pursuing perfection
Raising the Bar for Health Care Performance

The Pursuing Perfection Initiative: Lessons on Transforming Health Care

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Foreword

The ancestors of the Pursuing Perfection initiative were two. The more distant one was a five-year research project on "The Future of the Automobile," headquartered at the Massachusetts Institute of Technology (MIT) and funded largely by the Sloan Foundation, to study automobile production worldwide and describe the best methods in the industry.[1] Members of the research team translated its technical reports into a form more accessible to lay readers in two highly successful books, *The Machine That Changed the World*, and its more generalized successor, *Lean Thinking*. This research generated an enormous wave of interest, still strong, in the design and management of processes of production and service that maximize value to customers and minimize all forms of waste, using methods often referred to as the Toyota Production System (since the MIT project found most of the best practices in the world to be in use at that one company), "value chain" management, or "lean production."

In the mid-1990s, colleagues at the Institute for Healthcare Improvement (IHI) encountered the book *The Machine That Changed the World* [2] and began to wonder immediately whether the health care industry could benefit from a study similar to the Sloan-MIT project on the automobile. Could IHI organize teams to search worldwide for best processes in medical care, and then weave a quilt of "best possible current care" from the assembled pieces? Jim Womack, a co-author of the book, encouraged us, and we even approached the Sloan Foundation, itself, to assess its interest in such a study, but without success. Instead of the mega-project, IHI undertook a series of smaller Idealized Design projects[3] in the late 1990s, applying the same approach to health care subsystems. The first three of these projects were Idealized Design of the Clinical Office Practice (IDCOP), which involved 40 practices ranging from a single general practitioner to a 200-physician multispecialty group practice working on a total of 11 core processes; Idealized Design of the Intensive Care Unit, sponsored by the Veterans Health Administration (VHA); and Idealized Design of Medication Systems. IHI also began an ambitious program on patient safety called Quantum Leaps, which, like the Idealized Design projects, assembled a wide range of successful safety practices into an organization-wide strategy for hospitals that wanted to achieve breakthrough systemic levels of safety.

The second ancestor of Pursuing Perfection appeared in 2001 in the form of the Institute of Medicine (IOM) report, *Crossing the Quality Chasm*.[4] This report summarized the vast literature on defects and performance gaps in US health care, and called for a fundamental redesign of the US care system to better achieve six "aims for improvement" of care: safety, effectiveness, patient centeredness, timeliness, efficiency, and equity.

A push toward boldness in redesign also came from an important essay in *Health Affairs* by health services researcher Molly J. Coye, who put the question clearly: "Why no Toyotas in health care?"[5]

The Robert Wood Johnson Foundation (RWJF) became the catalyst IHI needed. In 2002, RWJF leaders approached IHI and asked if it was feasible to organize a national project with a small number of health care organizations that shared the ambitious goal of implementing best-known processes in care at a highly strategic level to achieve major gains in all six dimensions of the IOM report's aims for improvement. Temporarily called "The Toyota Project," this became in short order "Pursuing Perfection." The IOM report became the charter, and the Request for Proposals (RFP) followed that report closely in its outline. IHI's experiences with its Idealized Design projects and its Breakthrough Series Collaboratives, informed in part by the theoretical perspectives of lean thinking, offered the foundations of an approach.

The RWJF and IHI team (and, indeed, we coalesced into a single, delightful team) had no idea, when the RFP went out, whether anyone would be interested in a project whose transformational goal was bold and risky, and for which we were seeking the highest possible levels of executive and board commitment. To our surprise, the response was overwhelmingly positive: 226 organizations applied. Scores of those applications had merit; we had uncovered a level of motivation and ambition that we had not anticipated.

It was difficult to narrow the applicants to only seven participating sites for which we had funding, given the high quality and intense interest of so many health care organizations. We remain convinced to this day that a large number, perhaps the majority, of the original applicants could have fared just as well in the Pursuing Perfection initiative as did the seven excellent RWJF grantees that we finally chose.

This white paper summarizes the activities, results, and findings of Pursuing Perfection. Overall, two high-level statements may capture the essence.

First, Pursuing Perfection did not achieve its most ambitious goal: to birth an organization as fundamentally new and instructive in health care as Toyota was in the automobile industry. We do not believe that this goal was, or is, impossible. On the contrary, Pursuing Perfection and its many successor projects have vastly increased our confidence that we have the tools and the knowledge to rebuild care into an enterprise absolutely unprecedented in its results in all six IOM dimensions and, even more important, with much higher capacity to achieve with and for populations what we really want: not care, but health. Nonetheless, the type of organizational transformation sought and needed to achieve this level of breakthrough proved far more difficult than anyone in the initiative could have imagined at the start.

But, second, by many other measures, Pursing Perfection was the most successful and generative research and development project ever undertaken by the Institute for Healthcare Improvement and, arguably, by the entire health care improvement movement since it first took recognizable form in the late 1980s. Here is a brief and only partial list of its contributions:

- Development and testing of new approaches to improve reliability in health care processes, the most important of which has been the concept of care "bundles," which are in many ways predecessors to the current wave of interest in checklists in health care. The very first bundles (on prevention of central venous line bacteremia[6] and ventilator-associated pneumonia[7]) were developed in the IHI Quantum Leaps safety project and in the Idealized Design of ICUs, but the concept was snapped up and expanded upon by numerous Pursuing Perfection participants and these bundles were later refined for use in the IHI 5 Million Lives Campaign.

- Development, testing, and publication of "all-or-none" scoring for process execution.[8] This idea first surfaced prior to Pursuing Perfection at a future Pursuing Perfection site, HealthPartners in Minnesota, and was adopted widely and generalized by Pursuing Perfection participants.

- Widespread recognition of the key roles of boards of directors and senior executives in the leadership of strategic improvement in health care, and subsequent development of frameworks for their involvement such as the IHI Framework for Execution,[9] IHI Framework for Leadership for Improvement,[10] and IHI "Boards on Board" How-to Guide.[11]

- Basic clinical elements on improved patient safety that were embraced in IHI's 100,000 Lives Campaign and 5 Million Lives Campaign,[12] both of which have had spinoff programs and replications in other nations around the world.

- Breakthrough concepts on strong forms of patient-centered care and patient and family involvement, led largely by initial changes at Cincinnati Children's Hospital Medical Center in Ohio, a Pursuing Perfection site.

- New designs and examples for enhanced patient flow and applications of operations research principles in clinical care, such as adoption at Cincinnati Children's Hospital Medical Center of the work of Professor Eugene Litvak in management of surgical processes.[13]

- Enhancement of capacities in system-level performance metrics in health care settings, used extensively in the Pursuing Perfection group and referred to as Whole System Measures.[14]

- Development and testing of innovation in planned care for people with chronic illness built directly from Ed Wagner and the MacColl Institute's Chronic Care Model.[15]

- Laying the foundations for IHI's Triple Aim[16] projects (seeking better experiences of care, better health, and lower per capita costs for populations), which have now become IHI's largest research and development efforts. It was Pursuing Perfection that showed clearly both the importance and difficulty of combining cost reduction and health status improvement with the more normal and familiar aims of improving acute care and outcomes in mainstream health care organizations. From that realization came a new and deeper focus for IHI on population-based heath system design.

