Collaborative Workflows, Coordinated Care: Meeting the Challenges of 21st Century Healthcare

Collaborative Care: An Economic Imperative

Cost pressures, new payment models, and demographic trends are creating a global economic crisis as health systems struggle to care for an aging population of sicker patients. Funds available for healthcare are constrained, and they’re being wasted by inefficient, uncoordinated healthcare services.

Across the nations of the OECD, health expenditures consume an average of 9 percent of Gross Domestic Product, and real per capita healthcare expenditures grew more than 4 percent annually during 1997-2007. In the UK, the NHS wastes GBP 330 annually by treating patients as emergency hospital admissions when they could be seen by their GP. An oft-cited study shows that in the U.S. in 2003-2004, almost one in five hospitalizations of Medicare fee-for-service patients resulted in a readmission within 30 days of discharge; three-quarters of these could have been prevented by better coordinated care, and the cost to Medicare for these readmissions was USD 15 billion. Even traditional fee-for-service practitioners are under financial duress, with the U.S. Small Business Administration reporting that SBA-backed loans to physicians’ offices grew more than tenfold from 2000 to 2011.

Controlling costs starts with better management of patients with multiple chronic diseases, and it puts a premium on coordination and collaboration. Medicare patients with multiple chronic illnesses see an average of 13 different physicians in the course of a year, and their full treatment team can easily include another dozen professionals and paraprofessionals. Reflecting the importance of collaboration in caring for patients with chronic conditions, nearly 80 percent of the scoring criteria for the National Committee for Quality Assurance’s (NCQA) Recognition Program for Physician Practice Connections (PPC) Patient-Centered Medical Home (PCMH) relate to information-sharing and teamwork.

New payment models are forcing delivery networks to share the risks and potential cost savings of caring for these patients. By imposing direct or indirect financial consequences, these models incentivize organizations to emphasize prevention, deliver care in the lowest-cost appropriate setting, and reduce readmissions, Emergency Department (ED) visits, acute-care admissions, and bed days of care. “These have always been the right things to do, and physicians have always tried to do them, but changing financial models will make them increasingly imperative for financial survival,” says Dr. James P. Dwyer, Executive Vice President for Physician Services at Virtua and a former co-chair of the National Committee for Quality Health Care’s Performance Measurement Tools Task Force.
Evidence for Coordinated Care

Collaborating with patients, families, and the broader care team is crucial to achieving these objectives. A growing body of evidence shows that coordinated care offers powerful ways to improve resource utilization, outcomes, and both patient and staff satisfaction. For example:

- **Sweeney, 2007:** At a large California-based HMO, a patient-centered management group had 38 percent fewer admissions, 36 percent fewer inpatient days, 30 percent fewer ED visits, and 26 percent lower costs than the HMO's usual care.6

- **U.S. Veterans Administration (VA) Home-Based Primary Care (HBPC), 2011:** Under this innovative program, an interdisciplinary team that includes a nurse, physician, rehabilitation therapist, social worker, dietician, pharmacist, and psychologist collaborate to deliver comprehensive, longitudinal primary care for patients with complex, chronic, disabling disease for whom routine clinic-based care is ineffective. HBPC is improving clinical outcomes, reducing inpatient days and total cost of care, and increasing the quality of life for patients and families.7

- **Geisinger Health System, 2010:** A physician-led healthcare system in Pennsylvania, Geisinger developed a ProvenHealth Navigator methodology as part of its adoption of the PCMH model. Geisinger practices that used ProvenHealth Navigator showed a 40 percent reduction in 30-day readmissions, 20 percent reduction in total admissions, and 7 percent reduction in costs compared to other Geisinger practices.8

- **New West Physicians, 2011:** A primary care physician practice and Level 1 PCMH in Colorado has reduced 30-day readmissions to 1 percent—well below national averages of 6 to 18 percent. New West has many characteristics of an Accountable Care Organization (ACO), and implemented best practices such as centralized discharge planning and proactive follow up to achieve its results.9

- **Sutter Health Sacramento-Sierra Region, 2010:** At a not-for-profit integrated care system, a care coordination program decreased hospitalizations by 39 percent, ED visits by 16 percent, and patient visits to specialists by 24 percent. Sutter’s transitions-of-care protocols achieved a 30-day readmission rate of 5.27 percent and also reduced caregiver anxiety.10

Technology-Supported Collaboration

Given the number of individuals and organizations involved in the care of patients with chronic conditions, the opportunities for collaboration are plentiful—and technologies are rapidly evolving to make collaboration simpler, more powerful, and more cost-effective.

