Decreasing variation in medical practice and costs, increasing physician buy-in, integrating transparency and evidence based medicine

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Bedside to Spread Sheet

Two Immediate Options

- Focus on Quality
  - Reduced waste and inefficiency
    - Always reduces cost
    - Takes Time
    - Effects Permanent Real Change
- Look for waste
  - It's everywhere
Health Care Crisis

- We realize there is a problem
- Hope we get ours before its all gone
- Not really sure what to do to fix it
Health Care Crisis

- We realize there is a problem
- Hope we get ours before it's all gone
- Not really sure what to do to fix it
- We have ignored it for as long as possible

Health Care Crisis

- We realize there is a problem
- Hope we get ours before it's all gone
- Not really sure what to do to fix it
- We have ignored it for as long as possible
- Now impossible to ignore
Health Care Spending

- We can wait for congress to fix it
Per Capita Health Spending And 15-Year Survival For 45-Year-Old Women, United States And 12 Comparison Countries (1975 And 2005).

Muennig P A, Glied S A Health Aff 2011;29:2105-2113
Additional Information, Paul Grundy, IBM Corporation, 2012
Brent C. James, M.D., M.Stat.
Executive Director,
Institute for Health Care Delivery Research
Intermountain Healthcare
Salt Lake City, Utah, USA
Intermountain’s Thesis:

Cost and Quality are Inseparably Linked

Evidence-based best practice produces higher quality at lower cost

Figure out the best way to do something and the cost automatically drops

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Care falls short of its **theoretic potential**

1. Well-documented, massive, variation in practices (beyond the level where it is even remotely possible that all patients are receiving good care)

2. High rates of inappropriate care

3. Unacceptable rates of preventable care-associated patient injury and death

4. A striking inability to "do what we know works"

5. Huge amounts of waste and spiraling prices, that limit access (46.6 million uninsured Americans, and still climbing)
It is more important that you do it the same
than that you do it "right"

When you "do it the same:"

- error rates fall -- less complexity = fewer mistakes = better outcomes
- costs fall -- staff is more efficient; you more are efficient
- you can apply the scientific method to systematically improve -- regardless of where you start, you will end up with best demonstrated care practices

(Truth is found more often from mistakes than from confusion ...)

Francis Bacon (1561 - 1626)
Mortality amenable to health care

Deaths per 100,000 population


US Hospitals: Cost Per Case vs. National Average (For Like Cases)
High Reputation Hospitals and Cost Per Case (For Like Cases)

Health Care Cost

- If capitation is in the future
- If we like doing what we do
- *If we like our standard of living*
- We need to focus on
  
  *Improved outcomes*
  
  *Lower costs*
  
  *Through decreasing waste*
  
  *Time*
  
  *Products*
Health Care Cost

- Those of us at Intermountain are surprised
- We are the “model of efficiency”
- But we have plenty of waste and room for improvement and we are often quoted as the example??????

Cutting Health Care Cost

- How to get started
- Pick an element of frustration
- Pick something of interest
  - Cost of ______
  - Outcomes for ______
Diagram Process
Ishikawa

Breast Cancer Program

- Intermountain Health Care Primary Care
- Breast Nodule Noted
  Tissue Diagnosis
  Multiple Disciplinary Clinic:
  Surgeon
  Oncologist
  Social Worker
  On Average in 72 hours
Breast and Prostate Cancer Similarities

- New Chairman Department of Urology
- Primary Care Meeting -- 45 Physicians
- “Dr. Bishoff, How long for men with elevated PSA?”
- Response “Probably Longer Than 72 hours”
- Men with elevated PSA are no less anxious than women with breast nodules, they just don't show it.

Time To Notification of Tissue Diagnosis For Elevated PSA

1- Primary Care
   A. Identify Elevated PSA
   B. Identify Nodule on Prostate
   C. Generate or recommend Urology Evaluation

2- Patient
   A. Calls Urology Office
   B. Aspirin Use
   C. Want to wait
   D. Schedule conflicts
   E. Refused Early Apt
   F. Fear
Time To Notification of Tissue Diagnosis For Elevated PSA

1- Primary Care
A. Identify Elevated PSA
B. Identify Nodule on Prostate
C. Generate or recommend Urology Evaluation

2- Patient
A. Calls Urology Office
B. Aspirin Use
C. Wait to wait
D. Schedule conflicts
E. Refused Early Apt
F. Fear

3- Front Desk
A. Many consults are faxed, but they check fax once a day or less often
B. Answer phone
C. Schedule Apt
D. No appointment Slots
E. Phone Tag with patient

4- Physicians
A. Evaluate Patient
B. High PSA
C. Infection/Nodule
D. Increased PSA Velocity
E. Recommend Biopsy
F. Medicate: Valium/ Vicodin
G. Perform Biopsy

5- Medical Assistants
A. Set Up biopsy
B. Add on biopsy
C. Mark containers
D. Place specimens
E. Deliver to path
Time To Notification of Tissue Diagnosis For Elevated PSA

- **Process Improvement – Staff Meeting**
  - Explain Breast 72 hours vs prostate
  - Goal: More data before change
  - Formal Meeting To Discuss process
  - No waiting “We can Start Today!”

