2015 California Radiological Society Annual Meeting and Leadership Summit

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Dr. Steinberg has the following disclosures:
Received Honoraria for speaking for ViewRay
Valuing Value: Engaging the Value Proposition

California Radiological Society 2015 Annual Meeting and Leadership Summit
October 4, 2015
What We Will Cover

• This presentation will address the emerging value proposition in healthcare
• The demands of payment reform
• A general overview about metrics to evaluate the value of new technology from various perspectives
  – Scientific Community
  – Patients
  – Payers
  – Society
• Emerging payment models
The Subtext: “what I will barely mention”

- The process of technology assessment leading to coverage
- The epistemological problem of evidence development for use of medical technology
- The societal dilemma of ever rising cost of healthcare, much of which is driven by discovery
- But, I will mention the imperative of multiple stakeholders stepping up to fund evidence development to show value
Proton Beam Therapy and the Convoluted Pathway to Incorporating Emerging Technology into Routine Medical Care in the United States

Michael L. Steinberg, MD,* and Andre Konski, MD, MBA†

Economic Perspectives


Controversies in the Adoption of New Healthcare Technologies

Paul E. Wallnera · Michael L. Steinbergb · Andre A. Konskic

Commentary

The overthrow of the (evidence) hierarchy
Michael Steinberg MD*

Protons and the Hospital That Ate Chicago
Michael L. Steinberg, MD
WHY COST MATTERS?
MEGATREND: WE CAN’T AFFORD OUR HEALTHCARE SYSTEM

FFS can’t service the coming health system.
  • Does NOT reward quality, safety, or value.
  • Fundamentally inflationary.

Rise of alternative payment models.
  • ↑ risk-based payments.
  • ACOs.

BETTER, FASTER, CHEAPER

Americans spend over twice as much per capita on healthcare as the average developed country does.

**Per Capita Health Care Costs**

- Italy: $3,209
- Japan: $3,649
- U.K.: $3,289
- Australia: $3,997
- Sweden: $4,106
- France: $4,288
- Germany: $4,811
- Canada: $4,602
- Switzerland: $8,745
- U.S.: $3,484

**Source:** OECD, *OECD Health Statistics 2014*, June 2014. Compiled by PGPF.

**Note:** Per capita health expenditures are for the year 2012, except Australia, for which 2011 data are the latest available. Chart uses purchasing power parities to convert data into dollars.
What Did Our Extra Spending Buy?

• Over a 10 year period:
  – 10% more office visits
  – Same number of overnight hospital stays
  – 80% more MRI scans and
  – Twice the number of CT scans (and associated radiation dose)
  – Doubling in the cost of Specialty Drugs
Increased Utilization of IMRT

Growth in Medicare Allowed IMRT Delivery Procedures (77418 OPPS+MPFS)
More Proton Facilities
So We Are #1
In Healthcare, Right?
U.S. Lags Other Countries: Mortality Amenable to Health Care

Deaths per 100,000 population*

What else happened in the 10 years?

• Adult life expectancy in the US grew by 1 year – but, roughly half the average gain in life expectancy achieved by other OECD countries (2.2 years)

• ....and for a family of 4 ....
Average Health Insurance Premiums and Worker Contributions for Family Coverage, 1999-2008

### 1998
- **Employer contribution**: $4,247
- **Worker contribution**: $1,543
- Total: $5,791

### 2008
- **Employer contribution**: $9,325
- **Worker contribution**: $3,354
- Total: $12,680

117% Increase

**NOTE:** The average worker contribution and the average employer contribution do not add to the average total premium due to rounding.

**SOURCE:** Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999-2008

With permission of Art Kellerman
The Square Deal

^(@#$%)!
So .... What Does ACA and CMS Want From Us?

- Link Payment to Quality
- Care Coordination
- Enhance Primary Care
- Improve Care Experience For The Patient
- Innovation Models
- Public and Private Initiatives
  - Accountable Care Organizations
  - Medical Home Demonstration Projects
  - Payment For Complete Episodes of Care
Where Are We Now?

- Predominantly fee-for-service
- Fragmented delivery system with different payers, sites of service, payment systems, coverage policies
- Relative value units (RVUs) assigned to each CPT code
  - Work, Practice expense, Malpractice
- Payment = (Work RVU+PE RVU+MP RVU)*CF
Payment Reform

Phased in Transition or Jump?

