

CTSA Evaluation

**CTSA Consortium Steering Committee
October 9, 2009**

Harold Pincus (Columbia)
Chair
Evaluation Key Function Committee

Evaluation “Buckets”

1. Management Support
 - surveillance, tracking, process management
 - avoiding ascertainment bias
2. Quality Improvement
 - CTSA and Key Function levels
3. Grant Renewal
 - quantitative
 - qualitative/”stories of transformation and improvement”
4. “Transformation”
5. “Intrinsic” Evaluation Research
 - e.g. PBRN workflow analysis, ethics, CBPR, SNA
6. National Evaluation

Evaluation Context

- Complex inter/intra organizational environment
- Multiple stakeholders with high expectations/demands
- Resource allocation challenges
- Unrealistic timeframes
- “Flying blind”
- A pragmatic approach
- **Who** wants (needs) to learn (know) **what** in order to answer **which** critical management questions?
- Need quantitative and qualitative data (what and why)

Sample Evaluation Questions

- What do our customers need?
- Are we (overall/key function) achieving our goals/milestones?
- Which strategies are most effective/cost-effective?
- To what extent are we achieving brand penetration?
- Are the data to answer these questions valid?
- Are we expanding interdisciplinary collaborations?
- How productive are CTSA participants (i.e. pubs, grants)?
- Are we translating discoveries into improved health status?
- What information will help me advocate for X with stakeholder Y?
- Are we meeting expectations of Congress/society?

Evaluation Key Function Committee

Chair: Harold Pincus

NIH Coordinators:
Lori Mulligan/Meryl Sufian

PI Liaisons:
R. Rizza/G. Fitzgerald

Project Manager:
Huda Aden, BAH

Definitions & Measurement

Chair: Don Yarborough,
U of Iowa

Social Network Analysis

Chair: Noshir Contractor,
Northwestern

Shared Resources

Chair: Cath Kane,
Cornell

IRB Issues in Evaluation

Chair: Paul Moberg,
U Wisconsin

Definitions and Measurement

- Compiling definitions in current use
- Reviewing/developing options/menu
 - translational
 - the “disciplinarity” (inter, multi, trans, non, etc.)
 - collaboration
 - community engagement

Social Network Analysis

- Sharing methods/examples
- SNA Academy in 2009
- Community Engagement SNA workshop in 2010
- Link with communications

CTSA Evaluation Key Function Committee Social Network Analysis Interest Group

Noshir Contractor, Ph.D., Chair, Northwestern University Clinical and Translational Sciences Institute
Julie Rainwater, PhD, Chair 2006-2009, UC Davis Clinical and Translational Science Center

The CTSA Social Network Analysis (SNA) Interest Group explores SNA as a tool to enable and assess communication and collaboration across CTSA sites. SNA can visual-analytically depict the perceived strength of relationships among individuals and groups, identifying strong and weak connections among them. SNA can show changes over time in relationships, which can demonstrate how the CTSA program is affecting the way individuals or groups are working with each other.

Currently characterizing networks of:

- Key function communications
- Pilot grantees
- Investigator publications
- Mentors and mentees
- Community partners

Supporting CTSA Strategic Goals



CTSA Strategic Goal 3: Enhancing Consortium-Wide Collaborations

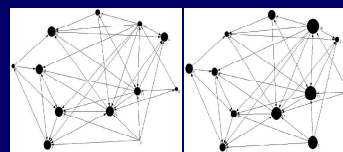
Research Networking -The CTSA consortium facilitates researcher networking across national institutions and across topic domains, creating a virtual community where collaborations across institutions can arise easily, where expertise is mapped and can be located easily, and where matchmaking between collaborators or others can expand beyond an institution's walls as desired.

Expertise from the CTSA SNA Interest Group is a key resource for advancing Strategic Goal 3. The tools and techniques of Social Network Analysis are being used to facilitate innovations in research networking at individual CTSAs and the consortium.

