Applying Comparative Effectiveness Research and Evidence-Based Medicine to Everyday Decisions

Robert W. Dubois, MD, PhD
Chief Science Officer
National Pharmaceutical Council
“Something’s just not right—our air is clean, our water is pure, we all get plenty of exercise, everything we eat is organic and free-range, and yet nobody lives past thirty.”
Learning Objectives

1. Define comparative effectiveness research (CER) and evidence-based medicine.

2. Describe the evidence needed to guide decisions.

3. Discuss concerns that evidence is not being used well.

4. Outline examples of policies impacting individual treatment, evolving payment environment, and use of real-world evidence.
Impact of CER and EBM on Everyday Decisions

1. Define CER and EBM
2. Why evidence is needed to guide decisions
3. Concern that evidence is not being used well
4. Policy Examples
   - Variability of individual treatment response
   - Evolving payment environment
   - Use of real world evidence
Evidence + Judgment = Decision

Evidence → Analysis and Synthesis of Evidence → Information about Outcomes → Value Judgments → Decisions/policy

Scientific judgments

Preference judgments

...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients.
CER Made “Easy”

- What works when?
- For whom?
- Under what circumstances?

- Delivery of the right care
- To the right patient
- At the right time
- In the most appropriate setting

- Make the right thing easy to do
Current Confusion of Views on EBM, CER, and HTA

<table>
<thead>
<tr>
<th></th>
<th>Can it work? (Efficacy)</th>
<th>Does it work? (Effectiveness)</th>
<th>Is it worth it? (Value)</th>
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<td>Evidence Generation</td>
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<td>CER</td>
<td>HTA</td>
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<tr>
<td>Evidence Synthesis</td>
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<tr>
<td>Decision Making</td>
<td>EBM</td>
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“Knowing is not enough; we must apply. Willing is not enough; we must do.”

-Goethe
Impact of CER and EBM on Everyday Decisions

1. Define CER and EBM
2. Why evidence is needed to guide decisions
Mom and apple pie USA
Too much medicine campaign
Through the campaign, the journal plans to work with others to increase awareness of the benefits and harms of treatments and technologies and develop ways to wind back medical excess, safely and fairly.
Aging baby boomers are fatter and sicker than their predecessors were at the same age, says a new study that’s raising alarms about the future costs of health care and disability.

The study says that although boomers have a longer life expectancy than their elders, their health is another matter.
Impact of CER and EBM on Everyday Decisions

1. Define CER and EBM
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My mind is made up

Don't confuse me with facts!
Can Coverage Be Rescinded When Negative Trial Results Threaten A Popular Procedure? The Ongoing Saga Of Vertebroplasty*

*Wulff, HealthAffairs December 2011
Patients Receive Only Half of Recommended Care

**Table 3. Adherence to Quality Indicators, Overall and According to Type of Care and Function.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Indicators</th>
<th>No. of Participants Eligible</th>
<th>Total No. of Times Indicator Eligibility Was Met</th>
<th>Percentage of Recommended Care Received (95% CI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall care</td>
<td>439</td>
<td>6712</td>
<td>98,649</td>
<td>54.9 (54.3–55.5)</td>
</tr>
</tbody>
</table>
Most Guidelines Are Based Upon Little Evidence

Percentage of All Recommendations*

<table>
<thead>
<tr>
<th>Level of Evidence**</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>11%</td>
</tr>
<tr>
<td>B</td>
<td>41%</td>
</tr>
<tr>
<td>C</td>
<td>48%</td>
</tr>
</tbody>
</table>

*Number of guidelines = 16; number of recommendations = 2,711

**A = multiple RCTs, B = 1 RCT (or non-randomized studies), C = opinion

Tricoci, JAMA 2009  ACC/AHA Guidelines
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Many Chances to Make the Right (or wrong) Evidenced-based Choices
Top Line CER Results Appear Straightforward

A Better Than B

A $=$ B
The “Average” Patient

David Kent and Rodney Hayward, “When Averages Hide Individual Differences in Clinical Trials: Analyzing the results of clinical trials to expose individual patients’ risks might help doctors make better treatment decisions,” American Scientist, Volume 95, January–February, 2007, pp 60-68
...is based upon the results of many

