Conducting Full-Spectrum Translational Research: Big Data Meets Embedded Mechanistic Studies

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The Rockefeller University Center for Clinical and Translational Science
Professor, Department of Epidemiology & Population Health
Albert Einstein College of Medicine/Montefiore Medical Center
Session Goals

1. Describe the RU-CDN Full-Spectrum Translational Research Team Science Model

2. Discuss CTSA-PBRN Engagement & Collaboration Process: Partnerships and Priorities

3. Illustrate the RU-CDN Full-Spectrum Translational Research Team Science Model with a case study of the “Bariatric Metabolic Outcomes Project” (BMOP)

4. Provide personal reflections on each of our experiences with this collaboration
BUILDING COMMUNITY-ACADEMIC TRANSLATIONAL RESEARCH PARTNERSHIPS

CDN/N² = PBRN INFRASTRUCTURE¹

- Quality Improvement
- Clinical Outcomes
- Comparative Effectiveness Research
  Patient Centered Outcomes Research (CER/PCOR)
- Training Clinician Investigators
- Implementation Science
- Disseminating Methods & Clinical Outcomes Results

ROCKEFELLER = CTSA INFRASTRUCTURE²

- Laboratory Investigation
- Mechanistic Questions
- Protocol Navigation
- Clinical Scholars
- Bioinformatics/Phenotyping
- Disseminating Translational Research Methods

CEnR Navigation Process (CEnR-Nav)²

[Investigators and partners may enter at any stage]

CEnR

CER/PCOR +
Embedded Mechanistic Studies

The Rockefeller University

• Unique structure
  • 82 heads of labs
  • 25 Nobel prizes, 22 Lasker Awards, 20 National Medals of Science
  • 100+ year tradition of translational research
  • 40 bed JCAHO-accredited research-only hospital
  • AAHRPP-accredited

• 250 protocols
  • 80% investigator - initiated
  • 20% phase I, II, III or device trials

• Center for Clinical Translational Science, 2006 -
  • Community Engaged Research Core
A Practice-based Research Network (PBRN) that works with Federally Qualified Health Centers (FQHCs) and other Primary Health Care Safety-net Practices

Research Infrastructure to build a Learning Healthcare System

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 Research and Service (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)
- One Florida

Funded by AHRQ Grant: P30 HS 021667
Principal Investigator: Jonathan N. Tobin, PhD (CDN)

www.CDNetwork.org
Bariatric Surgery for Obesity

Doctors at NYU Langone’s Weight Management Program and Weight Management Program at NYU Langone Hospital—Brooklyn may recommend bariatric, or weight loss, surgery for people with severe obesity—defined as having a body mass index (BMI) of 40 or greater—who are having trouble losing weight after trying other treatments for at least six months. Surgery may also be recommended for people who have a BMI of 35 to 39 and an obesity-related condition, such as type 2 diabetes, hypertension, coronary artery disease, severe osteoarthritis, or obstructive sleep apnea.

Formerly:
Sunset Park Family Health Center Network
and
Lutheran Medical Center
Key Attributes of the RU-CDN Translational Research Model

• Conducting rigorous practice-based comparative effectiveness/health outcomes research in collaboration with academic investigators, community-based clinicians and staff, patients, and other stakeholders

• Engaging FQHCs and Primary Care Clinicians as investigators

• Embedding basic science & mechanistic questions into clinical studies conducted in practice-based settings

https://ncats.nih.gov/translation/spectrum
The Deadly Trio

HEALTH 2014

Obesity

Diabetes

Hypertension

Source: CDC, 2016
The Process

- Team Meetings with NYU-Lutheran Family Health Center and Hospital primary care physicians, medical and surgical specialists, social workers, nutritionists, psychologists and IT experts serving bariatric patients

- Collaborated on the:
  - Bariatric Metabolic Outcomes Project (BMOP)
  - NYC-CDRN Obesity Pilot Project
  - PCORnet Bariatric Surgery (PBS) Project
How the collaboration began
Early glycemic effects of bariatric surgery in humans

