Translational Research: What Is It?

September 21, 2005
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Joellen Edwards, PhD, RN
One Person’s Perspective…

• Go see the human beings who are suffering, and then ask yourself, is the work I did today relevant to human suffering? Did I do something that is going to help to change somebody’s life, maybe not today but sometime soon?

• Christopher Reeve, accepting the American Society for Cell Biology Public Service Award, 2001
Definitions and Descriptions of Translational Research

• Advancing applied goals by incorporating theories, findings and methods from basic sciences
• Application of discovery to health care practice
• Knowledge transfer from research to everyday practice
• Bench to bedside and bedside to bench interface
• Research that bridges the cultural gap between scientists and clinicians
Process of Translational Research

- Generation of Evidence from Research
- Synthesis of Evidence
- Development of Evidence-Based Policies and Practices
- Testing of Policies/Practices in Clinical Settings
- Dissemination of Policies/Practices
- End User Incorporation into Clinical practice
Considerations…

• Team approach
• Regulatory environment
• Funding streams
• Academic environment
• Role models
Current examples of translational research

• **NIH** - Re-engineering the Clinical Research Enterprise - Funded Research
  MULTIDISCIPLINARY CLINICAL RESEARCH CAREER DEVELOPMENT
  PROGRAMS RELEASE DATE: October 20, 2003 RFA Number: RFA-RM-04-006
  (This RFA has been reissued, see [RFA-RM-05-016](#))
  DYNAMIC ASSESSMENT OF PATIENT-REPORTED CHRONIC DISEASE
  OUTCOMES RELEASE DATE: November 18, 2003 Number: RFA-RM-04-011

• **NIMH** - To facilitate translation and integration across the Institute, NIMH recently
  reorganized its extramural research programs into five divisions (from three; see
  [http://www.nimh.nih.gov/about/compon.cfm](http://www.nimh.nih.gov/about/compon.cfm))

**Offices and Divisions**

- Office of the NIMH Director
- Division of Neuroscience and Basic Behavioral Science (DNBBS)
- Division of Adult Translational Research and Treatment Development (DATR)
- Division of Pediatric Translational Research and Treatment Development (DPTR)
- Division of AIDS and Health and Behavior Research (DAHBR)
- Division of Services and Intervention Research (DSIR)
- Division of Extramural Activities (DEA)
- Division of Intramural Research Programs (DIRP)
Strategic Plan for

NIH OBESITY RESEARCH

A Report of the NIH Obesity Research Task Force
**Strategic Plan for NIH Obesity Research: Goals for NIH Obesity Research, and Strategies for Achieving the Goals**

The goals are organized under the following four themes:

- Preventing and treating obesity through lifestyle modification.
- Preventing and treating obesity through pharmacologic, surgical, or other medical approaches.
- Breaking the link between obesity and its associated health conditions.
- Cross-cutting research topics, including health disparities, technology, fostering of multidisciplinary and interdisciplinary research teams, investigator training, translational research, and education/outreach efforts.
Although most obese persons do not report binge eating or compulsive overeating, a substantial minority do report such difficulties. The NIH is planning a workshop that will explore the commonalities between obesity and other under-controlled and addictive behaviors.
NIH Workshop on Translational Research

- Commonalities between obesity & other under-controlled & addictive behaviors
- Neural systems mediating metabolic and motivational processes involved in energy regulation
- Genetic and environmental influences on neural systems involved in energy homeostasis
- Interactions of neural networks mediating cognitive and emotional processes with hypothalamic structures affecting energy balance
- Commonalities of brain mechanisms underlying food and drug cravings will be explored using brain imaging.
- Brain imaging studies also will be discussed to determine similarities in neurobiological processes involved in both pathological overeating and drug-taking behavior, as well as to reveal divergence in brain mechanisms involved in adaptive versus non-adaptive behaviors.
Community-based translational research is one approach for addressing health disparities issues, for example, through translational research on culturally competent prevention, early intervention, and disease management strategies for diverse population groups.
Division of Adult Translational Research and Treatment Development (DATR)
The Division of Adult Translational Research and Treatment Development (DATR) plans, supports, and administers programs of research, research training, and resource development aimed at understanding the pathophysiology of mental illness and hastening the translation of behavioral science and neuroscience advances into innovations in clinical care...
Translational Research at ETSU

Appalachian Center for Translational Research
ACTRID Goals

• develop and support translational research that addresses precursors and mediators of health disparities in Hispanic, African-American and disadvantaged/underserved Appalachian Tennesseans.

• partner with Hispanic, African-American and disadvantaged/underserved population groups to identify and address unique precursors and mediators of health disparities among Appalachians of racial and/or ethnic minority through health disparities research.

