Translating Health Services Research into Practice in the Safety Net

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Objective. To summarize research relating to health services research translation in the safety net through analysis of the literature and case study of a safety net system.

Data Sources/Study Setting. Literature review and key informant interviews at an integrated safety net hospital.

Study Design. This paper describes the results of a comprehensive literature review of translational science literature as applied to health care paired with qualitative analysis of five key informant interviews conducted with senior-level management at Denver Health and Hospital Authority.

Principal Findings. Results from the literature suggest that implementing innovation may be more difficult in the safety net due to multiple factors, including financial and organizational constraints. Results from key informant interviews confirmed the reality of financial barriers to innovation implementation but also implied that factors, including institutional respect for data, organizational attitudes, and leadership support, could compensate for disadvantages.

Conclusions. Translating research into practice is of critical importance to safety net providers, which are under increased pressure to improve patient care and satisfaction. Results suggest that translational research done in the safety net can better illuminate the special challenges of this setting; more such research is needed.

Key Words. Health services research, safety net, innovation, translation, diffusion

Health services research is commanding attention from providers as hospitals seek to improve access, quality, and cost in a constrained and rapidly changing health care environment. We examine health services research implementation in the safety net through a literature analysis and a case study of the experiences of a safety net provider, Denver Health and Hospital Authority (DH). Our findings suggest that translating health services research into practice is important and yet can be challenging for safety net systems.

WHAT IS A SAFETY NET PROVIDER?

Safety net providers include hospitals and clinics in the United States that disproportionately provide care to patients who have limited financial means. A report published by The Institute of Medicine in 2000 described “core safety net providers” as those that (1) maintain an “open door” by legal mandate or explicitly adopted mission, offering patients access to services regardless of their ability to pay and (2) have a substantial share of uninsured, Medicaid, or otherwise vulnerable patients among the population that they serve (IOM, 2000). What constitutes a “substantial share” varies: some authors use a restrictive benchmark, for example, that uncompensated care exceed 15 percent of total costs, while others use a looser requirement that 50 percent of an organization’s income come from Medicare and Medicaid. Safety net providers may also be identified through community-based comparison, qualifying if their patient Medicaid utilization rate is more than one standard deviation above the state mean. Despite definitional ambiguity, it is clear that safety net providers are defined by service rather than governance. As public hospitals and clinics have been shuttered, nonprofit hospitals have expanded their mission to encompass safety net roles. As shown by their inclusion among America’s Essential Hospitals, academic institutions are now recognized as safety net providers in many states. Freestanding clinics that provide comprehensive primary care to the medically indigent are also considered part of the safety net. These providers are most often federally qualified health centers (FQHC), a designation obtained with grant funding under Section 330 of the Public Health Service Act program administered by the Health Resources and Services Administration. Freestanding clinics may be included in the safety net if they are “FQHC Look-Alikes” that meet criteria for Section 330 funding but do not receive it.

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TRANSLATING RESEARCH INTO PRACTICE: INNOVATION

Papers that address the translation of health services research into safety net practice are scarce, even when the fields of dissemination and implementation science are included. Therefore, we chose to employ a broad definition of translational research to include work intended to “improve [health care] quality by improving access, reorganizing and coordinating systems of care, helping clinicians and patients change behaviors and make more informed choices, providing reminders and point of care decision tools and support tools, and strengthening the patient-clinician relationship” (Woolf 2008). We borrow a framework from diffusion theory, using the most rigorous health care-specific evidence found in the managerial and organizational sciences, sociology, epidemiology, and psychology literature to examine translation in the safety net.

Everett M. Rogers’s authoritative *Diffusion of Innovations* first identified and defined the stages of adoption, types of adopting agents, and the attributes common to successful innovations (Rogers 2003). Rogers and subsequent researchers have found that both innovation attributes and the perception of such attributes can affect adoption (Ferlie et al. 2001; Denis et al. 2002). Innovations with a relative advantage over the traditional method in cost, effectiveness, or both are more successful (Rogers 2003; Greenhalgh et al. 2004), though implementation may be enhanced or muted based on perception of the advantage (Greenhalgh et al. 2004). Other important factors include innovation, flexibility, or adaptability (Meyer, Johnson, and Ethington 1997), complexity (Meyer, Johnson, and Ethington 1997; Denis et al. 2002), risk, and how risks and benefits are distributed across the organization (Meyer, Johnson, and Ethington 1997), compatibility with organization values and whether it can be attempted as a trial (Rogers 2003), the cost of the innovation (Downs and Mohr 1976; Rogers 2003), and whether outcomes are observable (Rogers 2003).