Pories et al, 1995
Early glycemic effects of bariatric surgery in rodents

Early Findings after VSG

**Body Weight**

**Food Intake**

**Fasting blood glucose**

Emiliano et al, manuscript in preparation
**Gastric innervation and glucose homeostasis**

Glucose counterregulation:
sympathoadrenal response and increased hepatic glucose output

Fujita & Donovan, 2005; Kumukara, 2013; Taborsky, 2015

Image adapted from Clinicalgate.com, chapter by Kenneth Koch
Primary goal of starting community engagement project

• Goal was to test hypothesis that bariatric surgery led to a defect in glucose counter-regulation
• Identify bariatric patients in the community that would be eligible for a hypoglycemic clamp study at baseline and 6 months after the surgery
• Strategy of collaboration involved meeting with group at community health center to present our ideas and listen to their own ideas of what should be studied.
Interdisciplinary group, including gastroenterologists, surgeons, internists, family medicine practitioners, endocrinologists, nutritionists, psychologists, IT professionals

Lively discussion about obesity and its management

Discussions led to hypothesis generation on outcomes, as well project ideas involving:

- sleep apnea
- joint mobility early after surgery in rheumatoid arthritis
- body image after bariatric surgery
- diabetes
- renal function
- stress associated with voluntary food restriction/dieting
## Clinical Observations Proposed by NYU/Lutheran Bariatric Program Clinicians

<table>
<thead>
<tr>
<th>Medical Specialty</th>
<th>Variables of Interest (Hypotheses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary</td>
<td>Changes in continuous positive airway pressure (CPAP)?</td>
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<td>Hypoglycemia?</td>
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<tr>
<td>Mental Health</td>
<td>Depression and suicide?</td>
</tr>
</tbody>
</table>
The group hypothesized that patient baseline clinical and laboratory characteristics may accurately inform who will respond to bariatric surgery with significant and sustained metabolic improvement.
Inclusion Criteria

EHR data from November 2010 - to December 2014

One of the following procedures:

- RYGB - 43644
- VSG - 43775
- LAGB - 43770

Baseline evaluation:

- With pre-surgical (within 3 months prior to surgery) evaluation
- With at least two clinical evaluations post-surgery (within 6 months post surgery)
- Follow-up could be in Surgery, Primary Care, Cardiology, Endocrinology, Nephrology

Diagnosis:

- Obesity – 278.00
- T2DM – 250.00
Variables Extracted from EHRs

• **Demographics**: age, gender, ethnicity, insurance, zip code

• **Medical**: hypertension, diabetes, diabetes duration, dyslipidemia, OSA, use of CPAP, diagnosis of RA, depression

• **Clinical characteristics**: weight, BMI

• **Prescription drugs**: anti-hypertensives, anti-diabetics, statins, fibrates, niacin, weight loss, aspirin, steroids

• **Laboratory parameters**: hemoglobin A1C, fasting blood glucose, CBC, CMP, cholesterol, triglycerides, PHQ2/9
BMOP Results – proof of principle