– FFS > Episode of Care Based > Population Based
– Value as overriding theme
– Pace will vary market by market
– Living with uncertainty for a time
– Going forward, about 80% of all traditional Medicare payments will be based on quality or value by 2018
– The SGR fix legislation of 2015 lands value based payment of 2025
And for Radiation Oncology and Radiology ...

- We are paid for what is done, not how well we do it, or if we should do it at all
- We are paid equally regardless of our individual behavior or our quality of the care
- Wide variation in practice
  - And a wide variation in Cost without demonstrable difference in outcome
- We have not demonstrated Value
“Achieving high value for patients must become the overarching goal of health care delivery.”

Porter, ME. *What is Value in Health Care?* NEJM 2010.
Another Aspect Of Value

The Triple Aim: Care, Health, And Cost

The remaining barriers to integrated care are not technical; they are political.

by Donald M. Berwick, Thomas W. Nolan, and John Whittington

ABSTRACT: Improving the U.S. health care system requires simultaneous pursuit of three aims: improving the experience of care, improving the health of populations, and reducing per capita costs of health care. Preconditions for this include the enrollment of an identi-

› Better Care Experience for Individual
› Better Health for Populations
› Lower Per Capita Costs

....... Plus One

Health Aff May 2008 vol. 27 no. 3 759-769
Value: A Framework for Radiation Oncology

Sewit Teckie, Susan A. McCloskey, and Michael L. Steinberg
Value

Structure
- Adaptive
- Accredited
- Technologically current, yet safe

Process
- Patient-Centered
- Integrated across specialties

Outcomes
- Objective
- Subjective, patient-reported
- Publicly available

Costs
- Transparent
- Measured for full cycle of care
- Linked to quality

JCO September 10, 2014 vol. 32 no. 26 2864-2870
WHAT IS VALUE?
What is value?

• In the world outside of medicine, a “good value” is a desirable product or service that can be purchased for a fair price
  – Definition varies depending on social identity and social context; varies with the person doing the purchasing (the patient)
  – Desirable product or service very much in the eye of the beholder.
Challenges to Achieving Value in Healthcare

• Information asymmetries
  – The provider and patient often do not possess the same information about any of the components of care, especially cost and quality
  – Precludes patients from being “utility maximizers”
  – Prevents the function of the “invisible hand,” and therefore a true free market in healthcare
  – Payers’ response to this situation, where information is lacking, is to save by simply grinding on unit price
Challenges to Achieving Value -Economic Self Interest-

• Misaligned financial incentives
  – Supplier-induced demand
    • FFS payments encourage overuse
    • Payer response (cutting reimbursement or limiting coverage) leads to increased utilization via provider based volume effect → total cost spiral
  – Principal-agent problem
    • Patients (principals) assume that providers (agent) act in principal’s best interest
    • e.g. Self-referral of urologists to IMRT shops in which they have ownership significantly increases use of IMRT in all age categories

Challenges to Achieving Value

• Cultural attitudes to cancer care
  – Historically Cancer Care was a “sacred cow”
  – Spending in the last 6 months of life is high
  – Not much attention to rising cost until recently,
Challenges to Achieving Value

• Economic trends in cancer care
  – Inflation-adjusted direct medical spending on cancer care exhibited a 50% higher growth rate compared to the rest of healthcare over a 20-year period (Elkin, JAMA, 2010;303:1086-1087)
Challenges to Achieving Value: Out of Pocket Expense

• Economic trends in cancer care
  – System-wide and out-of-pocket costs for cancer are rising
  – Supply-demand dilemma: patients may demand less medical care as the prices of healthcare as well as complementary and substitute goods rise

• “Financial Toxicity” (Zafar, et al The Oncologistist 2013; 18:381–390)
  – 254 patients: 68% cut back on leisure activities, 46% reduced spending on food & clothing, 20% took less than prescribed prescriptions, 24% did not fill prescriptions at all
The Cost Conundrum

• Inability to assess cost poses the greatest challenge in determining value in healthcare

• **Charges ≠ Costs**

• Charges for the same procedure or supply can vary wildly between different providers and settings

• In healthcare, we simply do not know our costs
Measuring Costs

• **How it is currently done**: measure costs around departments, specialties, procedure types. Reflects current financing of care.

