Why 1.5 is the New 4.0 for the PCP?

Matt T. Rosenberg, MD
A Concerned Family Practitioner
Jackson, MI
### PSA Screening Recommendations of Major Societies

<table>
<thead>
<tr>
<th>Organization</th>
<th>Who To Screen</th>
<th>Screening Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>USPSTF, 2012</td>
<td>Should not be offered, consider shared decision making (SDM)</td>
<td>na</td>
</tr>
<tr>
<td>AUA, 2013</td>
<td>55-69 y or ≥ 70 with 10 to 15 y life expectancy, use SDM; &lt; 55 y individualize approach</td>
<td>Consider 2 y interval over annual; may individualize depending on initial level</td>
</tr>
<tr>
<td>ASCO, 2012</td>
<td>Men with life expectancy &gt; 10 y, SDM</td>
<td>none</td>
</tr>
<tr>
<td>ACS, 2010</td>
<td>&gt;50 y at average risk with 10 y life expectancy use SDM; 45 y high risk, 40 y very high risk</td>
<td>Annual if ≥ 2.5 ng/m; biannual if &lt; 2.5 ng/ml Biopsy if &gt; 4 ng/dl, individualize 2.5-4 ng/ml</td>
</tr>
<tr>
<td>ACP, 2013</td>
<td>&gt;50 y at average risk with 10 y life expectancy use SDM; 45 y high risk, 40 y very high risk</td>
<td>Consider longer intervals than yearly</td>
</tr>
<tr>
<td>EAU, 2013</td>
<td>Baseline PSA ≥ 40 – 45 y</td>
<td>2-4 y with PSA &gt; 1µg/L at 45-59 y and up to 8 y if PSA &lt; 1µg/L</td>
</tr>
</tbody>
</table>

Tenets of Shared Decision Making

• Provision of information
  – Balanced and evidence based
  – Harms and benefits of each option
• Elicitation of patient’s perspective
  – Asking about prior experiences
  – Understanding and discussing concerns
  – Delineating preferences regarding screening options
• Guiding final decision making (without directing)

The Bad News: PSA is not a great Test

- PSA is prostate specific. Elevations occur with:
  - Cancer (poor sensitivity)
  - Benign prostatic hypertrophy
  - Prostatitis
    - Antibiotics decrease PSA in 30% if infected
  - Trauma, instrumentation
  - Does not increase with sex or DRE

- 15% variation week to week
- Assay variability up to 20%
The Dilemma of a Limited Test

• Serum PSA has a high false positive rate

• Over 1 million prostate biopsies performed annually in the US
  – 75% biopsies have low-grade indolent (Gleason 6) or no prostate cancer
  – Serious complications of biopsies include infection and hospitalization

• Following the USPSTF recommendations misses an opportunity to detect and treat men with high grade prostate cancer (Gleason grade ≥ 7)
Who is Ordering PSA tests?

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine</td>
<td>64.9</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>23.7</td>
</tr>
<tr>
<td>Urology</td>
<td>6.1</td>
</tr>
<tr>
<td>Hem/Onc</td>
<td>1.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>DOB</th>
<th>Date Temp</th>
<th>Allergies</th>
<th>Chief Complaint</th>
<th>Advance Directive Discussed</th>
<th>Yes</th>
<th>No</th>
<th>PAST MEDICAL HISTORY</th>
<th>PAST SURGICAL HISTORY</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td></td>
<td>LMP</td>
<td>BP</td>
<td>Ht</td>
<td>Wt</td>
<td>Pulse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PHQ score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chief Complaint**

- **Allergies**
- **PHQ score**

**Advance Directive Discussed**

- **Yes**
- **No**

**Past Medical History**

**Past Surgical History**

**Medications**

**Patient Education**

**Family History**

**Review of Systems**

**Impression**

**Laboratory**

**Plan**

**Physical**

**Social History**

- **Tobacco:** Current Former Never
- **Ready to Quit:** Yes No
- **Cessation Discussed:** Yes No
- **Length of Discussion:** 3-10min 10+min
- **ETOH:** Yes No
- **Marital Status:** M S D Widow
- **Employed:** Yes No Student
- **Type:** DIABETIC YES NO

**General**

**Integ**

**HEENT**

**Neck/Bck**

**Cardiac**

**Chest**

**Breasts**

**Abdomen**

**Rectal**

**Prostate**

**Genitalia**

**EXT**

**Neuro**

**MAM**

**URINE**

**EKG**

**PFT**

**DEXA**

**Hb**

**Sig/Col**

**FBS**

**Flu Vac**

**Td/TDaP**

**Pneumo Vac**

**TSH**

**Chol**

**PSA**

**Last HgA1C Bun Cr**

**Last Eye Last Foot**

**BS Range/Home Micro**

**Impression**

**Plan**

**The Annual Check Up Form**
The PSA Dilemma
What does the Value Mean?

Velocity?

4.0?

Density?