Table 1. Clinical Characteristics of the Patients at Baseline

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>RYGB (n = 93)</th>
<th>VSG (n = 121)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics, Vitals, and Labs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>42.2 ± 10.5</td>
<td>38.9 ± 11.4</td>
<td>0.03</td>
</tr>
<tr>
<td>Female</td>
<td>83 (89.2%)</td>
<td>99 (81.8%)</td>
<td>0.13</td>
</tr>
<tr>
<td>Hispanic ethnicity</td>
<td>50 (53.8%)</td>
<td>57 (47.1%)</td>
<td>0.57</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>47.8 ± 6.6</td>
<td>48.4 ± 9.4</td>
<td>0.58</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>283.3 ± 54.1</td>
<td>293.8 ± 73.4</td>
<td>0.25</td>
</tr>
<tr>
<td>Systolic BP (mm Hg)</td>
<td>124.2 ± 15.5</td>
<td>124.1 ± 16.3</td>
<td>0.98</td>
</tr>
<tr>
<td>Diastolic BP (mm Hg)</td>
<td>77.4 ± 8.4</td>
<td>77.1 ± 8.5</td>
<td>0.80</td>
</tr>
<tr>
<td>Hemoglobin A1c (%)</td>
<td>8.0 ± 1.8</td>
<td>6.9 ± 0.8</td>
<td>0.04</td>
</tr>
<tr>
<td>Glucose</td>
<td>126.7 ± 34.4</td>
<td>111.5 ± 42.5</td>
<td>0.18</td>
</tr>
<tr>
<td>Comorbid Conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>17 (18.3%)</td>
<td>22 (18.2%)</td>
<td>0.99</td>
</tr>
<tr>
<td>Diabetes</td>
<td>34 (36.6%)</td>
<td>29 (24.0%)</td>
<td>0.05</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>29 (31.2%)</td>
<td>28 (23.1%)</td>
<td>0.19</td>
</tr>
<tr>
<td>Hypertension</td>
<td>46 (49.5%)</td>
<td>52 (43.0%)</td>
<td>0.35</td>
</tr>
<tr>
<td>Hypertriglyceridemia</td>
<td>3 (3.2%)</td>
<td>3 (2.5%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Sleep apnea</td>
<td>51 (54.8%)</td>
<td>73 (60.3%)</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Data are presented as mean ± SD for continuous variables or n and percentage for categorical variables. Abbreviations: RYGB, Roux-en-Y gastric bypass; VSG, vertical sleeve gastrectomy; BMI, body mass index; BP, blood pressure.
BMOP Results – proof of principle

Diabetes x Surgery x Time: p=0.006

Diabetes: p = 0.69
Time: p < 0.0001
Diabetes x Time: p = 0.35
Time²: p < 0.0001

Diabetes x Surgery x Time: p=0.005

Diabetes: p = 0.65
Time: p < 0.0001
Diabetes x Time: p = 0.42
Time²: p < 0.0001

Diabetes
(34 RYGB, 29 VSG)
Non-diabetes
(59 RYGB, 92 VSG)
BMOP Results – proof of principle

A

Surgery: p = 0.03  
Time: p < 0.0001  
Surgery x Time: p = 0.03  
Time²: p = 0.001

Hemoglobin A1c

0 2 4 6 8 10 12

Months from surgery

B

Surgery: p = 0.14  
Time: p < 0.0001  
Surgery x Time: p = 0.11  
Time²: p < 0.0001

Glucose

0 2 4 6 8 10 12

Months from surgery

RYGB (13 HbA1c, 22 Glucose)  
VSG (16 HbA1c, 28 Glucose)
Bariatric Metabolic Outcomes Project Dissemination: Live CME at NYU Lutheran & Webinar

**Speaker:**
Ana B. Emiliano, MD MS
Instructor in Clinical Investigation
The Rockefeller University

**Moderator:**
Rabih Nemr, MD FACS
Department of Surgery
Associate Program Director
Surgery Program
NYU Lutheran

*May 24, 2017 – 5PM-6PM*

[CDNetwork.org](https://www.CDNetwork.org/library/metabolic-outcomes-of-bariatric-surgery)
**Human Results** (CDN/NYU Lutheran EHR)

RYGB: $r = 0.04$, $p = 0.83$

VSG: $r = 0.21$, $p = 0.35$

Interaction $p = 0.45$

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**Mouse Model Results**

Correlation between blood glucose on the first post-operative day after sleeve gastrectomy in DIO mice and the 120 minute-time point of the OGTT on post-operative day 35. Correlation 72%, $p=0.06$. 

