Implications of Comparative Effectiveness Research in the VA

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Rich 85 Year History

- 3 Nobel Laureates, 6 Lasker Award Winners
- Many important discoveries and inventions
  - Cardiac Pacemaker, First liver transplant, Radioimmunoassay, CT Scanner
- Clinical Trials
  - First large scale clinical trial – TB
  - 1st multisite RCT of antihypertensive Rx
  - Lithium and Biologic Psychiatry
  - Cooperative Studies Program
    - Trials strongly influence medical practice
  - Comparative Effectiveness Research
Implications of Comparative Effectiveness Research for the VA

• Implications of CER for the VA
  o VA Capability in CER
  o Realization of VA capability in CER
    ➢ Over 30 years of important CER publications
  o Uses of CER - Translation
VA Capability in Comparative Effectiveness Research
VA Capability

- Infrastructure for CER
  - Clinical – Healthcare System
  - Research embedded in the Healthcare System
- Research Programs
Large Healthcare System

- 8.1 Million enrollees, 5.7 Million patients/yr
- >1200 Sites of Care
  - 153 Medical Centers
  - 773 Community-based Outpatient Clinics
  - 260 Readjustment Counseling Centers
- Electronic Health Record
- Data driven practice network
Large Capacity for Research

- Intramural research system embedded in VA HCS - a unique strength
  - Community of ≈3000 VA researchers embedded in the health care system
  - 108 VAMCs have capacity for research
  - ≈2100 VA funded projects
  - Electronic Health Record
  - Infrastructure for clinical trials, Health Services Research and EHR analysis
VA Infrastructure Reflects Needs in FCC CER Report

- FCC CER report outlined infrastructure needs for CER
- These infrastructure capabilities already exist in VA (*priority investments)
  - Clinical research network*
  - Registries, surveillance databases, research-quality observational datasets*
  - Administrative databases*
  - EHRs & distributed data networks*
  - Tools for dissemination and translation of research findings
  - Human and scientific capital
    - Clinician/Researchers – 70% of VA researchers
    - Training (eg Research Career Development Awards)
    - Patient/consumer engagement
CER Research Programs
VA Programs in Comparative Effectiveness Research

• Research Processes for CER
  o Cooperative Studies Program
    ➢ Clinical trials
  o Health Services Research
    ➢ Health system oriented research
VA Cooperative Studies Program

- Large VA clinical trials program
  - Major vehicle for Comparative Effectiveness Research

- CSP approaches assure both relevance of studies and high quality

- Method of funding projects
  - Letter of intent submitted often by clinicians
    - Ideas based on clinical practice observations, gaps in literature, etc
  - *Project review by experts who collaborate with the proposer*
    - Include clinicians, clinical researchers, trialists, biostatisticians, pharmacists, others

- Review considerations include clinical and policy considerations
  - Clinical relevance and importance to VHA population, methodology, feasibility (testable hypothesis, sample size), ethics, resources needed, investigator qualifications

- After approval
  - *Central IRB approval*
  - Form Study Committees, Coordinating Center, etc

- Collaboration with NIH and others in many trials
Health Services Research
Health Services Research

• Health systems oriented projects

• Analysis of EHR
  o Compare treatments and approaches to care in \textit{clinically rich} data in EHR
  o Natural experiments, etc
  o Immediacy of results
  o Less costly studies
  o However, there are methodologic issues
Realization of VA Capability in CER

Body of VA Research Work Over 30 Years
<table>
<thead>
<tr>
<th>Year</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>CABG Surgery</td>
</tr>
<tr>
<td>1987</td>
<td>High-dose Glucocorticoids in sepsis</td>
</tr>
<tr>
<td>1992</td>
<td>Warfarin to prevent stroke in AF</td>
</tr>
<tr>
<td>2009</td>
<td>Glycemic Control in Diabetes Mellitus</td>
</tr>
</tbody>
</table>
• Percutaneous coronary intervention/optimal medical therapy vs Optimal medical therapy alone (COURAGE) (no sign difference)
  o New England Journal of Medicine, March 27, 2007

