

4-2-2015

Filling the Gaps in Data and Methods for Public Health Services and Systems Research (PHSSR)

Erin Holve

AcademyHealth, erin.holve@academyhealth.org

Glen Mays

University of Kentucky, glen.mays@uky.edu

Follow this and additional works at: <http://repository.edm-forum.org/egems>

Recommended Citation

Holve, Erin and Mays, Glen (2014) "Filling the Gaps in Data and Methods for Public Health Services and Systems Research (PHSSR)," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4, Article 1.

DOI: <http://dx.doi.org/10.13063/2327-9214.1178>

Available at: <http://repository.edm-forum.org/egems/vol2/iss4/1>

This Learning Health System Commentary/Editorial is brought to you for free and open access by the the Publish at EDM Forum Community. It has been peer-reviewed and accepted for publication in eGEMs (Generating Evidence & Methods to improve patient outcomes).

The Electronic Data Methods (EDM) Forum is supported by the Agency for Healthcare Research and Quality (AHRQ), Grant 1U18HS022789-01. eGEMs publications do not reflect the official views of AHRQ or the United States Department of Health and Human Services.

Filling the Gaps in Data and Methods for Public Health Services and Systems Research (PHSSR)

Abstract

Introduction: The goal of aligning the delivery of public health and medical care services so as to achieve population-wide improvements in health status is not new. Yet the urgency to achieve greater alignment has increased as the prevalence of costly and preventable diseases and injuries grows, and as incentives for health care system redesign take hold through Affordable Care Act implementation. The science of public health services and systems research (PHSSR) can leverage this opportunity for change by bringing data together from public health and health care systems to support a holistic and integrated learning health system that maximizes the value of new data streams.

Issue Overview: This joint issue of *eGEMs* and *Frontiers in PHSSR* displays the viewpoints of diverse authors to enhance the types and sources of data that are available to understand and improve population health, and to integrate these data where possible. Four primary themes emerge from the papers: (1) the vision and strategy needed to support the role of data and methods in advancing population health in the United States; (2) the need to improve the infrastructure required to understand public health financing and organization; (3) the importance of making early, meaningful use of health information technology (IT) to achieve these goals; and (4) the need for new approaches and partners to improve measurement strategies and assess population health.

Next Steps and Considerations for the Field: *eGEMs* and *Frontiers in PHSSR* hope that, over time, this literature will continue to grow, identifying opportunities for multidisciplinary teams to work with communities and address common priorities that fill in existing information gaps such as those identified in the special issue.

Acknowledgements

We would like to thank the contributions of all of the authors and reviewers of this joint issue. We would also like to thank Kate Papa, Remle Newton-Dame, and Mike Noshay for their input and guidance on this editorial.

Keywords

public health, PHSSR

Creative Commons License



This work is licensed under a [Creative Commons Attribution-NonCommercial-No Derivative Works 3.0 License](https://creativecommons.org/licenses/by-nc-nd/3.0/).



Filling the Gaps in Data and Methods for Public Health Services and Systems Research (PHSSR)

Erin Holve, PhD, MPH, MPP;ⁱ Glen Mays, PhD, MPHⁱⁱ

Abstract

Introduction: The goal of aligning the delivery of public health and medical care services so as to achieve population-wide improvements in health status is not new. Yet the urgency to achieve greater alignment has increased as the prevalence of costly and preventable diseases and injuries grows, and as incentives for health care system redesign take hold through Affordable Care Act implementation. The science of public health services and systems research (PHSSR) can leverage this opportunity for change by bringing data together from public health and health care systems to support a holistic and integrated learning health system that maximizes the value of new data streams.

Issue Overview: This joint issue of *eGEMs* and *Frontiers in PHSSR* displays the viewpoints of diverse authors to enhance the types and sources of data that are available to understand and improve population health, and to integrate these data where possible. Four primary themes emerge from the papers: (1) the vision and strategy needed to support the role of data and methods in advancing population health in the United States; (2) the need to improve the infrastructure required to understand public health financing and organization; (3) the importance of making early, meaningful use of health information technology (IT) to achieve these goals; and (4) the need for new approaches and partners to improve measurement strategies and assess population health.