Institutional features can promote innovation. For example, large organizations with a high degree of specialization are repeatedly found to be more innovative (Damanpour 1991; Cummings et al. 2007), though size may be a proxy for resource availability and other variables (Greenhalgh et al. 2004). Organizations with ties to similar institutions that have implemented innovations may be at an advantage (Aarons, Hurlburt, and Horwitz 2011), as are those whose networks can facilitate interprofessional collaborations (Ferlie

et al. 2001). Centralized leadership is negatively associated with innovation (Greenhalgh et al. 2004), while institutional wealth is positively associated with it (Berwick 2003). Management and leadership characteristics have been heavily scrutinized; in one study, individuals with a proinnovation attitude and high levels of education were found to be more innovative (Damanpour and Schneider 2009). Organizational culture, the sense of how “things are done” in an institution, can help or hinder the implementation: nurses were found more likely to support utilization in environments “characterized by positive culture, good leadership, positive evaluation of performance and feedback” (Cummings et al. 2007).

Adoption process can affect the success of the innovation itself (Denis et al. 2002). For example, an innovation diffused through horizontal networks may better suit an innovation that benefits from the dynamic influence of peer-to-peer interaction, while vertical diffusion will suit an innovation that is formalized and authoritative (Greenhalgh et al. 2004). Whether the innovation is decided upon collectively, authoritatively, or is contingent on a decision made by outside parties can affect whether the implementation is successfully adopted and whether it is maintained (Greenhalgh et al. 2004). Tapping champions may facilitate an innovation; at other times a formalized adoption plan will be preferred (Rogers 2003; Greenhalgh et al. 2004).

Interactive effects between organization, context, and process are likely more important than any single feature alone (Denis et al. 2002), making it difficult to predict the success of an innovation without knowing the context to which it will be introduced. In an extensive review of innovation diffusions in health organizations, researchers noted “the tiny proportion of empirical studies that acknowledged, let alone explicitly set out to study, the complexity of spreading and sustaining innovations in service organizations” (Greenhalgh et al. 2004). Others have echoed this concern, which was described in one paper as “a relative dearth of implementation research *particularly in low-income settings*” [emphasis added] (Sanders and Haines 2006). There is reason to believe that safety net institutions are importantly different enough to warrant genre-specific literature; in a study of mental health service providers, Aarons, Sommerfeld, and Walrath-Greene (2009) identified the “heightened demand for public accountability, fairness, and uniformity” expected of public institutions, a demand that may undermine organizational agility and impair innovation. Organizational rigidity identified in public institutions may inhibit entrepreneurial activity, as may limited resources (Rogers 2003; Greenhalgh et al. 2004). These disadvantages, perceived or real, substantiate the need for

research specific to public institutions (Glasgow, Lichtenstein, and Marcus 2003).

PREDICTING RESEARCH TRANSLATION/INNOVATION IN THE SAFETY NET

Table 1 summarizes the optimal conditions for innovation uptake in health care organizations as described in the literature. When comparing these conditions to those present in the safety net, key distinctions emerge.

Among innovation characteristics, perceptions of advantage and adaptability are likely to be equally important inside and outside the safety net, but a low-risk adoption is likely to be more attractive in the safety net where losses may be poorly tolerated in an environment of thin operating margins.

Table 1: Comparison of Conditions Affecting Innovation Uptake

<i>Literature-Derived Optimal Conditions</i>	<i>Conditions in the Safety Net</i>
<i>Characteristics of the innovation</i>	
Perceived to be advantageous	Equally important inside/outside safety net
Adaptable to local circumstances	Equally important inside/outside safety net
Low risk associated with adoption	Low-risk tolerance in general; narrow operating margins increase loss impact
<i>Characteristics of the organization</i>	
Large/specialized	Limited growth capacity due to asset limits
Flexible social connections between managers	Shared commitment to mission
Decentralized leadership	Centralized control and government-type organization often apply to public institutions
Institutional wealth/accumulated resources	Limited resources inhibit innovation; revenues needed for day-to-day operational support
Senior leadership with belief in innovation	Clear understanding of impact of disparities; may be open to flexible approaches
Organizational “culture” or shared beliefs	Service-oriented mission of providing care regardless of the ability to pay
<i>Characteristics of the organization’s context</i>	
Behaviors of collaborating organizations	Academic medical centers; relationships with medical schools and teaching hospitals; if emergent due to community need, may remain part of previous hospital networks
Behaviors of competing organizations	Few local competitors; often singular organizations within their communities