Collaborative workflows start with securely sharing digital information and using it to function more effectively as a team. Technology-supported collaboration builds on foundational technologies such as electronic health records (EHRs) and health information exchanges (HIEs). It extends the return on investment (ROI) of these technologies by adding capabilities that enable organizations to securely share data when and where it’s needed and use it to empower care teams, patients, and families (Figure 1). “The current status is too often one of information silos that gather and store data,” explains Uwe Buddrus, Managing Director of HIMSS Analytics Europe. “The crux of care coordination is the ability to mobilize and share the data in the medical record.”

**Figure 1.** Sharing and mobilizing information for collaborative care.
Collaborative workflows facilitate tasks ranging from consultation requests and treatment planning to patient education and engagement. Consider the example of a patient calling for an ambulance. With collaborative workflows and technologies in place, the ambulance service might use mobile devices to securely access relevant information about the patient’s treatment preferences and history. The service could also initiate a multi-way video conference or secure messaging conference with the patient or their family member and the patient’s primary care doctor, community care nurse, and an ED specialist. Pooling their knowledge, the team might well conclude that the best course of action involves something other than transporting the patient to the hospital.

The same approach could be applied at the point of discharge, where case managers would share information securely and collaboratively across the care chain as they develop comprehensive discharge plans. Digital information could flow without friction, saving time for each member of the care chain and avoiding gaps in the patient’s care. The case manager could organize a video conference that would include the patient and his or her support network along with the physician, home health nurse, and other professionals. They can share relevant data, answer questions as a team, ensure that needed services are in place, and leave everyone feeling more confident and secure. Table 1 lists some typical collaboration scenarios with supporting technologies, and the following Collaboration Snapshots section provides examples.

“The most crucial member of the healthcare team is the patient. The patient has to be fully involved in the collaboration and be viewed as a full member of the healthcare team. That has to result in a change in perception, which has to result in a change in behavior.”

– Rachelle Kaye, PhD
Maccabi Healthcare Services

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Collaborative Workflows White Paper

Facilitating Collaboration through Next-Generation Tools
Healthcare applications and tools are evolving to support collaborative workflows. While continued progress is needed, the following trends are expanding the capabilities available to assist healthcare teams:

• Traditional solutions such as EHRs and portals are adding groupware-oriented capabilities that enable secure two-way information flow and real-time, collaborative decision-making. E-mail and other communications can be integrated into the EHR, ensuring that they are documented without added steps. EHRs and other healthcare applications are also adding more sophisticated referral tracking and population management functionality.

• Unified communications platforms provide a consistent interface for managing patient and clinician contacts and initiating or joining in a phone call, web conference, or video conference. With a single, intuitive interface, healthcare professionals can save time and choose the communication method that is most convenient and appropriate. Video conferencing solutions are affordable and simple enough for routine use with colleagues, patients, and families.

• Solutions are adding support for mobile usage models, reflecting the many environments in which care team members operate and the on-the-go nature of life in a modern hospital, clinic, or community care environment.

• Case management software is expanding to provide a more holistic and longitudinal record of a patient’s medical and social conditions and circumstances.

• Patient portals provide richer avenues for patient empowerment, education, coaching, and social support.

• In-home telemonitoring technologies include high-resolution video conferencing capabilities that allow for individual and small-group consultations as well as patient reporting of health data. They’re also incorporating features that support data-driven workflows based on real-time patient information.