Next Steps and Considerations for the Field: *eGEMs* and *Frontiers in PHSSR* hope that, over time, this literature will continue to grow, identifying opportunities for multidisciplinary teams to work with communities and address common priorities that fill in existing information gaps such as those identified in the special issue.

Introduction

The goal of aligning the delivery of public health and medical care services in order to achieve population-wide improvements in health status is not new. Yet the urgency to achieve greater alignment has increased as the prevalence of costly and preventable diseases and injuries grows, and as incentives for health care system redesign take hold through Affordable Care Act implementation. Concurrently, access to electronic health-related data from an expanding array of sources—including electronic health records (EHRs), social media communications, mobile health technologies, consumer and commercial electronic transactions, and satellite imagery—creates new opportunities for big data to inform and improve population health. To realize these opportunities the research community must learn to use these data resources in ways that produce new insights about better ways to deliver public health and medical care services. Similarly, public

health and medical professionals must learn to use these data and their associated research findings to support improved clinical, administrative, and policy decisions. The science of public health services and systems research (PHSSR), which uncovers strategies for improving the effectiveness and efficiency of public health services, is poised to maximize the opportunities created by this unique “policy window.” New opportunities are being created to bring together data from public health and health care systems and support a holistic and integrated learning health system. Maximizing the value of new data streams – including the opportunities created by mHealth as a result of platforms such as Apple’s Research Kit - will require careful attention to identify promising efforts and respond to current gaps in knowledge. Ultimately, the goal is for application of novel methods and measurement systems to contribute to a deeper understanding and evaluation of ongoing efforts to design or redesign health systems.

ⁱResearch and Education in Health Services Research, AcademyHealth ⁱⁱDepartment of Health Management and Policy, University of Kentucky College of Public Health

As illustrated in Figure 1, relatively few data resources are well-suited to conduct PHSSR. The figure shows examples of sources of survey or surveillance data that are well established, such as census data and the National Profile of Local Health Departments (NPLHD).

However, these traditional data sources are often not integrated with EHR data, or with data that can provide a broader perspective on the factors that influence health (e.g., built environment and socioeconomic status). As a result, it is challenging to construct the fuller picture of population health.

