The Power of Networks:
Building a Learning Healthcare System with Practice-based Research Networks (PBRNs)

Jonathan N. Tobin, PhD
President/CEO
Clinical Directors Network (CDN)
Co-Director, Community Engaged Research Core
The Rockefeller University Center for Clinical & Translational Science
JNTobin@CDNetwork.org

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THE POWER OF RESEARCH NETWORKS

• Define Practice-Based Research Networks (PBRNs)
• Examine types of research that can be embedded into care
• Present examples of prior and current CDN and N²-PBRN studies and future NYC-CDRN/PCORnet studies
• Discuss challenges and opportunities for scale-up and building a Learning Healthcare System

Primary Care PBRNs

• Group of ambulatory care practices
• Organizational structure transcends a single research project
• Link practicing clinicians with experienced investigators
• Enhance research skills of network clinician members
• Ongoing commitment to network activities
• Mission:
  • Service - primary care of patients
  • Goal - improve quality of primary care
  • Investigation - questions related to community-based practice

Source: AHRQ PBRN www.ahrq.gov/research/pbrn/pbrnfact.htm

AHRQ PBRN REGISTRY (2013)

Source: http://pbrn.ahrq.gov/pbrn-registry/pbrn-map; Data as of Oct. 2013
Models of Practice-Based Research

- **Top-Down**
  - Researcher-focused
  - Funder-focused

- **Bottom-up**
  - Clinician-focused (PBRN)
  - Patient-focused (CBPR)

- **Mixed Model (Bi-directional)**

Practice-Based Research Networks (PBRNs)

- **The Importance of Setting**
  - Ambulatory care represents the ambient conditions under which most people present for care and under which most care (Usual Care) is provided.
  - PBRNs in ambulatory care settings (such as Primary Care PBRNs) represent organized practices in which care is provided and care can be studied systematically.
  - Conduct Studies that follow Clinical Workflow in order to minimize disruption to the practices, clinicians, staff and patients.
  - PBRNs also represent an established mechanism for the dissemination and implementation of medical innovations.

Practice-Based Research Networks (PBRNs)

MIXED MODEL PBRNs:

- Can poteniate the bi-directional exchange of what is best in each model of research (lab vs. field)
- Provide the venue for translating practice into research, thereby changing the pattern of information flow
- Serve as both the venue for conducting research and the mechanism for disseminating research results

Types of Research Conducted in PBRNs

- Descriptive
- Observational
- **Experimental — Randomized Controlled Trials (RCTs)**
  - Comparative Effectiveness Research (CER)
  - Patient Centered Outcomes Research (PCOR)
  - Cluster RCTs
- Dissemination & Implementation (D&I)
- Quality Improvement
- ?Mechanistic Studies
Comparative Effectiveness Research (CER)

- “A rigorous evaluation of the impact of different options that are available for treating a given medical condition for a particular set of patients” (OMB)
- Includes Randomized Controlled Trials (RCTs), pragmatic, and observational trials and cost analysis comparing drugs, treatments, or diagnostic tools
- CER is closely related to Patient-Centered Outcomes Research (PCOR)


Types of T2 T3 T4 Research

- PBRN Practice-based Research Networks
- CER Comparative Effectiveness Research
- PCOR Patient Centered Outcomes Research
- CEnR Community-Engaged Research
- CBPR Community-based Participatory Research
- PCT Pragmatic Clinical Trials

Four-Stage Model of Community-Engaged Research (CEnR)

- GOALS OF COMMUNITY-ENGAGED RESEARCH
  - Build trust & capacity
  - Expand new resources and allies
  - Create better communication
  - = Improve overall health outcomes → Public Health Impact

Persons consulted by the researchers are at the periphery of the community.

Researchers retain total control of the project. There is community involvement, but it is passive.

Community leaders are asked not only for endorsement of the project, but for guidance in hiring community residents to serve as interviewers, outreach workers, etc.

Community members are first among equals in defining the research agenda.
MacPherson’s Key Steps in Conducting a Pragmatic Clinical Trial

1. Appropriate research question
2. Defining the patient group
3. Identify a comparison group
4. Defining the treatment protocol
5. Ensuring adequate sample size
6. Referral, recruitment and randomisation
7. Outcomes
8. Analysis
9. Reporting and dissemination

Pragmatic-Explanatory Continuum Indicator Summary (PRECIS) Tool

Challenges for PBRNs

- A common aim behind Comparative Effectiveness Research (CER) and Practice-based Research Network (PBRN)-conducted research is to produce new evidence-based medical knowledge that fills gaps between primary care practice realities and findings produced by academic/tertiary-care research and clinical trials
- Less control over
  - Patient characteristics
  - Variability in practice clinical and research capacity
  - Multiple IRBs
  - Significant resource problems that impede research
- Other challenges include:
  - selecting studies that meet network’s & practices’ priorities
  - working within an adequate and sufficient budget
  - developing study teams and agreements among team members
  - training practice staff for participation

WHY RESEARCH NETWORKS?