• Laptops incorporate advanced encryption and anti-theft technologies to better ensure the privacy of confidential data. Tablets are adding enterprise-worthy security and privacy capabilities, making mobile consumer technologies more suitable for healthcare settings.

Collaboration Snapshots
Healthcare leaders are using a variety of collaborative workflows to deliver more coordinated care. This section discusses just a few examples of how these organizations are collaborating more effectively.

Synchronized Admissions: Christiana Care, Wilmington, Del.
Christiana Care Health System has implemented numerous care coordination initiatives, including a synchronized admissions process. Christiana is a not-for-profit, non-sectarian healthcare system and major teaching hospital with 1,100 beds on two campuses. Two of its primary care clinics are certified as PCMHs, and its CMO, Dr. Janice Nevin, says the organization plans to convert all its clinics to PCMHs.

When a patient at Christiana’s Wilmington Hospital is admitted from the ED, a full care team assembles to collaboratively handle the admission. Together, the resident, attending physician, admitting nurse on the floor, social worker, clinical pharmacist, case manager, and other professionals meet with the ED staff. Working as a team and using mobile technologies, they interview the patient and family, assess risks, clarify questions, and identify next steps. “The patient and family only have to tell the story once,” explains Dr. Nevin. “Everyone hears it at the same time and can start their part of the workflow immediately. Physicians formulate the plan of care. The clinical pharmacist does medication reconciliation in real time and assists in generating orders. The social worker starts discharge planning while the family is still there. The attending can do bedside teaching. The case manager helps clarify any questions or concerns.”

The areas using the collaborative process have cut 1.5 days off average length of stay (ALOS), reduced readmissions and increased patient satisfaction. “When you do the right things up front, everything goes better,” Dr. Nevin says. “We have had zero Rapid Response Team calls within the first 24 hours of admission in areas where we’re using this process, which tells us that we are assessing patients correctly. The patient moves through the hospitalization process faster, and at discharge, it only takes 10 minutes to reconcile meds instead of 45 to 60 minutes.”

Mobile technologies support Christiana’s synchronized process. Currently, the admitting nurse uses a small laptop on a minibar to document the admission in Cerner PowerChart, but Dr. Nevin sees great potential for members of the synchronized team to use secure, high-performance tablets to take additional notes. Video conferencing could add flexibility by allowing team members to participate in the conference without being physically present.

Holistic Patient Support: Virtua, Marlton, N.J.
Virtua is a non-profit, comprehensive healthcare system that includes four hospitals plus outpatient clinics, surgery centers, home care, and other services. Virtua recently became self-insured and is moving toward becoming an ACO.
Among the steps Virtua is taking to help clinicians collaboratively care for patients with complex needs, the organization is restructuring its case management workloads. Instead of focusing only on utilization review, case managers now spend half their time on care coordination. This change enables Virtua to better identify patients who are at higher risk of readmission, for example, and collaborate across the care continuum to ensure that services are in place to support these patients post-discharge.

Patients with complex needs are offered "navigation services" upon discharge or when seen in a primary care clinic. Under this program, a nurse or other staff member facilitates scheduling diagnostics procedures, consultations and follow-up appointments, and assists with pre-authorizations. The program increases patient satisfaction, helps ensure that patients receive prescribed services, and gives patients another reason to choose Virtua providers for ancillary or follow-up care.

"If patients choose to stay within our system for the services they need, then we have all the documentation within our electronic medical records, which enables us to provide more coordinated care," says Dr. Dwyer. "For patients being discharged from the hospital, readmission rates are lower, and patients feel much more supported."

Another collaborative initiative created teams of hospitalists, nurses, and case managers for inpatient care. This initiative has reduced readmissions while dramatically increasing patient satisfaction.

Virtua’s hospitals use Siemens Soarian* EHR. Practices are deploying NextGen Healthcare* EHRs, with data exchange through a Siemens portal and a private HIE. Virtua also employs Microsoft Amalga* for patient-level and population-level health care analytics. Navigation services use both EHRs and Virtua-developed software.