• **How it should be done**: measure costs around the patient’s care cycle.
What is Value?

Health outcomes

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dollars spent

Entire cycle of care


From Jonas DeSouza
A Modification of the Value Equation

• Value = $f$ (outcomes, costs).
• Quality is an overriding component, as it encompasses outcomes.
• Donabedian definition of Quality:
  Quality = $f$ (structure, process, outcomes)

Value = Quality ÷ Costs
    = [Outcomes, Structure, Process] Costs
Achieving and Measuring Value in Radiation Oncology
Structure

• Accreditation Programs
  – Third-party, impartial peer review of personnel, equipment, treatment-planning, medical records, patient safety policies, QC/QA
  – Stepping up the game in accreditation
    • Looking at process, adherence to guidelines and outcomes
Process

• Standardization of care where possible to decrease variation in practice
  – Cooperative group clinical trials that delineate treatment approaches and volumes
  – Care pathways and checklists to ensure all patients have key components of care performed
  – Development of validated quality indicators
• “Learning curve” affecting value
Dimensions of Value

Tier 1
- Survival
- Degree of health or recovery

Tier 2
- Time to recovery and time to return to normal activities
- Disutility of treatment process

Outcomes/Measures

- Survival rate
- Laryngectomy-free survival
- Locoregional disease control
- Performance-status scale head and neck cancer (swallowing, eating and speech status)
- Work productivity and activity impairment
- Performance-status scale head and neck cancer (time to normal or best swallowing, eating and speech status)
- Time to return to work
- Mucositis
- Neutropenic fever
- Financial toxicity
- Treatment interruption due to toxicities
- Acneiform rash
- Radiation dermatitis
- G-tube placement
- Speech dysfunction
- Pain
- Hearing loss

**Dimensions of Value**

- Survival
- Degree of health or recovery
- Time to recovery and time to return to normal activities
- Disutility of treatment process
- Sustainability of health
- Long-term consequences of therapy

**Outcomes/Measures**

- Survival rate
- Laryngectomy-free survival
  - Locoregional disease control
  - Performance-status scale head and neck cancer (swallowing, eating and speech status)
  - Work productivity and activity impairment
- Performance-status scale head and neck cancer (time to normal or best swallowing, eating and speech status)
- Time to return-to-work
- Mucositis
- Neutropenic fever
- Financial toxicity
- Treatment interruption due to toxicities
- Acneiform rash
- Radiation dermatitis
- G-tube placement
- Speech dysfunction
- Pain
- Hearing loss
- Event-free survival / Disease-free survival
- Xerostomia
- Secondary cancers
- Hypothyroidism
- G-tube dependency
- Tracheostomy
Beyond Survival
Head and Neck Cancer

• 33% (n=301) to 52% (n = 384) of patients who were employed at the time of diagnosis were unable to return to work after treatment was completed

Outcomes

• Subjective measures
  – Traditionally not well-measured or even well accepted
  – Quality of life measurements are not enough
  – Should include:
    • Patient-reported outcomes
    • Psychosocial ramifications of disease or treatment
    • Ability to maintain employment
    • Patient understanding of own medical condition
    • Suffering through the “system” of care
The patient’s perspective on stereotactic body radiation therapy (SBRT) for treatment of early stage non small cell lung cancer
Study Questions

• How did a patient’s actual treatment experience compare to original expectations in terms of side effects, convenience, treatment anxiety and caregiver strain?

• For patients that had prior surgical resection for a previously diagnosed Stage I NSCLC, how did their SBRT experience compare to that of their prior surgery?

• 102 patients contacted with 89% participating in the study. 39% of patients had history of lung surgery for prior early stage NSCLC.
Results:

How was the patient’s actual experience compared to original expectations?

**Side effects**
- Less than expected: 92.30%
- More than expected: 7.70%
- As expected: 0%

**Convenience**
- Less than expected: 59.30%
- More than expected: 40.70%
- As expected: 0%

**Treatment Anxiety**
- Less than expected: 87.90%
- More than expected: 12.10%
- As expected: 0%
Results:
How did the patient’s SBRT experience compare to prior experience with surgery?