Emiliano et al, manuscript in preparation
VERTICAL SLEEVE GASTRECTOMY

RESECTED PART OF THE STOMACH

CELIAC GANGLIA DYSFUNCTION/DEGENERATION

HEPATIC SYMPATHETIC DENERVATION
DECREASED HEPATIC GLUCOSE PRODUCTION

Emiliano et al, manuscript in preparation
Integrative Translational Science

CELiac ganglia activation after 2-DG injection

CELiac ganglia after 2-DG injection

Emiliano et al, manuscript in preparation
Hepatic tyrosine hydroxylase-labeled fibers

LIVER NOREPINEPHRINE CONTENT

Norepinephrine content by HPLC 30 days after VSG

Emiliano et al, manuscript in preparation

SH vs. SPF: p=0.75
SH vs. VSG: p=0.0002
SPF vs. VSG: p=0.0005
Collaboration outcomes

• It was not possible to directly test my initial hypothesis and perform hypoglycemic clamp before and after bariatric surgery – not financially feasible

• BMOP EHR analysis results validated our approach in the sense that what we found replicated the literature on bariatric surgery outcomes

• Very early glycemic outcomes as predictor of long term glycemic outcomes provides a potential mechanistic link between our laboratory finding and improved glucose homeostasis after bariatric surgery
Surgical Treatment of Obesity: Bariatric Surgery

- **Gastric restriction**: volume, stoma size
- **Diversion**: by-pass (exclusion), interposition
- **Resection**: sleeve or hemi-gastrectomy

Combinations of above
Most Common Types of Bariatric Surgery in the US

1. VSG
2. RYGB
3. AGB

>80%
PCORNNet - NYC-CDRN (PCORI Grant #CDRN-1306-03961)
(PI: Rainu Kaushal, MD MPH, Co-PI: Jonathan N. Tobin, PhD)
Goals:

1) Learn more about how different factors and experiences come together for people managing weight issues. The project is made up of two components:

   • A 10 minute, 25 question survey about managing weight issues and/or undergoing bariatric surgery

   • After survey responses have been collected, survey answers are linked to information in patient medical records/EHRs

2) Develop and test methodologies to:

   • Build a secure, HIPAA-compliant process to combine medical records across multiple NYC institutions and other data sources (eg, health plans) in a way that protects patient privacy

   • Integrate individual level data from EHRs with Patient Reported Outcomes collected via surveys
<table>
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<tr>
<th>Medical Specialty</th>
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<th>PCORnet Patient Powered Research Network (PPRN) Partner</th>
<th>Patient Centered Outcomes (PCO) Measure</th>
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<td>Sleep Apnea Patient Centered Outcomes Network (SAPCON)</td>
<td>STOP-Bang questionnaire</td>
</tr>
<tr>
<td>Rheumatology</td>
<td>Improvement in joint symptoms ?</td>
<td>ARthritis Patient Partnership with Comparative Effectiveness Researchers (AR-PoWER PPRN)</td>
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<td>Depression and suicide?</td>
<td>Mood Patient-Powered Research Network (MoodNetwork)</td>
<td>Patient Health Questionnaire (PHQ) 9</td>
</tr>
</tbody>
</table>
HARNESSING THE POWER OF HEALTHCARE DATA NATIONALLY

- Large diverse population
- Geographic co-location in a fragmented healthcare market
- Centralized structure
- Largest concentration of AMCs
PCORnet Bariatric Study

- National PI: David Arterburn, MD
- NYC-CDRN co-PIs: Ana Emiliano, MD and Rabih Nemr, MD

BMI = body mass index; CDRN = Clinical Data Research Network; PCORnet = National Patient-Centered Clinical Research Network.
* Patients could be excluded for >1 reason.
Annals of Internal Medicine

Comparative Effectiveness and Safety of Bariatric Procedures for Weight Loss
A PCORnet Cohort Study