• use the organizational infrastructure and research actions in the ACTRID project as a way to disseminate culturally sensitive health information to target population groups.

• train and mentor health researchers to engage in health disparities research that can be translated into actions that will improve health status.
ACTRID’s Opportunities

• Pilot research funds
• Mentoring
• Research education
• Interaction with colleagues
• Statistical support
• Assistance with development of proposals
• A chance to make a difference in the health of our region’s people
ACTRID’s Definition…

• **Translational Research:**
  systematic translation of basic behavioral theory, methods, and findings into research designed to reduce the burden of health disparities. Translational research focuses on transferring findings from laboratory and theoretical studies to clinical application. ACTRID will particularly focus on research that transfers knowledge about use of health care services, access to health care, and health related lifestyles to delivery of interventions within targeted Appalachian
ACTRID’s Focus on Health Disparities

Table 1: Tennessee Ranking with the 50 United States on Health Status Indicators

<table>
<thead>
<tr>
<th>Tennessee Rank</th>
<th>1990</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall State of Health</td>
<td>37</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>Prevalence of Smoking</td>
<td>33</td>
<td>34</td>
<td>46</td>
</tr>
<tr>
<td>Risk of Heart Disease</td>
<td>46</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>Heart Deaths</td>
<td>35</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Cancer Deaths</td>
<td>26</td>
<td>44</td>
<td>45</td>
</tr>
<tr>
<td>Infectious Disease</td>
<td>28</td>
<td>37</td>
<td>36</td>
</tr>
<tr>
<td>Total Mortality</td>
<td>42</td>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td>Infant Mortality</td>
<td>40</td>
<td>42</td>
<td>46</td>
</tr>
<tr>
<td>Premature Death</td>
<td>43</td>
<td>45</td>
<td>46</td>
</tr>
</tbody>
</table>
ACTRID’s Model

Appalachian Population Groups

Poverty
Rurality
Cultural Beliefs

Access to care
Use of health care
Lifestyle

Increased Mortality
Increased Prevalence

TRANSLATIONAL RESEARCH
<table>
<thead>
<tr>
<th>Principal Investigator</th>
<th>Co-investigator(s)</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beth Bailey, PhD</strong></td>
<td>Evelyn Kemp, RN, PsyD Michael Floyd, EdD Forrest Lang, MD Beth Bailey, PhD</td>
<td><strong>Prematurity and Low Birth Weight in Appalachian Tennessee: The Roles of Smoking and Domestic Violence</strong></td>
</tr>
<tr>
<td><strong>Elizabeth C. McCord, MD, MS</strong></td>
<td>H. Patrick Stern, MD</td>
<td><strong>Development of an Intimate Partner Violence Strategy for Men</strong></td>
</tr>
<tr>
<td><strong>Karen E. Schetzina, MD, MPH</strong></td>
<td></td>
<td><strong>A Coordinated School Health Approach to Obesity Prevention among Appalachian Youth</strong></td>
</tr>
<tr>
<td><strong>Tiejian Wu, MD, PhD</strong></td>
<td></td>
<td><strong>Parent-Mediated Child Weight Reduction in Rural Primary Care Settings: A Pilot Study</strong></td>
</tr>
<tr>
<td><strong>Gail Gerding, PhD, RN</strong></td>
<td></td>
<td><strong>Addressing Diabetes Through the Use of Promotoras</strong></td>
</tr>
</tbody>
</table>
ETSU example: Appalachian Health disparities in cancer screening

• The issue:
  – Cancer mortality higher in Appalachia than the rest of the nation
  – Low cancer screening rates contribute to this disparity
  – Cannot account for all the screening disparity from SES, insurance, access to care (e.g., regular PCP, transportation)
Prior Research

• Provider’s decision to recommend cancer screening influenced by a variety of factors
  – prior beliefs about the patient
  – prior beliefs about her condition
  – information received during encounter
• When inadequate understanding of the patient, based in part on cultural gaps results in clinical uncertainty, providers must rely on prior beliefs and assumptions, which may include biases or stereotyping
Is there a translational research model for this?