Age Changes?
Shared Decision Making and PSA Testing: Results from a National Survey

Ever had a PSA test (ages 50 – 74)
- Received all tenets of shared decision making: 55%
- Understand some doctors recommend the test and others do not: 22%
- Informed that no one is sure if PSA testing saves lives: 14%

Understanding the Misunderstanding of the PSA

• Survey at the 2015 AAFP meeting in Denver
• 153 participants
  – 96 male
  – 49 female
  – 8 undeclared
• Years in practice 19.22
• Type of practice
  – 9 residents
  – 75 employed
  – 62 private
  – 7 undeclared
Which of the following best describes your practice in terms of prostate cancer screening with PSA?

<table>
<thead>
<tr>
<th>Option</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. I do not recommend PSA based screening</td>
<td>35 (23%)</td>
</tr>
<tr>
<td>B. I start testing at age 45 years as a baseline level and tailor subsequent screening intervals based on baseline PSA</td>
<td>59 (39%)</td>
</tr>
<tr>
<td>C. I start testing at age 55 – 69 years of age or 70 years of age and older with a 10-15 year life expectancy</td>
<td>48 (31%)</td>
</tr>
<tr>
<td>A + B</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>A + C</td>
<td>1 (&lt;1%)</td>
</tr>
<tr>
<td>B + C</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>No Answer</td>
<td>5 (3%)</td>
</tr>
</tbody>
</table>
Which prostate cancer screening guideline or recommendations do you follow?

<table>
<thead>
<tr>
<th>Guideline Combinations</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>USPSTF - Do not screen</td>
<td>68 (44%)</td>
</tr>
<tr>
<td>AAFP - Do not screen</td>
<td>30 (20%)</td>
</tr>
<tr>
<td>AUA - start testing at age 55 – 69 years of age or 70 years of age and older with a 10-15 year life expectancy</td>
<td>13 (9%)</td>
</tr>
<tr>
<td>NCCN - start testing at age 45 years as a baseline level and tailor subsequent screening intervals</td>
<td>1 (&lt;1%)</td>
</tr>
<tr>
<td>USPSTF + AAFP</td>
<td>12 (8%)</td>
</tr>
<tr>
<td>USPSTF + AUA</td>
<td>4 (3%)</td>
</tr>
<tr>
<td>USPSTF + NCCN</td>
<td>2 (1%)</td>
</tr>
<tr>
<td>NCCN + AUA</td>
<td>1 (&lt;1%)</td>
</tr>
<tr>
<td>NONE</td>
<td>18 (12%)</td>
</tr>
<tr>
<td>“their own”</td>
<td>3 (2%)</td>
</tr>
</tbody>
</table>
For those who stated that “I do not recommend PSA based screening (n=35)”

**Which prostate cancer screening guideline or recommendations do you follow?**

<table>
<thead>
<tr>
<th>Guideline Combination</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>USPSTF</td>
<td>19 (54%)</td>
</tr>
<tr>
<td>AAFP</td>
<td>3 (9%)</td>
</tr>
<tr>
<td>AUA</td>
<td>6</td>
</tr>
<tr>
<td>NCCN</td>
<td>0</td>
</tr>
<tr>
<td>USPSTF + AAFP</td>
<td>5 (14%)</td>
</tr>
<tr>
<td>USPSTF + AUA</td>
<td>1</td>
</tr>
<tr>
<td>USPSTF + NCCN + AUA</td>
<td>1</td>
</tr>
<tr>
<td>NCCN + AUA</td>
<td>1</td>
</tr>
</tbody>
</table>

77% knew the correct guideline
For those who stated that “I start testing at age 55 – 69 years of age or 70 years of age and older with a 10-15 year life expectancy (n=48)”

**Which prostate cancer screening guideline or recommendations do you follow?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>USPSTF</td>
<td>19</td>
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<tr>
<td>AAFP</td>
<td>13</td>
</tr>
<tr>
<td>AUA</td>
<td>5 (10%)</td>
</tr>
<tr>
<td>USPSTF + AAFP</td>
<td>6</td>
</tr>
<tr>
<td>USPSTF + AUA</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>4</td>
</tr>
</tbody>
</table>

10% knew the correct guideline
If you screen, at what age do you start screening? (n=118)

| Average | 48.5 |

What is a suspicious PSA in a patient age 59? (n=100)

| Range  | 1.5 - 10 |
| Average | 4.099 |

What is a suspicious PSA in a patient over 60? (n=93)

| Range  | 1.5 - 12 |
| Average | 4.68 |
What is a PSA velocity that concerns you? (n=52)

<table>
<thead>
<tr>
<th>Most common answer (n=10)</th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second most common answer (n=5)</td>
<td>1/year</td>
</tr>
</tbody>
</table>

See raw data as the other answers were all over the map
Do you believe that some prostate cancers are more aggressive or lethal than others?

| Yes       | 149 |
| No        | 4   |

If a patient had an abnormal PSA would a test that differentiates the chance of a low grade vs an aggressive tumor be of use to you (i.e. to refer to a specialist or not)?

| Yes       | 134 |
| No        | 12  |
| No Answer | 7   |
How have the current guidelines impacted the use of PSA for screening?

