Transforming Health Care

Part 1: A Tribute to the Physicians and Staff at The Permanente Medical Group

BY ROBERT PEARL, M.D.

In September 2013 The Permanente Medical Group was named the recipient of the American Medical Group Foundation’s 2013 Acclaim Award for its initiative “Transforming Health Care through Leadership and Technology.” Here are some highlights from their achievements.

Among awards and accolades that The Permanente Medical Group (TPMG) has earned, the Acclaim Award of the American Medical Group Association stands out. As physicians, we value the appreciation and gratitude we receive from our patients. And we welcome recognition from the policy world for our success in delivering high-quality, accountable care. But an award from one’s medical group peers has special meaning and impact.
TPMG is a large multispecialty medical group founded over 65 years ago on the principles of integrated care, multispecialty group practice, prepayment, preventive care, and physician leadership. Then and now, our mission and purpose is to provide the highest quality care to our patients and to earn their trust by ensuring convenient access and personalized service for all. These are lofty principles and goals, but principles and goals do not guarantee success, particularly within the context of meeting the expectations of an increasingly resource-constrained external economic environment.

In the late 1990s, we faced serious competitive threats as new aggressive competitors entered the healthcare market. To be successful, we had to differentiate our performance on quality; provide market-leading, patient-centered access and service; and achieve improvements in productivity. Our care delivery had to advance as rapidly as the exponential growth of medical science, and we had to find solutions to the fragmentation of health care, the growing demands on primary care, and the overall needs of our entire membership. We required in the words of the Institute of Medicine’s *Crossing the Quality Chasm*, “fundamental, sweeping change” if we were to meet the Institute’s Aims for care that is safe, effective, patient-centered, timely, efficient, and equitable.

We set out to fundamentally redesign our care processes and dramatically improve performance.

Beginning in 1999, we set out to fundamentally redesign our care processes and dramatically improve performance. To ensure success, we made significant investments in physician leadership development and information technology. Neither of these were areas that we had ignored previously, but the magnitude of investment and focus was increased exponentially. We structured our leadership development efforts on achieving alignment around TPMG’s priority goals and using data to drive change and track progress. We created a series of programs for senior executives, department chiefs, and emerging future leaders. Information technology was taken to a new level with our 2005-2010 implementation of the world’s largest and most comprehensive civilian electronic medical record. On that basic IT chassis, we built reporting systems to better measure our performance, population registries to guide our chronic condition management, and web- and mobile-based applications that link our physicians with their patients. As part of that effort, we gave patients the tools to access their personal health information, the ability to make appointments, the ease of refilling their prescriptions online, direct access to laboratory results, and a wealth of self-care information and programs.

The results of these efforts and the investments documented in our application for the Acclaim Award have been remarkable. In hypertension control, we currently approach 90%, compared to a national average of 55%. Our management of cardiovascular risk and care has resulted in a 62% decline in serious heart attacks and a 42% reduction in death from stroke among the patient population we serve. We have developed population-based screening programs for cervical, breast, and colon cancer with results that place us among the top 10 health plans in the country. In fact, if all Americans received the excellence in preventive screening and early intervention as our current membership, as many as 200,000 patients in the United States would avoid a heart attack or stroke each year, and 17,000 fewer people would die from colorectal cancer over the next 10 years. Our inpatient work on sepsis care has resulted in a 40% reduction in observed-to-expected sepsis mortality. Overall, we have lowered all-cause hospital mortality by 17% since 2007 and decreased hospital utilization by over 20%. At the same time, we have improved patient access to care and patient satisfaction so that our health plan has received the J.D. Power and Associates award for patient satisfaction six years in a row. We are proud to be the only 5 Star Medicare plan in California and the highest-ranking California health plan in NCQA’s 2012-13 rankings. Finally, we have achieved this performance in a way we believe is sustainable. Our physician morale is the highest in our history, and we are gratified to have 10 applicants for every physician opening.

The Acclaim Award is a tribute to the work of the more than 8,000 physicians and 34,000 staff of The Permanente Medical Group. The people of TPMG have demonstrated that achieving the six Institute of Medicine aims is possible when consistent leadership and effective technology are applied by a multispecialty medical group working in partnership with a not-for-profit health plan. We are proud of what we have accomplished but also know well that our work is not complete. We remain committed to accelerating the pace of change and helping making high-quality, affordable care available to all.