David Arterburn, MD, MPH; Robert Wellman, MS; Ana Emiliano, MD; Steven R. Smith, MD; Andrew O. Odegaard, PhD, MPH; Sameer Murali, MD; Neely Williams, MDiv; Karen J. Coleman, PhD; Anita Courcoulas, MD, MPH; R. Yates Coley, PhD; Jane Anau, BS; Roy Pardee, JD, MA; Sengwoo Toh, ScD; Cheri Janning, RN, BSN, MS; Andrea Cook, PhD; Jessica Sturtevant, MS; Casie Horgan, MPH; and Kathleen M. McTigue, MD, MPH, MS; for the PCORnet Bariatric Study Collaborative.*

Background: There has been a dramatic shift in use of bariatric procedures, but little is known about their long-term comparative effectiveness.

Objective: To compare weight loss and safety among bariatric procedures.

Design: Retrospective observational cohort study, January 2005 to September 2015. (ClinicalTrials.gov: NCT02741674)

Setting: 41 health systems in the National Patient-Centered Clinical Research Network.

Participants: 65,093 patients aged 20 to 79 years with body mass index (BMI) of 35 kg/m² or greater who had bariatric procedures.

Intervention: 32,208 Roux-en-Y gastric bypass (RYGB), 29,693 sleeve gastrectomy (SG), and 3,192 adjustable gastric banding (AGB) procedures.

Measurements: Estimated percent total weight loss (TWL) at 1, 3, and 5 years; 30-day rates of major adverse events.

Results: Total numbers of eligible patients with weight measures at 1, 3, and 5 years were 44,978 (84%), 20,783 (68%), and 7159 (69%), respectively. Thirty-day rates of major adverse events were 5.0% for RYGB, 2.6% for SG, and 2.9% for AGB. One-year mean TWLs were 31.2% (95% CI, 31.1% to 31.3%) for RYGB, 25.2% (CI, 25.1% to 25.4%) for SG, and 13.7% (CI, 13.3% to 14.0%) for AGB. At 1 year, RYGB patients lost 5.9 (CI, 5.8 to 6.1) percentage points more weight than SG patients and 17.7 (CI, 17.3 to 18.1) percentage points more than AGB patients, and SG patients lost 12.0 (CI, 11.6 to 12.5) percentage points more than AGB patients. Five-year mean TWLs were 25.5% (CI, 25.1% to 25.9%) for RYGB, 18.8% (CI, 18.0% to 19.6%) for SG, and 11.7% (CI, 10.2% to 13.1%) for AGB. Patients with diabetes, those with BMI less than 50 kg/m², those aged 65 years or older, African American patients, and Hispanic patients lost less weight than patients without those characteristics.

Limitation: Potential unobserved confounding due to nonrandomized design; electronic health record databases had missing outcome data.

Conclusion: Adults lost more weight with RYGB than with SG or AGB at 1, 3, and 5 years; however, RYGB had the highest 30-day rate of major adverse events. Small subgroup differences in weight loss outcomes were observed.

Primary Funding Source: Patient-Centered Outcomes Research Institute.

*For key investigators and stakeholders in the PCORnet Bariatric Study Collaborative, see the Appendix (available at Annals.org).

Comparative effectiveness of bariatric procedures among adolescents: the PCORnet bariatric study

Thomas H. Inge a,b,*, R. Yates Coley c, Lydia A. Bazzano d, Stavra A. Xanthakos e, Kathleen McTigue f, David Arterburn g, Neely Williams h, Rob Wellman i, Karen J. Coleman j, Anita Courcoulas k, Nirav K. Desai l, Jane Anau m, Roy Pardee c, Sengwee Toh n, Cheri Janning o, Andrea Cook p, Jessica Sturtevant q, Casie Horgan r, Ava J. Zebrock s, Marc Michalsky t, for the PCORnet Bariatric Study Collaborative