Advantages:
- Accelerate study start-up & conduct
- Follow clinical workflow and embed at point of care
- Build shared infrastructure
- Facilitate data-sharing
- Conduct full spectrum of translational research
- Opportunities for dissemination & scale-up
THE POWER OF RESEARCH NETWORKS

• Structure of CDN and N²-PBRN

• Examples of prior and current PBRN studies conducted by CDN and N²-PBRN

CDN

Clinical Directors Network

A Practice-based Research Network (PBRN) that works with Primary Health Care Safety-net Practices

Research Infrastructure to build a Learning Healthcare System

CDN Recognition

- AHRQ Designated “Center of Excellence” (P30) For Practice-based Research and Learning (2012)

 CDN Recognition

- US Department of Health & Human Services Award for “Outstanding Contribution Toward the Elimination of Racial and Ethnic Disparities in Health” (2001)

CDN’S OVERALL GOAL

- CDN is dedicated to providing and improving comprehensive and accessible community oriented Primary and Preventative Health Care services for poor, minority, and underserved populations

- CDN’S overall goal is to engage communities, clinicians and patients to translate clinical research into clinical practice for the elimination of health disparities

CDN’S Primary Activities

- Practice-based Research
- Education and Training
- Professional Development

www.CDNetwork.org
**CDN: Beginnings**

- "CDN was created in 1985 by a group of community health center dental and medical directors with the encouragement and support of officials of Region II of the Public Health Service (PHS)."
- "CDN has responded to the needs articulated by clinicians at health centers...has provided managerial training and clinical education, strategies for increased involvement of clinicians in health center management and opportunities for engagement in community‐based primary care research."

**Peer Support: Retention/Recruitment of Clinicians into Health Centers**

- "...while salary and benefit levels are a major variable in retention, other factors related to personal and professional satisfaction are also significant. These include workload, relationship to other staff, sense of mission, health center morale, reputation of the center and participation in decision-making within the organization."
- The most satisfying aspects of their jobs:
  - "team-building"
  - "diversity and versatility of their role"
  - "working with the community and community groups"
  - "taking a larger view of health care in the community"
  - "clinical leadership and administrative skills"
  - "personal commitment to the job and the mission"

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**Factors Contributing to Physician Retention in FQHCs**

- John Snow study of national retention rates of physicians at Community/Migrant Health Centers examined conditions which contribute to professional satisfaction or dissatisfaction.
- Retention was found to be positively related to job satisfaction
- Perception that the management of the health center had created a professionally satisfying environment (& connected to mission)

**Mission → External Validity**

**Generalizability → Social Justice**

- People: Eligibility - inclusion/exclusion criteria
- Place: Setting - types of services available
- Time: Seasonality - novel/established

**Ideal vs. Real World:**

- Practice Settings
- Populations
- Heterogeneity
CDN RECRUITMENT EXPERIENCE
1992-Present

64,067 Patients enrolled

74% Female

49% African-American

40% Latino/a

MIXED MODEL

CDN has successfully employed the “Mixed Model” in a variety of experimental and observational studies conducted in primary care practices serving low-income and minority communities, including:

- Community/Migrant Health Centers (CHCs)
- Diagnostic and Treatment Centers (DTCs)
- Health Department Clinics (DOHs)
- Primary Care Residency Programs (PCRPs)
- Managed Care Organizations (MCOs)
Employing the Mixed Model, Significant Improvements Have Been Achieved In:

• Clinical Preventive Services
• Disease Management
• Health Behavior Change
• Integration of Primary Care & Mental Health
• Quality of Life
• Clinical/Biological Outcomes
• Beginning to demonstrate Public Health Impact

Drivers of New PBRN Growth

CHALLENGES TO SUSTAINABILITY WHICH LEAD TO GROWTH OF NETWORKS

- Enormous financial investment
- Need for new markets (practices, clinicians)
- Saturated existing practices
- Limited bandwidth & competing priorities
- Time Constraints
- Competition for funding
- Inconsistent, partial or poor translation of research into practice
- Outside demands for expertise & access
- Geographic diversity/variable health needs

POTENTIAL SOLUTIONS

- High quality data collection
- Simplified, less costly forms
- Clinician participation in professional activities, early adopters and disseminators
- Vigorous communication and discussion of efficacy and effectiveness among collaborating PBRNs
- Models of collaboration
- Accelerated model of translation
- Inter-operable EHR systems
- Drivers of Growth & Expansion: Scalable

CDN N2-PBRN: Building a Network of Safety Net PBRNs (“Network of Networks”)

A collaboration among:

- Access Community Health Network (ACCESS)
- Alliance of Chicago (ALLIANCE)
- Association of Asian Pacific Community Health Organization (AAPCHO)
- Center for Community Health Education and Research (CCHERS)
- Clinical Directors Network (CDN) [Lead PBRN]
- Community Health- Applied Research Network (CHARN)
- Fenway Institute (FENWAY)
- New York City Research and Improvement Group (NYCRING)
- Oregon Community Health Information Network (OCHIN)
- South Texas Ambulatory Research Network (STARNet)

Funded by AHRQ Grant: P30 HS 021667
Principal Investigator: Jonathan N. Tobin, PhD (CDN)
Project Officer: Rebecca A. Rogers, MS, PhD (AHRQ)

9 Established PBRNs
3 “Incubator” PBRNs
600+ Practices
4.5 million patients
N² PBRN Academic Partners
Virtual Faculty

- Albert Einstein College of Medicine of Yeshiva University/Montefiore Medical Center
- Boston University
- Columbia University
- Dartmouth Medical School
- Harvard University
- Kaiser Permanente Center for Health Policy Research
- New York University
- Northwestern University
- Oregon Health and Science University
- RAND Corporation
- The Rockefeller University
- Tufts University
- University of California/San Francisco
- University of Chicago
- University of Illinois at Chicago
- University of Miami
- University of Michigan
- University of Oregon
- University of Washington
- Yale University