• Open vs Laparoscopic mesh repair for inguinal hernia (open better)
  o New England Journal of Medicine, April 29, 2004

• Medical therapy vs Coronary revascularization prophylaxis prior to elective vascular surgery (no sign difference)
  o New England Journal of Medicine, December 30, 2004

• Sotalol vs Amiodarone in atrial fibrillation (similar)
  o New England Journal of Medicine, May 5, 2005

• Intensive vs Less Intensive Renal Support in Critically Ill Patients with Acute Kidney Injury (no sign difference)
  o New England Journal of Medicine, July 8, 2008

• On vs Off Pump Coronary Bypass Surgery (On-Pump better)
HSR/EHR Analysis Examples

• **HSR**
  - Laboratory based vs Home evaluation of sleep apnea
  - Collaborative care model for depression
    - Site randomization of Outpatient Clinics (CBOCs)
  - Plain language decision aid for patient decision making in prostate cancer
  - Collaborative care using primary care physician, RN and PharmD for hypertension/diabetes to implement strike risk management
  - Patient preference tailored information concerning colon cancer screening
  - Training caregivers with a Home Safety Toolkit in Alzheimer’s Disease

• **EHR Analysis**
  - EHR diabetes cohort database shows no difference in mortality among oral anti-diabetic drugs (Diabetes Care, July 2007), others include
  - Nephrology collaborative care and mortality (2008)
  - Use of longitudinal databases is to assess quality of care (2008)
  - Comparison of ambulatory care models on diabetes outcomes (2008)
Implementation/Translation
Goals of translation

• “Right care to right patient at right time”
• Value for population
  o How do capitalize on CER to improve outcomes and value for the population?
• Value for individual patient
  o How do we apply CER to improve decisions for individual patients?
• Sometimes conflicting
• Overall approach a synthesis
  o How do we recognize variation at individual level when using CER to guide policy and practice?
Issues in Translation in the VA

• Although it is an integrated Health Care System, VA has many issues in translation similar to others

• Operates in complex environment
  o Complex needs of heterogeneous patient population
    ▶ Older, sicker patients
    ▶ Do results of CER apply to a particular Veteran?
  o Physician autonomy, academic affiliations
    ▶ Leads to local variation as in the HCS at large
  o Dual-use of VA and private healthcare

• However, when VA uses its implementation assets and approaches, these problems can be overcome

• Implementation tools utilize CER as well as other data
Approaches to Implementing CER

• **Individual Provider**
  - Guidelines
  - CME
  - EHR tools
    - Reminders
    - Computerized decision support
  - Tools for shared decision-making

• **Systems**
  - Pharmacy Benefits Management
  - Performance Measures
  - Clinical leadership and Program Office policies

• **Evidence Synthesis Program**

• **Quality Enhancement Research Initiative**
  - Brings approaches together
Applying CER to Individual Clinical Decisions

- **VA Clinical Practice Guideline Program**
  - De novo and adapted guidelines relevant for VA

- **CME**

- **Tools in EHR**
  - Reminders
    - E.g. Reminder to screen patients for alcohol lead to more rehabilitation
    - However, *Reminder Overload* a problem
  - Computerized decision support
  - Patient portal – MyHealtheVet

- **Tools to improve shared decision-making with Veterans**
  - E.g. in prostate cancer
Applying CER to Systems and Populations

• Pharmacy Benefits Management
  o National Formulary Policy

• Performance measurement and incentives
  o Performance measurement an integral part of the VA
  o 2009 performance above 90th percentile in HEDIS

• Clinical leadership and clinical program office policies

• Clinical guidelines
  o Process helps system achieve consensus and also disseminates information
Evidence Synthesis Program