Of organizational characteristics, limits on institutional wealth and accumulated resources may clearly inhibit innovation in the safety net. These limits may have secondary effects aside from constraining available assets: asset limits may prevent the growth of safety net organizations, making them less apt to become the large, specialized institutions that best house innovation. Even in large hospitals, urban safety net providers must typically reserve revenues to support day-to-day operations, leaving fewer resources available for innovation and adoption.

It is difficult to make safety net-specific predictions based on intraorganizational social connections, leadership characteristics, and culture. Many safety net hospitals are still public institutions, a heritage that may impede innovation implementation. The organization of public institutions tends to mirror that of government, including centralized control, well-defined managerial roles often defined by civil service rules, and management practices regulated by legislative mandate. At the same time, safety net organizations are well positioned to understand the impact of disparities and to value equality. Individuals may choose to work in these organizations because of shared commitment to the core mission of providing care regardless of the ability to pay. Such individuals might be expected to be open to approaches that are less hierarchical and more flexible, and are thus better able to diffuse innovation.

For safety net providers, organizational context would be expected to limit innovation. Most safety net providers, almost by definition, are singular organizations within their communities. They have few local collaborators and competitors and will thus be subject to less encouragement or pressure to innovate. There are exceptions. Some safety net providers retain long-standing relationships with medical schools as teaching hospitals, and thus may retain relationships with other teaching hospitals affiliated with that medical school. Hospitals that emerge as safety net providers in response to local population shifts and closure of government hospitals may remain in their previous hospital networks. These relationships may foster innovation within affiliate hospital networks.

Several safety net features, including limited tolerance for financial risk, organizational mission, smaller size, rigid organizational structures, and institutional context (see Table 1), deviate from the optimal innovation conditions identified in the literature. The most recent study in the literature on innovation in the safety net (Lyles et al. 2014) confirms this conflict. The authors interviewed 28 executives from safety net hospitals and clinics in California to examine provider activities in anticipation of health care reform under the Affordable Care Act. Respondents' views on innovation tended to be conser-

vative. Despite acknowledging that the patient population they served had unique characteristics and challenges, they preferred to implement health care change that had been proven elsewhere and favored incremental change over disruption. Problems with financing were also noted—best expressed by one interview participant who asked, “How do you make it work once the grant is gone?” Several leaders also cited examples of financial strain driving innovation, such as using remote visits with psychiatrists (“telepsychiatry”) in one system to allow fewer specialists to cover more clinics. Leaders expressed a desire for assistance with establishing partnerships with other providers.

THE DENVER HEALTH EXPERIENCE

Because of the paucity of research on health services research implementation in the safety net, we include a case study of DH, an integrated urban safety net system that serves the city and county of Denver, Colorado, to supplement our literature review.

The DH system includes a 525-bed hospital, a community health system with 9 freestanding neighborhood primary care clinics and 16 school-based clinics, Denver’s public health department, and the city’s 911 response and paramedic services. An electronic medical record for inpatient and outpatient facilities was implemented in the mid-1990s. Use of the electronic record to improve productivity and quality of care has been a key factor in DH’s success. DH is nationally recognized for its model of care delivery to minority, underserved, and indigent patients while remaining financially stable. DH serves approximately 25 percent of Denver residents of all ages, with a patient population that is approximately 48 percent Latino, 14 percent African American, and 32 percent white. It is estimated that 40–50 percent of uninsured Denver residents seek care through DH. In 2011, during which DH recorded 351,425 outpatient visits and 26,047 inpatient admissions, 28.8 percent of billings were to the state and city indigent care programs or to individual patients, 19.6 percent to Medicaid, 11.1 percent to Medicare, and 24.8 percent to commercial insurance, with the remaining charges billed to one of DH’s managed care programs. Medical staff members at DH have held faculty appointments at the University of Colorado School of Medicine since 1947, and a formal affiliation agreement between the two organizations has been in place since the early 1990s.

Five members of DH senior management, three men and two women, were identified as key informants and interviewed by a qualitative researcher.