Funded by HRSA

N² LEARNING COLLABORATIVE

TRACKS

1. PBRN Research Management Innovations (for PBRN Senior Staff)
2. PBRN Methods (for PBRN Senior Staff & Academic Collaborators)
3. Introduction to Research (for CHC Nodes Staff & New PBRN Staff)
4. PBRN Study Results (for CHC Nodes, CHC Partners, PBRN Senior Leadership & Staff, Academic Partners)
The N² PBRN Online Training Curriculum

Aims to enhance the skills of current PBRN researchers and practicing clinicians who are interested in participating in clinical research.

Tracks:

- Evidence-based practices and best practices demonstrated to be effective at transforming clinical research into a more clinician-engaged, accelerated research and translation model, with significant clinical and public health impact
- A "Virtual Faculty" of N² PBRN Directors and their PBRN-related research
- N² PBRN Academic Partners’ "Virtual Faculty" and their PBRN-related research
- Training in research methodology for practicing clinicians who wish to become more active and engaged in practice-based research
- New content added on Pragmatic Clinical Trials, CER & PCOR Research methods

Research Training for Clinical Leaders 2012-2013

- Study Design and Implementation
  - To enable practicing clinicians to develop their research interests and skills, through didactics on the scientific and statistical aspects of study design as well as through hands-on experience in preparing and implementing a research project
- Epidemiology and Biostatistics
  - To develop and provide oral and written research dissemination/presentation skills at local, regional and national forums
- IRB/Human Subjects Protection
  - IRB Application
  - Informed Consent
- Grant Writing
  - To provide technical assistance in grant-writing and identifying potential funding sources, including training exercises and assistance in developing budgets, staffing plans, work-scales, and timelines
- 60 CME/CNE/CDE Credits for Participation

ENCORE: Community Health Center Patient Centered Outcomes Research (PCOR) Training
(Funded by a PCORI Eugene Washington Engagement Award - NCHR 1000-30-10-10 EA-0001)

Goal:

To adapt, enhance, and implement an existing year-long training curriculum designed to educate and engage health center teams including patients, clinical and administrative staff in PCOR

Objectives:

- Build infrastructure to strengthen research capacity of health centers as they develop or expand their own research infrastructure and engage in PCOR
- Develop, implement, and disseminate broad innovative training content and delivery approaches
  - targeted to and accessible at no cost to all health centers and other primary care practices
  - content will prepare health center patients, staff, and researchers in the conduct of community-led PCOR
- Evaluate, refine, and disseminate training resources to health centers nationally

Community Health Center
Patient Centered Outcomes Research (PCOR) Training Program
"Enhancing Community Health Center PCORI Engagement" (Encore) PCORI Grant No. NCHR 1000-30-10-10 EA-0001

Key Partners:

- Access Community Health Network
- Association of Asian Pacific Community Health Organizations (AAPCHO)
- Clinical Directors Network (CDN) [J. Toye, PI; M. Duk, PD]
- Community Health Applied Research Network (CHARN)
- Institute for Community Health (ICH) at Harvard University
- National Association of Community Health Centers (NACHC) [M. Prout, Co-PD]
- South Carolina Primary Healthcare Association (SCPCHA)
THE POWER OF RESEARCH NETWORKS

CDN ⇒ N²

Case Presentations of CDN & N²-PBRN Studies:
• Prevention Care Management for Improving Cancer Early Detection (NCI, AHRQ, PCORI)
• CA-MRSA Project (NCATS, AHRQ, PCORI)

www.CDNetwork.org

Prevention Care Management (PCM) Projects to Improve Cancer Screening in Primary Care

PCM1, PCMT & PCM2 Projects

Principal Investigator:
Allen Dietrich, MD
Geisel School of Medicine at Dartmouth

Co-Principal Investigator:
Jonathan N. Tobin, Ph.D.
Clinical Directors Network (CDN)

Funded by:
NCI Grants R01-CA87776 (PCM1, PCMT) & R01-CA119014 (PCM2)

Framework: Prevention Care Management (PCM) Projects (2000-2012)

Efficacy → Effectiveness → Dissemination & Implementation

PCM1 (2000-2004)
PCM2 (2006-2012)

PCM1 CONSORT: Health Centers

Recruitment Timeline:
November 2001 - October 2002
Follow-up:
18 months after recruitment; all follow-up completed by April 2004

Dissemination & Implementation

Funded by NCI Grants R01-CA87776 & R01-CA119014
(A. Dietrich, PI; J.N. Tobin, Co-PI)
**Effectiveness**