David Kent and Rodney Hayward, “When Averages Hide Individual Differences in Clinical Trials: Analyzing the results of clinical trials to expose individual patients’ risks might help doctors make better treatment decisions,” American Scientist, Volume 95, January–February, 2007, pp 60-68
Will access be constrained?
But such concerns have declined as states choose benchmark health plans that will determine their minimum health insurance benefits. So far, the benchmark plans cover about 62 percent of the drugs available in different classes, Avalere Health found in analyzing eight plans. Coverage of drugs in the classes studied ranged from a low of 26 percent in California’s benchmark plan to a high of 93 percent in Mississippi’s likely benchmark.
“No significant differences are found in efficacy comparisons of second-generation antidepressants, though physicians should consider varying frequency of side effects when developing treatment plans.”*

Conclusion: “Current evidence does not warrant recommending a particular second-generation antidepressant on the basis of differences in efficacy.”**


Many Factors Needed When Considering Variation in Individual Treatment Response

- Likelihood of response to similar treatments (Treatment Independence)
- Clinical Consequences of Delaying Optimal Treatment
- Underlying Patient Diversity
- Higher Risk and Clinical Impact of Heterogeneity
- Patient Preferences
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Many New Payment Models

- High Deductible Health Plans
- Episode-based Payment
- Reference-based Pricing
- Performance-based Reimbursement
- Least Costly Alternatives
- Accountable Care Organizations
- Coverage with Evidence Development

Appropriate Use of Resources
Transitioning to Bundled Payments in Medicare
Bundled Payments Unify the Evidentiary Perspective
Self-Referral Restrictions
Cash Flow
Patient Education
Capital Investment
Hospital Ownership
Shared Savings
Quality Measures
Data Systems
Contracting With Insurers
Physician Network
Patient Assignment
Patient-Centered Medical Homes
Provider Payment
Bonus Determination
Case Management
Case Mix Adjustment
Risk Corridor
Re-Insurance
Role of Medications
Executive Summary

A Government Accountability Office report finds that use of erythropoiesis-stimulating agents in dialysis decreased 31% from 2007 to the end of 2011 after Medicare’s bundled dialysis payment was changed to include drugs and FDA revised dosing recommendations.
New Payment Approaches Can Incorporate the True Value of Pharmaceuticals

<table>
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<th>Condition</th>
<th>Cost for Episode of Care</th>
<th>Quality Benchmarks</th>
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<tr>
<td></td>
<td>Pharmaceutical Share of Costs</td>
<td>Cost Offsets from Pharmaceuticals</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>Modest</td>
<td>Impact on re-hospitalization</td>
</tr>
<tr>
<td>Rheumatoid Arthritis</td>
<td>High</td>
<td>Minimal</td>
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![Diagram showing the relationship between EBM, CER, and HTA](image)

*slide form Bryan Luce, UBC*
UnitedHealth Group and Mayo Clinic are set to unveil a new research initiative that will draw on millions of health-insurance claims and in-depth clinical patient records, part of a broader effort in the health industry to glean insights about care from a growing flood of data.
How High Do You Set the Evidence Bar?
UnitedHealth Drug Evidence “Hierarchy” Demands Observational Data be Peer-Reviewed

“Insurer UnitedHealth Care Group Co. is willing to accept observational data to support reimbursement for prescription drugs but the information should be published in a peer-reviewed journal, Senior VP Clinical Advancement Lewis Sandy said at the Real Endpoints reimbursement symposium in Philadelphia March 12.”

“Administrative claims data may be useful in evaluating the effectiveness of medications for RA”
“However beautiful the strategy, you should occasionally look at the results.”

—Winston Churchill
“Study Raises Doubts Over Robotic Surgery”

By MELINDA BECK, Tuesday, February 19, 2013

“The use of robotic surgery for hysterectomies has grown dramatically in recent years, even though it costs one-third more than other minimally invasive surgery and has little added benefit, a major study said Tuesday...”
Website: www.npcnow.org
Twitter: @npcnow
Facebook: facebook.com/npcnow
Evidence is Expected to Have Increasing Impact on Healthcare Decision-Making

The State of CER: Some Press, Cautious Optimism  
*The RPM Report March 2012*
Hypothetical Life-Cycle Cash Flow

Net Revenues

Years

Clinical Trials

FDA Approval

Launch, Promotion, Peak Sales, Competition

+ Cash Flows

- Cash Flows

$0

$50
CER Will Impact the Economics of Innovation

Revenues
- Broader outcomes
- Personalized medicine supports higher pricing
- Increased adoption of new evidence
- Personalized medicine market size
- Payers require CER
- CED

Costs
- Long-term endpoints
- Active comparators
- Multiple subgroups
- New trial designs accepted
- Personalized medicine results in smaller studies
Cash Flows Greatly Differ Based Upon the CER Scenario
Please fill out your evaluation

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