An intensity sampling strategy designed to identify information-rich cases without extremes (Patton 2002) was used to purposefully select participants based on their tenure at DH, their roles in the DH system, and their familiarity with DH system administration, workflow, inpatient and outpatient practices, and research. Together, interview participants represented 127 years of health care experience, including 89 years of tenure at DH, ranging from a low of 12 years to a high of 40 years of experience, with a median of 20 years and mean of 25.4 years. Participants included both clinicians and nonclinicians, with expertise in health services research, program evaluation, quality improvement, general internal medicine, pediatrics, nursing, health and financial administration, personnel management, clinic oversight, and the implementation and translation of innovation into practice. Interviews were conducted according to a semistructured protocol that incorporated a guided conversation with both set questions and extemporaneous exploration of subjects that surfaced in discussion. Interviews averaged 43 minutes apiece, ranged from half an hour to an hour, and were audio recorded and transcribed with additional data obtained from notes and observations made by the interviewer. Content analysis of written and recorded materials was done through an inductive approach and open coding of interview data to identify emergent topics and themes.

Research-Based Innovation in the Safety Net

Participants were unanimous in noting that resources were a significant factor at every stage of health services research and research-based innovation. The population served by the safety net was described as having fewer resources and more complex needs than other populations. For example, safety net patients often require help connecting with community assistance or enrolling in Medicaid. Innovations implemented in the safety net must be sensitive to financing constraints and must also support the needs of a multicultural and multilingual patient population. A payment model based on fee-for-service, payment-for-production reimbursement for health care delivery does not support sustainable implementation of innovative delivery models or care that depends on services which cannot be reimbursed, no matter how promising they might be. Conversely, when working with a population that is essentially capitated through lack of insurance, innovative strategies that facilitate efficiency without reducing quality can sometimes be supported.

DH was perceived to have a narrow operating margin and to be vulnerable to losses that could result from innovation failure. The time required from

clinicians, team members, and leadership to design, implement, monitor, and refine innovative projects was mentioned as an example of “opportunity cost” invested up front. Resources required to sustain innovations, such as personnel, were also noted as cost factors. Nevertheless, research was viewed by all to be an integral part of health care delivery in the safety net; one respondent observed that research received less emphasis outside the safety net in both for-profit and nonprofit systems. Conducting research that “enhances our ability to meet the health care needs of Denver Health system patients” is one of the six statements that together encompass the DH mission. The process of testing, studying, and evaluating against criteria for performance improvement was described as the accepted means to identify and implement needed changes; as one respondent said, “research shows us how to move to the next level.”

Adoption and Implementation: Successes and Failures

Deciding whether to adopt an innovation requires assessment of the innovation’s alignment with organizational goals and strategic objectives.

Cited priorities included improved health outcomes, cost controls, better patient experience, and alignment with researcher interests and expertise. Respondents reported that the Institute for Healthcare Improvement (IHI) Triple Aim of better care (in quality and satisfaction), better population health, and lower per capita cost (Berwick, Nolan, and Whittington 2008) was the best assessment of the worthiness of an innovation.

Elements essential for research-based innovation to be perceived as successful included sustainability, consistent implementation, trust among personnel, and effectiveness in improving clinical outcomes or cost (without detriment to quality or outcomes). Innovations that were low cost but high impact with respect to health outcomes were seen as particularly desirable.

Effective implementation was associated with both internal and external factors. Innovations that were driven by evidence-based practices and national guidelines were perceived as likely to be successfully adopted. Similarly, innovations perceived to be aligned with the DH mission or the changing health care landscape, whether through the receipt of “high visibility” federal or state funding or in response to market pressures, policy initiatives, or patient preferences and desires, were considered more likely candidates for implementation. Adequate resources were noted as being important both during implementation and for sustainability.

An organizational culture of data was deemed important to both the implementation and maintenance of research-based innovation. Registries for population management, quality improvement dashboards, and clinical and financial data warehouses were perceived as essential means of obtaining both real-time feedback and ongoing monitoring. It was also noted that the strength of the data infrastructure at DH might be unique among safety net providers. Clear direction, good program management, formalized review processes, and adherence to the model being implemented were all identified as facilitators of innovation success.