**PCMT CONSORT: MMCO (n=1)**

**Dissemination & Implementation**

**PCM2 CONSORT: MMCO (n=3)**

**Screening Outcomes**

**PCM1**
- 18 months: Up-to-Date Pap, mammogram
- 1 Year HFOBT
- 5 Years: Sigmoid
- 10 Years: Colonoscopy

By Chart Review

**Efficacy**

**PCMT**
- 9 months: Up-to-Date Pap, mammogram
- 1 Year HFOBT
- 5 Years: Sigmoid
- 10 Years: Colonoscopy

By MMCO Claims Data

**Effectiveness**

**PCM2**
- 18 months: Up-to-Date Pap, mammogram
- 1 Year HFOBT
- 5 Years: Sigmoid
- 10 Years: Colonoscopy

By MMCO Claims Data

**Dissemination & Implementation**

**PCM Intervention Delivery**

<table>
<thead>
<tr>
<th>Intervention Implementation</th>
<th>PCM1</th>
<th>PCMT</th>
<th>PCM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Participants</td>
<td>616</td>
<td>663</td>
<td>562</td>
</tr>
<tr>
<td>N (%) Reached</td>
<td>616 (100%)</td>
<td>663 (100%)</td>
<td>562 (100%)</td>
</tr>
<tr>
<td>Intervention Period</td>
<td>18 months</td>
<td>18 months</td>
<td>18 months</td>
</tr>
<tr>
<td>PCM1</td>
<td>8 months</td>
<td>9 months</td>
<td>10 months</td>
</tr>
<tr>
<td>PCM2</td>
<td>10 months</td>
<td>10 months</td>
<td>10 months</td>
</tr>
<tr>
<td>Targeted Cancers</td>
<td>Breast, Cervical, and Colorectal</td>
<td>Breast, Cervical, and Colorectal</td>
<td>Breast, Cervical, and Colorectal</td>
</tr>
<tr>
<td>Identification of Eligible Participants</td>
<td>Medical records review and computerized administrative claims data</td>
<td>Medical records review and computerized administrative claims data</td>
<td>Medical records review and computerized administrative claims data</td>
</tr>
<tr>
<td>Phone Calls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean call length (range)</td>
<td>15.0 (12-17)</td>
<td>14.0 (10-20)</td>
<td>16.0 (10-20)</td>
</tr>
<tr>
<td>Average call length (minutes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>150 (120-180)</td>
<td>140 (100-200)</td>
<td>160 (100-200)</td>
</tr>
<tr>
<td>Subsequent</td>
<td>80 (60-100)</td>
<td>70 (50-100)</td>
<td>70 (50-100)</td>
</tr>
</tbody>
</table>
### PCM Intervention Components

<table>
<thead>
<tr>
<th>Intervention Components</th>
<th>PCM1</th>
<th>PCM2</th>
<th>PCM3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail clinician recommendation letter to patient</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Mail activation card to patient</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Mail screening test-specific educational material to patient</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Confirmed and updated screening dates</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Discuss and provide support on barriers using script</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Schedule screening appointments</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Reminder calls</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Reminder letters</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

### Organizational Characteristics

<table>
<thead>
<tr>
<th>Organizational Characteristics</th>
<th>PCM1</th>
<th>PCM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance of Study Participants (%)</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Medicare</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Employee/other</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>No insurance</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Practice Types Involved (%)</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>Community Health Center (publicly funded)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Diagnostic &amp; Treatment Center (publicly funded)</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Private Practice</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Primary Care Clinicians at All Centers per Study</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Total Clinicians, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Practitioners (%)</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>General Internists (%)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Nurse Practitioners and Physician’s Assistants (%)</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

### Statistical Methods for Meta-Analysis of 3 PCM RCTs

- Unadjusted Comparisons of the main effects for the three PCM RCTs
- Random effects meta-analysis
- Random effects meta-regression model using the aggregate level data on the log scale was used to estimate a decrease in effectiveness over the three trials
- More complete data were available for PCM1 and PCM2
- PCM1 & PCM2 were combined to provide a covariate-adjusted estimate using logistic regression models
- p-value < 0.05 (2-tailed) statistical significance
- 95% confidence intervals are reported
Meta-analysis of Odds Ratios from 3 CDN PCM RCTs

<table>
<thead>
<tr>
<th>Odds Ratios Stratified by Language: Heterogeneity of Treatment Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS: PCM1 vs. PCM2</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>PCM1</td>
</tr>
<tr>
<td>PCM2</td>
</tr>
</tbody>
</table>

$\text{I}^2 = 54.8\%, \ p = 0.109$

Interpretation
- While the effect sizes for PCM1 versus PCM2 appear to be different, they are not.
- The distribution for Spanish and English speakers differs between PCM1 (64%) and PCM2 (27%).
- This language effect drives the difference in ORs.
- The difference between 1.69 (PCM2) versus 1.31 (PCM1) is best explained by language differences.
- This represents Simpson’s Paradox:
  - The possibility that a measure of association may reverse direction upon stratification by a third variable.
  - Simpson’s paradox can occur in meta-analysis because the sum of the data or results from a number of different studies may be affected by confounding variables that have been excluded by design features from some studies but not others.
  - It is an extreme example of collapsibility, in which results of the data analysis in every mutually exclusive stratum or subgroup are the opposite of the crude results. (see also CONFOUNDING BIAS)

Source: M. Porta, A Dictionary of Epidemiology (University Press, 2008)
SCALE-UP
NYC DOHMH Colo-rectal Cancer Screening
Patient Navigator Program

Expansion Timeline

- 2003-2006--Pilot phase
  - Lincoln, Woodhull, Elmhurst
- 2007--Phase 2
  - Five HHC Hospitals - Harlem, Jacobi, Metropolitan, Bellevue, Kings County
- 2008--Phase 3
  - Two HHC Hospitals - Coney Island, Queens
  - Six Voluntary Hospitals - Brookdale, NY Pres-Columbia, Flushing, Jamaica, Montefiore, Richmond

Source: 2008 C5

SCALE-UP
NYC DOHMH Colo-rectal Cancer Screening
Patient Navigator Program

NYC Colonoscopy Screening Trend

Per centage ≥ 50 yrs Receiving Colonoscopy within last 10 years in NYC, 2003-2012

833,040 additional people screened in 2012.