  Front Desk
  MA’s
  Doctors

---

Time To Notification of Tissue Diagnosis For Elevated PSA

- **Process Improvement – Staff Meeting**
  - Lesson 3: Ready, shoot, aim
    - A formal meeting is not always necessary to start change.
  - Staff Meeting one month later to find Key leverage points.
High Priority Leverage Points

<table>
<thead>
<tr>
<th>Leverage Points</th>
<th>Number Change Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Desk</td>
<td>9</td>
</tr>
<tr>
<td>Physicians</td>
<td>4</td>
</tr>
<tr>
<td>Pathology Department</td>
<td>2</td>
</tr>
</tbody>
</table>

3- Front Desk
A. Check fax machine hourly
B. Call patient immediately
C. Offer apt for same day or next day
D. Schedule with next available physician not just one doctor
E. Set up template for open slot: PSA/Nodule apt and biopsy each day for each doctor
F. Never put physicians on hold: referring and pathology
G. Ask for best contact phone/check

6- Pathology Department
A. Treat the same as breast read same day confirm and report second day
B. Send results to mailbox like lab test to trigger recognition of returned result

4- Physicians
A. Willing to add on patient each day for evaluation/biopsy
B. Willing to pass to partner for biopsy the next day

7- Front Desk
A. Check/Read Fax hourly
B. Give directly to physician if positive or PA if negative as soon as report returns. Call in OR or send text message

8- Physician
A. Call back same day or as soon as result returns
B. Document in EMR
Prostate Cancer

- Scope of the problem

- Number one cause of cancer and cancer deaths in men
- Lifetime risk is 1/8 men nation wide
- Lifetime risk in Utah 1/6 men
- 250,000 new cases each year
- 30,000 deaths each year
Prostate Cancer: “To Screen or Not to Screen”

• Screening in breast and colon less controversial even though it leads to mastectomy, colostomy etc.
• Screening for prostate cancer is Controversial, but ...
  N Engl J Medicine 2009;360
  Most common cancer in men (Non Derm)
  1/6 men will develop
  Second cause of cancer Death in men
  Lung cancer remains number 1

Prostate Cancer
“To Screen or Not to Screen”

• Benefits of Screening:
  1) Reduction in prostate cancer deaths
  1997-2007 35% decrease in prostate cancer deaths.
• Benefits of Screening:
  1) Reduction in prostate cancer deaths
     1997-2007 35% decrease in prostate cancer deaths.
  2) Decrease locally advanced disease at the time of diagnosis
     19.2% pre-PSA in 1988
     4.4% in 1998
     1987, 35% of patients had nodal metastasis
     2009 Today 85% of these patients have prostate confined disease

• Randomized Studies in US and Europe
  decreased mortality with treatment of early stage prostate cancer

PSA Screening

- AUA
  Age of 40 years of age with PSA and DRE
- ACS
  Age of 50 with PSA and DRE and younger men with risk factors
- AAFP
  No published standards
- ACP-ASIM/AMA
  Discuss benefits and harms of screening
- USPSTF
- DRE and PSA not recommended for general population and a recommendation against screening for men ≥ 75 years of age

Prostate Cancer

- Scope of the Problem
- Chemoprevention
Finasteride

- Finasteride approved by the FDA in 1992 for treating benign prostatic hyperplasia (BPH)
- It is usually given in a 5 mg dose and is marketed as Proscar®
- Finasteride is also used (at a much lower 1 mg dose) to prevent hair loss and promote hair growth. It is marketed for this use as Propecia®

About Finasteride

- Finasteride is a drug that reduces levels of dihydrotestosterone (DHT) in the blood and the prostate gland.
- DHT is a male hormone that is important in normal and abnormal prostate growth.
- DHT plays a key role in noncancerous growth of the prostate (BPH) as well as in the development of prostate cancer.
- The prostate gland shrinks for men taking finasteride
Finasteride Effectiveness: Prostate Cancer Prevention Trial

- The PCPT was an NCI funded double blinded placebo controlled study designed to see whether finasteride (Proscar®) could prevent prostate cancer in men 55 and older.
- 18,882 men were enrolled in the study for 7 years. They underwent transrectal ultrasound and prostate biopsy at the end of the 7 year period.
- The study began in October 1993 at 221 sites across the US. The PCPT was expected to continue until May 2004, but was stopped in June 2003 due to highly significant findings.
- The PCPT trial showed that finasteride reduced the risk of developing prostate cancer by 25%.