a Department of Surgery, University of Colorado, Denver, Aurora, Colorado
b Children’s Hospital of Colorado, Aurora, Colorado
c Kaiser Permanente Washington Health Research Institute, Seattle, Washington
d Department of Epidemiology, Tulane University School of Public Health, New Orleans, Louisiana
e Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio
f Departments of Medicine and Epidemiology, University of Pittsburgh, Pittsburgh, Pennsylvania
g Community Partners’ Network, Nashville, Tennessee
h Department of Research and Evaluation, Kaiser Permanente Southern California, Pasadena, California
i Department of Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania
j Division of Pediatric Gastroenterology, Hepatology, and Nutrition, Boston Children’s Hospital, Boston, MA, Boston, Massachusetts
k Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, Massachusetts
l Duke Clinical and Translational Science Institute, Durham, North Carolina
m REACHNet (a PCORnet CDRN), New Orleans, Louisiana
n Department of Pediatric Surgery, Nationwide Children’s Hospital, Columbus, Ohio

Received 8 January 2018; received in revised form 28 March 2018; accepted 5 April 2018
Combining distributed regression and propensity scores: a doubly privacy-protecting analytic method for multicenter research

Purpose: Sharing of detailed individual-level data continues to pose challenges in multicenter studies. This issue can be addressed in part by using analytic methods that require only summary-level information to perform the desired multivariable-adjusted analysis. We examined the feasibility and empirical validity of 1) conducting multivariable-adjusted distributed linear regression and 2) combining distributed linear regression with propensity scores, in a large distributed data network.

Patients and methods: We compared percent total weight loss 1-year postsurgery between Roux-en-Y gastric bypass and sleeve gastrectomy procedure among 43,110 patients from 36 health systems in the National Patient-Centered Clinical Research Network. We adjusted for baseline demographic and clinical variables as individual covariates, deciles of propensity scores, or both, in three separate outcome regression models. We used distributed linear regression, a method that requires only summary-level information (specifically, sums of squares and cross products matrix) from sites, to fit the three ordinary least squares linear regression models. A comparison set of analyses that used pooled deidentified individual-level data from sites served as the reference.

Results: Distributed linear regression produced results identical to those of the corresponding pooled individual-level data analysis for all variables in all three models. The maximum numerical difference in the parameter estimate or standard error for all the variables was 3×10^{-10} across three models.

Conclusion: Distributed linear regression analysis is a feasible and valid analytic method in multicenter studies for one-time continuous outcomes. Combining distributed regression with propensity scores via modeling offers more privacy protection and analytic flexibility.

Keywords: distributed regression, propensity score, distributed data networks, privacy-protecting methods

Observational Comparative Effectiveness Methodological Study
PCORnet Bariatric Study Results that will influence my practice

Significantly lower weight loss observed in:

- Patients with diabetes
- Individuals with BMI less than 50 kg/m²
- Patients aged 65 years or older
- African American patients
- Hispanic patients

Arterburn et al, *Annals of Internal Medicine* 2018
Conclusions

- Engaged community-based clinicians with basic science, translational and health services researchers

- Generated hypotheses from practice-based observations

- Collaborated in local pilot studies to develop and refine methods to extract and combine EHR data with patient-reported outcomes

- Participated in national observational comparative effectiveness studies of bariatric surgical outcomes for adults and adolescents and developed and validated a novel methodology to enhance patient privacy and data security when conducting distributed, multivariable regression analyses
Rather than being polar ends of the translational spectrum, T0 mechanistic research and T3-T4 community/patient-oriented research are powerful synergistic partners.
Stakeholders in Community Engaged Research

- Basic Scientist
- Scientific Collaborator
- Patient/Community Member
- Clinician