These and other innovations have spread widely beyond the organizations participating in the Pursuing Perfection initiative, and many have made their way into core health care delivery research and literature. Indeed, so extensive has been this spread that numerous change agents and clinical leaders in the US and abroad no longer realize that the tools and models that guide their work today began in the Pursuing Perfection program and its bold participating sites. Those sites continue as

leaders and examples for others, and a number have earned recognition for their exceptional quality from the Centers for Medicare & Medicaid Services and others who search widely for successes to showcase.

Molly Coye's clear-headed question—"Why no Toyotas in health care?"—remains apt and important for our time. We still have yet to see a model system that achieves what she was seeking and what Pursuing Perfection was trying to birth. To get there will require more change even than Pursuing Perfection sites knew to attempt. But, the lessons are full of new possibilities, and we have every confidence that, when totally new, transformed care is finally in our hands—that is, simultaneously achieving better experiences of care, better health, and lower cost for populations—the celebration of that success will include deep gratitude to the Pursuing Perfection initiative and its participants for blazing the trail toward success.

Executive Summary

The Pursuing Perfection initiative was an eight-year demonstration program (2001 through 2008) funded by the Robert Wood Johnson Foundation (RWJF) in the US. Supported by technical assistance from the Institute for Healthcare Improvement (IHI), the initiative's goal was to learn if and how health care organizations could make dramatic improvements in performance across the organization, resulting in a considerably more efficient and effective health care system.

Methods: Thirteen health care organizations from the US and Europe designed, tested, and implemented changes in strategy, structure, and key processes, supported by IHI faculty and with frequent contact with each other in a collaborative learning model.

Results: All participating organizations were able to demonstrate substantial improvement in at least one area of performance. Equally, the Pursuing Pefection participants learned that two factors are critical to achieving perfection-level performance in health care: 1) substantial changes in the leadership's approach to quality; and 2) a steady stream of innovative solutions to persistent challenges such as reducing mortality, harm, and disparities. Even though substantial improvements in structure and processes led to better patient experience, organizations participating in Pursuing Perfection could not demonstrate reductions in cost of care and improvements in the health of the community. A different level of innovation is needed to address cost of care and population health.

Conclusion: The Pursing Perfection initiative was an incubator for new approaches to leadership and innovation in health care. With these new approaches, we learned that substantial, sustainable, and replicable improvement in quality is possible in health care organizations. However, for the health *system* to improve, high quality in health care organizations must, in all likelihood, be accompanied by innovations in the organization of services and care delivery across the continuum of patient care.

Introduction

In December 2000, the Robert Wood Johnson Foundation (RWJF) recruited the Institute for Healthcare Improvement (IHI) to help establish the most ambitious demonstration project to date focused on improving the quality of health care. The goal was nothing less than "perfection," showing that health care organizations could improve not just one or two aspects of care, in one clinic, unit, or department, but demonstrate that high levels of performance improvement could be a way of life for health care providers, all the time, in all dimensions of quality, throughout an entire organization or system of care. We learned that dramatic improvement in health care organizations is achievable, but it requires more than simply expanding current, even excellent, improvement initiatives. It requires fundamental changes in leadership and a steady stream of innovative solutions to tough problems. We also learned that even if a hospital or medical group can deliver outstanding care for their patients, this does not automatically result in reduced costs of care or improvements in the health of local populations, two essential elements for healing the health care system. For those changes to occur, an even larger transformation, both within and across organizational boundaries, is necessary.

Pursuing Perfection Initiative: Overview and Key Phases of Work

Pursuing Perfection Goals

The Pursuing Perfection initiative challenged hospitals and physician organizations to improve patient outcomes dramatically by "pursuing perfection" in all major care processes. Pursuing perfection meant striving to:

- Deliver all indicated services at the right time;
- Avoid services that are not helpful to the patient or reasonably cost effective;
- Avoid safety hazards and errors that harm patients and employees; and
- Respect patients' unique needs and preferences.[17]

The Pursuing Perfection initiative aimed to "show that system-wide quality improvement efforts are feasible and, through such efforts, set new benchmarks for health care quality and safety."[17] IHI and RWJF staff determined that the best way to raise the bar in health care would be to accomplish what Toyota did in automobile manufacturing: show performance improvement that far exceeded anything seen before. If such levels of improvement could be demonstrated among a group of health care providers—that is, very low levels of defects and errors, virtually 100 percent adherence to the highest standards of care, and high levels of satisfaction among patients and families—then confidence in and ambition for new levels of improvement would become much higher as a result. The initiative would not only raise expectations among providers, payers, and consumers for higher-quality care; it could also demonstrate *how* to attain this level of achievement.

Key Phases of Work

Pursuing Perfection began with a grantee selection process and included four phases (see Figure 1).

Figure 1. Pursuing Perfection Initiative: Key Phases of Work by Year

Phase	2001	2002	2003	2004	2005	2006	2007	2008
Phase I: Site Selection	X X X X							
Phase I: Planning	X	X						
Phase II: Implementation		X X X	X X X X	X				
Phase III: Focus on Ambulatory Care				X X X	X X X X	X		
Phase IV: Summarize and Disseminate Key Learning						X X X	X X X X	X

Note: Each X represents one quarter

Phase I: Selection of Participating Sites

Applications from 226 health care organizations were reviewed by a 14-member National Advisory Committee; ultimately, 12 organizations were selected for Phase I planning grants (see Appendix A). The selection criteria included:

- High levels of senior leader engagement in quality of care;
- A track record of improvement in care; and
- A feasible but ambitious plan for improving both clinical processes and the infrastructure in the organization.

Phase I: Planning

The grantees then designed and initiated tactical and business plans to pursue perfection. The organizations used as their guide the landmark Institute of Medicine report, *Crossing the Quality Chasm*.[4] The initial 12 RWJF grantees, joined by the first international (self-funded) participant, Jönköping County Council in Sweden, created their plans for implementing the Pursuing Perfection program in their organizations. The RWJF National Advisory Committee, following a rigorous process, selected seven US organizations from the 12 original grantees to receive Phase II implementation grants of up to $1.9 million each over two years.

Phase II: Implementation

The grantee organizations executed their plans to pursue perfect care. Each organization committed to working on at least seven specific improvement projects that together would help to reach the organization's goals, while leaders developed strategy and structural changes to support the improvement. It became clear that the Pursuing Perfection participants (grantees, IHI staff, and RWJF staff) had to create new approaches to achieve ambitious levels of improvement.

- **Improvement Projects to Raise the Bar:** Grantee organizations were asked to implement two major improvement projects, followed by five more, in the two-year timeframe specified in their business plans. This proved challenging for the grantee organizations, and at least half of them questioned whether their efforts were best focused on doing these projects or on bolstering the organization's capability, leadership system, and infrastructure to support improvement. The decision was made to stay the course and address both projects and infrastructure at once, keeping the emphasis on perfection-level improvements for patients. Better outcomes for patients had to be "true north" for the initiative. Without that focus, the value of the Pursuing Perfection initiative to the organization and the potential for learning would be diminished.

- **Leadership and Organizational Learning:** In each of the participating organizations, leaders understood that if quality was to become the business strategy of the organization, major shifts in management and infrastructure would be needed. The types of infrastructures that were highest priority for design were communication systems and information systems that create transparency; workforce policies and practices and training that support improvement; and systems to support quality improvement. These new approaches were identified and actively tested during Pursuing Perfection Phase II.