REDUCE Trial: Reduction by Dutasteride in prostate cancer events

- Double blinded placebo controlled study designed to see if Dutasteride (Avodart®) could prevent prostate cancer in men 50 - 75.
- 8,250 men one negative prostate biopsy, PSA >2.5 and <10 ng/ml
- Dutasteride 0.5 mg/day x 4 years vs placebo x 4 years
- Prostate biopsy at 2 years and 4 years
- The risk reduction for prostate cancer was 23% years 1-2 and 24% years 3-4
- BPH related outcomes: urinary retention decreased by 77%, BPH surgery decreased by 73%

Finland: European Association of Urology Congress Stockholm Sweden, 2009
REDUCE: NEJM 362:1192-1202, 2010
SELECT: JAMA 293:1136-1247, 2009
Finnish Prostate Cancer Screening Trial:

- Retrospective Screening 23,340 men 1996-2004
- Prostate Cancer Incidence by Stage, Grade, PSA Levels
  1,754 (8%) on 5ARI
  3,848 (17%) on Alpha Blocker
- Screened every 4 years
- Finasteride users 38% decreased incidence of prostate cancer
- No change in alpha blocker group

Finland: European Association of Urology Congress Stockholm Sweden, 2009
REDUCE: NEJM 362:1192-1202, 2010
SELECT: JAMA 293:1138-1247, 2009

<table>
<thead>
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<th>5 ARI Adverse Events:</th>
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<tbody>
<tr>
<td><strong>Placebo</strong></td>
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<tr>
<td>AE leading to D/C</td>
</tr>
<tr>
<td>Withdrawal due to AE</td>
</tr>
<tr>
<td>Libido</td>
</tr>
<tr>
<td>ED</td>
</tr>
<tr>
<td>EJD</td>
</tr>
<tr>
<td>Breast Tenderness/enlargement</td>
</tr>
</tbody>
</table>
American Urology Association and American Society of Clinical Oncology

- Recommended for men over 50
- Want to be screened
- Interested in prevention of prostate cancer
- Daily use of Finasteride or Dutasteride is recommended in men over the age of 55 years who undergo routine annual PSA screening for prostate cancer.

Family History of Prostate Cancer

Yes

Age > or = 40
Yearly PSA, DRE
Age Adjusted PSA

PSA Levels
Age Adjusted
Plot on Chart
Greater than 20% chance is abnormal

Abnormal
TRUS/BX

Positive
Cancer
Urologist Consultation
Multidisciplinary clinic

Negative
No Cancer
Yearly PSA and DRE
High Grade PIN:
Repeat PSA and TRUS Bx 6-12 months

Age > 55
Yearly PSA, DRE
Age Adjusted PSA

Age > 55
Finasteride 5 mg Daily
Yearly DRE and PSA
(PSA value multiplied x 2 when on Finasteride to make decisions about need for biopsy or observation

No

Age > 50
Yearly PSA, DRE
Age Adjusted PSA

Normal

Age < 55
Yearly DRE and PSA

Positive
No Cancer

Yearly DRE and PSA

Negative
No Cancer

Yearly DRE and PSA
Goal of the Clinical Program

• Clinical Program published
• Delivered to primary care physicians system wide

Finland: European Association of Urology Congress Stockholm Sweden, 2009
REDUCE: NEJM 362:1192-1202, 2010
SELECT: JAMA 293:1138-1247, 2009

Goal of the Clinical Program

• Decrease prostate cancer by 25 - 32%
• Decrease TURP or BPH procedures by 70%
• Decrease long term use of alpha blockers
  Members age 50-74   N= 511,199
  9,000 men on Alpha blocker
  Cost $826,000/ year
  No decrease in size of prostate

Finland: European Association of Urology Congress Stockholm Sweden, 2009
REDUCE: NEJM 362:1192-1202, 2010
SELECT: JAMA 293:1138-1247, 2009
Goal of the Clinical Program

- Decrease prostate cancer by 25%
- Decrease TURP or BPH procedures by 70%
- Decrease long term use of alpha blockers
- Low side effect profile
- Hair Re-growth
- *No increased incidence of high grade cancers*

Finland: European Association of Urology Congress Stockholm Sweden, 2009
REDUCE: NEJM 362:1192-1202, 2010
SELECT: JAMA 293:1138-1247, 2009

Prostate Cancer

- Scope of the Problem
- Chemoprevention
- PSA Reporting
Surprise Findings of Prostate Cancer
PSA ≤ 4ng/ml