Engagement and buy-in at all levels of participation were unanimously viewed as vital to successful innovation. Consensus suggested that grass-roots endeavors identified new ideas and opportunities for innovation, but that scaling system-wide could not be achieved without senior executive support (summarized by one respondent as “time, attention, and resources”). Active sponsorship by one or more clinicians identified as leaders or champions is also necessary. The importance of diversity among key personnel was also cited, both in a multidisciplinary sense and with respect to racial and ethnic diversity that reflected the DH patient population.

However, even research-driven and evidence-based innovations can flounder upon implementation in a real-world system. At DH, failed projects have included those with results that were difficult for senior administration to accept or those perceived to be misaligned with DH’s needs and objectives, initiatives with limited advantage or those that took too long to come to fruition and were discontinued, and personnel-dependent innovations that lacked sufficient resources or those where the resources were incorrectly allocated. One example of the latter occurred in implementation of an evidence-based nurse home visitation model that used nonclinical patient navigators instead of nurse visitors. The nonclinical personnel could not meet all patient needs, and the program did not improve health outcomes. Another example happened in implementation of a school-based health center which was maintained only 1 day per week versus the usual 5-day per week to reduce costs; as a result, prospective youth patients viewed the clinic as insufficiently available and did not use it even when it was open.

Resource constraints of various types were identified as one of the most common barriers to innovation uptake. Innovations that could not be billed for or reimbursed under a fee-for-service model were difficult to sustain. Programs conducted with external funding or that depended on specialized resources or specific personnel, such as bilingual nurses, were challenging to maintain in the absence of that support.

Technological barriers were identified as a challenge to innovation, including the lower levels of access and literacy among patients served by the safety net juxtaposed with the rapid growth of technological innovation. Dependence on vendors to make changes to electronic health records or other systems was seen as a limiting factor to innovations that use such platforms.

The source of the innovative idea was cited as a potential barrier to implementation. Innovations presented by professionals other than physicians were seen as less likely to undergo widespread adoption. Although leadership support was identified as important for success, innovations that were “forced” by higher ups were also perceived as less likely to be sustained. Policy and regulatory factors, such as data sharing restrictions under state or federal regulations such as HIPAA, also presented barriers to the translation of research into practice. Finally, excess variation in practice between implementation sites resulted in a lack of fidelity to the intended model and subsequent failure of the innovation to perform as expected.

The Process of Innovation: Best Practices for Implementation

Participants were asked to describe the process used to translate research-based innovation into operational practice. Their responses corresponded to the four phases of Deming’s continuous quality improvement cycle: Plan, Do, Study, Act (Deming 2014). This approach is closely aligned both with Lean methodology for continuous improvement, adopted at Denver Health in 2005, and with IHI recommendations for tests of change and process improvement in the health care setting (AHRQ, 2008).

Plan. Identification of an innovation is the first step in the implementation process. Respondents identified the US Preventive Services Task Force (USPSTF) recommendations and newly released national guidelines for care as common sources for innovation ideas. Participants also reported discovering potential innovations in reviews of published research findings. Other opportunities came from programs tested on a pilot scale through the initiative of one or more interested clinicians. Once identified, potential innovations were evaluated for fit with organizational objectives and for impact on local resources and costs. Evaluation was conducted through quality improvement workgroups and committees. High-cost ideas with only marginal expected advantage were unlikely to proceed to the next phase; conversely, innovations

expected to benefit patients either short- or long-term through quality and health outcome improvement were more likely to progress.

Do. Once an innovation was approved, new standard protocols for care and change concepts for implementation were designed. Monitoring metrics appropriate to the innovation were identified and the current baseline level of performance was established. Metrics might be selected from among DH's existing quality and process metric tracking dashboards, which include items drawn from such sources as the National Committee for Quality Assurance, USPSTF recommendations, Consumer Assessment of Healthcare Providers and Systems surveys, and employee satisfaction surveys, or might be identified as new metrics specific to the innovation and collected specifically for measurement purposes. Past examples of innovation-specific metrics have included laboratory values on specific tests, productivity measures, and patient-reported outcomes. After approval from hospital leadership, an innovation champion (usually a clinician) would be tasked with leading implementation across the organization. Additional champions were tapped locally to guide each implementation site. The innovation would be introduced practice by practice (or site by site), and clinic personnel would receive education about the concept.

Study. Once implemented, innovation progress would be monitored and regularly reviewed for results and quality control. Established metrics would be tracked over time and compared to both the previously observed baseline and to any established goals.