- **Innovation:** As the grantees designed changes to reach the highest levels of performance, IHI learned that Pursuing Perfection's success relied on addressing persistent challenges for which the health care field had no ready solutions. IHI devoted a portion of the technical assistance resources from RWJF to finding solutions for these challenges. This inquiry became a major research and development effort for Pursuing Perfection. A method for analyzing the problems and seeking novel solutions from outside health care was devised, followed by testing of the solutions with the Pursuing Perfection grantees. The research and development focused on reducing mortality at the system level, developing system-level measures to evaluate the overall quality of a health system, reliable delivery of evidence-based medicine, patient flow through the system of care, planned care for all patients, access to specialty care, transparency of information, involvement of patients and families in improvement, the business case for quality, and ensuring equity.

- **Technical Assistance and a Learning System for the Program:** As the National Program Office (NPO), IHI was charged with providing technical assistance and direction for Pursuing Perfection. To maximize the learning from all the participants, IHI established a series of opportunities to gather and share information. Face-to-face meetings that gathered all grantee organizations occurred three times a year. By June 2002, the number of organizations participating in Pursuing

Perfection had grown to 13—the seven US organizations awarded Phase II implementation grants from RWJF and six (self-funded) international sites: four National Health Service (NHS) local health communities in England (North and East Devon, Central Norfolk, Lambeth and Southwark, and Bradford), sponsored by the NHS Modernisation Agency; Reinier de Graaf Group from Delft in the Netherlands; and Jönköping County Council in Sweden, which participated in the first phase of the initiative.

Phase III: Focus on Ambulatory Care

RWJF provided support for the grantees to focus their efforts on improving care across hospitals and beyond hospital boundaries. The goal was to add to the efforts already underway to improve inpatient care with stronger interventions to raise effectiveness and coordination of care for patients both before and after their hospital stays. RWJF grantees each received $150,000 per year for two years to enhance their programs that would bolster care across the continuum. Research and development of innovative solutions to challenges identified during the Pursuing Perfection initiative continued as well. Dissemination accelerated as more learning about how an organization "pursues perfection" became available. A series of articles in *Modern Healthcare* described the challenges and leadership issues in the initiative.[18]

Phase IV: Summarize and Disseminate Key Learning

The grantees and IHI worked to consolidate and package the lessons from the Pursuing Perfection initiative. By this time, the grantees were self-funding all of their efforts to pursue perfection and had been engaged in dissemination for at least two years. They were frequent presenters at regional and national meetings, and two grantee organizations established "sharing days" for visitors to manage the number of inquiries they received. The grantees also continued to learn a great deal from each other about building the necessary infrastructure to support their continuing efforts. In addition, IHI disseminated Pursuing Perfection lessons and innovations on reducing mortality, improving reliability, defining system-level measures to evaluate the overall quality of a health system, and improving patient flow in IHI programs such as the IMPACT network Learning and Innovation Communities and the 100,000 Lives Campaign; on the IHI website; and to IHI Strategic Partners and allies such as Premier and the Centers for Medicare & Medicaid Services.

Knowing that other health care providers were capable and eager to follow the path created by the Pursuing Perfection organizations, RWJF funded IHI to share the lessons from Pursuing Perfection with the larger health care community, beginning in Phase I. IHI established a Learning Network of other organizations interested in the program, supported by a workspace on IHI's website and quarterly conference calls hosted by IHI. As new stories, results, and experiences developed among the grantees, this learning was posted on IHI.org.[19] As of May 2008, there were 65 stories on the IHI website directly related to Pursuing Perfection. IHI created a storyboard for the initiative that highlighted key lessons and ideas as they emerged, updating it every year and displaying it both at IHI's Annual National Forum on Quality Improvement in Health Care and on IHI's website. Furthermore, with RWJF support, a video series on

the program concepts and major innovations in care was created by Crosskeys Media and distributed widely.[20] In 2006, two Pursuing Perfection organizations, Hackensack University Medical Center in New Jersey and Whatcom County in Washington, were featured in the PBS series, *Remaking American Medicine*,[21] for their work in Pursuing Perfection. Dissemination of this kind drew other organizations to the initiative, so that we were able to learn from others pursuing similar goals.

Throughout the initiative, IHI and the participants relied heavily on numerous experts and faculty to bring new thinking and strong experience to the challenges encountered. In addition, program evaluators from Boston University, who were studying organizational structures and how they changed, provided input to the grantees both during site visits and at program meetings, and published the findings from their research.[22]

Pursuing Perfection was not only an ambitious demonstration project, but also an exercise in progressive learning. Through multiple cycles of design, testing, and learning, the grantees and other participants led IHI to a new view of improvement: achieving the highest levels of performance for patients and organizations, across all major care processes, requires new ways of working. The following section in this paper includes a description of how Pursuing Perfection participants learned what "pursuing perfection" means, and the new ways of working required to reach ambitious goals for all patients and for the health care system.

Health Care Providers Can Perform at Much Higher Levels

The Pursuing Perfection initiative demonstrated that performance that raises the bar—exceeds levels that before were thought to be unattainable—is not only possible but within reach when aims are ambitious, the science is strong, and leaders are willing to deploy resources to get the work done. All of the US sites and several of the international teams participating in Pursuing Perfection were able to demonstrate they could perform well beyond the usual benchmarks in some dimension of care and sustain that performance.

Appendix B contains the most encouraging results achieved in Pursuing Perfection. What follows is a description of highlights that demonstrate the depth and breadth of improvements possible when l eaders set goals at the highest levels and are willing to support new ways of working in the organization.

Improved Safety and Effectiveness

Reducing hospital-wide mortality was a goal for every organization in Pursuing Perfection. Perhaps the most significant example of improving safety and effectiveness was the reduction in hospital mortality, as measured by the hospital standardized mortality ratio (HSMR),[23] for Pursing Perfection grantees (see Figure 2).

The HSMR was first released with 2000 data. As demonstrated in Figure 2, in 1998 the variation among the grantees was substantial (35 points between highest and lowest performers) and only PeaceHealth–St. Joseph Hospital was below the national average. By 2006, every organization had

reduced its HSMR, the variation among organizations had become much smaller (a 16-point range with no outliers), and the organizations were clustered near the national average. This change in variation stands out from the national trends, where there was no reduction in variation among hospitals in general with respect to HSMR between 2000 and 2006.
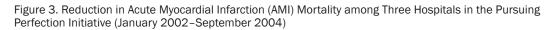
Figure 2. Reduction in Hospital Standardized Mortality Ratio (HSMR), and Reduction in HSMR Variation, in US Hospitals and in Pursuing Perfection Organizations (excluding pediatric hospitals)

The Pursuing Perfection organizations demonstrated high levels of performance improvement on evidence-based care and core measures mandated by the Centers for Medicare & Medicaid Services (CMS). In the first year, Hackensack University Medical Center (HUMC) and McLeod Regional Medical Center were the top performers in the CMS–Premier Hospital Quality Improvement Demonstration (HQID). Among 260 participating hospitals, HUMC was the top performer and McLeod was among the top five in the first year in all five focus areas of the HQID project: 1) congestive heart failure (CHF); 2) acute myocardial infarction (AMI); 3) coronary artery bypass graft surgery (CABG); 4) pneumonia (PN); and 5) hip and knee replacement surgery. This indicated that both Hackensack and McLeod applied a system-wide approach to reliability—delivering the right care to every patient, every time.