PCPT- Study Changed Everything

• First Level I evidence For Prevention Of Prostate Cancer
• Double Blinded Placebo Controlled Trial
• 18,882 men enrolled, 9,459 men were randomly assigned to receive a placebo
• Entrance criterion: PSA ≤ 3ng/ml
• 2,950 men never had a PSA > 4ng/ml or an abnormal DRE throughout the 7 year trial period and these men received an end-of-study biopsy
“PSA - Four No More”

• The results of the PCPT study have prompted the end of the “PSA 4 ng/ml cutoff era”
• PSA cutoff of 4ng/ml were based on a sextant biopsy of 6 biopsies
  PSA 4 to 9.9 ng/ml: 21% of CaP
  PSA above 10 ng/ml: 67% of CaP
  When 12 or more biopsy cores are taken, that value can be as high as 40-50% in men with PSA > 4 ng/ml

Development Risk for Prostate Cancer
Relation to PSA Value

• MUST ALSO INCLUDE:
  Age
  Race
  Family history of prostate cancer
  Previous biopsy
  Patient taking finasteride or dutasteride
Prostate Cancer Calculator

- Developed with the results from the results of the PCPT
- [http://deb.uthscsa.edu/URORiskCalc/Pages/calcs.jsp](http://deb.uthscsa.edu/URORiskCalc/Pages/calcs.jsp)
- IUI is currently using this calculator to determine whether a biopsy is recommended

Prostate Cancer Calculator

- PSA at Intermountain Health Care Labs
- 1,235 PSA tests / week
- 64,220 tests / year
- How to use the data from the PCPT trial and make it immediately accessible
- Automatic risk stratification
- Decrease unnecessary biopsy
- Biopsy based upon risk not absolute number
New PSA REPORTING

- **Sample Report**
  - **Patient One**
    - **Age**: 58
    - **PSA**: 3.8 ng/mL

---

**7.6% of US Men Have PSA > 4**

The Prostate 66:1044-1051, 2006

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*Image: Distribution of serum PSA levels in U.S. Men*
The Prostate 66:1044-1051, 2006

7.6% of US Men Have PSA > 4
92.4% of US Men Have PSA < 4

"Your PSA is Elevated. You need a biopsy."
"Your PSA is Normal. No testing is necessary."

From Ian Thompson, MD using SEER, PCAW and Prostate Cancer Prevention Trial Data
Population Screening with PSA
True Outcomes

From Ian Thompson, MD using SEER, PCAW and Prostate Cancer Prevention Trial Data
Population Screening with PSA
True Outcomes

<table>
<thead>
<tr>
<th>PSA 4+</th>
<th>7.6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive biopsy</td>
<td>25%</td>
</tr>
<tr>
<td>High grade</td>
<td>19%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Normal PSA</th>
<th>92.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive biopsy</td>
<td>15%</td>
</tr>
<tr>
<td>High grade</td>
<td>15%</td>
</tr>
</tbody>
</table>

Screen 10,000 Men

<table>
<thead>
<tr>
<th>PSA 4+</th>
<th>760</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>190</td>
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<tr>
<td>High grade</td>
<td>36</td>
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</table>

<table>
<thead>
<tr>
<th>PSA &lt;4</th>
<th>9240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>1386</td>
</tr>
<tr>
<td>High grade</td>
<td>208</td>
</tr>
</tbody>
</table>

From Ian Thompson, MD using SEER, PCAW and Prostate Cancer Prevention Trial Data

Development Risk for Prostate Cancer
Relation to PSA Value

- **MUST ALSO INCLUDE AT LEAST:**
  - Age
  - Race
  - Family history of prostate cancer
  - Previous biopsy
  - Patient taking finasteride or dutasteride

Risk Calculators Are Available

1. Available since publication of the PCPT results but not widely used
   http://deb.uthscsa.edu/URORiskCalc/Pages/calcs.jsp
2. Google ‘prostate cancer risk calculator’
   Click on top ‘hit’
1. **Risk of Biopsy-Detectable Prostate Cancer**

The Cancer Risk Calculator for Prostate Cancer was developed based upon 5519 men in the placebo group of the Prostate Cancer Prevention Trial. ...

deb.uthscsa.edu/URORiskCalc/Pages/uroriskcalc.jsp - 6k - Cached - Similar pages

2. **The Sunnybrook prostate cancer risk calculator** « THE "NEW ...**

The Sunnybrook prostate cancer risk calculator. Posted on May 28, 2008 by E. Michael D. ("Mike") Scott. A new online calculator, developed by a Canadian ...

prostatecancerinfoink.net/2008/05/28/the-sunnybrook-prostate-cancer-risk-calculator/ - 23k - Cached - Similar pages

3. **The Sunnybrook prostate cancer risk calculator** « THE "NEW ...**

The Sunnybrook prostate cancer risk calculator is the second online prostate cancer risk assessment tool ...
Risk of Biopsy-Detectable Prostate Cancer

Fields marked with asterisks (*) are required.