Robert Pearl, M.D., is executive medical director and CEO of The Permanente Medical Group, the 2013 Acclaim Award recipient.
For more than six decades, the mission of The Permanente Medical Group (TPMG) has been to provide industry-leading quality, safety, and service at an affordable price. Their long-term vision, held with their partner Kaiser Foundation Health Plan and Hospitals in Kaiser Permanente, is to deliver on this promise so effectively that they serve as a model of care delivery for the nation.

The redesign was dependent upon very significant investments in development of skilled physician leaders to design and drive that change and in the technology to support it. In this article, four cases provide a closer look at the redesign processes and demonstrate how profoundly the changes TPMG made have improved the health of their patients.

Challenging Times

By the late 1990s, TPMG was experiencing a number of very serious external pressures.

First, they suffered from problems common to modern care delivery: the exponential growth in medical science and technology, the growing complexity and fragmentation of care, the increasingly unmanageable demands on primary care, and a persistent focus on acute care over population health. Many of the failures in effectiveness and safety outlined in the seminal 2001 Institute of Medicine (IOM) *Crossing the Quality Chasm* report were evident in the system as well; the infrastructure built in the 20th century would not support the demands of the 21st.

Second, the late 1990s brought significant, broad-based economic and market pressures. TPMG had lost much of their market advantage.
Leadership recognized that they would need, as stated in the *Crossing the Quality Chasm* report, “fundamental, sweeping redesigns” to bring state-of-the-art care, service, and optimal health to the entire population. Elected in 1999, the new Chief Executive Officer (CEO) laid out a vision of group excellence and new strategies for redesigning major care processes that leveraged integration. This vision relied on very significant investments in physician leadership and information technology.

**Investing in Physician Leaders**

With all of the challenges TPMG faced, they needed leaders who could guide and implement the new strategy.

Physician leaders design, implement and oversee all aspects of administration, technology, and patient care in TPMG. Over 25% of its 8,000 physicians currently serve in official leadership positions, from the physician leaders responsible for each of 21 hospitals and 51 outpatient facilities, to more than 1,700 department chiefs and committee chairs. To ensure that they are equipped with the skills, values, and perspectives needed for the group’s ongoing success, TPMG created a leadership institute, a set of comprehensive leadership training programs taught by the CEO and faculty experts from three leading schools of business. The curriculum includes programs on strategy, leadership communication, organizational culture, leading change, coaching, team-building, performance feedback, and negotiation. Ongoing trainings include the following:

- **Executive and Senior Physician Training:** Five-week executive training at Harvard Business School
- **Chief and Physician Leader Training:** One-week residential training for new chiefs; six recurring all-day sessions
- **Emerging Leaders Program:** Two-year program for the next generation of leaders; combines residential in-person seminars with peer group sessions, individual projects, and personal development plans. Approximately 200 physicians have participated.

In 2012 TPMG added the following:

- **Adult and Family Medicine Symposium:** Three-day symposium of 240 physician leaders; focused on approaches to increase teamwork, improve communication, and enhance the skills physicians need to run an efficient practice.
- **Leading through Change:** Training for physician peer leaders for quality, service, and access.

Over the past decade, thousands of physicians have attended these programs, representing a level of investment in physician leadership that is essential and likely unsurpassed in health care today.

**Investing in Information Technology**

To ensure that they are leaders in quality, safety, service, and access, TPMG had to strategically invest in IT that was created with and for physicians and served patients and staff well.

From 2005 to 2010 TPMG completed implementation of the world’s largest and most comprehensive inpatient and outpatient civilian electronic medical record (EMR). To manage the customization and deployment of the EMR, physician leaders from every specialty were engaged. Clinical experts, often in combination with the group’s department of research scientists, combed clinical evidence and built it systematically into the EMR. Local physician leaders and EMR “super users” at each facility train and supported their colleagues.