Source: 2014 C5

Racial/Ethnic Screening Disparities Eliminated

Percentage ≥ 50 yrs Receiving Colonoscopy within last 10 years by Race/Ethnicity, 2003-2012

Source: 2014 C5
Funding:
NYC DOHMH, NYS DOH, CDC

Next Steps: Using Collaborative Care to Reduce Depression and Increase Cancer Screening Among Low-Income Urban Women Project

NYC Colonoscopy Screening Data Booklet, 2010 Community Health Survey, CS

Collaborative Care to Reduce Depression and Increase Cancer Screening Among Low-Income Urban Women Project (PCM3-MH)

A collaboration among:
Clinical Directors Network (CDN) - Jonathan N. Tobin, PhD, Andrea Cassells, MPH, TJ Lin MPH
Albert Einstein College of Medicine - Elsa Weiss, PhD, Nan Sun, PhD
Montefiore Family Care Center - Elizabett Hiler, MD
Morris Heights Health Center - Alison Malek, LCSW
Urban Health Plan - Alexandra Morales, PsyD
NYCRING - Claudia Lechuga, MPH
BronxWorks - John Weed, LSW
Good Shepherd Services - Elizabeth O’Hara-Ciaccio, LCSW
Geisel School of Medicine at Dartmouth University - Allen Dietrich, MD

Grant 1R12HS114522 (PCM3-MH)
1FD1-MH-231667

N² PBRN: NYCRING

- The New York City Research and Improvement Networking Group is a partnership of thirty-five practices
- Exclusively focuses on the urban underserved
- NYCRING provides visits to over 600,000 low income, minority primary care patients
- Access to research, data, clinical and administrative resources made available through the Albert Einstein College of Medicine and Montefiore Medical Center
Goals and Objectives

- To determine whether addressing and reducing depression are necessary steps to increase rates of cancer screening among low-income depressed women ages 50-64 across 3 Bronx health centers
- We implemented a CER/PCOR study comparing the effectiveness of two year-long interventions for:
  - 756 women ages 50-64
  - screen positive for depression (PHQ-9 > 8)
  - have not completed recommended screenings for cervical, breast, and/or colorectal cancer
- Comparing the Effectiveness of:
  1) Collaborative Care Intervention (CCI) that addresses Depression and Cancer Screening needs simultaneously
  2) Prevention Care Management (PCM) Patient Navigation Cancer Screening Intervention

Prevention Care Management – PCM (Comparison Arm)

- In the PCM condition, the Care Manager will focus on cancer screening, providing
  - Education
  - Patient navigation
  - Motivational support to overcome screening barriers and form favorable attitudes towards screening
- Patients in the PCM condition will be referred to their primary care clinicians for their depression, if they are not in treatment

CDN Online Tools: Staff Intervention Training Resources at NCI/SAMHSA Cancer Control Planet RTIPS

http://rtips.cancer.gov/rtips
Collaborative Care Intervention (CCI)

• Collaborative Care Intervention facilitates decision-making and action to engage in screening AND reduce depression. A Care Manager (CM) will:
  – educate patients about cancer screening and depression;
  – provide patient navigation to improve access to and use of cancer screening services, and connect patients to outside services;
  – provide depression care management and motivational support (includes addressing barriers) for self-care with respect to screening, depression, and other conditions;
  – act as a critical link between primary care, mental health care provider, and the patients, helping to develop and implement a treatment plan.

Three Component Model (TCM)

Three Component Model (TCM)

CDN Online Tools:
Clinician Training Resources (CME)

www.CDNetwork.org

WWwww.CDNetwork.org

CME accredited through AAFP

Screening Outcomes

Pragmatic Clinical Trial:
All EHR-based Cancer Screening, Mental Health, Treatment Data, Process and Outcomes Measures

  – Past history of medication use for mental health
  – Past history of psychotherapy
  – Present medication use (names and reported side effects)
  – Barriers to medication or psychotherapy use
  – Present psychotherapy/counseling and frequency
  – Initiation of medication or psychotherapy while enrolled
Results and Lessons Learned

Results

- Both FQHCs and Community Based Organizations (CBOs) are now significantly engaged in project implementation activities
- Key facilitators to study implementation include presence of a study champion, a robust Electronic Health Record (EHR) system and a multi-disciplinary team
- Challenges include bureaucratic systems that slow the hiring of study staff, competing priorities and lack of a central IRB

Conclusions

- This study is designed to increase our understanding of integrating mental health and cancer screening in primary care, and how to best support this population in making screening decisions