• Evidence Synthesis Program
  o Reviewing the evidence on a topic
  o *Policy oriented* synthesis of evidence to inform medical practice and health systems planning
    - Informed by policy considerations with input by clinicians
  o Recent topics
    - Drug management of BPH – Led to Formulary change
    - Osteoporosis – Incorporated into Guideline on screening male veterans
    - Pain in Polytrauma – Need more research
    - Tight glucose control with insulin – benefits questionable
  o Evidence Briefs
    - To keep up with fast changing evidence
Quality Enhancement Research Initiative (QUERI)

- Clinical/Research partnership program to guide and implement translation programs in certain priority areas
  - Uses CER as well as other data

- QUERI centers
  - CHF, Diabetes, HIV and Hepatitis C, IHD, Mental Health, Polytrauma, Spinal Cord Injury, Stroke, Substance Use Disorders, Implementation Practice and Research Support
Examples of VA Implementation

Diabetes QUERI

Prophylactic coronary revascularization prior to vascular surgery
Case Example:
Applying CER to Diabetes Care

- CER and other studies have shown that our approach to diabetics needs individualization
  - E.g. Tight control more suitable for young, more healthy diabetics

- Which drugs should we use to treat diabetes?
- What is best target for glycemic control?
- How should we identify “good” or “poor” care for individual patient, practice or facility?
- How do we use VHA data to identify areas for improvement?
VA Diabetes Care

• Formulary policy emphasizes those drugs shown to improve long-term clinical outcomes
  ○ Others available under specific conditions

• Guidelines emphasize risk-based strategies that vary goals of treatment based on age, comorbidity, underlying disease

• Performance measures focus on those where benefits of tighter control greatest ($HbA_{1c} > 9$)
  ○ Research testing performance measures linked to clinical actions and patient conditions

• Diabetes database allows facility to look at care for different strata of patients
  ○ E.g. Elderly vs. younger, newly diagnosed
Prophylactic Coronary Revascularization Prior to Vascular Surgery

• VA trial - *Patients with IHD did not benefit from Prophylactic coronary revascularization prior to vascular surgery*
  o Manuscript published (NEJM, 2004)

• Guidelines established

• Decreased cardiac catheterization, PCIs and CABG in this situation
Challenges/Lessons Learned
Challenges/Lessons Learned

- **Evidence base is modest overall**
  - Must be adequate for approach
  - Must keep up with fast-changing evidence

- **Individualization**
  - How do we individualize results?
  - How do we implement results in different settings, different patients etc.?
  - How much variation is allowable?

- **Patient centered approaches**
  - How do we meet patient expectations?
  - How do we engage & communicate with patients in the busy clinical practice?

- **Implementation is difficult where risk/benefit trade offs are closer than, e.g., beta blockers p MI**
Challenges/Lessons Learned

- **Old versus New Medical Media**
  - *Old* – Journal articles, CME
  - *New* – EHR reminders, decision support, Patient portals, social media

- **Need to align approaches to implementation and diminish complexity**
  - “Make the right thing the easy thing”

- **Need to reward performance that reflects CER data and patient circumstances**
  - Performance measures are constantly evolving

- **Organizational and local characteristics are important**
  - As is leadership involvement

- **Implementation should be an element of early research and not an afterthought**
Future
Future of CER in the VA

- Patient centered care the fundamental of the VA HCS
- Engagement of patients
  - E.g. Growth of patient portals – MyHealtheVet
- More refined performance measurement
- Implementation an early element in CER and not an afterthought
- Systems redesign program
  - Process engineering approach
  - Collaborative model for spread
  - Veteran Engineering Resource Centers
- Further individualization of CER
  - Genomic databases and other individualized data
  - Address issue of “average results” of CER
• **Ultimate Goal:** Informed choices and guidance for Patients, Providers, Healthcare system

• Informed choices will in fact be via a complex of interacting and coalescing research vehicles
  - Comparative Effectiveness Research
  - Research related to Personalized/Individualized Medicine
    - Genomics and other approaches to examine the individual in his or her person and setting (genetic make-up, coexisting conditions, location, etc)

• Comparative Effectiveness Research will continue to be a major VA endeavor