Act. Implementation sites would be given real-time feedback based on review results. Refinements and adjustments to innovation processes would be conducted as appropriate; when needed, quality improvement coaches would visit implementation sites and encourage fidelity to the standard.

Other Insights and Lessons Learned

Participants identified DH's nature as an integrated health care delivery system as critically important for successful improvement, innovation uptake, and understanding the complete continuum of care. Respondents cited as

examples outpatient–inpatient transitions of care made observable due to inclusion of both settings under the DH umbrella and the visibility of medication filling practices via DH pharmacies.

DISCUSSION AND IMPLICATIONS

The results of our analysis partially support our original thesis in that incorporating the results of health services research was perceived to be a worthwhile way to bring innovation to a safety net setting. However, our findings did not support our premise that innovation would be less achievable. DH demonstrates some optimal conditions for uptake, including its integrated system of hospital and clinics and leadership committed to innovate. Misaligned reimbursement and thin operating margins emerged from the interviews as barriers to innovation, but they were counterbalanced by deeply embedded cultural factors that favor innovation, including a culture of data and the use of Lean practices, quality improvement methods, and process improvement approaches. While innovations tended to come from highly vetted or empirically justified consensus guidelines, respondents reported that approaches from newer findings were also considered when supported by a strong clinical champion or committed team. Although *a priori* considerations indicate that diffusing research results in the safety net may be prohibitively difficult, the DH experience suggests that organizational structure and culture can partially compensate for other disadvantages. Table 2 summarizes the practical implications of this finding by presenting factors identified through the DH experience that can facilitate translation of research into practice in the safety net.

While we believe that the information-rich perspectives of the leadership personnel who served as key informants provide a comprehensive overview of DH's research translation experiences, we acknowledge that this study would be strengthened by soliciting participants in a variety of roles from among junior as well as senior employees. We also recognize that the experiences of DH, when considered as a case study, may not fully represent those of other safety net systems with different priorities that could affect innovation uptake and translation into practice. An expanded study that utilizes a broader sampling strategy and includes representation from multiple safety net systems would contribute greatly to diffusion research in this regard.

Table 2: Factors Facilitating the Translation of Research into Practice at Denver Health

<i>Factor</i>	<i>Manner of Facilitation</i>
Integrated health care delivery system	Supports communication and information sharing across inpatient and outpatient systems of care
Committed leadership	Sets priorities and goals at organizational and department levels; promotes innovation adoption
Clinical championship	Change agent(s); serves as problem-solving and implementation resource at the point of care
Evidence-based approaches	Improves acceptance through establishing a foundation upon previous work
Culture of data	Supports acceptance throughout the organization of performance assessment against measureable standards
Defined approaches for quality/ process improvement (e.g., Lean)	Eases the implementation and adoption process through personnel familiarity with well-established methods; reduces learning curve required
Structured evaluation methods	Allows thorough analysis of innovation effectiveness; increases trust in results observed
Established infrastructure for health services research within the organization	Supports conduct of scientifically rigorous studies and high-quality evaluation

In addition to our findings, innovation literature also suggests that more safety net-specific research is needed. Safety net organizations appear to be highly reliant on implementing solutions demonstrated in the health care mainstream, rather than solutions demonstrated to be relevant and appropriate for their settings. Patients served by safety net providers differ from more advantaged patients in their ability to engage with care, even after they gain access to care. Safety net patients are more likely to have low health literacy, low access to technology, limited English proficiency, and a higher prevalence of mental health and substance abuse issues. Furthermore, the negative influence of social and economic factors on health, clearly seen in the safety net, is almost completely discounted by current reimbursement schemes, risk-adjustment methods, and other structures on which success in health care depends. Improving satisfaction with care and the value delivered from care for low-income, high-need patients is a critical challenge, one exacerbated by increased pressure to retain patients in the wake of new incentives under the Affordable Care Act. Conducting research in the safety net can provide an evidence base to support changes in the health care infrastructure that will better take into account the impact of these external factors. In the absence of the resources needed to establish research infrastructure within the safety net

itself, partnerships between academic institutions and safety net providers may be one avenue for such research.

At once resource-challenged and entrusted with the care of disadvantaged populations with substantial health needs, safety net providers must seek innovative approaches to reach the triple aim of improving both patient care and population health at lower cost. Translating health services research into practice in the safety net is not only feasible but also a critically important way to achieve the provision of high-value, high-quality care.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.