Enter Your Information

- **Race**: Caucasian
- **Age**: 55
- **PSA Level**: 3.2 ng/ml
- **Family History of Prostate Cancer**: No
- **Digital Rectal Examination**: Normal
- **Prior Prostate Biopsy**: Never Had A Biopsy
- **Is the patient taking finasteride?**: No

Calculate Cancer Risk

Based on the data provided, the person’s estimated risk of biopsy-detectable prostate cancer is 20.8%.
The 95% Confidence Interval for this prediction is 23.2% to 33.4%.
More information about the confidence interval:
The person’s estimated risk of biopsy-detectable high grade prostate cancer is 4.5%.
The 95% Confidence Interval for this prediction is 2.9% to 6.5%.
More information about the confidence interval:

Your Information

- **Race**: Caucasian
- **Age**: 55
- **PSA Level**: 3.2 ng/ml
- **Family History of Prostate Cancer**: No
- **Digital Rectal Examination**: Normal
- **Prior Prostate Biopsy**: Never Had A Biopsy
- **Is the patient taking finasteride?**: No
Risk of Biopsy-Detectable Prostate Cancer

Results
Based on the data provided, the person's estimated risk of biopsy-detectable prostate cancer is 36.8%.

The 95% Confidence Interval for this prediction is 33.8% to 41.1%.
More information about the confidence interval.

The person's estimated risk of biopsy-detectable high-grade prostate cancer is 16.6%.

The 95% Confidence Interval for this prediction is 10.4% to 26.7%.
More information about the confidence interval.

Your Information

<table>
<thead>
<tr>
<th>Race</th>
<th>African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>75</td>
</tr>
<tr>
<td>PSA Level</td>
<td>3.2 ng/ml</td>
</tr>
<tr>
<td>Family History of Prostate Cancer</td>
<td>Yes</td>
</tr>
<tr>
<td>Digital Rectal Examination</td>
<td>Normal</td>
</tr>
<tr>
<td>Prior Prostate Biopsy</td>
<td>Never Had A Biopsy</td>
</tr>
<tr>
<td>Is the patient taking finasteride?</td>
<td>No</td>
</tr>
</tbody>
</table>

Intermountain Healthcare
Prostate Cancer Calculator

- PSA at Intermountain Health Care Labs
- 1,235 PSA tests / week
- 64,220 tests / year

Prostate Cancer Calculator

- PSA at Intermountain Health Care Labs
- Urologists and Primary Care not usually using calculators
- How to use the data from the PCPT trial
- How to make it immediately accessible
  - Automatic risk stratification
  - Decrease unnecessary biopsy
  - Decrease detection of insignificant prostate cancers
  - Biopsy based upon risk not absolute number
Prostate Cancer Calculator

Working with Ian Thompson, MD and PCPT group

16 February 2010

Incorporated PCPT results PSA Logic Into Lab Reporting

PCPT Two Reports:
1) Risk of Prostate
2) Risk of high grade cancer

All PSA age 55 or older

Presents Risk Stratification

Reports only the risk of high grade cancer

New PSA REPORTING

- **Sample Report**
- **Patient One**
  - Age 58
  - PSA 3.8 ng/mL
New PSA REPORTING

- **Sample Report**
- **Test, Patient One**
  - Age: 58
  - PSA: 3.8 ng/mL
- **Risk of High-Grade Prostate Cancer**
  - DRE neg: 6.0%
  - DRE neg, African-American: 14.4%
  - DRE pos: 14.9%
  - DRE pos, African-American: 31.3%
  - Finasteride, DRE neg: 13.6%
  - Finasteride, DRE neg, African-American: 29.1%
  - Finasteride, DRE pos: 30.0%
  - Finasteride, DRE pos, African-American: 52.8%
Biopsy Rates

PSA Biopsy Rate All Ages
Positive Biopsy Rates

PSA Positive Biopsy Rate All Ages

Risk Score Impact on Positive Biopsy

<table>
<thead>
<tr>
<th>Period</th>
<th>Age Group</th>
<th>Biopsies</th>
<th>Positive Biopsies</th>
<th>Percent Positive</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>Under 55</td>
<td>346</td>
<td>86</td>
<td>24.9%</td>
<td>0.0013</td>
</tr>
<tr>
<td>After</td>
<td>Under 55</td>
<td>359</td>
<td>105</td>
<td>29.2%</td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>55-64</td>
<td>924</td>
<td>290</td>
<td>31.4%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>After</td>
<td>55-64</td>
<td>1024</td>
<td>371</td>
<td>36.2%</td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>65-74</td>
<td>886</td>
<td>330</td>
<td>37.2%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>After</td>
<td>65-74</td>
<td>1024</td>
<td>404</td>
<td>39.5%</td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>All</td>
<td>2156</td>
<td>706</td>
<td>32.7%</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>After</td>
<td>All</td>
<td>2407</td>
<td>880</td>
<td>36.6%</td>
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</table>
## Risk Score Impact on Gleason Score