Three Pursuing Perfection grantee organizations, HUMC, McLeod, and Tallahassee Memorial HealthCare, targeted care for AMI and adverse drug events (ADEs), two major sources of harm and

error. Each organization was able to reduce AMI mortality to five percent (below the lowest-decile benchmark of seven percent) and reduce ADEs to less than 1 per 1,000 doses (see Figures 3 and 4).

Figure 3. Reduction in Acute Myocardial Infarction (AMI) Mortality among Three Hospitals in the Pursuing Perfection Initiative (January 2002–September 2004)
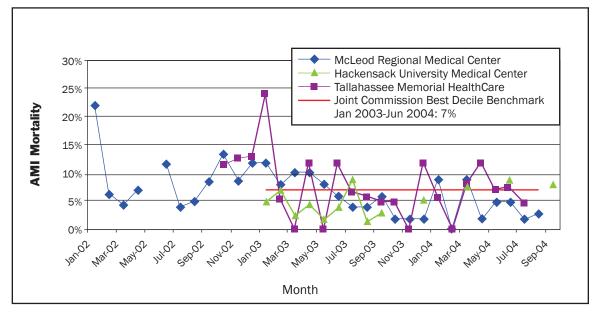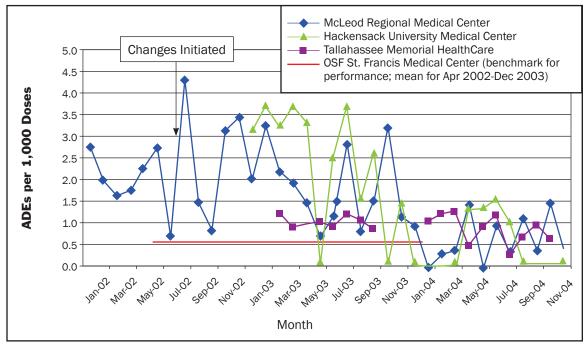

Figure 4. Reduction in Adverse Drug Events (ADEs) among Three Hospitals in the Pursuing Perfection Initiative (January 2002–November 2004)

Adverse drug events per 1,000 doses were determined using the IHI Trigger Tool for Measuring Adverse Drug Events.[24] The mean rate of ADEs per 1,000 doses was used as a benchmark since that was the best level of performance available using a standard measure at the time of the Pursuing Perfection initiative's efforts to reduce harm. Figure 4 demonstrates the level of performance that could be accomplished in just two years when safety and reliability science[25] is applied across an organization.

In July 2002, 75 percent of patients in the inpatient units at Cincinnati Children's Hospital Medical Center, a Pursuing Perfection grantee, were receiving reliable evidence-based care (all indicated services according to standard protocols for their six most common pediatric inpatient diagnoses); this number increased to 95 percent by July 2005.

Improving effectiveness in ambulatory care was also important. Several Pursuing Perfection organizations demonstrated substantial improvements in outcomes for patients. HealthPartners Medical Group and Clinics developed a care model process for all patients in their system, and instituted the use of "all-or-none" measures. With "all-or-none" measures, credit is given only if all the criteria for optimal care are met. For diabetes care, this includes the percentage of patients with diabetes who have had all of the following: an annual hemoglobin A1c value <7 percent; annual screen for LDL with a value <100 mg/dL; last recorded blood pressure <130/80; documented non-tobacco use; and documented regular aspirin use (if age 40 or older). In 2004, only 6 percent of patients with diabetes at HealthPartners met all criteria for optimal care. The rate was similar in other organizations. At HealthPartners, the rate steadily increased each quarter, reaching 24.5 percent in the third quarter of 2008.

In Jönköping, Sweden, a focus on the health of the public led the team participating in Pursuing Perfection to seek improvements in rates of influenza vaccine. Through community and health care system changes, influenza vaccine rates increased from 52 percent of the population in 2001 to 70 percent in 2005.

Reducing Waste and Unwanted Delays

Emergency department (ED) visits can be reduced for people with chronic illness when care in the community is designed to keep them well. At Cambridge Health Alliance, asthma-related visits to the ED for their population of children with asthma decreased from 12.1 percent of children with asthma in 2003 to 5.9 percent of children with asthma in 2005. Whatcom County tested offering patients with multiple chronic illnesses the support of a clinical care specialist. They estimate that use of services by these patients decreased; over 60 percent of patients with a clinical care specialist were able to avoid at least one office visit, and 15 percent were able to avoid an emergency department visit.

At the Center for Chronic Care (CCC) within Capital Health Plan (CHP), Tallahassee Memorial HealthCare and CHP dramatically improved care for people with multiple chronic illnesses. In 2004, the inpatient days per 1,000 patients dropped from 2,354 to 1,644 for patients participating in the CCC. In 2005, the number of inpatient days per 1,000 patients dropped from 3,622 to 1,158 for a second cohort of patients using the CCC.

In 2004, the cost per member per month decreased from $1,179 to $932 for patients participating in the CCC. In 2005, the cost per member per month decreased from $2,869 to $993 for a second cohort of patients participating in the CCC.

Waiting times in the system at Devon and Exeter Trusts in England were a constant concern. By examining admissions and discharges from hospital to community, and approaching improvements to the flow in and out of the hospital as a system-level challenge, the Trusts were able to reduce the number of days patients were waiting to be transferred from acute care to long-term care from 6.5 to 3.5 days. Quicker returns to the community made beds in the hospital available more quickly, and the number of patients waiting for admission into the hospital dropped from an average of two patients per day to no patients waiting for a hospital bed on most days.

Patients as the Source of Control and Delivering Equitable Care

In January 2002, the difference in asthma-related ED visits between English-speaking and non-English-speaking children at Cambridge Health Alliance was 35 percentage points; this gap decreased to 5 percentage points in March 2006.

Cincinnati Children's explored their cystic fibrosis outcomes using payment source (government or private) as a proxy for wealth and identified a discrepancy: a smaller percentage of children with private insurance had nutritional failure (weight below the tenth percentile for their age) than the children with government payment sources (Medicaid). In 2002, there was approximately a 20-point gap between the two payer groups; in 2006, this gap was less than 5 points (see Figure 5).
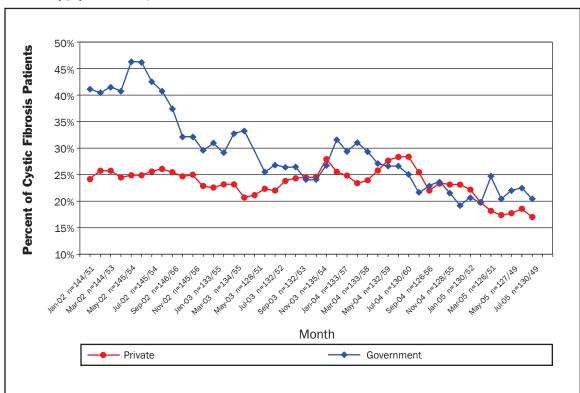
Figure 5. Percent of Cystic Fibrosis (CF) Patients at Cincinnati Children's Hospital Medical Center with Weight for Age Below 10th Percentile (January 2002-July 2005) (includes only patients who are less than 19 years old, stratified by payment source)

Results like this indicate that the Pursuing Perfection initiative helped improve patient experience and outcomes. Another indicator that Pursuing Perfection has strengthened health care organizations' overall performance is success in public competition. For example, awards bestowed upon two Pursuing Perfection sites validate the importance of the initiative's lessons:

- Cincinnati Children's Hospital Medical Center received the 2006 American Hospital Association–McKesson Quest for Quality Prize for their leadership and innovation in quality, safety, and patient care. In 2008, The Joint Commission awarded Cincinnati Children's the Ernest Amory Codman Award to recognize their excellence in the use of outcomes measurement to achieve improvements in the quality and safety of health care.
- HealthPartners received the National Quality Forum's National Quality Healthcare Award for 2007 for their outstanding efforts to drive improvements in quality, efficiency, transparency, and accountability.

