Leading Practices in System Redesign

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EXECUTIVE SUMMARY

I. <u>Introduction</u>

The IOM report *Crossing the Quality Chasm* called for fundamental reforms in the health care system. It identified deficiencies and problems that contribute to sub-optimal health care quality, compromised patient safety, and waste in the system. More importantly, it outlined an agenda for making our health care system safe, effective, patient-centered, timely, efficient, and equitable

While these six aims provide a vision of what a 21st century health care system should be, the report did not recommend specific organizational approaches to achieve these redesign aims. Rather, it called for an on-going process of identifying "state-of-the-art approaches" employed by health care organizations, as they face the challenges of redesigning the system to accomplish the six aims set forth in the report.

This study was commissioned by the Agency for Healthcare Research and Quality (AHRQ) to obtain information about ways that providers, particularly hospitals, are improving their health systems through system redesign. We performed an environmental scan of relevant literature dating five years back (1999-2004) and conducted 14 semi-structured telephone discussions with key informants who are leaders in provider organizations and health services researchers with extensive experience working with provider organizations. The findings from this study offer guidance and action steps that may help policy makers, providers, payers, and research funding communities move toward transformational change in health care system.

First, we present a conceptual framework to guide the discussion on current redesign efforts. This patient-centered, multilevel model shows how seven clusters of change mechanism interact with one another on multiple levels, as providers, payers, and policy makers redesign care to attain the goals envisioned in the IOM report. Then, we discuss challenges providers commonly face during the process of redesign. We follow by reporting factors that significantly contribute to the success and sustainability of redesign efforts. We conclude by offering recommendations for key stakeholders including policy makers and payers on how they can be actively engaged in facilitating system redesign.

II. <u>Operational Definition of "Leading Practices" in "System Redesign</u>

System redesign refers to projects that make a combination of changes in organizational structures and processes, clinical practices and procedures, staffing and working conditions, information systems and technologies, incentives, and culture in order to enhance care quality, efficiency, and/or access. A redesign activity was considered a "leading practice" if it was specifically recommended and validated by experts. In addition, "leading practices" were identified through the literature review as projects with published outcome data.

III. A Conceptual Framework of Understanding

Using the redesign challenges outlined in *Crossing the Quality Chasm* as a starting point, we identified seven clusters of change mechanisms associated with redesigning the health care system. These change mechanisms involve:

- Redesigning care processes
- Using information technology (IT) for information, access, and clinical support
- Managing clinical and organizational knowledge and skills
- Developing effective teams
- Coordinating care across conditions, care settings, and time
- Incorporating outcome and performance measures for improvement and accountability
- Aligning incentives

Appendix B provides references corresponding to each cluster of change mechanism identified from the literature review. Appendix C provides cases to illustrate the complexities of these change mechanisms.

Exhibit 1 shows a propeller fundamentally anchored in patient-centered care delivery, with its seven blades each representing a cluster of change mechanisms. This multilevel model indicates that the redesign of care processes, care coordination, the use of information technology, the management of knowledge and skills, the development of effective teams, the incorporation of performance measures, and the alignment of incentives are interdependent on one another within and across different levels. Throughout our literature scan and discussions with key informants, we found redesign practices occurring on every level—they were found on the patient-provider level, the clinical microsystem (i.e., team) level, the middle management level, the organizational level, the regional collaborative level, and the larger system/environmental level. In addition, discussions with key informants highlight the importance of multilevel interactions. We contend that strategies to redesign and transform the health care system must consider and leverage the interdependence of these change mechanisms that often span across different levels.

IV. Major Challenges in System Redesign

There were four common challenges requiring provider, policymaker, and payer attention and action:

- **Preparing for and managing health care providers' resistance to change**

    *"*Redesign activities that require behavioral change on the part of individuals are much harder."

- **Accelerating the pace of IT adoption and implementation throughout the health care system**

" Information system is a challenge for us. It always looks fancier than it is."

- **Sustaining and spreading redesign efforts**

"In health care, invention is hard, but dissemination is even harder."

- **Working with current payment system**

"How do you do the right things when right things put you out of business?"

V. Success Factors and Suggestions for Provider Organizations

We found five cross-cutting success factors that were critical in the transformation process. These success factors require efforts to:

- **Directly involve leadership and senior management**

  Leaders (and/or senior managers) play three important roles during the redesign and transformation process: symbolic, active, and collaborative.

- **Strategically align and integrate improvement efforts with organization imperatives**

  This factor is especially important for spreading the initial redesign projects to achieve system-level transformation.

- **Systematically establish and maintain infrastructure and performance appraisal systems for continuous improvement**

  This includes providing technical training and data infrastructure, as well as engaging in continuous social/cultural reinforcement on the importance of quality improvement.

- **Actively develop human resources**

  This involves nurturing champions, developing clinical teams, and involving staff members in redesign projects.

- **Draw inspirations from outside of the health field**

  We encountered two important texts cited in the literature and/or mentioned by informants: *Diffusion of Innovations* by Everett Rogers and *Leading Change* by John Kotter.

VI. <u>Recommendations</u>

Policy Makers and Professional Organizations

- Establish a clearinghouse of leading practices to provide practitioners with models and tools to utilize during redesign projects

- Sponsor leadership workshops to train physician, nursing, and administrative leaders on how to manage system redesign

- Facilitate the creation of collaboratives or learning networks (whether regional or national) to share lessons and provide technical assistance by developing and disseminating effective redesign tools

Insurers and Payers

- Restructure the current payment scheme to eliminate or reduce perverse incentives associated with the delivery of high quality care

- Collaborate with provider organizations to continue making the business case for quality

- Encourage care coordination and integration across the continuum of care, especially for patients with chronic conditions

- CMS to instrumentally support redesign efforts by providing basic, public-domain IT infrastructure (e.g., disease registry, at the minimum)

Foundations and Research Funding Community

- Support initiatives designed to provide governing boards and health care leaders with the tools to implement system redesign efforts

- Develop a prioritized research agenda to evaluate system redesign interventions

- Examine different approaches for transferring better practices dealing with system redesign initiatives

- Sponsor research by developing new measures of care coordination that cut across specific diseases and settings of care

- Sponsor research that identifies the organizational and environmental determinants of successful redesign and improved quality and outcomes of care

I. INTRODUCTION

A. Purpose

The primary goal of this project is to provide an environmental scan of organizational and delivery system redesign efforts to improve quality of care, patient safety, cost, efficiency, and access in health systems, with a primary focus on hospitals. There are two main components to this project: (1) a comprehensive structured literature review dating five years and (2) in-depth telephone discussions with experts and redesign leaders.