They also created a physician-led department to develop, implement, and support the adoption of other technologies including mobile and video applications. Some of the technologies they developed were:

- Registries and population management tools that display care gaps to all staff and to patients online and on mobile applications
- Web- and mobile-optimized platforms that allow 1.7 million patients to securely send 8 million e-mails a year to their physician; choose their primary care physician in real time; view information from their health record including 5.4 million lab results per year; review the diagnosis, prevention, self-care health information, and tools their doctor recommends; schedule 1.8 million appointments and receive 6.1 million e-mail reminders per year; and identify when they are due for preventive services such as cancer screenings
- 126 interactive, web-based education programs that offer 214,000 patients a year assistance in shared-decision making, self-care, and chronic disease management

**Implementation and Results**

The following four cases illustrate how investments in physician leadership and information technology combined with a relentless focus on achieving the highest levels of quality and service have resulted in exceptional advances in population health and patient satisfaction (see Table 1).
Between 2000 and 2008, TPMG achieved a 30.4% reduction in age-adjusted mortality from heart disease and stroke, a reduction so substantial that the combined mortality of heart disease and stroke dropped below cancer mortality as the leading cause of death in the population served by TPMG (see Figure 1).

Leadership
Given the scale and importance of hypertension control in their population, TPMG implemented a robust leadership structure comprised of the following:

- **Regional Clinical Leader:** The Associate Executive Director (AED) responsible for quality appointed an influential physician expert to lead the hypertension redesign effort. This physician led a multidisciplinary hypertension team (including CV clinical experts, a clinical pharmacist, a research scientist, primary care leaders, analysts, and project managers) to assess opportunities and strategies to improve care.

- **Local Physician Hypertension Champions:** Adult Primary Care and senior facility physician leaders appointed hypertension champions at each facility who met frequently with the regional clinical leader and supported the spread of best practices to all physicians.
Per 10,000 Person Years

2000–2008: 30.4% reduction in mortality from CVD

Colorectal Cancer Stage at Diagnosis*

* A “localized” tumor is confined to the organ of origin without extension beyond the primary organ. “Regional extension” of tumor can be by direct extension to adjacent organs or structures or by spread to regional lymph nodes. If the cancer has spread to parts of the body remote from the primary tumor, it is recorded as “distant” stage.

Colorectal Cancer Screening HEDIS Performance against National Benchmarks and Top Performers (2004 – 2012)

Department Chiefs: Department chiefs hold each physician accountable for their individual panel performance.

Technology
Over the years TPMG has developed tools and technologies that have been critical to their ability to identify, treat, and monitor patients with hypertension. Key developments include:

- BP scan form and registries (utilized prior to EMR implementation)
- Web-based population management tool
- EMR enhancements
- Medical Assistant best practice advisories in the EMR

Results
Between 2001 and 2009, TPMG brought over 350,000 additional people to good BP control, significantly reducing the risk of heart attack or stroke for each. Their 2012 Commercial HEDIS BP control rate was 87%, #3 in the nation in NCQA ratings of Health Plans.

Hypertension control is part of larger work to improve population health by reducing CV risk. Similar systematic approaches have greatly reduced other CV risk factors:

- Their cholesterol control rates for CV disease and diabetes are in the top 10 of the nation per NCQA.
- Smoking rates run 28% below state and 54% below national Behavioral Risk Factor Surveillance System benchmarks.
- In the hospital, TPMG has near-perfect inpatient Joint Commission AMI quality metrics and has experienced a 50% reduction in hospital AMI deaths since 2005.

Colorectal Cancer Screening
Over the past 14 years TPMG has developed comprehensive programs to support cancer prevention, early detection, effective treatment, and systematic surveillance. Colorectal cancer (CRC) has been a critical area of focus as it is the second leading cause of cancer death in the United States, and reports show that half of adults do not receive CRC screening.

TPMG has been systematic in their approach so that in 2012 HEDIS CRC screening rates were 79% for group and individually-enrolled patients and 89% for Medicare patients, the 4th and 2nd highest in the
country, respectively. They have made such significant improvements in CRC screening that the number of new CRCs dropped 15% between 2008 and 2011, despite a growing and aging population. In 2011 they saw fewer regionally and distantly invasive cancers than at any time in recent history (see Figure 2).