<table>
<thead>
<tr>
<th>Year</th>
<th>Men ≥ 50 yo reporting PSA screening in last 12 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>36.9</td>
</tr>
<tr>
<td>2008</td>
<td>40.6</td>
</tr>
<tr>
<td>2010</td>
<td>37.8</td>
</tr>
<tr>
<td>2012</td>
<td>30.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence of prostate cancer per 100,000 men ≥ 50 yo (n=446,009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>534.9</td>
</tr>
<tr>
<td>2008</td>
<td>540.8</td>
</tr>
<tr>
<td>2010</td>
<td>505</td>
</tr>
<tr>
<td>2012</td>
<td>416.2</td>
</tr>
</tbody>
</table>

Changes in Prostate Cancer Detection

Number of men ≥ 50 diagnosed in US

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>213,563</td>
</tr>
<tr>
<td>2012</td>
<td>180,043</td>
</tr>
</tbody>
</table>

What if the Recommendations are Wrong?

“Both the incidence of early-stage prostate cancer and rates of PSA screening have declined and coincide with the 2012 USPSTF recommendation to omit PSA screening from routine primary care for men. Longer follow-up is needed to see whether these decreases are associated with trends in mortality”

Dare We Go Back to the Pre-PSA Era?

With the introduction of PSA testing, death from prostate cancer was reduced by 20%, whereas metastatic disease was reduced by nearly half.

Welch, nejm 2015 373;18. Gomella, LG “Celebrating the Death of PSA screening” CJU December 2011
Screen or not screen?

Do I screen?

Does it matter?

I don’t have time for this?

I don’t have time to educate myself?

What is shared decision making?

Am I liable for overdiagnosis or underdiagnosis?
Can We Simplify This?
Goals Needed to Simplify

- Decrease needless evaluations
- Don’t make unnecessary patients
- Don’t ask the PCP to counsel outside of their comfort zone
- Is it possible to just have one value?
Why is 1.5 ng/ml the only value I need to know?
A single PSA measurement of > 1.6 ng/ml in men 45 to 49 years was associated with a 5.14% greater risk of dying of prostate cancer within 25 years of testing.
Initial PSA Predicts Future Risk

Benny Holmström et al. BMJ 2009;339:bmj.b3537
5-year Diagnosis Rates Based on Initial PSA Level

**Overall Study Population (21,500)**

- **African Americans**: 19-fold increase in risk
  - 10.39% percent developing prostate cancer

- **15-fold increase in risk**:
  - 7.85% percent developing prostate cancer
  - 0.51% percent developing prostate cancer

**FIG. 2. Receiver operating characteristic curve for all patients.**

- Maximum sensitivity and specificity at PSA 1.5 ng/mL
- Estimated Area C=0.87251

A first PSA test threshold of 1.5 - 4.0 ng/mL, represents the Early-Warning PSA Zone
Patients with PSA ≥1.5 ng/mL have an increased risk of developing PC

Despite what everybody thinks, PSA levels above 1.5 ng/ml are not common.

Data courtesy of Bioreference Lab

December 2015
Screening PSAs

• Patients (age 40 to 75) with 1 PSA result in the past 12 months
  – 217,000 patients
  – Results from 0.01 to 5,000

• Eliminate extreme results
  – 215,613 patients
  – Results from 0.01 to 10.0
Result Distribution
Result Distribution

27%
Result Distribution

73%
Male Patient
45 Years or Older
With at Least a 10
Year Expectancy

Screening PSA

Repeat
PSA in 5 years

PSA <1.5

Consider
Biopsy

PSA ≥1.5

Further Investigation by PCP or Urologist

Low Risk

High Risk

4K, PHI, PCA3

Rosenberg MT, Spring AD, Crawford ED. IJCP 2015; in press.
Early Detection - A Way Forward

• PSA treated like other lab tests, lipids, electrolytes, weight, and BP
• Shared decision making when tests are abnormal
  – 70% of men require no discussion
• An abnormal PSA can be further evaluated with a biomarker
Make Intelligent and Personalized Decisions

• Avoid PSA tests in men with little to no gain
  – Focus on age
  – Focus on health
  – Focus on quality measures
  – Focus on those at risk

• Use the PSA wisely by understanding it’s value

Logic (and Evidence) Provide the Answer

Patient concern  Office visit  History  DRE  PSA  Biopsy

Specimen with pathologist

Thoughtful evaluation before going here
Analogies in Primary Care

- We do not start a patient on insulin without a glycoslyated A1C?

- We do not recommend cardiac bypass surgery based on an abnormal EKG?

- Does it make sense to base prostate surgery on an imperfect screening test?
How to Make the PCP Happy

• Information for patient must be based on evidence and be beyond dispute
• Patient should be presented with a clear framework for a decision
• Process should be appropriate for primary care
  – Should not assume provider has detailed knowledge of disease
  – Should not require more than a few minutes

How to Make the PCP Happy

• Information for patient must be based on evidence and be beyond dispute

• Patient should be presented with a clear framework for a decision

• Process should be appropriate for primary care

–1.5 ng/ml is simple and appropriate
A Call to Arms

• The urology community **MUST** take the lead in education

• Prostate cancer screening is important, if done correctly

• PSA is valuable, as a first line test

• Biomarkers improve screening by assigning risk

• Start the conversation with **1.5!!**