This project was commissioned to accomplish four major objectives:

(1) Provide a review of the literature (both academic and gray) and conduct an environmental scan of redesign efforts in health systems, with particular focus on hospitals, (1999-2004)
(2) Identify barriers and facilitators associated with system redesign from the providers' perspective
(3) Learn how providers make decisions about redesign efforts
(4) Provide suggestions of actions that public and private payers might take to encourage good system design

B. Background

The seminal IOM report *Crossing the Quality Chasm* called for fundamental reforms in the health care system.[1] The report identified deficiencies and problems that contribute to sub-optimal health care quality, compromised patient safety, and waste in the system. The continuation of such deficits are documented by recent national studies.[2, 3]

The IOM report outlined an agenda for providers, policy makers, payers, and researchers, to ensure that our health care system delivers care that is safe, effective, patient-centered, timely, efficient, and equitable. While these six aims conveyed a "galvanizing vision" of what a 21st century health care system should be, the report did not recommend specific organizational approaches to achieve these redesign aims. Rather, it called for an on-going process of identifying "state-of-the-art approaches" employed by health care organizations, as they face the challenges of redesigning the system to accomplish the six aims set forth in the report.[1]

This study picks up where the IOM report leaves off by examining leading practices in system redesign. It documents major challenges providers face during the redesign process and highlights critical success factors associated with reaching redesign goals. Based on these lessons and those identified through a review of the literature, we offer recommendations and issues for providers to consider as they engage in the redesign process; suggest action steps for policy makers and others to facilitate system redesign; and provide guidance for payers to align incentives to promote and sustain these efforts.

II. METHODOLOGY

A. Literature Review

We began with a subject-guided search for review articles in the MEDLINE database, using broad subject terms concerned with health care quality, safety, efficiency, innovation, and other areas as they relate to redesigning the health care system (1999-2004). This process was supplemented with keyword-guided searches in the ABI/INFORM and *Wall Street Journal* databases. Subsequently, we added relevant references identified from peer-reviewed articles, accessible internal and external reports, and quality-oriented websites.

The major MeSH terms used in the MEDLINE database exploded MeSH search included: "Hospital Design and Construction;" "Patient Care Management;" "Quality Assurance," "Health Care; Health Care Quality, Access, and Evaluation;" "Outcome and Process Assessment (Health Care);" "Safety Management; Efficiency, Organizational;" "Evidence-Based Medicine;" "Organizational Innovation;" "Organizational Case Studies;" and "Information Systems." These major MeSH terms included sub-terms that belong to the broader subject. For example, an exploded MeSH search using the term, "Patient Care Management" would include "Patient-Centered Care," "Managed Care Programs," "Disease Management" and other related terms. This is the most comprehensive approach to searching within the MEDLINE database using the PUBMED portal.

Using the ABI/Inform Global business, finance, and economics database, the literature search used the search terms "hospital" or "health system" with "redesign," "reorganization," or "innovation" in the subject line and another search term using "patient," "quality of services," and "hospital." The search in the *Wall Street Journal* collection was conducted with the same search terms in the citation and abstract line.

Our screen through the 1,726 review articles initially identified by the search engine of the MEDLINE database resulted in 35 review articles. References for each of the 35 review articles were scanned for additional articles using the Web of Science citation index. References from leading health care research journals, such as JAMA, Lancet, the New England Journal of Medicine, and references from leading contributors in the field of health care research were isolated for further scanning. From that list, references that had been cited over 100 times were included in the final literature scan. A handful of articles with less than 100 citations were included for their relevance to the topic of system redesign. A total of 49 references were collected using this method. Review articles from journals that were not represented in the Web of Science database, e.g. the Joint Commission Journal on Quality and Safety, were collected manually. References in these articles were scanned with focus on topical relevance and repetition. Important references from these articles were then included in the final bibliographic database. Thus, our literature review included a total of 84 articles identified through the structured MEDLINE search, supplemented by more than 80 articles contributed by interviewees

and recommended leaders in the field of system redesign and quality improvement, to yield a total of more than 160 articles reviewed.

We performed the review based on the following definition for "leading practice" in "system redesign":

> This study defined "system redesign" as projects that often make a combination of changes in organizational structures and processes, clinical practices and procedures, staffing and working conditions, information systems and technologies, incentives, and culture, in order to enhance care quality, efficiency, and/or access. This definition is consistent with the IOM's notion of redesign, which refers to "a new perspective on the purpose and aims of the health care system."[1] We searched for redesign efforts that used a systems approach (i.e., not single interventions implemented in isolation) and focused on cases that demonstrate the value of "bundling" (i.e., integrating two or more change mechanisms during the redesign process). A redesign activity was considered a "leading practice" if it was specifically recommended and validated by key informants and experts. In addition, "leading practices" were identified through the literature review as projects with reported outcomes data.

B. In-depth Telephone Discussions

In order to obtain detailed information regarding the adoption and implementation of system redesign projects, as well as payers' involvement during the redesign process, we conducted 14 semi-structured telephone discussions with 16 key informants, including health care providers and health services researchers who have extensive experience working with provider organizations. We sought their opinions on the selection and implementation of redesign projects; barriers and facilitators encountered during the redesign process; important lessons learned; and payers' role in encouraging and sustaining system redesign and quality improvement efforts. Key informants were also asked to identify leading practices, which we then added to our search, as described above.