Recovery?
- 100% easier than surgery
- 100% same as surgery
- 0% more difficult than surgery

Treatment Anxiety?
- 100% less than surgery
- 0% same as surgery
- 0% more difficult than surgery

Caregiver Strain?
- 100% less than surgery
- 0% same as surgery
- 0% more difficult than surgery

Convenience?
- 97% more than surgery
- 3% same as surgery
- 0% less than surgery
Results:

If you could decide now, and you knew that SBRT was as effective as surgery, would you have rather had SBRT for your prior early stage lung cancer that was operated on?
A Model Organizational Chart for a “Value Improvement” Program*

- **Value Oversight Committee**
  - Quality Improvement (ie, Evidence-based Practices)
  - Patient Safety (ie, Case reviews, Safety Culture, “Never Events”)
  - Patient Experience (ie, HCAHPS scores, patient complaints)
  - Cost/Waste Reduction
    - Targeted Initiatives (ie, Nebs to MDIs, fewer labs)
    - Lean Initiatives (ie, Improving discharge process)

**Numerator of the Value Equation**

**Denominator of the Value Equation**
PATIENT VOICE
BPH care pathway: How we imagined it
BPH care pathway: how patients see it
Focus on where patients are having negative experiences - find solutions to elevate their experience.
A Model Organizational Chart for a “Value Improvement” Program*

- **Value Oversight Committee**
  - Quality Improvement (ie, Evidence-based Practices)
  - Patient Safety (ie, Case reviews, Safety Culture, “Never Events”)
  - Patient Experience (ie, HCAHPS scores, patient complaints)
  - Cost/Waste Reduction
    - Targeted Initiatives (ie, Nebs to MDIs, fewer labs)
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Numerator of the Value Equation

Denominator of the Value Equation
Costing
Time Driven Activity Based Costing (TDABC)

TDABC

- Departmental Costs
- Support Resources Costs
- Direct Labor Costs

Clinical Process Analysis

Patient Population
### Robot-Assisted Radical Prostatectomy (RALP)

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<th>Map No</th>
<th>Process</th>
<th>Sub Process Code</th>
<th>Sub Process</th>
<th>Personnel type</th>
<th>Space</th>
<th>Probability</th>
<th>Sub Process Takes Place</th>
<th>Process Time (min)</th>
<th>Personnel CCR ($/min)</th>
<th>Allocated Personnel Cost ($)</th>
<th>Space and Equipment CCR ($/min)</th>
<th>Allocated Space and Equipment Cost ($)</th>
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<td>Patient is weiq RR - PTU RN PTU</td>
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<td>$703.21</td>
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<tr>
<td>6</td>
<td>Day of Surge</td>
<td>27</td>
<td>Terminal clear Hospital Assis OR</td>
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</table>

**TOTAL COSTS**

- Total Personnel Cost: $3,728.43
- Total Equipment Cost: $6,664.96
- Total Materials Cost: $0.00
- Total Costs: $9,854.98
UCLA Approach to Value Based Care Redesign

- Measure patient views on value
- Evaluate variations in costs, practice patterns, resulting outcomes
- Define highest value pathways
- Role of shared decision making with the patient in measuring value

Value = Patient Experience + Clinical outcomes

Cost to provide care
Can we afford the new wave of “high value” health care?
Who assesses value in the U.S.?

- Medicare
  - “Reasonable and necessary”
- US Preventive Services Task Force
- Private health plans
  - “Medically necessary”
  - Value managed through medical policies but rarely through non-coverage
- Academics
- AHRQ
- Professional specialty societies?
  - Choosing Wisely
  - American College of Cardiology, ASCO, ASTRO, ACR
- Patients?
- Technology Assessment Groups
California Technology Assessment Forum (CTAF)

- Independent CTAF Panel of physicians and lay members
- Reviews evidence, including clinical effectiveness assessment and economic modeling
- Votes on comparative effectiveness and value of new procedures, processes, and therapies
- Makes recommendations on options for coverage policies and clinical practice
- New: forwards a “value-based price benchmark” for consideration in the policy debate

From CTAF
Basic Components

• Systematic evidence review
  – Prospective Trials
  – Observational Data (Registries)
• Decision Analysis
• Cost Effectiveness Analysis
The ICER Evidence Rating Matrix
The cost-effectiveness threshold

New treatment less effective, more costly

High extra cost

Low gain

Low extra cost

High gain

New treatment more effective, less costly

CE threshold

With permission of ICER
Is there more to value than incremental cost-effectiveness?