CONCLUSIONS

Prevention Care Management (PCM) intervention

1. Addresses multi-level barriers to screening
2. Effective at increasing CRC screening rates
3. Impact is greater for the Latina population
4. Can be translated and implemented successfully across a wide range of clinical settings in medically underserved communities
5. Is robust and transferable across CHC, DTC and MMCO settings
6. Is an important strategy to be implemented in primary care systems to be effective and sustainable
7. May need to add CCI components added to address depression and other mental health, but care management framework may enhance outcomes for both mental health and cancer screening

Policy Implications

1. CHCs, DTCs, PCPs and other primary care practices with large numbers of Spanish speaking patients can benefit from the PCM intervention
2. PCM is an innovative and effective strategy that can be implemented in MCOs, ACOs, and PCMHs to enhance CRC screening rates and reduce cancer health disparities
3. PCM is transferrable and can be adapted into cancer early detection Quality Improvement (QI) Initiatives
4. PCM can be generalized to address mental health needs of underserved populations

Examples

CDN \(\rightarrow\) N\(^2\)

Case Presentations of CDN & N\(^2\)-PBRN Studies

- Prevention Care Management for Cancer Early Detection (NCI, AHRQ, PCORI)
- CA-MRSA Project (NCATS, AHRQ, PCORI)
The Rockefeller University Center for Clinical and Translational Science Clinical Directors Network CHC Partnership

Conducting CER/PCOR with Embedded Mechanistic Studies

Supported in part by grant # UL1 TR000043 from the National Center for Advancing Translational Sciences (NCATS, National Institutes of Health) Clinical and Translational Science Award (CTSA) program.

The Community-Associated Methicillin-Resistant *Staphylococcus aureus* (CA-MRSA) Project (CAMP): Establishing a CA-MRSA Surveillance Network

A collaboration among:
- The Rockefeller University Center for Clinical & Translational Science (CCTS)
- Clinical Directors Network (CDN)
- Community Health Centers (CHCs)

Funded by The Rockefeller University Center for Clinical and Translational Science (CCTS) Pilot Grants and an NIH Administrative Supplement (NIH-NIH5 Grant No. U54 TR000043) and AHRQ Grant # P30 HS 021667.

Translational Science

**Embedded Mechanistic Studies**

- Comparative Effectiveness Research (CER)/Patient Centered Outcomes Research (PCOR)
- Dissemination and Implementation Research
- Effectiveness Research
- Efficacy Research
- Pre-Clinical/Phase I & II Research

Public Health Impact
Stakeholder Engagement and Study Design

Study Start-Up:
1. Continuing Medical Education (CME) accredited sessions:
   - CHCs; 72 attendees
   - Active discussions between scientists & healthcare providers
   - Agreed incision & drainage of infected site for a simple & effective treatment
   - Emphasized importance of community hygiene
   - Therapy commonly used for CA-MRSA in a CHC setting


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CA-MRSA Project (CAMP)
Design Follows Clinical Workflow

Inclusion Criteria
- The patient presents with signs and symptoms of a SSTI
- 7 to 70 years of age
- Fluent in English or Spanish
- Plans to receive care in this community health center during the next year

Exclusion Criteria
- The patient is unwilling to provide informed consent
- The patient is acutely sick (for example, crying, wheezing, bleeding, screaming or shaken) and unable to participate in a discussion about the study
- The patient is unable to understand the information shared about the study

CAMP Results

Lesion Location (n=152)
MSSA isolates (17 wounds + 20 colonization sites)
- 1 MSSA isolate ST75 USA 300 “NewYork clone” (1 wound)
- 2 MSSA isolates ST5 USA 100 “SouthWest Pacific clone” (2 wounds)
- 5 MRSA isolates to be typed
  - 1 MRSA isolate ST8 USA 300 (28 wounds + 14 colonization sites)
- 3 MRSA isolates ST30 USA 1100 “SouthWest Pacific clone” (2 wounds + 1 colonization site)
- 1 MSSA isolate ST121 (1 wound + 1 colonization site)
- 1 MSSA isolate ST8-NY cloneV (1 wound + 1 colonization site)
- 1 MSSA isolate USA 400 (1 colonization site)

Area
To the Goals:
Network
Method:
Clinical and microbiological surveillance
Participating Hospitals: 1) Lincoln Medical Center, Bronx, NY
2) Lutheran Medical Center, Brooklyn, NY

Wound and colonizing isolates share identical phenotypes of heterogeneous beta-lactam resistance

Cases of Community-Acquired MRSA (CA-MRSA) Among Immigrants Seen in NYC Community Health Centers
Presented at the 13th Conference of the International Society of Travel Medicine, May 19-23, 2013, Maastricht, The Netherlands, with special recognition during the Poster Tour Session on Recurrent SSTIs/MRSA

Recurrence:
- 9/100 (7.5%)
- 4/100 (4.0%)
- 3/100 (3.0%)
- 1/100 (1.0%)
- 0/100 (0.0%)

Recurrent Furunculosis in a Community-Acquired S. aureus Infection Caused by a Strain Belonging to the USA300 Clone of MRSA

Presented at SCTS Translational Sciences Conference 2013, April 17-19, Washington, DC by:
- Rivshen Balachandran, MD
  Section Head, Walk-in Clinic
  Urban Health Plan, Inc.
- Maria Penick de la Gandara, MD, PhD
  Postdoctoral Associate
  Laboratory of Microbiology and Infectious Diseases
  The Rockefeller University
CAMP Dissemination