Acknowledgements: Thank you to Stephen Lurie, Noshir Contractor, Yun Huang, and Annie Wang for providing network graphics. This poster was prepared by Christine Hotz and Julie Rainwater, UC Davis, Clinical and Translational Science Center, and was made possible by Grant Number UL1 RR024146 from the National Center for Research Resources. Its contents are solely the responsibility of the authors and do not necessarily represent the official view of NCRR or NIH.

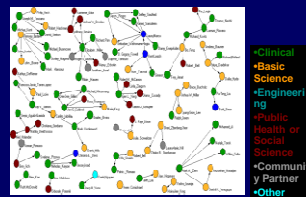
Example Networks

1. Communication Networks

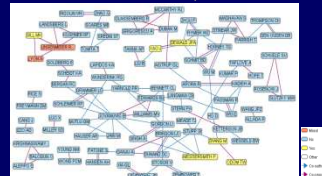


Credit: "Social Network Analysis as a Method of Assessing Institutional Culture: Three Case Studies", Stephen J. Lurie, MD, PhD, Thomas T. Fogg, MS, and Ann M. Dozier, RN, PhD, Acad Med, 2009 Aug;84 (8): 1023-25.

2. Grantee Connections

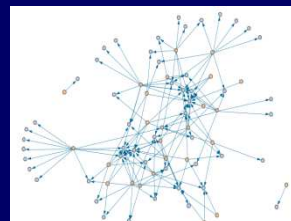


Credit: "Emerging Multi-Disciplinary Research - Collaborations among Clinical and Translational Scientists", Christine Hotz, DVM, MS, Julie Rainwater, PhD, Jose Galvez, MD. Paper presented at the International Sunbelt Social Network Conference, 2009. Research



Credit: Courtesy of Science of Networks in Communities (SONIC) Lab at Northwestern University in collaboration with Northwestern University Clinical and Translational Sciences Institute (NUCATS)

3. Publication Networks



Credit: Courtesy of Science of Networks in Communities (SONIC) Lab at Northwestern University in collaboration with Well Cornell CTSC.

Relationships between Key Function Directors at an Institution-wide CTSC
Both figures represent the self-reported levels of understanding of key function directors about one another's key functions. The size of the nodes in Figure 1 reflects the degree to which other key function directors report a high level of understanding about that function within the CTSC (incoming arrows). In Figure 2, the size of the nodes are proportional to the degree to which directors of the respective key functions report that they understand the roles of the other key functions (outgoing arrows).

Emerging Multi-Disciplinary Research - Collaborations among Clinical and Translational Scientists

This graph represents the multidisciplinary collaboration network of investigators receiving pilot grant funding from the UC Davis CTSC, 2006-2009, coded by discipline. Although the largest percentage of awardees (46%) were clinical scientists, basic scientists (26%) and social / public health scientists (18%) were also well represented.

Co-authorship and Co-proposal Networks

This graph shows the co-authorship (blue line) and co-proposal (magenta line) networks among the applicants for Northwestern University Clinical and Translational Sciences Institute (NUCATS) grants. The colors of the nodes depict the funding outcome of the proposal. Nodes in which the funding status is "mixed" indicates that the applicant was involved in more than one proposal and at least one, but not others, received funding.

Cornell CTSC Pilot Award PIs and their Publication Subject Categories

The SNA Interest Group shares examples of how SNA can be used to better understand the strength and magnitude of collaborations. This example shows Well Cornell CTSC PIs (brown) and their publication subject categories (blue).