Through the experience of all 13 organizations in Pursuing Perfection, we now better understand that it is possible, though not easy, to raise the bar in health care on a few outcomes and processes at once, and we know how to achieve it. Based on qualitative analysis of the initiative's outcomes, we have developed a hypothesis for achieving high-level, sustainable improvement—that is, pursuing perfection—in health care organizations. This hypothesis is depicted in the driver diagram below (see Figure 6). A driver diagram is a tool to help organize theories and ideas in an improvement effort as to which changes (primary and secondary drivers) will result in achieving the desired outcome.

Figure 6. Drivers of Substantial and Sustainable Performance Improvement in Health Care

Secondary Drivers

Primary Drivers

Reach and Sustain High Levels of Performance and Establish the Infrastructure to Improve Anything

Senior leadership drives to high levels of improvement

- Set aims at levels far beyond the benchmark
- Create an executable strategy
- Resources are devoted to a long-term strategy (7-10 years) that includes building infrastructure
- Innovation is supported and encouraged to solve the challenging problems

Operations leaders build and execute a portfolio of initiatives that together meet strategic goals while building the infrastructure for sustainability

- Strategy drives priorities for initiatives
- Develop adequate human capital and improvement capability to execute the portfolio of projects
- Modify structures and processes to achieve and then sustain new performance levels

Front-line projects serve as the crucible for innovation and improvement, and for learning how to change the system

- Learning and measurement system is used to ensure success
- Creativity and innovation alongside sound improvement methods drive to raise-the-bar results

Two Success Factors: Leadership and Innovation

Two key elements were critical to achieving and sustaining the level of performance sought in Pursuing Perfection: 1) the commitment of leaders to making quality the central business strategy and working to fulfill that commitment; and 2) finding innovative ways to solve the problems that arise when goals are ambitious and systems are complex.

Leading an Organization to Raise the Bar

When the Pursuing Perfection initiative was launched, it required that one full-time equivalent from the senior executive team in each organization be devoted to the initiative. The senior leaders in the participating organizations showed an impressive commitment to Pursuing Perfection. As the initiative developed, we learned that it was not the amount of time devoted, but what the leaders *did* with that time, that made the difference between typical local improvement projects and system-wide improvement. Each of the senior executives and their teams used different theories of leadership and management, including the Malcolm Baldrige criteria, and models from John Kotter[26] and Jim Collins.[27] Many used an amalgam of these and other approaches.

The participating organizations' leaders were coached by IHI faculty—Jim Reinertsen, Maureen Bisognano, Michael Pugh, and Tom Nolan—who were committed to learning, along with the leaders, the leadership behaviors most important to achieving outstanding results. Together, the leaders and coaches observed strategies used among all the participants, but particularly those that moved the quickest to achieving "raise the bar" performance. The major insight is that while a system of leadership is needed, certain approaches, or "leverage points," are most important for pursuing perfection. These approaches are explained in detail in the IHI white paper, *Seven Leadership Leverage Points for Organization-Level Improvement in Health Care.*[10]

A summary of the key leverage points, with examples from the Pursuing Perfection participants, underscores how leadership behavior supports making quality the everyday strategy for the organization.

1. Establish and oversee specific system-level aims at the highest governance level.

These system-level aims were ambitious and reflected the personal commitment of the leadership team. For example, many of the Pursuing Perfection organizations made promises, sanctioned by the board of trustees, in terms that patients could understand—such as "you will be safe in our care"— and made them visible.

Well-chosen system-level aims became primary drivers of whole system transformation, because aims such as "reduce the mortality rate for all hospitalized patients by 20 percent in 3 years" could not be accomplished through one or two improvement projects, in one or two diseases, or in one or two departments or units. Moreover, when such aims were adopted by the organization's board of directors or other "highest governing authority," the aims could not be ignored.

2. Develop an executable strategy to achieve the system-level aims and oversee their execution at the highest governance level.

To reach this goal, senior teams in Pursuing Perfection organizations would do the following:

- Adopt a few focused breakthrough aims in quality as their priority;
- Develop a rational portfolio of improvement projects that would, if executed well, reach those aims;
- Assign and train very capable leaders to ensure that projects delivered results; and
- Ensure that adequate support and oversight were provided to leaders and improvement teams.

Senior leaders set aims at the beginning of the Pursuing Perfection initiative, and the leaders then proposed a portfolio of improvement projects to reach those aims. Along the way, they identified when aims needed to be more ambitious, when the portfolio was not focused enough, or when there were insufficient leaders for projects, and they made adjustments to all three during the regular review of quality and their Pursuing Perfection efforts at weekly senior executive team meetings. A refinement of this approach is described in the IHI white paper, *Execution of Strategic Improvement Initiatives to Produce System-Level Results.*[9]

3. Channel leadership attention to system-level improvement: personal leadership, leadership systems, and transparency.

The leaders of organizations that moved quickly to pursue perfection were the ones who gave the initiative their focused attention. They attended project meetings, deployed their senior team to support projects, and made changes in their own work and that of the organization so that Pursuing Perfection efforts could be supported and sustained by infrastructure changes.

4. Put patients and families on the improvement team.

Originally, the concept was to "get the right team on the bus," by having senior leaders devoted to quality and medical staff committed to improvement. These attributes of the team remain important, but the pivotal change was to include patients and families as part of the improvement team. Daily patient communication with the senior executives, family-centered rounds, integration of families and patients in organizational infrastructure (governance and improvement work), and bringing patient stories to the board of trustees are some ways to involve patients and families in improvement. Incorporating the patient and family perspective leads to setting ambitious improvement aims, establishes a stronger sense of urgency, and focuses ideas for change on what is most important for the customer. Without patients' voices, designs for improvements easily and frequently miss the target, meeting the needs of staff but failing to meet those of patients and families.

5. Make the chief financial officer (CFO) a quality champion.

One of the pressing challenges to pursuing perfection is reconciling the business performance of the organization with quality improvement. A successful strategy must enhance both. When the CFO understands how quality improvement affects business performance, and can lead efforts to improve quality and improve the financial picture at the same time, big improvements become achievable and sustainable. For example, the CFO at Cincinatti Children's participated in efforts to improve reliability in the ED and inpatient units. With his help, the team identified opportunities to reduce waste and improve outcomes.