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<thead>
<tr>
<th>Period</th>
<th>Age Group</th>
<th>Gleason Total = 6</th>
<th>P-Value</th>
<th>Gleason Total = 7</th>
<th>P-Value</th>
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<tbody>
<tr>
<td>Before</td>
<td>Under 55</td>
<td>45.8%</td>
<td>0.1073</td>
<td>43.7%</td>
<td>0.3059</td>
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<tr>
<td>After</td>
<td>Under 55</td>
<td>55.1%</td>
<td></td>
<td>37.8%</td>
<td></td>
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<tr>
<td>Before</td>
<td>55-64</td>
<td>38.9%</td>
<td>0.0002</td>
<td>51.6%</td>
<td>&lt; 0.0001</td>
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<tr>
<td>After</td>
<td>55-64</td>
<td>51.2%</td>
<td></td>
<td>37.9%</td>
<td></td>
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<tr>
<td>Before</td>
<td>65-74</td>
<td>38.3%</td>
<td>0.4239</td>
<td>46.8%</td>
<td>0.5793</td>
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<tr>
<td>After</td>
<td>65-74</td>
<td>40.8%</td>
<td></td>
<td>45.0%</td>
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<tr>
<td>Before</td>
<td>All</td>
<td>37.9%</td>
<td>&lt; 0.0001</td>
<td>47.6%</td>
<td>0.0003</td>
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<tr>
<td>After</td>
<td>All</td>
<td>45.8%</td>
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<td></td>
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</tbody>
</table>
Results

- Using Risk Stratification Resulted in
  
  1) Decrease in prostate biopsy rate in the Intermountain Health Care System
  2) Increase in prostate cancer detection rate
  3) A decrease in Gleasons sum from an average of 7 to an average of 6 among 55-64 year olds, but remained constant for other patient groups

What can we do?

1. Start using risk calculators in evidence based ways
   - Personalized strategy
     - Look at additional factors, age, race, DRE, Medication
   - Can start today
   - No additional cost except time in office for staff to enter data
   - Similar to Mammography USPSTF Grade C 2009 but still used today
2. PSA Velocity and free PSA may not be helpful
3. Increase use of active surveillance
   - 5-year DSS 99.6%; 10-year DSS > 97%
4. May be value to adding additional information
   - PCA – 3
   - BMI
   - Other Markers
   - AUA Symptoms Score
Prostate Cancer

- Scope of the Problem
- Chemoprevention
- PSA Reporting
- Time to tissue diagnosis
- Quality of Life and Cost for treatment

Quality of Life

**PURPOSE:**
- Support Quality Improvement
- Informed discussions with patients

**OBJECTIVES:**
- Determine how treatments differ in clinical & quality-of-life outcomes over time.
- Learn how men diagnosed with prostate cancer experience their quality of life over time.

<table>
<thead>
<tr>
<th>Follow-up time periods</th>
<th>All Participants</th>
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<tr>
<td>6 months</td>
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<td>24 months</td>
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<tr>
<td>36 months</td>
<td>71</td>
<td>163</td>
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<td>48 months</td>
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<td>60 months</td>
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<tr>
<td>ANY</td>
<td>235</td>
<td>312</td>
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</table>

* R= # QOL Questionnaires Received  P= # Possible QOL Questionnaires
Quality of Life

Subject Well-Being Score

* = Satisfaction with Life Scale score (5 to 35; higher scores indicate better perceived subjective well-being)
Red = Statistically significant difference from baseline (LOWER quality of life)

Quality of Life

EPIC Urinary Function Summary Scores

* = EPIC standardized scores (0 to 100; higher scores indicate better perceived functioning)
Red = Statistically significant difference from baseline (LOWER quality of life)
Quality of Life

EPIC Bowel Function Summary Scores

- Radiation
- Surgery

Baseline 6 months 12 months 18 months 24 months 36 months 48 months

* = EPIC standardized scores (0 to 100; higher scores indicate better perceived functioning)
Red = Statistically significant difference from baseline (LOWER quality of life)

Quality of Life

EPIC Sexual Function Summary Scores

- Radiation
- Surgery

Baseline 6 months 12 months 18 months 24 months 36 months 48 months

* = EPIC standardized scores (0 to 100; higher scores indicate better perceived functioning)
Red = Statistically significant difference from baseline (LOWER quality of life)
Quality of Life

Urologic Symptom Index Summary Scores

* = American Urologic Association Symptom Index (0 to 35; higher scores indicate more severe symptoms)

Green = Statistically significant difference from baseline (HIGHER quality of life)