YES!
Assessing Value

A Framework for CTAF Assessments of Health Interventions
Value Flowchart

Comparative Clinical Effectiveness | Incremental Cost per Clinical Outcomes Achieved | Other Benefits or Disadvantages | Contextual Considerations | “Care Value”
--- | --- | --- | --- | ---
High | Intermediate | Low

“Care Value” Potential Budget Impact Provisional “Health System Value” Mechanisms to Manage Affordability Achieved “Health System Value”
--- | --- | --- | --- | ---
High Intermediate Low | High Intermediate Low | High Intermediate Low | High Intermediate Low

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**Incremental Cost per Outcomes Achieved and Care Value**

- **Incremental Cost per Outcomes Achieved**
  - Cost per aggregated health measure (QALY)
    - Diverse health economic and policy analyst perspectives on mechanisms to set and use cost/QALY thresholds
    - Common practice: WHO recommended thresholds linked to national GDP (1xGDP ~ $50,000 in the United States)
– ICER will use the following in its reports and in its guidance to CTAF and CEPAC:

- **High care value**
  - < $50,000/QALY if no “substantial” other benefits and/or contextual considerations
  - $50,000-$100,000 per QALY if “substantial” other benefits and/or contextual considerations

- **Intermediate care value**
  - $50,000-$100,000/QALY if no “substantial” other benefits and/or contextual considerations
  - $101,000-$150,000/QALY if “substantial” other benefits and/or contextual considerations

- **Low care value**
  - $101,000-$150,000/QALY if no “substantial” other benefits and/or contextual considerations
  - > $150,000/QALY
Other Benefits or Disadvantages

- Any substantial benefits or disadvantages offered by the intervention to caregivers, the delivery system, or other patients in the health care system that would not have been captured in the available “clinical” evidence

- Examples include (but are not limited to):
  - Mechanisms of treatment delivery that require many fewer (or more) visits to the clinician’s office
  - Treatment outcomes that reduce disparities across various patient groups
  - New mechanisms of action for treatments of clinical conditions (e.g., mental illness) that have demonstrated low rates of response to currently available treatments
  - Public health benefits (e.g., reducing risk of new infections)
• Contextual considerations can include ethical, legal, or other issues (but not cost) that influence the relative priority of illnesses and interventions

• Examples include:
  – Is there a particularly high burden/severity of illness and no acceptable treatments currently exist? (e.g. genetic conditions)
  – Does the condition include high-priority populations?
# A Value Flowchart

<table>
<thead>
<tr>
<th>Comparative Clinical Effectiveness</th>
<th>Incremental Cost per Clinical Outcomes Achieved</th>
<th>Other Benefits or Disadvantages</th>
<th>Contextual Considerations</th>
<th>“Care Value”</th>
</tr>
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<tbody>
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<table>
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<th>“Care Value”</th>
<th>Potential Budget Impact</th>
<th>Provisional “Health System Value”</th>
<th>Mechanisms to Manage Affordability</th>
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</table>

With permission of ICER
• Provisional Health System Value
  – An early judgment of “provisional” health system value based on the potential budget impact of a change in care is used as a trigger for determining whether mechanisms need to be considered to help manage the affordability of a new intervention

With permission of ICER
### A Value Flowchart

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</table>

With permission of ICER
Final Thoughts

• The conceptual view of value by payers in the US today is dominated by comparative clinical effectiveness and budget impact.
• The conceptual view of value by manufacturers in the US is dominated by (comparative) clinical effectiveness, additional benefits, and the intrinsic value of having multiple treatment options.
• The best policy outcome will result if:
  – Payers become more transparent and consistent while focusing more on the balance of long-term benefits and costs in their conception of value
  – Manufacturers begin to view affordability as a mutual and immediate imperative.
  – Payment systems takes into consideration the cost of evidence development (particularly for technology) and support the process of evidence development
“Nowadays people know the price of everything and the value of nothing.”

—Lord Henry Wotton from *The Picture of Dorian Gray*, Oscar Wilde