**Leadership**

**Regional Clinical Leader:** In 2004, the Associate Executive Director (AED) for Specialty Services appointed an influential gastroenterology (GI) physician expert to lead the CRC screening program redesign effort and to work closely with the research scientists, Chiefs of GI and internal medicine, laboratory, local physician implementation leads, and regional staff to ensure alignment around the goal of increasing CRC screening. Some of the important strategies implemented include:

- **Patient-centered approaches to outreach and screening:** To reduce the patients’ burden of prevention screening, the leader gained approval from primary care to begin a small pilot at several sites to evaluate the acceptability of a mail-based screening outreach program. In addition, he evaluated the effectiveness and patient preferences regarding fecal immunochemical test (FIT) kits. The pilot led to a regional mail-based outreach program to encourage screening for those adults not compliant with other modalities.

- **Setting targets:** Reviewing best national performance, capacity, and progress, aggressive targets have been recommended to and approved by the medical group Board of Directors each year.

- **Colonoscopy quality assurance program:** To ensure consistent colonoscopy screening effectiveness, adenoma detection rates are tracked at the physician level.

- **Other Regional Leadership:** The CRC steering group partnered with technology leaders to develop electronic screening prompts for medical assistants. Executive leaders developed an incentive payment model to support investments in redesign and colonoscopy capacity.

- **Local Leadership:** In each facility, leaders helped oversee and carry out efforts to meet regional goals.
Technology
Complementing the emphasis on leadership, technology was central to being able to identify, screen, and follow-up with patients in an effective, efficient, and timely manner:

- **Identifying at-risk patients:** TPMG designed a multi-pronged approach to identifying and tracking at-risk patients. They used the EMR to refine the targeted population by excluding from outreach patients in hospice, skilled nursing facilities, or with medical conditions such as ulcerative colitis that would contraindicate FIT testing. In the EMR, they had the CRC screening status displayed to physicians and medical assistants in all departments and provided a prompt when patients appropriate for screening were present on the medical campus. Finally, they created tools to support patient engagement including integrating screening status and due dates on all clinic registration receipts, on secure physician home web sites, and on a mobile prevention application.

- **Capacity planning:** A planning tool was developed to assist local GI departments in planning for the number of follow-up colonoscopies due to positive FIT tests.

- **Follow-up:** A high-risk database was developed to ensure timely surveillance for patients with abnormal results.

Results

- In early 2007, the outreach program was rolled out to the entire screening population, initially 300,000 patients annually. By 2012, the population was 450,000 patients annually, using the EMR data to select patients appropriate for FIT outreach. Returned test rates increased from 35% to over 60% in 2012.

- Aggressive screening targets have been set and achieved in each of the last seven years. Figure 3 shows performance against HEDIS benchmarks since improvement initiatives began in 2005.

- Similar approaches have been used for cervical and breast cancer screening, where performance also ranks among the top ten in the country (see Figure 4).

Access and Patient-Centered Care
Access and patient-centered care had not always been strengths of TPMG’s performance. In the late 1990s, the medical group invested significantly in technologies that tracked every appointment request and...
in regional and local leadership to identify and oversee consistent execution on key access goals. These changes have been successful and very popular with patients. Over the last ten years internal patient satisfaction scores have improved significantly; for each of the past six years TPMG has been identified as the highest-rated plan in the state for patient satisfaction by J.D. Power and Associates.

**Leadership**

The CEO appointed two AEDs to oversee the design and implementation of broad scale primary and specialty access changes. Each facility leader identified high-level leaders, analysts, and project managers to support each chief in successful implementation of access goals. These leaders followed a very deliberate approach, building on the successes of the year prior.

Maintaining such patient-centered access requires consistent leadership attention. On a monthly basis the AEDs, physician leaders from the call center, and the Chairs of the Chiefs of the clinical departments develop plans and strategies for improving access. These leaders also meet quarterly with the Chiefs of Service from each of the facilities to communicate the strategy and provide tools to improve performance. The chiefs from each facility are supported by regional and local access teams that provide data and consulting. The senior physician leader at each facility holds each department chief accountable for meeting access goals and receives weekly access monitoring tools by department.