Shared interest
### Who Was at the Meeting

<table>
<thead>
<tr>
<th>FQHC</th>
<th>CDN (PBRN) / RU (CTSA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Principal Investigator (Bariatric Surgery)</td>
<td>Clinical Epidemiologist</td>
</tr>
<tr>
<td>Primary Care/Family medicine</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>The Rockefeller University Clinical and Translational Science Award Program (CTSA)</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>Clinical Scholar – Physician/Scientist</td>
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<tr>
<td>Gastroenterology</td>
<td>Biostatistics</td>
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<tr>
<td>Mental Health Specialist</td>
<td>Bioinformatics</td>
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<tr>
<td>Nutritionist/Dietitian</td>
<td>Pilot Grant Mechanism</td>
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<tr>
<td>Information and Statistician</td>
<td>CEnR/Protocol Navigation</td>
</tr>
</tbody>
</table>
Stakeholders in Community Engaged Research

- Basic Scientist
- Scientific Collaborator
- Patient/Community Member
- Clinician

Shared interest

- Mouse vs Human?
- How to extract meaning from Big Data?
- Which procedure is best for me?
- Which patient/which procedure? What explains my clinical observations?
Community-Engaged Research Navigation

Optimal Entry

Dissemination → Building Collaborations

Building Collaborations → Developing Proposals/concepts

Developing Proposals/concepts → Protocol Navigation

Protocol Navigation → Starting up a Study

Starting up a Study → Conducting Protocol

Conducting Protocol → Dissemination

Kost RG, et. al. Acad Med 2017
# Outcomes: Something for everyone

Adapted from Kost RG, et. al. Helping Basic Scientists Engage  *Acad Med* 2017

<table>
<thead>
<tr>
<th>Career Stage</th>
<th>Time invested</th>
<th>Protocol Aims, mapped to Translational Continuum</th>
<th>Measure of partnership</th>
<th>External Funding</th>
<th>Publication</th>
<th>Health Impact</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>T0 T1 T2 T3 T4</td>
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## Outcomes: Something for everyone

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</thead>
<tbody>
<tr>
<td>Early career</td>
<td>Extended</td>
<td>T0 T1 T2 T3 T4</td>
<td>Time, leadership, co-authorship, dissemination</td>
<td>Clinical scholar Pilot K award</td>
<td>Co-author, Annals Int Med</td>
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<tr>
<td>Clinicians</td>
<td>Extended</td>
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<td>Time, leadership, co-authorship, dissemination</td>
<td>Co-authors Annals Int Med</td>
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<td>Evidence based practices</td>
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<td>Patients</td>
<td>Limited &amp; in silico</td>
<td>T0 T1 T2 T3 T4</td>
<td>PCOs, surveys, EHR data</td>
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<td>Evidence based Rx</td>
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<tr>
<td>Collaborators</td>
<td>Extended</td>
<td></td>
<td>Time, Analysis, Dissemination</td>
<td>PCORI</td>
<td>Co-authors Annals Int med</td>
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<tr>
<td>PBRN &amp; CTSA Navigators</td>
<td>Extended</td>
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<td>Time, leadership, co-authorship, grant-writing</td>
<td>CCTS AHRQ PCORI</td>
<td>Co-author, methodology</td>
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</table>
• The Rockefeller University Clinical and Translational Science Award Program (CTSA) (NIH-NCATS Grant #UL1-TR-000043) (PI: Barry S. Coller, MD)

• CDN Center of Excellence (P30) for Practice-based Research and Learning “N²: Building a Network of Safety Net PBRNs” (AHRQ Grant #1 P30-HS-021667) (PI: Jonathan N. Tobin, PhD)

• PCORNet - NYC-CDRN (PCORI Grant #CDRN-1306-03961) (PI: Rainu Kaushal, MD MPH, Co-PI: Jonathan N. Tobin, PhD)

• The PCORnet Bariatric Study - Comparing the Benefits and Harms of Three Types of Weight Loss Surgery (PCORI/OBS-1505-30683) (PI: David Arterburn, MD, MPH – NYC-CDRN Co-PIs: Ana Emiliano MD MSC, Rabih Nemr MD FACS)
Reflections on the Collaboration
Discussion

Questions & Answers