6. Engage physicians.

Generally, physicians are primarily focused on delivering patient care and less so on being engaged in improvement efforts. In Pursuing Perfection, physicians became engaged in developing and executing the strategy to improve performance; both their ideas and their will for improvement helped to drive the projects to successful results. As a support for this level of engagement, three grantee organizations sent physicians to the Intermountain Healthcare Advanced Training Program to hone their improvement leadership skills, and subsequently these physicians brought their energy, expertise, and improvement skills to the toughest problems encountered in Pursuing Perfection. Without leadership from physicians—who are capable of working *on* the system, not just *in* the system—improvements are often smaller and slower, and projects have less chance of attaining ambitious goals. A detailed description of effective ways to engage physicians in improvement is included in the IHI white paper, *Engaging Physicians in a Shared Quality Agenda.*[28]

7. Build improvement capability.

The will, ideas, and strategy to pursue perfection rely on capable staff to bring them to life. Each organization needs a method for improving (it does not seem to matter which one), but beyond that they need people capable of leading improvement. Just as physicians need to be engaged, most organizations need people who understand and can coach improvement, if not at the front line then in a technical role as support to the improvement project teams. Most Pursuing Perfection teams trained Improvement Advisors (IAs) to teach and coach others in their organizations about improvement. Many organizations found that this level of support was insufficient; front-line staff and managers also needed skills to lead and support improvement projects on the spot, rather than waiting for the IA to help.

Leaders in Pursuing Perfection eventually used each of the Seven Leadership Leverage Points to guide their organizations to new levels of performance. They did so in different sequences and to different degrees, depending on the organization, but successful organizations addressed all seven levers.

Pursuing Perfection as the Incubator of Innovation

Having set aims at levels well beyond current industry benchmarks, the Pursuing Perfection grantees believed that if they ramped up their existing improvement efforts (to a level they referred to as "improvement on steroids"), the goals would be achievable. A few participants, advisors, and faculty predicted that doing more of the same—using current improvement strategies—would not be sufficient, and that new designs were needed. Consequently, early in the initiative we began examining the "10 Simple Rules" from *Crossing the Quality Chasm* for guidance on redesigning care.

Initially, however, each participating organization started projects and implemented infrastructure changes using their existing methods; later each organization, in their own way, discovered that more of the same—even better versions of the same—would not be sufficient for achieving their lofty Pursuing Perfection aims. They made some progress in improving outcomes and were ready to expand improvement projects, but often found themselves stuck. It was at this point that innovation became important. Several examples of the need for innovation and redesign during the Pursuing Perfection initiative illustrate this point.

Example 1: Shifting the Focus from Better Disease Management for the Chronically Ill to Providing Planned Care for All Patients

Background: HealthPartners Medical Group and Clinics established a goal of improving outcomes for patients with chronic disease, and began perfecting diabetes care in two clinics. Before joining the Pursuing Perfection initiative, they had already made great improvements in care for people with diabetes. After 12 months and some improvement in performance indicators, they recognized that their disease-specific approach would not be sufficient to achieve their goals for better chronic disease care. They could not build a process for diabetes care, and then one for asthma care, and then one for congestive heart failure care, and then one for depression care. What they needed was an integrated system of chronic illness care that accommodated patients with *any* condition.

The Innovation: Two innovations emerged from this effort. First, HealthPartners reconceived their project and began using a standardized team-based approach to deliver care across all primary care sites that they called their "Care Model Process." This became the model of care for all patients, not just those with chronic illness, and HealthPartners now uses it in inpatient settings (a variant on multidisciplinary rounds). By ensuring that each patient is affiliated with a care team that is responsible for care over time, they discovered that communication and continuity are easier, and gaps in care decrease. Both the delivery of evidence-based care has improved and the cost of care has decreased. In this reconceptualization, HealthPartners also developed the use of an all-or-none approach to measuring performance on important aspects of care. All-or-none measurement gives credit for improvement only when all indicators of performance are met—a much higher standard.

The Result: By providing team care to every patient, not just those with chronic illness, the Care Model Process offers an innovative extension of the Planned Care Model.[29] This process has become standard throughout HealthPartners and is used in primary care settings in both the US and the UK. Use of all-or-none measurement to drive performance within the organization is also standard in HealthPartners and has been incorporated into IHI programs on improving reliability and in other settings.

Example 2: Delivering Evidence-Based Care Reliably

Background: Several Pursuing Perfection grantees focused their improvements on providing evidence-based care and used as their metrics the core measures mandated by the Centers for Medicare & Medicaid Services (CMS). They aimed to deliver care reliably, with failures in the parts per hundred (95 percent reliability or better), rather than at the prevailing performance level of 1 to 4 failures out of 10. In the case of evidence-based care, clinicians widely agreed that specific services or interventions were necessary for good care and should be delivered reliably. However, training, vigilance, and trying harder did not yield performance in parts per hundred.

The Innovation: This experience led IHI and the grantees to import and adapt methods for reliability from industry into health care.[25]

The Result: Hackensack University Medical Center and McLeod Regional Medical Center took the lead in applying reliability concepts to health care, mainly through their participation in the CMS–Premier HQID project. Although both organizations, and others, could show near-to-benchmark performance (at 75 percent reliability or better) at the beginning of the Pursuing Perfection initiative in 2001, their work on improving reliability during their participation in Pursuing Perfection moved them to a different, greater level of reliability altogether, reaching beyond 90 percent reliable delivery of evidence-based care. The use of reliability methods from other industries, generally untested at the start of Pursuing Perfection, is now widespread in IHI initiatives such as the 100,000 Lives Campaign and the 5 Million Lives Campaign, and embedded in other improvement initiatives such as the Premier QUEST program.

Example 3: Patients Become Partners

Background: Pursuing Perfection organizations were committed to making patients their partners in care, and placed patient satisfaction at a high premium. Most organizations had instituted Patient and Family Advisory Committees, conducted focus groups, and instituted programs to make patients and families more informed, more welcome, and more comfortable. From the start, the Whatcom County team sought out patient input when designing their project, and what all Pursuing Perfection teams learned was eye-opening.

The Innovation: When Cincinnati Children's and the UK teams decided to include patients and families on their improvement teams, the results were more than positive. From Whatcom County's experience of engaging patients and families early in their improvement efforts, it became clear that improving care *for* patients and families was not enough; we had to improve care *with* them. As a result, the patients and families were able to see all the performance data and understand all the challenges involved in improving quality of care. Structures in the organization made it possible for patients and family members to be full partners in the pursuit of perfection.

The Result: Including patients and family members on improvement teams is becoming commonplace in Pursuing Perfection organizations and organizations participating in IHI's IMPACT network. Teams share data transparently with patients and families, and they get the best ideas for improvement and the best motivation from patients and families. This approach has been integrated into many IHI programs, is taught and advocated by the Institute for Patient- and Family-Centered Care, and is now used in hospitals across the US and the UK.

Other Examples of Innovation

Other innovations from Pursuing Perfection began in similar ways. This paper previously described how the use of Whole System Measures opened up the possibility of assessing performance improvement in the organization as a whole. The following list of innovative approaches stemmed from challenges faced in Pursuing Perfection.

- **Tackling mortality reduction as a system property** is work that has become a mainstay in health care and served as the basis for the IHI 5 Million Lives Campaign.
- **Ensuring patient flow through the system of care** was a challenge for most organizations, with ED diversions, long lengths of stay, and high occupancy threatening the well-being of patients and health care organizations. More capacity was not the answer. Communities of organizations in Pursuing Perfection, IHI's IMPACT network, and elsewhere began testing innovative strategies for matching capacity with demand and working across organizational boundaries. Some of these organizations are beginning to show remarkable results such as eliminating ED diversions and reducing waiting time for hospital admission from six hours to three.
- **Demonstrating the business case for quality** has been elusive, but in the Pursuing Perfection initiative, financial officers joined together with front-line improvers to find innovative ways to reduce costs while improving quality.[30] Organizations continue to test these approaches and use them as a foundation for strategies to reduce waste.