**Technology**

Technology was a core component of improvements in access and patient-centeredness. The first step was to complete the transition from each facility handling their own calls, to a physician-led, technology-rich call center, which could utilize more advanced telephone technology. Then the EMR was used to provide instant access to all available patient information, allowing remote consultations. The advanced technology at call centers and in their electronic consult system allows TPMG to collect timely data on appointment supply and demand and achieve the following efficiencies:

- **Electronic Consulting:** This system provides decision support and allows primary care physicians to directly book specialty appointments.
- **Booking appointments and getting advice:** The technology infrastructure enables 24/7 regional call center representatives to leverage vast amounts of information—patient membership records, clinical data, and customized scripts and protocols—to triage patients’ care needs and understand their appointment preferences—including by telephone and video—and then book corresponding appointments. The call centers also handle requests to support physicians, like verifying treatment for work, managing less severe flu symptoms, and reminding patients of other tests or screenings for which they are due.
- **P-Consults:** Every day several hundred specialists in approximately 40 specialties carry cell or Spectralink phones to provide immediate access to advice or a phone consult.
- **Telephone Appointment Visits:** More than 12% of appointments are telephone visits.
■ T-Consults: When medically appropriate, primary care physicians can schedule a telephone visit with specialists.

■ Roving Visits: When a physical exam or minor procedure is needed, a specialist comes to the patient while he or she is still in their primary care physician’s office; often no additional appointment is needed.

■ Virtual Roving: A digital image can be transferred to a specialist (e.g., a dermatologist); 80% of the time the patient receives the diagnosis and treatment plan within 30 minutes while still in the office.

■ Secure E-mail Consults: Consults can be conducted via secure e-mail between specialist and patient.

■ Video Visits: Piloting 11 different applications; 3,000 consultation and patient video visits have been conducted to date.

Results

TPMG monitors progress toward patient-centered care through appointment data and patient satisfaction scores from internal and external (CAHPS) surveys. They have made great progress on providing patient-centered, timely access.

They are able to offer patients the choice to be booked same day or on a day when the patient chooses to be seen. Today, TPMG is able to book a patient an appointment that matches their stated preferences on 80% of initial calls for adult medicine, and 82% of initial calls for pediatrics.

Today, 99% of patients have a personal physician who they see for more than 87% of their primary care visits. Patients report knowing who their personal physician is 94% of the time, up from 75% in 2001.

In the past five years they have reduced the average specialty appointment wait from 14 days to 5.

Patient satisfaction with access and personalization of care is at an all-time high, having improved every year for 12 consecutive years (see Figure 5).

Sepsis

In 2008, physician leaders from every hospital participated in a systematic review of their last 50 hospital deaths, combing them for opportunities to improve treatment or prevent harm. While those patients dying from sepsis were getting heroic care, reviews suggested starting care earlier and identifying risk earlier might have reduced their severity of illness and saved lives. Studying their own population, TPMG found that more than 10 times as many hospital deaths were attributable to sepsis as to acute myocardial infarction.

Leadership

A multidisciplinary team of physicians and nurses from ED, ICU, hospital medicine, and quality from several hospitals joined with regional physician and nursing quality leaders to review the evidence on sepsis care. They consulted with local and national experts and created an evidence-based algorithm and measurement strategy for early detection, risk stratification, and early aggressive treatment of all presentations with any degree of sepsis. The proposed approach was carefully vetted with leaders from all disciplines and with senior organizational and clinical leaders. Senior leaders ensured that each hospital had the necessary equipment and the physician champion time and project management to support rapid change. The screening and treatment algorithm was modified and improved in the course of pilots at two facilities while a regional team collected tools, such as training materials, order sets, documentation tools, team charters, equipment lists for sepsis carts, etc. The proposed measurement strategy was tested and modified and success stories were gathered to support the spread of this approach.

Technology

Standardization of care was enhanced in various ways:

■ Standardized sepsis and early goal directed therapy order sets for all disciplines and hospitals. The sepsis algorithm is linked to order sets for instant availability. Serial lactate orders are automatically added to admission order sets when an emergency department lactate is found elevated.

■ Development of a sepsis report in the EMR instantly displaying intervention and hemodynamic milestones, critical medications, such as antibiotics and vasopressors.

■ Accordion clusters of optimal antibiotics by organ system, developed by hospitalists and infectious disease experts. These clusters support critically important early and appropriate antibiotic selection.

■ Data mining. The EMR is mined to track interventions, timeliness, and variation on multiple fronts. This is critical to ensuring that a change is an improvement.