These key informants are listed, in the order of consultation:

Name of Informant	Academic/Primary Organization Affiliation
Dr. Martin Charns	Boston University School of Public Health
Dr. Gary Young	Boston University School of Public Health
Dr. Patty Gabow	Denver Health
Dr. Paul Bate	UCL Medical School, United Kingdom
Dr. Brent James	Intermountain Health Care
Dr. Paul Batalden	Institute for Healthcare Improvement
Dr. Eugene Nelson	Dartmouth-Hitchcock Medical Center
Dr. Edward Wagner	Group Health Cooperative of Puget Sound
Dr. Paul Wallace	Kaiser Permanente
Dr. Jill Steinbruegge	Kaiser Permanente

Dr. Don Berwick	Institute for Healthcare Improvement
Ms. Ann Lewis	CareSouth Carolina, Inc
Dr. Lee Sacks	Advocate Health Partners
Dr. Gordon Hunt	Sutter Health
Dr. Berdi Safford	Family Care Network, PLLC
Dr. Uma Kotagal	Cincinnati Children's Hospital Medical Center

We followed a telephone discussion guide [Appendix A] and conducted most of the discussions between one to 1.5 hours. Notes taken during the discussion were analyzed by two independent team members, using standard qualitative research methods.[4]

C. Attendance at the "Transforming Health Systems Through Leadership, Design, and Incentives" meeting (October, 18th & 19th, 2004)

Team members Dr. Margaret C. Wang and Dr. Stephen M. Shortell attended and presented preliminary findings at the "Transforming Health Systems Through Leadership, Design, and Incentives" meeting, held at the Agency for Healthcare Quality and Research, in Rockville, MD. Lessons were also drawn from discussions at this meeting. More than fifty participants including providers, health plan representatives, purchasers, health care executives, policy makers, and patient care advocates, representing a broad cross-section, attended and shared their concerns and experiences associated with redesigning the health care system.

The practices identified and examined do not necessarily "cover the waterfront" of all the leading practices addressing the redesign challenges presented in the IOM report; there are certainly other good examples beyond those considered in this study. Rather, we present a sampling of important and illustrative efforts of leading practices.

III.RESULTS

A. Literature Review

Our literature review revealed that there is an extensive and growing body of literature documenting and reviewing how health care organizations respond to the redesign imperatives described in the IOM report—challenges related to redesigning care processes; making effective use of information technologies; managing clinical knowledge and skills; developing effective teams; coordinating care across conditions and the continuum of care; and incorporating performance and outcome measures for improvement and accountability. In addition, there is an increasing acknowledgement that redesigning and transforming the health care system must take into account interactions of various components of the system on multiple levels.[5, 6] The chain-of-effect framework presented by Don Berwick following up on the IOM's "Quality Chasm" report specifically articulated the importance of adopting a systems view, with changes at four levels (i.e., patient, microsystems, health care organizations, health care environment) aimed at improving patient care.[7]

A Conceptual Framework of Understanding

Since system redesign is a very broad concept encompassing many aspects of health services on multiple levels, we developed an overarching framework as a map to guide subsequent discussions. Displayed in Exhibit 1 as a propeller, this comprehensive and multilevel model recognizes the interactions among different levels at which change mechanisms are affected and have impact. These include the patient-provider level; the clinical microsystem level; the middle management level that often cuts across disciplines and departments; the health care organization level; the collaborative efforts on the regional level; and the large system/environmental level. In addition, this model shows seven clusters of change mechanisms we identified from the literature review and discussions with informants. Each presented as a blade of the propeller, six of these seven clusters of change mechanisms address the redesign challenges described in the IOM report. These clusters of change mechanisms involve redesigning care processes; using information technology (IT) for information, access, and clinical support; managing knowledge and skills; developing effective teams; coordinating care; incorporating performance measures; with the additional cluster of efforts in aligning incentives [Appendix B]. We contend that strategies to redesign and transform the health care system need to consider and leverage the interdependence of these change mechanisms that often span across different levels.

Case Examples

From the hundred or so identified references, we found redesign efforts taking place within complex systems at the microsystem level, the organizational level, the regional level, and even on the national level. Some of these redesign efforts span across and cascade down different levels simultaneously. In addition, most redesign efforts incorporate elements from more than one cluster of change mechanism (e.g., training care

teams to use IT for performance feedback and clinical decision-making). Two case examples are included in Appendix C to illustrate the complexities involved in system transformation.

B. Redesign Challenges

The task of initiating, sustaining, and spreading redesign and quality improvement projects throughout the health care system is daunting. Redesigning the health care system requires working with an already stressed work force that has little extra time and slack resources to spare.[8, 9] The task is made much more difficult by the lack of a system-wide infrastructure for information technology (IT), a process for dissemination, and a payment system that directly supports redesign efforts. We discuss challenges that are commonly encountered by health care providers as they strive to improve the quality of health care delivered. These challenges also illustrate the difficulties of working with interdependent change mechanisms occurring on multiple levels.

Preparing and managing health care providers' resistance to change

"Redesign activities that require behavioral change on the part of individuals are much harder," lamented one physician leader. Physician behaviors, in particular, are difficult to change.[10, 11] This is partly due to the strong acculturating process during years of clinical training, where practice autonomy is held to a high esteem and evidence-based medicine from randomized clinical trials is taught as the gold standard of quality.[12] Since many redesign projects involve restructuring the care team and following established practice guidelines and protocols, physicians may feel that they are no longer "the captain of the ship" and are now required to practice "cookbook medicine." Some physicians do not acknowledge that the quality chasm is as serious as the IOM report suggests,[13] while others express doubts about whether efforts to redesign care, such as those using the advanced access model or other technologically-driven changes (e.g., computerized physician order entry, force function reminders at discharge, and others), would help them practice medicine more efficiently.[14-16] More importantly, this resistance to change reflects an overly taxed work force that does not have the necessary slack to adjust to or be actively involved in the redesigning process.[8, 17] In fact, as one physician noted, *"the most significant barrier in redesign was time."* Therefore, addressing physicians' concerns about compromised productivity and perceived threats to autonomy during the change process is one of the most challenging tasks during the process of redesign. As one physician leader advised, *"It's only going to happen when it's the easiest way to do [it]."*

Accelerating the pace of IT adoption and implementation throughout the health care system

"Information system is a challenge for us. It always looks fancier than it is," one physician leader shared. There is a growing body of literature documenting the use of IT for electronic health documentation, error detection and reduction, clinical decision support, care management reminders, performance benchmarking and feedback, disease