- How does it interface at different places in a model?
- Example:
  - Using a model of socio-cultural pathways to health disparities to develop a Provider Bias Model
Model: Socio-cultural pathways to health disparities

Sociocultural System

- Institutional Bias
- Socio-economic

Health Care System

- Interpersonal System

Health Disparities

- Individual Bias
- Socio-economic
- Individual Bias
<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Provider</th>
<th>Patient</th>
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<tr>
<td>Socio-cultural</td>
<td>Socially constructed</td>
<td>Negative societal messages patients received</td>
</tr>
<tr>
<td>System</td>
<td>Belief systems about culture,</td>
<td>about culture, ethnicity, SES, gender</td>
</tr>
<tr>
<td></td>
<td>ethnicity, SES, gender</td>
<td></td>
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</tr>
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<td>------------------------</td>
<td>--------------------------------------------------------------------------</td>
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<td>Health-related and group-specific beliefs and attitudes that may include distrust or trust of the provider</td>
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<td>------------------</td>
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<tr>
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<td>Confidence or distrust in providers and/or the health care system</td>
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<td>Communication with their patients and decision-making (provider bias can occur here)</td>
<td>Health seeking behavior/compliance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>What their role should be in communicating with Providers and making health related decisions</td>
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<tr>
<td>Level of Analysis</td>
<td>Doctor</td>
<td>Patient</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
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Translational steps for this issue

• First the research question:
  – How do the 4 culturally-related characteristics — the patient’s SES, level of anxiety, presence or absence of fatalism, and the quality of the patient-provider relationship — influence providers’ decisions to recommend mammography to Appalachian women?
Medical Decision Leading to Health Disparities

MEDICAL DECISIONS LEADING TO HEALTH DISPARITIES

Patient

Provider

unconscious/conscious bias
stereotyping
level of experience with cultural group

Prior Assumptions or Beliefs about cultural group

Clinical Decision

Patient

Provider

level of cultural competence
patient-provider communication/relationship

Information from Clinical Encounter

cultural competence/congruence
Translational steps for this issue

• Then, prior research informs next steps

1. Provider bias can occur in any group that’s different (e.g., low SES)

2. Clinical uncertainty due to a lack of understanding by the provider of patient/condition (relationship)
   
   • Reliance on prior beliefs about the patient
   
   • If little prior knowledge of this
     – reliance on prior *assumptions* about health, attitudes & behavior of Appy patients (stereotyping: fatalistic, low SES, low interest in their health)
Translational steps for this issue

3. Appalachian cultural elements (stereotypes) can be barriers
   - “Poor but proud”
   - Independent, “private” nature
   - Don’t describe emotions well
   - Distrust health system (there’s no cure)
Translational steps for this issue

4. Prior work by this team
   • Patient and provider factors influenced cancer screening practices (Canada)
     • family history of cancer
     • patient anxiety about cancer
     • patient expectations of cancer screening
     • quality physician-patient interaction
   • Development and validation of the PBIAS instrument
Prior work by this team cont’d

- **Provider Bias Instrument for Assessing Cancer Screening (PBIAS)**
  - Translated 4 known Appalachian traits combined with prior work
    - Fatalism
    - Anxiety
    - Quality of the doctor-patient relationship
    - SES level
  - Portrayed in “trigger” DVDs
  - Tested for agreement among rural PCPs
Next steps: Step A

Modification & Testing of Internet-Based Video Vignettes (generalizability & web-base development)

- Website creation from DVD instrument
- Testing via national meeting at kiosks
- Operationalize the technology
- Further validate trait depiction
- Test generalizability
PATIENT: Margie Starnes
Established Patient; called this morning for appointment
Age: 64
BP: 124/72

PATIENT: Clara Johnson
Established patient
CC: 50 year old; wife of local
bank president Productive cough,
congestion, fever x 5 days
VS: BP 124/72 Pulse 85 Temp 98.8

PATIENT: Betty Jean McConnell
Established Patient
CC: 84 year old; stay-at-home grandmother
Vomiting and diarrhea x weekly a week
VS: BP 140/90

PATIENT: Della Mae Preston
Established Patient
CC: 40 year old; editor at local newspaper
Wrist pain x several weeks
VS: BP 132/76

PATIENT: Gwenn Osborne
Established patient
CC: 40 year old; Tamara’s wife
Stiff neck x 5 days
VS: BP 140/94 Pulse 85 Temp 98.8
Next steps: Step B

Development of Unannounced Standardized Patient (USP) Method

• Train and certify SPs
• Evaluation of USP visits to residency and nurse practitioner clinics
  – USPs visits providers
• Validate USP vignettes
• Focus group evaluations
Next steps: Step C

**Internet Video as a proxy for the SPs**

- USP visits to 88 Appalachian Providers
  - 4 USPs visit provider, one month intervals
- Provider completes survey immediately after visit
- Provider views video scenario and completes survey 2-4 months after last USP visit
- The two are compared
PBIAS Research Strategy

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Discussion

- Environment for Translational Research at ETSU?
- How to take down any barriers?
- Ideas for studies
- How to turn those ideas into research…