Initially manual chart review was required to abstract performance against hemodynamic bundle goals for septic shock. Clinical leaders and analysts
partnered to build a web-based expedited abstraction tool that finds ED patients with shock or high lactate and prepopulates critical milestones in their care. This greatly expedites abstraction and, as it does not require discharge codes, greatly expedites review and learning.

Results

TPMG screens over 800,000 emergency visits annually for sepsis. Of these, over 20,000 with sepsis go on to require hospital admission and undergo sepsis stratification and treatment.

Over the course of the past five years, raw sepsis mortality has dropped from 25% to 9%. Observed to expected sepsis mortality has decreased over 40% (see Figure 6). Floor deterioration rates for sepsis patients have decreased significantly and septic shock length of stay has been reduced by 40 hours per patient. This work has been an important contributor to a 17% reduction in all-cause hospital mortality since 2007, saving over 800 lives a year and a 15% reduction in all-cause hospital stay rates since 2009.

The recipient of a platinum URAC award, the program has been perceived as a model for others. One state government invited TPMG to share the program and went on to require that every hospital in their state institute process and outcome measures similar to the one at TPMG.

Conclusion

In the late 1990s TPMG began a journey to transform care delivery. They invested in developing physician leaders who would standardize evidence-based care and drive accountability for achieving industry-leading quality, safety, and service. They also invested heavily in technology as a platform to coordinate care across all disciplines and increase the timeliness, convenience, and affordability of care for our patients.

These investments have borne fruit.

■ For six consecutive years, Kaiser Permanente has received the J.D. Power and Associates award as the highest rated health plan in the state for patient satisfaction.

■ For eight consecutive years, Kaiser Permanente has been ranked first on the California state report card for quality and patient satisfaction; in 2013 they received a four out of four-star rating in each of nine categories of quality. Every one of their facilities is top rated in its geographic area.

■ On NCQA’s 2012-2013 Health Insurance Plan ranking of over 300 plans, Kaiser Permanente was rated #1 in the state, #8 in the nation for Commercial, and #3 in the nation for Medicare.

■ They are the sole 5 Star Medicare plan in their state.

■ Kaiser Permanente Hospitals in Northern California are among the safest in the country; 95% earned a Grade A safety rating in 2012 by The Leapfrog Group. (Only 30% of all participating hospitals receive this rating.)

■ Analyses conducted by Aon Hewitt found Northern California Kaiser Permanente to be the most cost-efficient plan in the state.

■ Physician opinion surveys show the highest physician morale in TPMG history in contrast to physicians in the surrounding communities who have seen large declines in satisfaction.

Through TPMG’s redesign, they have improved the health of and the affordability of care for both the 3.4 million members of Kaiser Permanente and the populations of the communities around them. They also know that their journey is not complete. With the implementation of healthcare reform, the challenges and the opportunities for medical care in this country will grow. TPMG’s 8,000 physicians and 30,000 staff members are committed to accelerating the pace of change and ensuring high-quality, affordable care on a large scale and so setting a standard for excellence in medical care.

Adapted from the 2013 Acclaim Award Application from The Permanente Medical Group submitted by Joseph J. Houska, Ph.D., Vice President Strategic Projects and Consulting.

TPMG Profile

Number of Providers: 8,054 physicians
33,056 nurses and staff

Patients: 3.4 million

Annual Patient Visits: 16.4 million

Number of Sites: 51 medical office locations
21 hospitals

TPMG Profile

<table>
<thead>
<tr>
<th>Number of Providers:</th>
<th>8,054 physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33,056 nurses and staff</td>
</tr>
<tr>
<td>Patients:</td>
<td>3.4 million</td>
</tr>
<tr>
<td>Annual Patient Visits:</td>
<td>16.4 million</td>
</tr>
<tr>
<td>Number of Sites:</td>
<td>51 medical office locations</td>
</tr>
<tr>
<td></td>
<td>21 hospitals</td>
</tr>
</tbody>
</table>

TPMG Profile

■ For six consecutive years, Kaiser Permanente has received the J.D. Power and Associates award as the highest rated health plan in the state for patient satisfaction.

■ For eight consecutive years, Kaiser Permanente has been ranked first on the California state report card for quality and patient satisfaction; in 2013 they received a four out of four-star rating in each of nine categories of quality. Every one of their facilities is top rated in its geographic area.