Fortunately, not only did Pursuing Perfection have the IOM's "10 Simple Rules," but we also had a process for learning together how to redesign systems to reach higher levels of performance. Innovative ideas emerged in this redesign process, and many of them have become part of mainstream improvement in health care. One innovation begot another; once we set perfection-level aims, we needed inventive ideas to help us achieve them.

Even though several Pursuing Perfection grantees—in particular, Whatcom County and HealthPartners in the US, and Jönköping County in Sweden—were achieving performance levels that raised the bar for patient experience in hospitals and primary care settings, IHI leaders recognized that the Pursuing Perfection initiative would not produce models that would improve health care overall. A fundamental conflict in the US health care system and current business models prevented most health care providers from attending to the health of the population and the per capita costs of health care. Yet, without addressing these components, perfect care in hospitals is costly and ignores the best opportunities to keep people healthy, that is, keep them from becoming patients. If health care in the US was to improve at the levels envisioned at the inception of Pursuing Perfection, the goal of perfect performance of providers has to be joined with a new and transformative aim for health care quality; to focus *simultaneously* on three facets at the same time: the health of a population, the individual care experience, and the control of per capita costs. In addition, the system to accomplish these aims would include much more than the traditional health care system. With this new insight, IHI subsequently launched the Triple Aim initiative in 2007, which focuses on these three aims and is based on the work stemming from Pursing Perfection.[16]

The Triple Aim itself is an inventive use of lessons from the early days of health maintenance organizations (HMOs) and managed care. It assumes that if performance and funding are considered together for a population of patients, care will be adequate, rational, and lean. The current prototype tests on the Triple Aim will be the next innovative effort to fulfill the aims of Pursuing Perfection. Innovation begets the need for more innovation.

Learning from Failures As Well As Successes

Ten years after the Pursuing Perfection initiative began the successes remain, and there are also lessons from the efforts that did not work as well. Sometimes changes were too difficult to implement in Pursuing Perfection organizations or did not lead to improvement. Some key reasons for failure emerged and are illustrated with examples below. The learning from these failures helped inform continued improvement efforts.

Projects Failed from Lack of Cooperation

A prime example is the difficulty in changing outcomes for patients with chronic illness. Several Pursuing Perfection organizations tried to improve outcomes for patients with asthma, diabetes, congestive heart failure, and depression. Using the best known tools and approaches, they struggled with poor cooperation from physicians that did not want to, and did not have to, adhere to standard approaches for care. Moreover, they often faced a host of barriers in the community, particularly in communities with fewer resources. When clinicians were allowed to continue idiosyncratic practices, without the leadership and support to standardize care, and when the population needed more resources than were available, patient outcomes did not change.

Efforts Failed Because They Were Not Seen As Strategic for the Organization

The Pursuing Perfection teams saw the strategic value in getting finance staff involved in improvement efforts, but the challenges to doing so were many. It took substantial time and leadership to build a common language and trust between financial staff and clinicians. These relationships created a climate in which returns on investment could be understood and common aims could be established. Without the cooperation, there were few or no linkages between improvement efforts and financial well-being for the organization. When organizations faced financial challenges, improvement efforts (such as cooperation with community providers on adherence to standards, streamlining medication practices, or raising patient satisfaction) were often among the first investments to be sacrificed.

Projects Failed from Lack of Sustained Attention

Some Pursuing Perfection improvement projects failed simply because difficulties arose. For example, if a project was not clearly tied to the organization's strategy, as noted above, it was at risk. Turnover at the senior leader level and changes in the power base in the community caused other improvement efforts to lose momentum. In Whatcom County, for example, the clinical nurse specialist support for people with chronic illness was discontinued, even though it had demonstrated very good results when the team pilot tested this change. The funding ran out and there was not enough leverage in the community to generate alternate local funding.

Leaders leave organizations, relationships falter, and individuals can choose not to cooperate. These things cannot be prevented, but future efforts at system-wide change can be ready to overcome these challenges by properly setting up improvement projects to bolster their chances for success, and by establishing several layers of engaged leadership and talent to support improvement efforts.

Conclusion

The Pursuing Perfection initiative sought to achieve bold levels of transformation in the health care system. Although no hospital or health care delivery system can claim to have achieved perfection, the pioneering organizations that participated in the initiative demonstrated tremendous achievements and important learning and innovations resulted from this work. We now understand more clearly both the value and the limits of pursuing excellence in the acute care setting, and improved outcomes for thousands of patients in the US and Europe are in many ways the result of these efforts.

The most precious lesson from the Pursuing Perfection initiative is this: much better system-level performance is attainable and we no longer need to settle for modest improvements. Care can be highly reliable, safe, equitable, efficient, and superbly supportive of patients and families. Moreover, with a moderate amount of support and attention, health care leaders can foster substantial changes in their organizations' capacity to provide outstanding care. Innovation has an important role in health care improvement; it can help solve intractable problems and bring new thinking to fundamental issues like mortality, reliability, and service.

Despite the successes of the Pursuing Perfection initiative, it is more evident that the best possible performance in hospitals is not enough to transform the health care system overall. First, having an example of "perfect care" does not necessarily lead others to follow. Many health care leaders need concrete reasons to disturb the status quo. The leverage of regulation or financial incentives will also be needed to propel leaders to seek performance that is more than just above average. Second, it's not certain that perfect care will necessarily reduce waste in health care processes and costs of care. Perfect care in the hospital will not necessarily lead to better community-based care, or solve the problems of overuse, underuse, and misuse in the health care system. The pursuit of perfect health care—which leads to better health, fewer episodes in which care is needed, and lower costs—requires fundamental changes in the way care is organized and in the payment structure for care. Although Pursuing Perfection may not have achieved its goal of "perfection," the initiative did establish a transformational vision for system-level improvement and how it might be achieved, and garnered noteworthy innovations and improvements in outcomes in the process.

Appendix A: Pursuing Perfection Grantee Organizations in the United States

Organization Name and Location	Focus of Pursuing Perfection Efforts
Cambridge Health Alliance,* Cambridge, Massachusetts	Integrated Delivery System
Children's Hospital and Health Center–San Diego, San Diego, California	Hospital and Clinics
Children's Hospital Medical Center,* Cincinnati, Ohio	Hospital and Clinics
Hackensack University Medical Center,* Hackensack, New Jersey	Hospital
HealthPartners Medical Group and Clinics,* Bloomington, Minnesota	Medical Group and Clinics
Henry Ford Medical Group, Detroit, Michigan	Integrated Delivery System
Luther Midelfort–Mayo Health System, Eau Claire, Wisconsin	Hospital and Clinics
McLeod Regional Medical Center,* Florence, South Carolina	Hospital
Mission St. Joseph's Health System, Asheville, North Carolina	Hospital
Scripps Mercy Hospital, San Diego, California	Hospital and Clinics
St. Joseph Hospital (Whatcom County),* Bellingham, Washington	Community-wide Health Care
Tallahassee Memorial HealthCare,* Tallahassee, Florida	Hospital with Health Plan