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management and coordination, prescription and test ordering, among other functions often embedded in an electronic medical or health record system (EMR or EHR).[18-25] Despite this extensive knowledge, there is still wide variation in the level of IT adoption by health care organizations and physicians.[15, 16, 26, 27] We found from the informants that the challenges associated with IT adoption center around three key issues: deciding what to adopt, financing the cost of adoption and subsequent maintenance, and training the work force to use the adopted system. The decision of which components of the IT system to adopt is especially critical for small and/or rural practices with very limited financial and human resources. One health care executive remarked, *"IT is at the heart of our redesign process. However, the IT we are relying on is not EHR for economic reasons—the cost of [IT system hardware and software] and the cost to our productivity. Our IT is an electronic registry, a database providing data on chronic and preventive care management."* Adopting and maintaining an IT system requires major initial investment and subsequent allocation of resources for maintenance.[28] Part of the challenge is the need for senior leaders to continue making the business case for IT investment and securing funds for system maintenance, even when savings are not promising in the short-term.[29] Lastly, successful IT implementation requires staff education, cooperation, and training to get accustomed to using the system.[30] One health services researcher recalled, *"One of the barriers is the doctors saying, 'Why should I use the system which takes 6 or so minutes to enter when I can simply jot it down very quickly in 30 seconds?'"* Therefore, the challenge with implementing IT for quality improvement lies in the delicate balance between the financial and technical aspects of adopting and maintaining the system, as well as the human and social aspects of using the system. As one physician researcher working with an integrated delivery system observed, *"An organization's ability to address the technical aspect of change, the social aspect of change, and also the interplay between the two, iteratively and on scale, is the fundamental underpinning of quality improvement."*

Sustaining and spreading redesign efforts

"In health care, invention is hard, but dissemination is even harder," remarked a leader in quality improvement. Sustaining refers to making redesign efforts "the way we do business," even after the initial spotlight has dimmed, while spreading refers to disseminating redesign efforts beyond the original locus of change. These two issues are related to each other as leaders observe initially successful quality improvement projects unable to "deploy" or slowly return to "the way things were." Important factors related to the disseminating process include: perceptions of the innovation (i.e., redesign efforts), characteristics of the people who adopt the innovation, and contextual factors, particularly those involving communication, incentives, leadership, and management.[17] Our discussions with informants reveal that the challenges with sustaining and disseminating redesign efforts are made more difficult by the silos in our health care system. The silos that exist in the health care system impede communication and attenuate the effects of incentives for improving quality—in the absence of an established infrastructure and/or process to share learning, the various departments and service lines do not have the means to cross-pollinate redesign ideas, resulting in the "six-west" syndrome. One health care executive shared a redesign effort in which a high-performing

team achieved outstanding outcomes for diabetes care management. Despite the initial success and attempts to disseminate the practice throughout the organization, spread did not happen until the executive, medical director, and nursing director *"were there to endorse the effort and train the subsequent teams."*

Working with current payment system

"How do you do the right things when right things put you out of business," wondered one health care executive. The current incentive and payment system has been described as "misaligned," "perverse," and "toxic" to quality improvement. One of the most frequently mentioned challenges in this area is working with payers who are uninterested in system redesign and quality improvement. Not being able to collaborate with payers for infrastructure support, human resources, financial assistance, or access to important patient information has been a major obstacle for providers engaged in system redesign. In fact, in most local health care markets, there is little financial incentive for providers to improve quality—payers only seem to pay attention to cost.[30] An even more serious problem is payers' *"failure to pay for quality, while paying for defects."*[31] Most provider informants mentioned their health care organizations bear the cost of providing evidence-based health services (e.g., case management, group visits, and care coordination) simply because these services are not billable, while duplications of services and preventable high-cost surgical procedures are reimbursed by payers (and insurers). Thus, many redesign efforts stumble and eventually falter because the payment system fails *"to align payment with quality."*[32]

C. Success Factors and Suggestions for Provider Organizations

Redesigning the health care system requires patience and perseverance. In the process of identifying "leading practices," we were humbled by the realization that there is no single "silver bullet," "best practice," or "cookie cutter" solution and that contextual factors (e.g., unique market position, organizational history, etc.) are powerful intervening forces. However, there are several cross-cutting activities that seem to be associated with successful redesign efforts. We discuss them below as suggestions for provider organizations.

Directly involve leadership and senior management

Direct, active, and visible leadership (and/or senior management) involvement is the single most frequently mentioned success factor by our key informants. In fact, it is a factor that is essential to the success and sustainability of redesign activity. We found that leaders (and/or senior managers) play three important roles during the redesign and transformation process: symbolic, active, and collaborative.

- **Symbolic:** engendering an authentic, credible, trustworthy image that is consistent with the organization's culture and redesign vision
- **Active:** removing barriers; securing resources; sustaining and spreading change; protecting the microsystems; visibly making business cases for quality; aligning

the organization's strategic imperative with the redesign projects; effectively communicating transformation plan; and creating and promulgating a transparent and quality-oriented culture

- **Collaborative**: fostering a governance structure that bridges the dual hierarchy (clinical and administrative) to work together to endorse and support system redesign

One health care executive mentioned that one of the reasons contributing to the successful redesign efforts in her organization has to do with the stable and credible leadership in the organization (which builds on a long history of trust), her direct involvement in redesign activities (e.g., conducting focus groups), and ensuring senior managers sending uniform message about the importance of quality improvement. Another example frequently cited is the crucial role Ken Kizer played during the Veteran Administration's transformation process.[33] On the other hand, several health services researchers recalled observing initially promising redesign efforts "killed" because of apathetic leadership.

Strategically align and integrate improvement efforts with organization imperatives

The second key success factor involves aligning and integrating redesign projects with the organization's strategic imperative. This factor is especially important for spreading the initial redesign efforts to achieve system-level transformation. It includes:

- Customizing redesign efforts to fit local practice norms
- Prioritizing and selecting projects based on the organization's existing strategic orientation
- Sequencing and integrating additional projects in a manner that leverages the iterative learning process (i.e., the marginal cost of additional projects decreases as the organization learns how to improve better)

"Focus on what matters, and do the most important ones first," advised a leader in quality improvement. One physician executive recalled opting to adopt cancer patient care management teams, as opposed to diabetes care management, because diabetic care was not aligned with the corporate strategic priority. One health services researcher mentioned an integrated delivery system's unsuccessful experience with implementing a product line business model—it could not deploy because the product line was implemented in isolation from any other type of change in structure or system needed to support it.