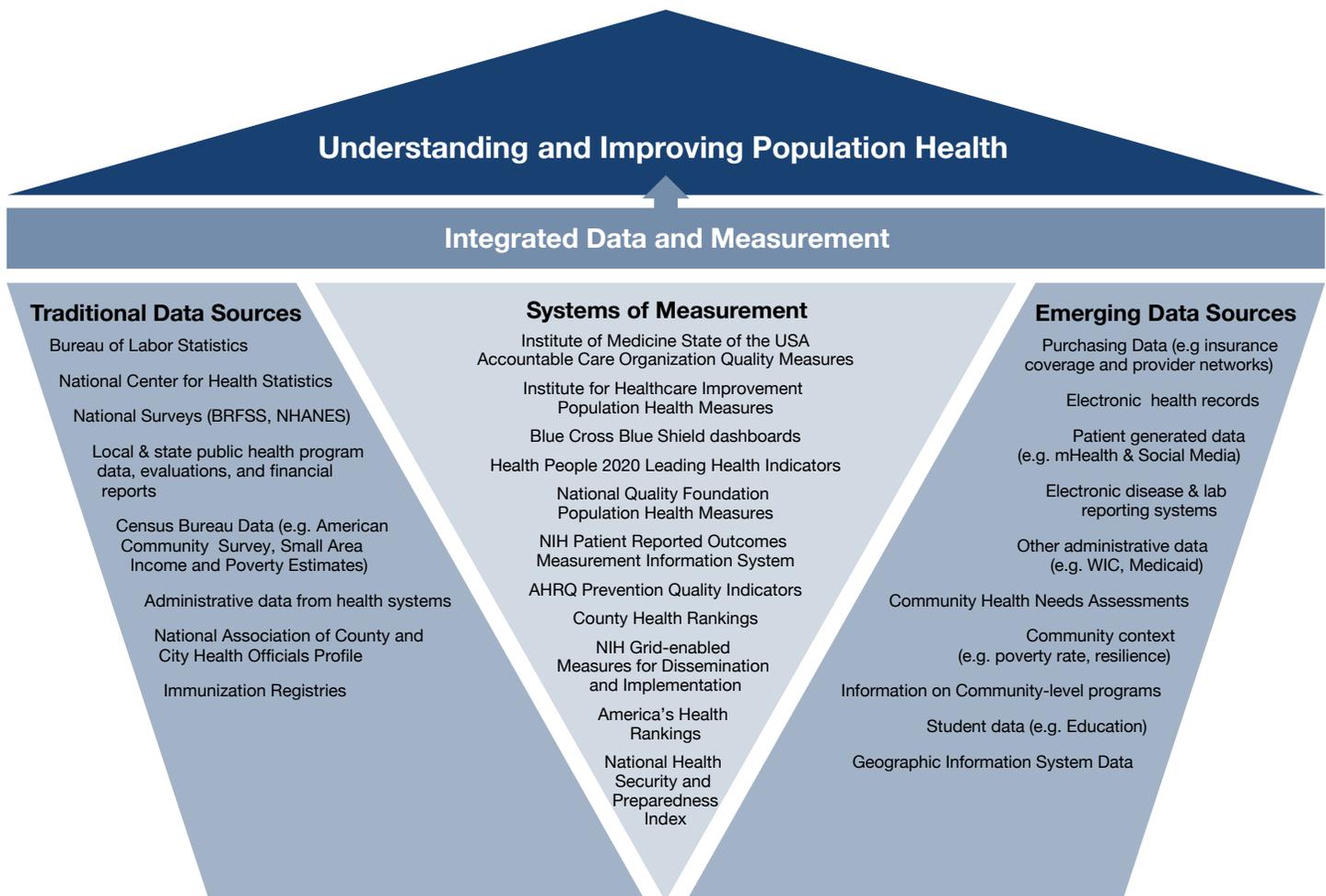
In this inaugural collaboration between *eGEMs* and *Frontiers in PHSSR*, we have compiled a special issue to showcase the possibilities of conducting research on population health using health-related data from traditional and novel electronic sources (Figure 1). Featuring commentaries on the current state of PHSSR and population health research from experts in public health, health care financing and organization, and health IT, as well as reflections on strategies to enhance measurement and future directions

to engage communities in order to understand their needs and preferences, the papers illustrate a desire for new approaches to data collection, as well as novel data sources and methods to advance the field of PHSSR.

The papers reflect evolving discussions within the field. In 2014, AcademyHealth—with support from the Robert Wood Johnson Foundation—developed a cadre of seminal papers on data and methods needed in PHSSR. Experts from public health, health care, and health IT refined those papers during a meeting at AcademyHealth's office, specifically focusing on data needs for three domains in PHSSR: organizing public health agencies,¹ using health IT,² and financing public health activities.³ Together, these three papers provide a road map for future research and create the beginnings of a framework for a research agenda for PHSSR.

As the papers matured, it became clear that there would be substantial benefit to developing a joint, special collection of papers that would explore PHSSR data and methods challenges, as well

Figure 1. Integrating PHSSR Data Sources to Understand and Improve Population Health



as potential solutions to integrating existing silos between public health and health care systems. The eight papers in this special issue address a range of data and methods to develop the evidence base on financing and organization of public and population health, in addition to understanding uses of health IT and new questions about delivery of public health services that will emerge based on access to health IT. Other papers explore considerations for developing and implementing robust measures of population health and opportunities to leverage community health needs assessments to fill critical data gaps. Uses of electronic health data are explored in nearly all the papers, highlighting the critical new opportunity for the practice- and research communities to collaborate around generating and using data to improve health for patients and communities.