Recurrent Furunculosis in a Community-Acquired S. aureus Infection Caused by a Strain Belonging to the USA300 Clone of MRSA

Presented at CDN Translational Science Conference 2013, (Washington, DC) by:
- Skirish Balakrishna, MD
- Subra Madhav, MD
- Maria Furtado de la Guarda, MD, PhD

Elizabeth Head

Urban Postdoctoral Section

Family Care Clinical Directors

Brookdale Community Health Centers

American Medical Association

Rockefeller University

ASQ+ASS

MD

MD

MRSA

BioReference Labs

Sensitivity

20%

Community-engaged Research Pilot Project:
Expanding the Study of SSTIs/CA-MRSA To Barbershops and Beauty Salons in NYC

- Previous studies have shown the receptiveness of male barbershop owners, employees, and patrons to learning more about disease prevention and occupational safety and health
- SSTIs/lesions are often observed on face, scalp, head, neck, arms, hands
- About 20% of CAMP participants’ lesions presented in these locations
- Barbers and their clients were highly receptive to inquiries and information about MRSA
- Barbers welcome an in-depth public health education in the barbershop setting

N2 PBRN: Network of Networks

Lutheran Family Health Centers (LFHCs)* Incubator PBRN

CDN+ACCESS+STARNet

CDN (New York)

StarNet (Texas)

ACCESS (Chicago)

LFHC* (New York)

CDN PBRN

CAMP
- Protocol
- Consent
- English
- Spanish
- Methods
- Database
- Ontology
- Biospecimen Repository

CDN+ACCESS+STARNet

Network for Molecular Genetics & Microbial Pathogens (Molecular Lab)

Local Clinical Labs

BioReference Labs

Sensitivity

NFCC

118 Patients

318 Patients

Funded in part by AHRQ Grant #1 U10 HS 020807

CDN (New York)

STARNet (Texas)

ACCESS (Chicago)

LFHC* (New York)

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N² PBRN: STARNet
San Antonio TX
• The South Texas Ambulatory Research Network is composed of small group practices or solo clinicians.
• Members are primary care physicians, clinical staff, medical students who provide service for patients from the San Antonio area to the Lower Rio Grande Valley and Corpus Christi communities.

https://iims.uthscsa.edu/STARNet/home

N² PBRN: Access Community Health
CHICAGO IL
• Composed of 40 health centers that provide preventive care, chronic disease management, and support services to underserved communities
• Advance a continuum of care by partnering healthcare providers with outreach staff, case managers, social workers, and substance abuse counselors
• Largest provider of primary care for Medicaid beneficiaries in Illinois

http://www.accesscommunityhealth.net/

N² PBRN: Lutheran Family Health Centers Network
BROOKLYN NY (incubator PBRN)
• The Lutheran Family Health Centers (LFHC) network provides high quality, affordable outpatient primary health care and support services close to home.
• As one of the largest Federally Qualified Health Center (FQHC) networks in the nation, LFHC includes 9 primary care sites, 28 school based health/dental clinics and numerous social support services. With approximately 86,000 patients, the LFHC network handles nearly 530,000 visits annually

https://www.lutheranhealthcare.org

CAMP Town Halls & Focus Groups:

Qualitative Findings Demonstrated Convergence of CER/PCOR Interests

• Patients: Responses from the RPPS patient focus group indicated that many patients participated in the CAMP study in order to contribute to knowledge about CA-MRSA transmission and recurrence. Outcomes that patients were most concerned about include: recurrence, pain and inability to work.
• Clinicians: “[It is assumed that] colonization is ongoing, because we’ve had patients return with recurrent infections. ...If you just use systemic antibiotics, the nasal colonization persists. Another question to consider is if the source is in the house. We can take all measures to decolonize the person but if the infection is still in the house (pet, towel, sheets, etc), then it’s a huge factor.” – Dr. Balachandra
• Laboratory Investigators: “Does the MRSA recurrent phenotype reflect a single or multiple genotypes?
• Clinical Investigators: 31% of MRSA+ wounds and 28% of MSSA+ wounds are recurrent
To compare outcomes, for patients presenting with SSTIs and diagnosed with
CA-MRSA, randomized to one of two interventions:

[1] Standard CDC-Guidelines Directed Usual Care, including incision, drainage, and oral antibiotics

[2] CDC-Guidelines-directed Usual Care combined with interventions conducted in the home setting to reduce re-infection and transmission to family/household members

Pragmatic Clinical Trial Infrastructure (PCTi) Use Case:
CA-MRSA RECURRENT PREVENTION CER/PCOR Study

Use Case was Selected for the CTSA PCTI Workshop (Oct 2012)

Patient Centered Outcomes Research Institute (PCORI) "Patient-centered CER Study of Home-based Interventions to Prevent CA-MRSA Infection Recurrence (CAMP-2)" (PI: Jonathan N. Tobin, PhD, Clinical Directors Network, Inc. (CDN) and The Rockefeller University) (PCORI Grant No. CER-1402-10800)

Team Grant-writing Tasks

Each Team consisted of:
- CHC Clinician
- Rockefeller Investigator
- CDN PBRN Staff Member

Group Discussion (30 minutes)
- Brainstorming and writing
- Discussion, Review
- Editing
- References added by CDN Staff

Task One: Home Assessment
1. Community Health Worker Training Module
2. Identifying Household Members
3. Approach and Consent
4. Conducting Patient Education