Systematically establish and maintain infrastructure and performance appraisal systems for continuous improvement

Building a reliable infrastructure to support redesign and quality improvement activities is crucial for two reasons: First, it creates a system and develops a cadre of experts equipped with improvement skills. This group of in-house experts then shares the improvement results with the rest of the organization to slowly transform the culture

within the organization. Second, a reliable infrastructure also establishes a system for following through with redesign projects. The process of providing technical training and engaging in social/culture reinforcement of the importance of quality improvement include:

- Providing the necessary analytic tools for redesign (e.g., PDSA, run-charts)
- Maintaining reliable infrastructure support for quality improvement
- Using performance feedback as a way to energize redesign efforts
- Implementing performance appraisals and reward systems that benefit employees for achieving error reduction and quality improvement targets
- Celebrating small successes—"holding the gains"

One health care executive remarked, *"When we learned about how to use models of improvement such as the PDSA cycle, it was a big cultural change. For the first time, we had a tool."* Other informants mention the use of common engineering approaches such as simulations and algorithms for centralizing scheduling systems. Providing the right tools for staff was also mentioned as a facilitator in a recent report on hospital quality.[34] Reliable infrastructure is often taken for granted, as one organization's effort to implement computerized physician order entry failed simply because the IT team did not ensure enough computing power to process the orders. We learned that participating in a collaborative such as the Breakthrough Series, or a formal training program such as the Advanced Training Program at Intermountain Health Care offered invaluable tools and in some cases provided the impetus for initiating improvement projects.[35] For performance appraisal, several provider organization leaders mentioned using unblinded performance data (i.e., performance data linked with provider identification) as a way of spurring quality improvement. This was also cited as a success factor contributing to the sustained quality improvement in New York state cardiac surgery.[36] Building an organizational culture supportive of transparency and quality improvement is crucial for making unblinded data work, as one physician leader advocated, *"don't show anyone data unless you can help them with it."*

Actively develop human resources

A recent study on successful hospitals specifically attributed the delivery of high quality of care to having the right people.[34] Our informants could not have agreed more. The process of developing human resources involve:

- Nurturing champions
- Developing multidisciplinary clinical teams
- Involving staff in redesign projects

Several informants mentioned the importance of working with early adopters of innovative clinical practices, because *"the rest will eventually come along."* Champions have also been observed as important facilitators for adopting care management processes to improve chronic care delivery.[37, 38] One suggestion for nurturing champions is to create slack time for these early adopters, such as formalizing a part-time

"improvement fellowships" or sabbatical.[17] There is growing evidence that effective teamwork not only leads to improved quality of care but also leads to higher organizational performance.[39-41] Several informants referred to the workshops and nine-part series on clinical microsystems,[42] as well as the chronic care model[43, 44] as useful frameworks they applied to facilitate the development of multidisciplinary teams. Larger integrated delivery systems such as Kaiser Permanente, sponsors in-house research investigations examining team functioning. Involving staff in redesign projects provides staff a sense of ownership of the redesign project and brings the locus of control to them. One informant commented that the organization's success in implementing a diabetes care program using registry data was largely due to the buy-in and cooperation from both the administrative and clinical staff who were involved in entering patient data, putting sticky reminders, scheduling and following up with patients, among other responsibilities. On the other hand, one researcher shared a redesign effort that did not sustain, because *the people who were on staff did not see themselves working within the process."*

Draw inspirations from outside of the health field

We encountered two important texts cited in the literature and/or mentioned by informants. For leaders interested in disseminating effective practices and achieving organizational transformation, these two texts are:

- *Diffusion of Innovations* by Everett Rogers (2003)[45]

This book, now in its fifth edition, is one of the most widely cited and authoritative resources in the area of diffusion research. It offers a clear conceptual framework guiding the stages of the diffusion process, with interesting anecdotal stories illustrating key points.

- *Leading Change by* John Kotter (1996)[46]

Although most of the examples offered in this book are not from the health care industry, we found that the general lessons offered by the author are highly consistent with those shared by the informants and easily applicable to health care.

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IV. RECOMMENDATIONS

Successfully redesigning the health care system to close the quality gap requires effective collaboration and active support from policy, professional, financing, and research entities. We offer action steps to engage these key stakeholders in the process and where available, provide examples.

A. Policy Makers and Professional Organizations

- Establish a clearinghouse of leading practices to provide practitioners with models and tools to utilize during redesign projects—see for example the database of successful efforts maintained by The Institute for Healthcare Improvement (IHI).

- Sponsor leadership workshops to train physician, nursing, and administrative leaders on how to manage system redesign—see for examples, suggestions provided by Becher and Chassin.[47]

- Facilitate the organization of collaboratives or learning networks (whether regional or national) to share lessons and provide technical assistance by developing and disseminating effective redesign tools—see for examples, CMS Quality Improvement Organizations; Pittsburgh Regional Health Initiative; the IHI Breakthrough Series; and others.

B. Insurers and Payers

- Restructure the current payment scheme to eliminate or reduce perverse incentives—see for examples, work by Rosenthal et al.[48] and Conrad and Christianson[49]

- Collaborate with provider organizations to continue making the business case for quality by recognizing that the motivation to initiate system redesign may not be the same as the financial incentives necessary to sustain redesign efforts, especially for IT or human resource investments—see suggestions offered by Leatherman et al.[31]; Rewarding Results; Bridges to Excellence; and others.

- Encourage care coordination and integration across the continuum of care, especially for patients with chronic conditions—see findings by Leatherman et al.[31]; Rewarding Results; Bridges to Excellence; and others.

- CMS can instrumentally support redesign efforts by providing basic, public-domain IT infrastructure (e.g., disease registry, or basic EMR dataset)—see for example components discussed by Metzger[50]

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C. Foundations and Research Funding Community

- Support initiatives designed to provide governing boards and health care leaders with the tools to implement system redesign efforts

- Develop a prioritized research agenda to evaluate system redesign interventions

- Examine different approaches for transferring better practices dealing with system redesign initiatives

- Sponsor research by developing new measures of care coordination that cut across specific diseases and settings of care

- Sponsor research that identifies the organizational and environmental determinants of successful redesign and improved quality and outcomes of care—see for example, on-going research as part of the Pursuing Perfection or RAND Improving Chronic Illness Care Evaluation projects.