Overview of the Issue

The special issue reflects the diverse viewpoints of the authors. From public health practitioners and safety net providers to researchers at academic medical institutions and associations, the authors convey a desire to enhance the types and sources of data that are available to understand and improve population health, and to incorporate diverse data sources where possible. Four primary themes emerge: (1) the vision and strategy needed to support the use of data and methods in advancing population health in the United States; (2) the need to improve the infrastructure required to understand public health financing and organization; (3) the importance of making early, meaningful use of health IT to achieve these goals; and (4) new approaches and partners needed to improve measurement strategies and assess population health.

Projecting a Vision for PHSSR Data and Methods Needed to Support Population Health

Commentaries by Buehler⁴ and Plough⁵ outline key gaps in information and opportunities for this evolving field. Buehler provides an overview of the three domains in which data and methods are viewed as critical for PHSSR, based upon AcademyHealth's April 2014 PHSSR data meeting: organization, financing, and health IT. While the types of data that are necessary within each domain are different, Buehler emphasizes the overlap. He concludes that concrete steps to advance the field must start with an effort to prioritize the main research questions facing public- and population health. Buehler suggests that unique investments may be needed to extend the information captured in existing administrative, financial, and population health monitoring systems in order to generate robust insights into key PHSSR questions. Plough extends this vision by addressing the need for data and methods in PHSSR that capture the system dynamics that are driving changes in the United States, many of which are outside health care delivery. Plough sees an opportunity to expand research partnership to incorporate new "big data" sources—including information on the built environment, education, and social services—in order to

strengthen social sciences and improve understanding of the complex social and behavioral contexts that shape population health. The article concludes by sharing 10 principles underlying the Robert Wood Johnson Foundation's vision for a culture of health with an outline of the action area drivers that identify specific areas for future research, and an announcement of a forthcoming website that will connect all of RWJF's major data repositories and national measurement activities.

The Need to Enhance Infrastructure to Improve Data on Financing and Organization

With respect to public health financing, Corso et al. point to critical data gaps in tracking public health dollars that prevent linking federal and state investments to health outcomes. Improving this linkage, the authors argue, will allow investments in public health to be better understood, will provide a strong foundation for PHSSR to investigate variation and drive improvement, and will improve accountability of public health departments. Using a 2011 Institute of Medicine (IOM) logic model as a framework, Corso et al. identify local data sources on costs and outcomes, define the barriers inherent in the data, and pose recommendations for better linking of costs to health outcomes. The team suggests a common nomenclature for researchers that would ultimately facilitate the translation of PHSSR, with the end goal being the mutual desire to support the efficient allocation of scarce public health resources.

Steinwachs addresses the paucity of data on the organization of the public health systems in the United States, and proposes that the systems can only improve once the field addresses these data gaps and methodological uncertainties—as a necessary step toward efforts to become "learning public health systems (LPHS)."⁶ The paper lays out a set of research questions and the potential next steps for public health agencies to develop the capacity to generate and evaluate data needed to become LPHS.

Leveraging Health IT in Public and Population Health to Fill Gaps in Data

Davidson describes systems approaches that take advantage of considerable investments in health IT to address these data gaps and improve population health. As noted by Davidson, *public health informatics* faces challenges similar to challenges faced by clinical informatics, many of which will drive the availability of data and evidence in public- and population health and will constitute an important research agenda for PHSSR. Edmunds et al. present the result of deliberations from an experts meeting on scenarios for the future of public health informatics. In the scenarios, challenges were discussed, specific informatics goals were identified, and strategies for success were developed. Examples include activating stakeholder engagement to expand data sharing between traditional and new partners, and making existing data more readily available to local partners. The recommendations

also address the gaps in PHSSR and include the need to rely on collaboration across public- and private sectors and to improve data infrastructure and workforce capacity at all levels, as is discussed in various papers across the joint *eGEMs* and *Frontiers in PHSSR* special issue.