Prostate Cancer

- Quality of life survey
  - System wide process improvement
  - Bonus pay tied to entire urology participation
- Quality of Life and Hospital Outcomes
  - Reported to each surgeon
  - Individual results
  - Compared to other surgeons
  - Unblinded
Average Length of Stay
System Analysis

Length of Stay for Radical Prostatectomies
Source: Enterprise Data Warehouse

Average Length of Stay for Radical Prostatectomy Patients: Unadjusted System

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<tr>
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<td>80</td>
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<td>75</td>
<td>87</td>
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Average Length of Stay for Open Prostatectomy Cases (Non-Da Vinci)

Average Length of Stay for Robotic Prostatectomy Cases (Da Vinci)

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Updated: 14-Oct-2010
Average Positive Margins
System Analysis

Prostatectomy Margin Status: Stage 2 Disease
Percent of radical prostatectomy patients who have positive margins following definitive surgery

Percent of Prostatectomies with Positive Margins - Stage 2 (T1, T2) Disease

Percent of Prostatectomies with Positive Margins - Stage 3 (T3) disease

Positive Margins
Provider Analysis
Costing Analysis

Average Variable Cost for Open Prostatectomy Cases (Non-Da Vinci)

Average Variable Cost for Robotic Prostatectomy Cases (Da Vinci)

Prostate Cancer

- So we spent a lot of money to get data -- now what?
- Not enough just to show the data
- Needs to be basis for dialogue
- Not “In my experience”
- Need to move to “In my measured experience”
- Allow patients to see their results compared to surgeons other patients
Prostate Cancer

- Not “In my experience”
- Need to move to “In my measured experience”
- Surgeons are difficult to work with
- It is hard for us to ignore data
- Why is there variation?
  - Cost: compare PCA, OR time, other factors
  - Margins: Review recorded cases, training, visiting professors
  - OR: Inventory, set up, turn over, tech training, nurses

Prostate Cancer

- Variation in Cost shown to surgeons
- Line Item edit
- Discuss must haves and why
- Initially 168 different combinations
  - Not including different nurses/techs
Prostate Cancer

- Variation in Cost shown to surgeons
- Line Item edit
- Discuss must haves and why
- Initially 168 different combinations
  Not including different nurses/techs
- After consensus 49 combinations

Prostate Cancer

- After consensus 49 combinations
  Shorter turnover times
  Decreased inventory
  Eliminated non mission essential items
  Example Vascular Stapler Charges $1000
  Replaced with $7 suture
Change in Robotic Prostatectomy Cost/Surgeon

Change in Cost of Robotic Prostatectomy by Provider 2009 vs 2011

Radical Prostatectomy Cost

Year | Savings Per Case | Percent of Total Procedure Costs Saved | Cases | Overall Annual Savings
-----|------------------|----------------------------------------|-------|----------------------
2010 | $1,427.22        | 12.2%                                  | 137   | $195,528.48          
2011 | $2,830.33        | 24.1%                                  | 168   | $475,494.86          

Robotic Prostatectomy Cost Savings
Cost Containment

- Put price tag on items in central core
- In USAF 3 million $ savings in one year
- Lets do it at Intermountain Health Care
  Makes Sense
  Easy
  Could Start today

Cost Containment

- Put price tag on items in central core
- In USAF 3 million $ savings in one year
- Lets do it at Intermountain Health Care
  Should be easy
  Meet the Lawyers
    contract say no comparison
  Solution Griffin!
  Everyone needs one -- buy one
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</tbody>
</table>

**Supply Cost 2011/2012 Appy**

But My Stapler is Better Than Yours

- Quality issue raised
- One Bowel stapler is “safer” than the other
  Also happens to be much more expensive
  “The Truth is What It Is.. Not What You Want It To Be”
Hard for surgeons to argue with data
Many surgeons have strong preferences as to which brand of EEA device they use for anastomoses.

Using NSQIP data from 1/09 to 8/12,

- 184 cases done by 16 surgeons
- EEA stapler was used to perform low anterior anastomoses.
- Evaluated:
  - anastomotic leak (AL),
  - post-operative gastrointestinal bleeding (GIB),
  - length of stay (LOS),
  - Cost $

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<th>Stapler Brand</th>
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<th>B</th>
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<tr>
<td>Length Stay</td>
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<td>3.7</td>
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Multiple staplers were opened and charged to the patient 17 times 9%
Instrument Sterilization

- Cost to Clean… clean instruments

Instrument Sterilization

- Engineering started a detailed study FTE, solutions, water, energy
- Meet with surgeons remove unneeded instruments Removed 33/82 = 49 remaining
Additional Opportunities

• There appear to be significant savings by reducing the number of sets on-hand to align with what is needed.