Past Training

CTSA Clinical & Translational Science Awards
Using Social Network Analysis to Evaluate Translational Collaboration

SOCIAL NETWORK ANALYSIS TRAINING WORKSHOP

Thursday, February 26, 2010 8:00am - 5:00pm
Friday, February 27, 2010 8:00am - 5:00pm
UC Davis School of Medicine
Medical Education Building
1001 Shields Avenue, Davis, CA 95616

Presenting Session: Wednesday, February 25, 2010
8:00am - 12:00pm
CTSA Social Network Analysis Training Workshop
Christine Hotz, DVM, MS, Julie Rainwater, PhD, Jose Galvez, MD, Stephen Lurie, MD, PhD, Thomas T. Fogg, MS, Ann M. Dozier, RN, PhD, Acad Med, 2009 Aug;84 (8): 1023-25.

Social Network Analysis Summer Institute
A Workshop of the UC Davis Clinical and Translational Science Center

UC Davis School of Medicine
Medical Education Building
1001 Shields Avenue, Davis, CA 95616

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Upcoming Training

CTSA Clinical & Translational Science Awards
Community Engagement and Social Network Analysis Workshop

Coming in Spring 2010

UC Davis Clinical and Translational Science Center
Sacramento, CA

Objectives

- To enhance cross-CTSA collaboration on developing a network of knowledge and research translational scientists
- To explore and understand the role of social network analysis for analyzing CTSA impact on community engagement research
- To learn methods to determine the most promising PhD trainees and develop an agenda to develop shared centers for analyzing CTSA and community-engagement research

Format

Day One: Experts at UC Davis will also be members of that CTSA's organization that will present attendees in methods to use SNA to enhance CTSA strategic goals.

Day Two: CTSA trainees will deliver presentations relevant to their research and discuss their own research.

For additional information contact Julie Rainwater jrrainwater@ucdavis.edu or Christine Hotz chotz@ucdavis.edu

* Funding for CTSA SNA training Workshops provided by NCRR Administrative Supplement Awards



Social Network Analysis of Interdisciplinarity in Obesity Research

Michel E. Bales, PhD, MPH, Stephen B. Johnson, PhD, Chunhua Weng, PhD, Harold A. Pincus, MD
Department of Biomedical Informatics and Department of Psychiatry, Columbia University, New York, NY

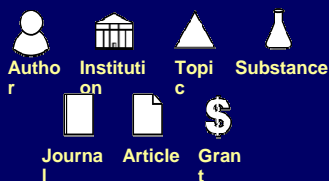


INTERDISCIPLINARY RESEARCH LEADS TO INNOVATION. How do we improve interdepartmental collaboration?

We developed a fully automated program that generates a network visualization from a PubMed¹ query.

1. What are the components of a scientific network?

NODES in network



LINKS from articles retrieved in PubMed search.

SIZE reflects degree (number of links per node).

PROXIMITY determined by network structure. Linked groups of nodes are closer to one another.

COLOR: levels of red, green, and blue drawn from node position in X, Y, Z space.

The arrangement of the elements depends on how things are connected.

If the elements appear in the same Medline record in the search results, they are linked and appear closer together

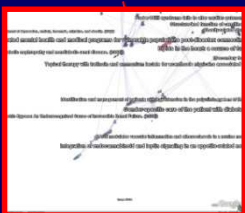
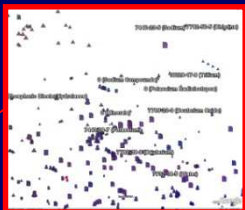
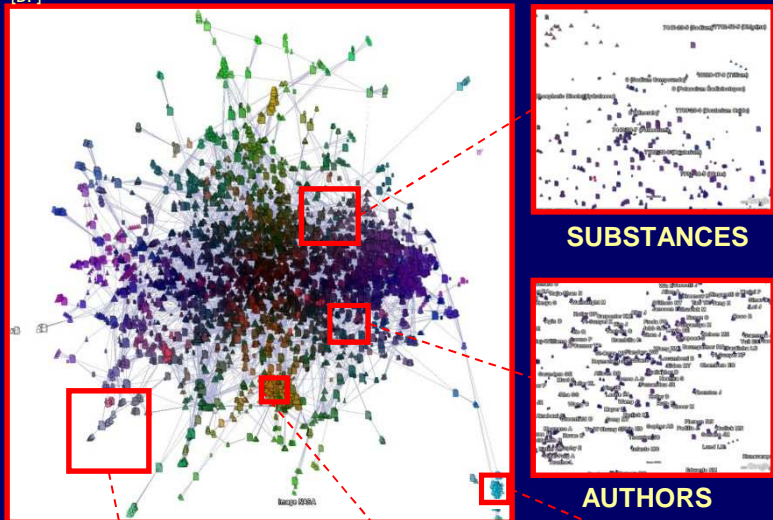
If there are no links between two elements, they are not drawn close and are not connected by a line.

