of a Tool: Combining Decision Support and Shared Decision Making

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Decision: Get screening mammograms or not?  

For 1000 age 60 women over 10 years

- 122 are diagnosed with breast cancer.
  - 24 die of breast cancer.
  - 98 survive breast cancer.

- 878 are not diagnosed with breast cancer.
  - 878 won't have breast cancer.
Decision: Get screening mammograms or not?

- **No**
- **Biennial**
- **Annual**

For 1000 age 60 women over 10 years:

- 142 are diagnosed with breast cancer.
  - 18 die of breast cancer.
  - 6 avoid breast cancer death.
  - 98 survive breast cancer.
  - 20 more are diagnosed and survive.

- 858 are not diagnosed with breast cancer.
  - 249 no breast cancer, recalls or biopsies.
  - 609 recalled for at least one false alarm.
  - 124 undergo a biopsy that is normal.

Continue
Decision: Get screening mammograms or not?

For 1000 age 60 women over 10 years

137 are diagnosed with breast cancer.
- 20 die of breast cancer.
- 5 avoid breast cancer death.
- 97 survive breast cancer.
- 15 more are diagnosed and survive.

863 are not diagnosed with breast cancer.
- 483 no breast cancer, recalls or biopsies.
- 380 recalled for at least one false alarm.
- 63 undergo a biopsy that is normal.