• Savings may also result by eliminating the sharpening of infrequently used instruments.
  – *Whole sets are sent for sharpening instead of just individual instruments, which may add cost and reduce tool life unnecessarily.*
For several sets, on-hand quantity is more than needed.

A histogram of the four examples from the previous slide shows on-hand sets are more than were actually used.
Reducing the sets on-hand creates savings without sacrificing service.
Table Values for Major Retractor Set Example

- Only 14 sets are required to meet a 100% service level
- Current on-hand quantity for the Major Retractor set is 24, or 10 more sets than needed in the maximum case.
- Reducing the sets on-hand presents an opportunity of $20,000 without sacrificing service.

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<th>Sets</th>
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<th>Cumulative %</th>
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<td>2</td>
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<td>9</td>
<td>17</td>
<td>96.27%</td>
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<td>10</td>
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<td>99.44%</td>
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</tr>
<tr>
<td>16</td>
<td>0</td>
<td>100.00%</td>
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</table>

Findings

- Surgical sets have an average direct cost of $0.058 per instrument or 98K per year.
- A reduction of 10% to 30% in instruments from each set results in a labor savings between $7K and $21K per year.
- Eliminating unneeded sets for just the 4 types studied and keeping service levels at 100% to 90% results in cost savings of between $80K and $132K. *Further study to find the others*
- Sharpening unnecessarily reduces tool life and increases cost. *Further study required*
Staff Comments – Safety

• When OR is filling a used case cart to send on the elevator to Decontam, the cart cannot be over-stacked. For example, when the basins or pans are stacked too high they become unbalanced in the elevator and either spill or have to be rearranged.
• When OR is stacking a used case cart to send on the elevator to Decontam the cart items need to be self-balanced. For example, (think Jenga) trays/ pans/ basins/ sharps-containers should not be used to support other trays/ pans/ basins/ sharps-containers so they do not tip over when removing something from the case cart.
• Take care to balance the large garbage bins when loading so they do not forcefully tip. Place heavier items toward the bottom and/or back of the bin. For example, Sheryl was hit on her leg to cause bruising when she pulled out a large garbage bin from the elevator and it fell forward because it was unbalanced and too heavy on the "lip" of the bin.

Staff Comments - Process

• It is difficult to sort out instruments in a set when the OR dumps the whole set (used and unused items) into the same basin as other sets. Only used instruments should go into the basins to soak. Worse is when two sets of the same type are dumped into the same basin because it is difficult to sort them back apart.
• A minor problem is when items for the Instrument Room are mistakenly sent to Decontam. It creates extra movement.
Have but Don’t Open

• We are one of the least efficient surgery departments

  “Intermountain Health Care is the Model…..”

• Doctor Preference Card Nightmare

  Electronic Failure
  No paper cards

Mary Cox $288.95
Makensee Malm $1,432.54
Sarah Medley $526.35
Megan Willinger $152.91
Mindy Brown $2,396.44
Misty Hayes $153.33
Nicolete Wales $897.47
Natalie Walker $36.88
Polly Haddeham $150.44
Pam� Bldon $412.18
Robby Crawford $167.27
Rachel Kramer $506.87
Rachel Bass $1,235.33
Russel Idig $1,315.18
Shelby Beall $3,157.28
Shae Britton $3,598.69
Shauna Keatbar $1,698.40
Shane Stratford $1,760.83
Shae Tidwell $3,812.44
Scott Low $849.20
Shane Kennedy $272.68
Shannon Jones $308.81
Sue Maxwell $2,206.92
Susan Worthing $124.54

Have but Don’t Open

• One Month Period of Time
• Nurse Participation Optional
• Offered a $50 gift card to winner
• Have it in the room, but don’t open until asked for – see handout
Have but Don’t Open

- One Month Period of Time
- Nurse Participation Optional
- Offered a $50 gift card to winner
- 84/174 Nurses and Techs Participated
- Range $3.09 - $7838.15
- Average $1,412.55/ nurse

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<tr>
<td>Sue Maxwell</td>
<td>$2,295.52</td>
</tr>
<tr>
<td>Total Savings</td>
<td>$118,655.22</td>
</tr>
</tbody>
</table>

Conclusion

- Can we bend the curve
- Decreased waste
- Focus on Quality
Conclusion

• Can we bend the curve
  Decreased waste
  Focus on Quality
• Physicians are finally interested/afraid/paying attention
• The OR is an easy place to start

Conclusion

• Improved quality = Lower cost to hospital
• Decrease waste and inefficiency
• Demanded to see that this translates into lower patient bills = Physician Support
• Lower overall cost of health care
  Driven by physicians
• Power for negotiating contracts
  Hospitals/Administration
  Negotiate Contracts
  Everyone one wins
“Medical care must be provided with utmost efficiency. To do less is a disservice to those we treat, and an injustice to those we might have treated.”

Sir William Osler, 1893