New Approaches to Measure Total Population Health

Drawing on a series of reports from the IOM⁷ that emphasizes the importance of population health measurement in improving health care quality and outcomes, Stoto⁸ presents a summary of methods and key challenges in developing a comprehensive approach to population health measurement. The paper emphasizes the limited systems that are in place to support measurement, and the need for health system officials and leaders to develop improved measures by defining the purpose of the measures, deciding what to measure, choosing measures using existing data, or developing new sources of data that are valid and reliable. In a similar vein, a commentary by Alberti⁹ from the American Association of Medical Colleges notes that community health needs assessments (CHNAs) conducted by local public health agencies, tax-exempt hospitals, and Federally Qualified Health Centers point to critical gaps in community health. With the IOM's recommendation to include behavioral and social factors in EHRs, medical colleges could integrate CHNAs into training with the goal of creating a new generation of doctors armed with tools to improve health through better integration with each community's health needs. However both papers suggest that more work needs to be done to ensure health systems are collecting the most appropriate and useful data on the populations they serve, and to train providers in the use of that data for improving a patient's health.

Next Steps and Considerations for the Field Working Together to Address Knowledge Gaps

The importance of sustained collaboration across diverse teams, departments, and agencies is a recurrent theme in the papers. Improved organization and cooperation between public health agencies and the private and public sectors can enhance information sharing,^{10,11} while the synchronization of financing data can connect the cost of programs and interventions to their outcomes.¹² Although people and agencies must collaborate, health IT systems also need to be integrated¹³ and clinical care providers need to be trained to understand the use—and the potential—of these data.¹⁴

In addition to the collaboration across people and systems, Stoto offers a framework for creating valuable population health measures involving cooperation of health officials through defining the purpose of the measures, what exactly to measure, choosing measures using existing data, or developing new sources of data that are valid and reliable. At the same time, the owners and users of health-related data must collaborate across individual settings and research projects to reach agreement on standardized meth-

ods for capturing and extracting data elements and constructing valid and reliable measures. Working together, these professionals can fill current gaps in knowledge and achieve the type of robust, integrated measurement model illustrated in Figure 1.

As Stoto notes in describing the theory of collective impact,¹⁵ reinforcing activities such as contributing to scientific symposia and to the published literature, and ongoing collaboration on projects and peer support, are key components to promoting improvement and sustaining change. Though AcademyHealth's population health program and the EDM Forum, as well as the National Coordinating Center for PHSSR, we've got our boots on the ground, working daily with you—the researchers and those who use this research—toward the ultimate goal of building a learning health system to improve the health of patients and populations.

We hope that, over time, this literature will continue to grow, identifying opportunities for multidisciplinary teams to work with communities and address common priorities that fill in existing information gaps such as those identified in this joint special issue. We welcome future submissions of this type to *eGEMs* and *Frontiers in PHSSR*, each with their unique areas of focus.

eGEMs papers focus on the use of electronic health data for research and quality improvement, often with a focus on practical aspects of system transformation and the use of new technology and data to achieve these goals. Innovative programs to facilitate data sharing and use across public health, health care, and social services are ongoing, and *eGEMs* has already published a suite of papers highlighting efforts from around the country, including Michigan;¹⁶ Minnesota;¹⁷ Washington, D.C.;¹⁸ and New York State,^{19,20} among others.²¹

Frontiers in PHSSR publishes brief descriptions of preliminary findings from ongoing or recently completed empirical studies and quality improvement projects in public health. Findings must have the potential to guide future public health practice, health policy, and research.

Both journals are committed to expanding the dissemination and implementation of promising practices. Only by working together as a field to enhance current data and methods can current data be used to generate knowledge and, ultimately, the wisdom needed to support and integrate the public health system's efforts to improve the health of all Americans.

Acknowledgements

We would like to thank the contributions of all of the authors and reviewers of this joint issue. We would also like to thank Kate Papa, Remle Newton-Dame, and Mike Noshay for their input and guidance on this editorial.