*Organizations that received Phase II implementation grants from RWJF

Appendix B: Selected Examples of Best Results from Pursuing Perfection (2002–2006)

Pursuing Perfection Site	Improvement Focus	Results
Cambridge Health Alliance	Pediatric Asthma	In July 2003, the rate of pediatric asthma emergency department (ED) visits was 12.4 percent at two pilot sites, 6.8 percent at another, and 12.1 throughout the rest of the system. In July 2005, the rate of pediatric asthma ED visits for each location was reduced to 6.8 percent, 4 percent, and 5.9 percent, respectively.
	Health Disparities	In January 2002, the difference in pediatric asthma ED visits for non-English-speaking and English-speaking patients was 35 percentage points; this gap was decreased to 5 percentage points in March 2006.
Cincinnati Children's Hospital Medical Center	Health Disparities	In January 2002, the difference in incidence of nutritional failure (weight for age below the 10th percentile) for pediatric cystic fibrosis patients with government insurance and for those with private insurance was 16 percent; the gap was decreased to 4 percent in July 2006.
	Adverse Drug Events	In November 2004, the number of days between insulin reversal agent administrations was 31 days; the number of days increased to 244 days in September 2005.
	Increased Community Involvement	In October 2003, 5 percent of the network asthma population was receiving "perfect care" (all indicated services), which increased to over 80 percent in December 2005.
	Reliability of Care	In July 2002, 75 percent of patients in the inpatient unit were receiving reliable evidence-based care (all indicated services), which increased to 95 percent in July 2005.
Hackensack University Medical Center	Adverse Drug Events	In 2002, the adverse drug event rate was 8 harms per 1,000 doses; in the first quarter of 2007 there were 0 harms per 1,000 doses.
	Reliability of Care	• In 2004, 96.5 percent of patients with acute myocardial infarction were receiving reliable evidence-based care (all indicated services), which increased to 99.3 percent in July 2006. • In 2004, 98.3 percent of patients with coronary artery bypass grafts were receiving reliable evidence-based care (all indicated services), which increased to 98.4 percent in July 2006. • In 2004, 94.2 percent of patients with congestive heart failure were receiving reliable evidence-based care (all indicated services), which increased to 96.3 percent in July 2006. • In 2004, 89.9 percent of patients with pneumonia were receiving reliable evidence-based care (all indicated services), which increased to 96 percent in July 2006. • In 2004, 93.9 percent of patients with hip and knee replacements were receiving reliable evidence-based care (all indicated services), which increased to 97.8 percent in July 2006.

Appendix B: Selected Examples of Best Results from Pursuing Perfection (2002–2006) [continued]

HealthPartners Medical Group and Clinics	Congestive Heart Failure Care	In January 2005, 22.9 percent of patients with congestive heart failure were receiving "perfect care" (all indicated services); this increased to 78.8 percent in December 2005.
	Diabetes Care	In the 2nd quarter of 2003, 1.8 percent of patients had optimal diabetes care (HbA1c <7, LDL <100, systolic blood pressure <130, daily aspirin use [over 40 years], non-tobacco use); this increased to 12.1 percent in the 4th quarter of 2005.
	Care Team Approach	• Prior to May 2005, 8 percent of primary care visits had pre-visit planning; this increased to 72 percent in December 2005. • Prior to May 2005, 56 percent of patients had an accurate health maintenance record; this increased to 95.5 percent in December 2005.
	Reduce Ventilator-Associated Pneumonia (VAP)	Prior to 2004, the average monthly incidence of VAP per 1,000 ICU days was 4; this decreased to 0 by December 2005.
	End-of-Life Care	In January 2004, the average length of stay in hospice for end stage congestive heart failure was 3.3 days; this increased to 142 days in December 2005.
Jönköping County, Sweden	Asthma Care	From 2001 to 2005, hospitalization for pediatric asthma patients decreased from 21 per 10,000 children to less than 10 per 10,000 children.
	Workforce	Staff turnover decreased from 4 percent in 2001 to 1 percent in 2005.
	Preventive Care	In 2001, 52 percent of the population received an influenza vaccine; this increased to 70 percent in 2005.
Luton and South Bedfordshire Acute Care Trust, United Kingdom	Flow in the System	In January 2003, 28 percent of patients waited more than 4 hours for care in Accident and Emergency. By January 2006, the percent waiting more than 4 hours was less than 8 percent.
	Chronic Conditions	In April 2002, patients with chronic obstructive pulmonary disease (COPD) accounted for 8 percent of hospital admissions; patients who were admitted stayed on average 9.2 days in the hospital. By January 2005, COPD patients accounted for 4 percent of admissions and those who were admitted stayed on average 7 days in the hospital.

McLeod Regional Medical Center	Acute Myocardial Infarction Care	In 2002, mortality from acute myocardial infarction was 7.5 percent; this decreased to 4.1 percent in July 2005.
	Adverse Drug Events	In 2001, the rate of adverse drug events was 3.5 harms per 1,000 doses; this decreased to 0.4 during the first six months of 2005.
	Workforce	In 2002, the staff turnover rate was approximately 8 percent; in 2005, this rate decreased to less than 4 percent.
	Reliability of Care	• In August 2004, 50 percent of patients with pneumonia received reliable evidence-based care (all indicated services); this increased to 89 percent in July 2005. • In August 2004, 57 percent of patients with congestive heart failure received reliable evidence-based care (all indicated services); this increased to 67 percent in July 2005. • In September 2004, 64 percent of patients with hip and knee replacements received reliable evidence-based care (all indicated services); this increased to 85 percent in July 2005. • In August 2004, 88 percent of patients with coronary artery bypass grafts received reliable evidence-based care (all indicated services); this increased to 100 percent in July 2005.
Tallahassee Memorial HealthCare	Mortality Reduction	In 2001, the hospital standardized mortality ratio was 128.7; this decreased to 78.2 in 2005.
	Acute Myocardial Infarction Care	In 2003, the mortality rate from acute myocardial infarction was 7.6 percent; this decreased to 4.7 percent in 2005.
	High Risk Chronic Care Management	• In 2005, the mortality rate of Center for Chronic Care (CCC) patients was 3.9 percent, 5.9 percentage points lower than that of a control group and 2.5 percentage points lower than the original 1,000 patients invited to participate in the CCC. • In 2004, the inpatient days per 1,000 patients dropped from 2,354 to 1,644 days for patients participating in the CCC. In 2005, the inpatient days per 1,000 patients decreased from 3,622 to 1,158 days for patients participating in the CCC. • In 2004, the cost per member per month decreased from $1,179 to $932 for patients participating in the CCC. In 2005, the cost per member per month decreased from $2,869 to $993 for patients participating in the CCC.
Whatcom County/ PeaceHealth	Patient Involvement	• In 2007, there were 1,097 active patient shared care plans (an increase from 0 in 2002). • Patient involvement increased by including patients on improvement teams, committees, and community advisory groups. In 2008, 22 patients were involved with various improvement teams and committees (Medical Executive, Medication Reconciliation, SCIP, ICU Collaborative, etc.), 16 patients were on the Center for Senior Health Advisory Group, and 10 patients participated in Joint Camp Development. Two patients were also involved in presenting on the topic of Patients as Partners on Teams during the Northwest Patient Safety Conference in Seattle.

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