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EXHIBIT 1

Multilevel Model of Change Mechanisms
A "Propeller" for Accelerating System Redesign
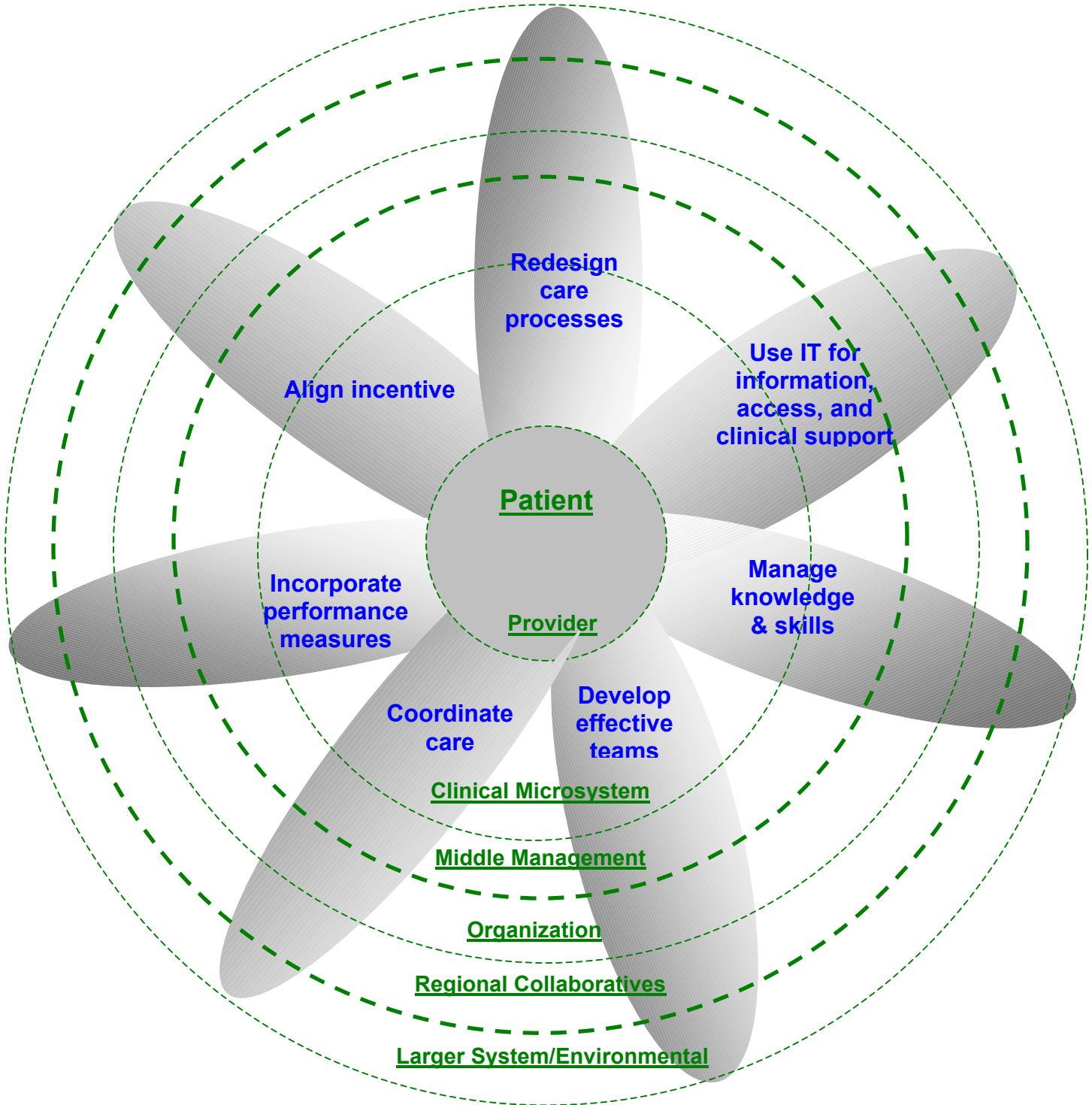
APPENDIX A

MEMO

TO:
FROM: Margaret C. Wang
DATE: July 15, 2004
SUBJECT: Information on telephone discussion regarding system redesign practices

_____

Thank you for participating in this important study to help us gain information about ways that providers are improving their health systems through system redesign. Findings from discussions with participants in redesign projects and from a literature survey will be reported to the Agency for Healthcare Research and Quality (AHRQ) and shared with participants in meetings with providers and decision makers sponsored by AHRQ and Centers for Medicare and Medicaid Services (CMS). In addition, the findings will be summarized in academic and trade publications. We will not identify you by name without your permission. Further, we will not identify the people, groups, and organizations you describe, unless we receive your permission to do so.

To provide the context for the interview, please find below brief information regarding this project:

Objectives:

- To provide up-to-date review and environmental scan of redesign efforts in health systems
- To identify barriers and facilitators during the redesign process
- To learn how and why participants prioritize and make decisions about redesign efforts
- To recommend ways that public and private payers can encourage and reward good system design and best practices

Definition of System Redesign:

System redesign projects often make a combination of changes in organizational structures and processes; clinical practices and procedures; staffing and working conditions; information systems and technologies; incentives; and culture. These changes aim at enhancing care quality (including patient safety), efficiency, or access.

Contact Information:

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<u>APPENDIX A</u>

Discussion Topics:

We will address **four** thematic topics in the 1.5-hour discussion scheduled.

(1) **<u>Background</u>** <u>on Redesign Projects</u>

We will ask you to describe **major achievements and best practices** and **projects that resulted in disappointments** in areas where there might be lessons for others. In particular, we are interested in learning:

- How were these redesign efforts conceived (e.g., from formal needs assessment, reaction to patient satisfaction survey, etc.)?
- Why were these projects selected?
- What were the indicators of the projects' outcomes (e.g., success and/or disappointments)—was any formal measures used?
- What have been the major factors behind the success and/or disappointments?
- What are the immediate plans for the future of these projects?