Task Two: Home Intervention
1. Administering Questionnaire
2. Self-Sampling for CA-MRSA Carriage
3. Environmental Sampling for MRSA Contamination
4. Specimen Transport

CDN → N² → PCORnet

CDN PBRN & N²-PBRN
• Adaptation of Existing Templates
• Models of Stakeholder Engagement
  – Communities
  – Clinicians
  – Patients
  – Researchers
  – Policy-makers
• Scalability

www.CDNnetwork.org
Building a Learning Healthcare System Requires
Designing Studies with these Principles:

- Analyzing, reviewing & providing feedback of EHR data to practices and clinicians at multiple levels:
  - patient
  - clinician
  - practice
- Disseminating and implementing research on evidence-based (EB)/effective interventions and best practices
- Linking routine workflow with EB-interventions
- Carrying this out within each clinical practice nested within multiple Healthcare Systems
- Aligning incentives

NYC-CDRN Key Collaborators

<table>
<thead>
<tr>
<th>Health Systems</th>
<th>PI: Rainu Kaushal, MD MPH</th>
</tr>
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<tbody>
<tr>
<td>- Clinical Directors Network (CDN)</td>
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| Co-PI: Jonathan N. Tobin, PhD   | Columbia University                |
| Co-PI: George Hripcsak, MD MS   |                                   |

Key Scientific/Technical Partners

- The Rockefeller University Hospital
- NY Genome Center (NYGC)
- Biomedical Research Alliance of NY (BRANY)
- HealthIX
- Bronx RHIO (BRIC)

Clinical Research Data

- Demographics
- Diagnoses
- Procedures
- Medications
- Test Results (Labs, Radiologic Scans)
- Health Insurance Claims
- Omics
- Patient-Reported Outcomes

PCORnet Organizational Structure
Successful PBRNs = Power of Connectivity
Implications for Clinical Care, Teaching, Research & Public Health

• Acceleration of study conduct and implementation of results
• Integration of all activities across the full translational research spectrum
• Development of high performing workforce, including
  • new types of clinician-investigators who spend most of their career seeing patients in practice-based settings
  • carrying out research in practice-based settings
  • engaging clinicians as investigators who design, conduct, analyze, disseminate and implement studies
• Real-time flow of data and information extracted from care settings used for population health planning and evaluation, as well as individual patient treatment
• Increasing patient engagement in decision-making and governance

Exploring the Use of Social Network Analysis to Measure Stakeholder Engagement: CAMP Team Connectivity

CDN eLearning

• CDN weekly listserv course announcements reaches 25,135 Clinicians, Clinical Researchers and Healthcare Policy-makers

  • As of February 2015:
    – 815 Webcasts
    – 640 Hours of CME/CDE
    – CECH/CESW Credits awarded
  – 30,110 Total Participants
    • 30,200 Live Participants
    • 9,910 Library Participants
Summary: Learning Healthcare Initiatives

Why Efforts are Working
- Strong Academic-PBRN Partnerships
- Strong Community-PBRN Partnerships
- Strong PBRN-PBRN Partnerships

Keys to Success
- Diverse topic offerings
- Protocol specific topic offerings
- Offer timely, relevant Continuing Education (CME, CNE, CDE, CECH, CESW)

Key Barriers
- Clinical demands/productivity → protected time
- Competing Priorities (JCAHO, PCMH, MU, ACO)
- ACA Uncertainties
- Lack of clear linkage between QI & Research

Summary: Participating in PBRNs and Learning Healthcare Initiatives

- Enhances
  - Retention and Recruitment
  - Professional Development
  - Training and Education
  - Role Diversification
  - Job Satisfaction

- Improves
  - Clinical Skills
  - Clinical Guidelines and Best Practices Adoption
  - Clinical Quality

- Decreases
  - Implementation Time
  - Stress & Burnout

Jonathan N. Tobin, Ph.D.
President/CEO
CLINICAL DIRECTORS NETWORK, INC. (CDN)
Co-Director for Community-Engaged Research & Adjunct Professor
Allen and Frances Adler Laboratory of Blood and Vascular Biology
Center for Clinical and Translational Science
THE ROCKEFELLER UNIVERSITY
Professor, Department of Epidemiology & Population Health
ALBERT EINSTEIN COLLEGE OF MEDICINE OF Yeshiva UNIVERSITY
Clinical Directors Network (CDN)
5 West 37th Street, 10th Floor
New York, NY 10018 USA
Tel: 212-382-0699 ext. 295
Fax: 212-382-9609
JNTobin@CDNetwork.org

www.CDNetwork.org
www.eClinician.org
2015 Community Engagement Symposium

Developing and Enhancing Collaborations for the
Translation of Research

Do you want to learn more about how research discoveries translate from basic science, to clinical practice, to public health benefits?

Are you interested in sharing your work with the community and developing collaborations for the improvement and translation of your research?

Are you interested in learning more about research being done at the UT Health Science Center at San Antonio and collaborating with researchers?

Join us on Saturday, May 2, 2015
9:00a.m. - 4:00p.m.
The University of Texas Health Science Center at San Antonio
Caturano Campus
1461 Floyd Curl Drive, Suite 1012

FREE

Continuing education credit provided
Free lunch provided
Free parking provided (pending availability)

CDN 117