References

1. Steinwachs, Don (2015) "Transforming Public Health Systems: Using Data to Drive Organizational Quality and Efficiency," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4. In Press.
2. Davidson, Art (2015) "Creating Value: Unifying Siloes into Public Health Business Intelligence," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4. In Press.
3. Corso, Phaedra; Ingles, Justin B.; Taylor, Nathaniel; and Desai, Samir (2014) "Linking Costs to Health Outcomes for Allocating Scarce Public Health Resources," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4, Article 2.
4. Buehler, James (2014) "Defining Information Needs for Public Health Systems and Services Research," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4, Article 4.
5. Plough, Alonzo (2015) "Developing New Systems of Data to Advance a Culture of Health," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4. In Press
6. Steinwachs Op.Cit. 2015.
7. The Role of Measurement in Action and Accountability [Internet]. Washington (DC): Institute of Medicine; 2010 Dec [cited 2014 Dec 17]. Available from: <http://iom.edu/~media/Files/Report%20Files/2010/For-the-Publics-Health-The-Role-of-Measurement-in-Action-and-Accountability/For%20the%20Publics%20Health%202010%20Report%20Brief.pdf>
8. Stoto, Mike (2015) "Population Health Measurement: Applying Performance Measurement Concepts in Population Health Settings," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4. In Press.
9. Alberti, Philip (2014) "Community Health Needs Assessments: Filling Data Gaps for Population Health Research and Management," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4, Article 5.
10. Edmunds, Margo PhD; Thorpe, Lorna PhD, MPH; Sepulveda, Martin MD; Bezold, Clem PhD; and Ross, David A. ScD (2014) "The Future of Public Health Informatics: Alternative Scenarios and Recommended Strategies," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 4, Article 3.
11. Steinwachs Op.Cit. 2015.
12. Corso Op.Cit. 2014.
13. Davidson Op.Cit. 2015.
14. Alberti. Op. Cit. 204414
15. Kania J, Kramer M. Collective impact [Internet]. Stanford (CA): Stanford Social Innovation Review; 2011 [cited 2014 Dec 17]. Available from: http://www.ssireview.org/articles/entry/collective_impact
16. Des Jardins, Terrisca R. (2014) "The Keys to Governance and Stakeholder Engagement: The Southeast Michigan Beacon Community Case Study," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 3, Article 2.
17. Chute, Christopher G.; Hart, Lacey A.; Alexander, Alex K.; and Jensen, Daniel W. (2014) "The Southeastern Minnesota Beacon Project for Community-driven Health Information Technology: Origins, Achievements, and Legacy," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 3, Article 16.
18. Goldwater, Jason; Jardim, Juliette; Khan, Tasnuva; and Chan, Karen (2014) "Emphasizing Public Health Within a Health Information Exchange: An Evaluation of the District of Columbia's Health Information Exchange Program," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 3, Article 8.
19. Maloney, Nancy; Heider, Arvela R.; Rockwood, Amy; and Singh, Ranjit (2014) "Creating a Connected Community: Lessons Learned from the Western New York Beacon Community," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 3, Article 15.
20. Heider, Arvela R.; Maloney, Nancy; Satchidanand, Nikhil; Allen, Geoff; Mueller, Raymond; Gangloff, Steven; and Singh, Ranjit (2014) "Developing a Community-Wide Electronic Health Record Disease Registry in Primary Care Practices: Lessons Learned from the Western New York Beacon Community," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 3, Article 7. DOI: <http://dx.doi.org/10.13063/2327-9214.1089>
21. Massoudi, Barbara L. MPH, PhD; Marcial, Laura H.; Haque, Saira; Bailey, Robert; Chester, Kelley; Cunningham, Shellery; Riley, Amanda; and Soper, Paula (2014) "Beacon Communities' Public Health Initiatives: A Case Study Analysis," *eGEMs (Generating Evidence & Methods to improve patient outcomes)*: Vol. 2: Iss. 3, Article 14. DOI: <http://dx.doi.org/10.13063/2327-9214.1093>