(2) **<u>Barriers</u>** and **<u>Facilitators</u>** <u>Affecting the Adoption, Implementation, and Sustainability of Redesign Projects</u>

We will ask you to consider the following and any additional factors. We would appreciate any example you could provide to illustrate how these factors have played a role in the redesign processes and how they have been addressed.

- Presence of external drivers (e.g., recognition for quality)
- Financial resources
- Information technology/information system capability
- Process improvement skills (e.g., PDSA, benchmarking, etc.)
- Application of engineering skills and approaches (e.g., scheduling algorithms, simulations, etc.)
- Senior management support
- Organizational culture and vision
- Provision of incentives
- Agreement within organization and/or team regarding where and how to focus on redesign efforts
- Belief in the value of redesign efforts and desire to improve outcome
- Leadership and champions
- Additional factors which are unique to your redesign efforts (e.g., organization setting, managed care market, patient population, etc.)

APPENDIX A

(3) **Decision-making**, **Prioritizing**, and **Learning Process** Associated With Redesign Efforts

We will ask you to describe the decision-making and learning processes within the organization/team prior to, during, and after the redesign period. Any example you might be able to provide would be greatly appreciated. We are interested in learning:

- How have decisions regarding redesign projects been prioritized (e.g., based on projected impact and sustainability; alignment with organization's strategic plan, etc.)?
- How have non-payer stakeholders (e.g., board of directors, patients, providers, etc.) reacted to these redesign efforts?
- What outcome/performance measures were used and how were these chosen and developed (e.g., who was involved in the development, was the PDSA approach used, etc.)?
- How has the organization/team transitioned through these redesign efforts?

Your insights on the **major lessons** from your experience with redesigning the health system are extremely valuable.

- What advice would you give to others?

(4) **Payer** Involvement

We will ask for your insights on how payers can be involved to encourage and reward good system design and best practices. Particularly, we are interested in learning:

- What role have health plans played in your redesign efforts?
- What about CMS?
- How could CMS provide incentives to encourage good system design in terms of selecting the types of measurements (i.e., for assessing success) and why?
- What about payment models (e.g., care coordination/disease management fee, pay for performance, etc.)?

We will ask you for any concluding thoughts or additional comments you would like to share with us.

We would very much appreciate any **additional resources** you can share with us to help us compile comprehensive information on **best practices in system redesign** (e.g., **internal documents, external reports, useful websites,** etc.) These documents will be treated as confidential documents.

Thank you for agreeing to participate in this discussion and sharing your invaluable insights.

APPENDIX A

ADDITIONAL THOUGHTS AND COMMENTS TO SHARE DURING DISCUSSION

APPENDIX B

Article Summary

The summary table and corresponding reference list provide an overview of the publications included in the environmental scan. Whenever possible, references were categorized according to the goals of redesign efforts (i.e., the six IOM aims of safe, effective, efficient, patient-centered (personalized), timely, and equitable health care) and types of redesign mechanisms (i.e., the seven propeller blades of redesign clusters involving redesigning care processes; using IT for information, access, and clinical support; managing knowledge and skills; developing effective teams; coordinating care; incorporating performance measures; and aligning incentives).

Four additional categories were added to the goals of redesign (i.e., the six IOM aims) in order to provide a more refined description of the types of articles represented in the snowball citation search. Articles were categorized based on whether they provided background information on redesign, discussed issues related to diffusion, reported outcomes data, and discussed scope of care associated with redesign efforts. Background articles typically provided general information or review on specific redesign clusters (e.g., redesigning care process) or topical areas (e.g., the healthcare workforce). Diffusion articles were concerned with the spread of redesign mechanisms within and between organizations (e.g., the role of collaboratives in managing knowledge and sharing skills among health care organizations). Outcomes articles reported or summarized specific effects of redesign activities (e.g., the effect of computerized physician order entry on safety). Scope of care articles addressed the changes in the breadth of work activities associated with certain redesign activities (e.g., understanding how the introduction and implementation of clinical practice guidelines impact clinical practice, discussing how the development of clinical teams expands the management of patients with chronic conditions).

In addition to the seven clusters of redesign mechanisms, we included articles targeting specific issues related to physicians, managed care, the intensive care unit (ICU), nurses, the healthcare workforce, and adverse drug reactions. Research in these areas referred to specific themes that consistently appeared in reviewed articles and discussions with informants (e.g., changing physician behavior, reducing adverse drug reactions, among others). It should be noted that numerous redesign activities targeted these specific topical areas by applying redesign mechanisms included in the seven clusters (e.g., using computerized physician order entry to reduce adverse drug reactions).

APPENDIX B

Article Summary Table

	Safe	Effective	Efficient	Personalized Timely (T)	Equitable	Background	Diffusion	Outcomes	Scope Of Care
Redesign Care Process	20 24 28 30 35 87 91 93 99 113 128 143 149	9 12 31 42 51 79 99 102 135 140 143 161	9 12 31 51 99	161 22 49 104 115 (T) 114 (T) 123		20 21 25 26 28 29 30 35 40 52 57 60 66 100 114 115 127 133 153 154	24 27 40 49 52 78 83 84 99 119 128 131 153 154 160	9 50 70 84 100 136 143	22 40 71 144
Use IT for Information, Access, and Clinical Support	17 18 19 37 59 81 121 146	8 9 42 43 75 101 102 135 158	9 37 38 43 117	32 123		16 26 60 61 63 75 82 87 101 158	27 32 39 53 54 69 105 107 108 122	8 9 18 81 87	122

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	Safe	Effective	Efficient	Personalized Timely	Equitable	Background	Diffusion	Outcomes	Scope Of Care
Manage Knowledge and Skills	7 93 110 138	10 68 137 140 159	68	11 34 74		10 21 26 29 61 126	7 27 98 120 131 137 142 145 159	50 74	
Develop Effective Teams	18 92 93 110 111 143	14 68 92 139 143 151	68	14 67 155		13 26 57 117 118 139 152	13 27 78 85 118 131 153	18 72 139 143	151
Coordinate Care	28 92 157	31 41 42 92 111 135	31 41 97	22 97		5 28 57 66 76 154 157	33 120 148 154		22
Incorporate Performance Measures	7 23 37 90 95 157	2 58 112 134 141 158	37 141	44 45 73	58 62	23 26 44 58 77 133 134 137 157 158	7 39 65 78 131 137 142 148	2 73 77 141	