In this way we are spatially showing connections between the entities in the network.

2. What are the highly collaborative subgroups?

OBEISITY RESEARCH NETWORK at our university

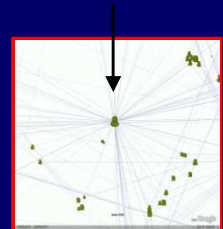
PubMed query: obesity AND ("columbia presbyterian" [AD] OR mailman [AD] OR "columbia university" [AD] OR "new york presbyterian" [AD] OR "newyork presbyterian"[AD]) AND 1999:2008 [DP]



3. Who are the brokers (bridges) between groups?

This highly collaborative co-director of an obesity research center is a key link between research groups.

Directors of labs and centers, acting as gatekeepers, were among the most collaborative. More can be done to encourage trainees and junior faculty to collaborate across traditional boundaries.



4. How can network analysis be used to implement and evaluate the results of scientific initiatives?

- Incentivize and support areas that are already highly collaborative
- Identify potentially important hubs of collaborative research that need to be provided with additional resources
- Intervene in areas where collaboration is lacking

Use this information to obtain a baseline of collaboration and then measure progress

- Structure measures: Do collaborations exist?
- Process measures: What is the extent of the collaboration?
- Outcome measures: Are there products of research that have had an impact on the field, e.g. grants, journal articles, and citations?

Network analysis helps us understand both MAJOR ENTITIES and PATTERNS in scientific communities

¹T15LM07079 and National Center for Research Resources grant UL1 RR024156. Contact: Michael Bales, meb2108@columbia.edu.
²National Library of Medicine (US). MEDLINE. Bethesda, MD, USA: National Institutes of Health, Bethesda, MD, USA; 2009.

Shared Resources

- Repository of evaluation tools, surveys, best practices
 - Improving Wiki value and functionality via consultation with librarian to create taxonomies and organizing principles
- Compiling info on pilot programs
- Survey of institutional evaluation activities, methods, needs
- New bibliometrics work group proposed

IRB Issues in Evaluation

- Variability of IRB responses
- Collaboration with SGC1/CRI/CR Ethics
- Developing educational materials/tools
- Will sunset when done

Examples: SGC and KFC Liaison Efforts

- Liaison system with virtually all SGCs and KFCs
- **SGC 1**
 - Analyzing protocol data
- **SGC 2/Education KFC**
 - Form an evaluation education group of SGC2
 - Address expanded education evaluation component in competitive renewal
- **SGC 4/Community Engagement KFC**
 - Conducted CER needs assessment
 - Developing evaluation section in *Principles of Community Engagement* revision
- **Communications KFC**
 - Collaborate on evaluation of Consortium communication products

October 2009 Meeting Objectives

- Exchange institutional challenges, approaches and best practices
 - An Overview of Independent National Evaluators Survey – Breakout Session
 - Evaluating Education and Career Development – Breakout Session
- Discuss ways to measure process improvement in clinical research management
- Explore possibilities of Social Network Analysis in the CTSA context
- Share tools, techniques and methods
- Consider evaluation roles in advancing strategic goals and Consortium activities (e.g., multiple liaisons across SGCs and KFCs)
- Provide input to national process evaluation
- Increase awareness of evaluation
 - Overlap with CTSA PIs and Administrators and SGC4 members