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	Safe	Effective	Efficient	Personalized Timely	Equitable	Background	Diffusion	Outcomes	Scope Of Care
Align Incentives	109	2 6 42 46 68	6 47 46 64 68			26 46 47 60 61 64 129 132 137 147	53 85 94 131 137	2 46	

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	Safe	Effective	Efficient	Personalized	Equitable	Background	Diffusion	Outcomes	Scope Of Care
Physicians	125	68	68	11 88		4 40 56 88	105 107 108 122	125	71 122 144
Managed Care						96 106			
ICU	125	43	43					125	
Nurses	1 116	51 116	51				98		
Healthcare Workforce	86 116			45 74		48 61 86 150		71 74 116	
ADR: Adverse Drug Reactions	36 81 87 91 92 93 99 121 146 149 156	92 99	99			3 15 16 19 36 55 80 87 89 124	53 99	36 87 124	156

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APPENDIX C - 1

**Creating a Rich Information Environment at
The Spine Center at Dartmouth-Hitchcock Medical Center and Beyond**

Abstract:

Caring for patients with back pain requires care providers of different clinical backgrounds to communicate and work with one another. Members of multidisciplinary team at the Spine Center worked with patients to integrate information technology into clinical processes. Patient-centered information were collected and summarized into a one-page Patient Value Compass in order to guide clinical decision-making at the point of care and to provide rich data for benchmarking and research nationwide. The result is an information-rich care environment that empowers and satisfies both patients and providers.

Case:

The Spine Center at Dartmouth-Hitchcock Medical Center was opened in 1998 to provide specialty care in treating back pain.

"We needed a language to work with our patients. The value compass provides the language that helps our multidisciplinary team work with our patients to get them back to work, back to play, one back at a time," said Dr. James Weinstein the Spine Center Founder.

The redesign project involved:

- Identifying the **optimal flow** of patients;
- Creating a common language for how care providers of multiple disciplines (e.g., neurosurgeons, internists, physical therapists, occupational therapists, orthopedists) would understand and **coordinate patient care**;
- Integrating **information technology** into the care process with inputs from patients and the multidisciplinary provider team by:
    - Asking the patient to use a touch pad computer guiding him/herself to provide the requisite data for generating a one-page summary called the **Patient Value Compass;**
- Using the **Patient Value Compass** during the visit to enhance communication between the provider and the patient in order to better **meet the patient's needs** and continuously **monitor the patient's progress**

In addition, the rich information collected at the patient-level were used beyond point of care to:

- Build a **national registry** for the National Spine Network to allow the Spine Center to benchmark and compare its patterns of care vis-à-vis those at other participating collaborating sites.
- Contribute **research data** to an eleven-site, NIH-sponsored **randomized clinical trial** on the value of spine surgery for the three most common diagnoses for which spine surgery is performed by:
    - Incorporating patient preferences (e.g., patients' eligibility, decision-making, **planning for care management** given the patient's problem) in the care model.

Outcomes:

- Informed, empowered, and satisfied patients and providers
- Development of a **common culture** based on patient-centered care for the multidisciplinary team
- Shared **self-awareness** for the multidisciplinary team as an independent microsystem that is interdependent with the larger system of care

Source: Nelson EC, Batalden PB, Homa K, et al. (2003). Microsystems in Health Care: Part 2. Creating a Rich Information Environment. *Joint Commission Journal on Quality and Safety*. 29(1): 5 – 15.

APPENDIX C - 2

Scripps Health Pursuing Perfection in Acute Myocardial Infarction (AMI)

Abstract:

Achieving the six aims outlined in *Crossing the Quality Chasm* requires health care organizations to address redesign challenges. Scripps Health initiated the Cardiac Pilot Project to dramatically improve care provided for patients with AMI. The hospital analyzed the process of care management for AMI patients and organized a multidisciplinary team (including patients) to develop performance measures, redesign care processes, and coordinate care, in order to ensure that AMI patients receive effective, efficient, equitable, patient-centered, safe, and timely care. The short-term results are high compliance rates for most of the process improvements.

Case:

Scripps Health is a healthcare system that operates five hospitals, two skilled nursing facilities, and a number of ambulatory health services, located in San Diego County, CA. The Cardiac Pilot Project was conducted at Scripps Mercy Hospital, an active teaching facility with 520 beds and 22,000 discharges per year.

"It wasn't about doing the two pilots well—it was about changing the organization," said Dr. Henry James, Scripps Health VP Clinical Outcomes and Measurement. The redesign project was guided by the six aims outlined in *Crossing the Quality Chasm*. It involved:

- Analyzing **processes** in the management of AMI that can be improved and setting measurable improvement goals;
- Creating **multidisciplinary work teams** consisting of physicians, nurses, community health leaders, case managers, and patients to develop **methods for measuring progress** towards improvement goals. Specifically, these processes and goals are:

  - Developing and using a multipurpose form called the *Cardiac Patient Prescription and Risk Reduction Intervention/Discharge Instructions* to ensure that patients receive effective evidence-based therapies for AMI unless contraindicated;
  - Providing patients at discharge with a care plan, a medication list, and a copy of their EKG to take to each of their physicians' offices for their next visit to ensure efficient **coordination** between inpatient and ambulatory care;
  - Examining whether AMI patients were treated differently due to their gender or insurance to ensure care is provided in an equitable manner;
  - Considering patient preferences in the care planning process to ensure patient-centered care;
  - Implementing pre-printed physician orders for medications and requiring pharmacist intervention in case of unclear abbreviations to ensure care is provided safely;
  - Providing patients with an EKG within five minutes of arriving at the hospital; and if AMI is confirmed, opening the culprit artery within 90 minutes of arriving at the hospital, to ensure timely delivery of care.

Outcomes:

- More than 90% compliance of the first five process improvements at the time of publication
- Further examination of the last goal, because it did not reach intended compliance rate
- Follow-up to determine whether compliance with these processes resulted in significant clinical improvement and led to organizational transformation

Source: Reeder L. (2002). Pursuing Perfection. Two Systems Challenged by Developing Models for Perfect Care. *Disease Management and Quality Improvement Report*. 2(8): 3-7.