Collaboration at Landskrona Hospital, Skåne, Sweden

A 69-bed community hospital, Landskrona Hospital provides coordinated care within its walls and is working to extend collaboration across the continuum of care. “Healthcare has traditionally been organized into drainpipes, where information flows vertically,” says Dr. Marcus Larsson, Head of Unit, Local Health Care Unit, Landskrona Hospital. “We are working to improve communication horizontally, when we transfer a patient between institutions or discharge a patient to the care of their GP.”

Landskrona serves the elderly population of Skåne, and its average patient is 83 years old. The hospital has a small ED, but ambulances take the sickest patients directly to Skåne University Hospital, where they are stabilized and may be transferred to Landskrona for further treatment. Hospitals in the region use the Siemens Soarian EHR, providing a basis for collaborative treatment planning and decision-making.

Landskrona has established collaborative inpatient processes for treating conditions such as strokes. Neurologists, nurses, dieticians, counselors, therapists, and other healthcare professionals access a comprehensive EHR that includes lab and diagnostic results. The hospital also collaborates with the region’s GPs, ambulances, and community care organizations, primarily through paper-based communications since EHRs are not yet compatible. Pharmacists in Sweden collaborate through a national prescription database, and recent legislative changes in Sweden will allow hospitals and physicians to access the prescription database. “With better information-sharing, we can better manage the care transitions, and that is our current focus,” Dr. Larsson says.

Integrated Collaboration Between Hospital and Primary Care: New Pueblo Medicine, Tucson, Ariz.

Hospitalist-based care offers significant benefits, but it often produces a disconnect between primary practices and inpatient care. New Pueblo Medicine, an independent practice of seven board-certified internal medicine physicians, avoids that disconnect by making one of its physicians, Dr. Andrea Miller, a full-time hospitalist at Tucson Medical Center (TMC). Dr. Miller works collaboratively with other physicians in the practice to provide efficient, coordinated patient care.

Dr. Miller has fingertip communication with her New Pueblo colleagues and full remote access to the practice’s NextGen EHR from the hospital, office, or home using a desktop, laptop, or other mobile device. She uses TMC’s EpicCare* Inpatient Clinical System to chart her work at the hospital. The practice shares admission planning information with Dr. Miller for any scheduled admission, and the hospital notifies Dr. Miller via text message when a New Pueblo patient comes to the ER. Whether the patient’s visit is planned or spontaneous, Dr. Miller can immediately determine when they were last seen in the office, by whom and what their latest diagnostics showed. She can consult with her colleagues and they can view the patient’s records simultaneously and make joint treatment decisions.

The collaborative model has proven popular with patients and physicians. The practice operates more efficiently, and the other six physicians see more patients per day. Patients like the consistent care they get from Dr. Miller while they’re hospitalized, and everyone appreciates not having office scheduling disrupted by delay-inducing emergencies at the hospital.
Sharing data through the EHR is critical to the model’s success. “The minutes that I don’t have to spend asking the patient about their history, which is already well-documented, are minutes that can make a difference in their care,” Dr. Miller says. “Having the EHR as the foundation also makes it much more possible to work together to get the follow-up care nailed down before the patient leaves the hospital. Our practice is doing great on bed days, and our results are solid—we’re not discharging prematurely.”

**Comprehensive Collaboration that Includes the Patient in the Health Team Communication Loop:**

Maccabi Healthcare Services, Israel

Maccabi Health Services is a not-for-profit insurance fund and healthcare provider that delivers coordinated care to more than 1.9 million members. With healthcare IT investments dating back to 1984, Maccabi today is an advanced user of comprehensive information, including centralized medical records, decision support, lab and teleradiology results, and automatic incorporation of referral results into the EHR.

At Maccabi, all members of the patient’s care team have appropriate access to EHRs, and Maccabi called on its ethics committee to help establish policies around privacy and information sharing. The system links Maccabi to private pharmacies as well as plan pharmacies, giving physicians a fuller picture of their patients’ medication patterns and facilitating collaboration between physicians and pharmacists. A broad range of communication functions are incorporated into the EHR, enabling communications to be documented without added effort.

Maccabi uses predictive modeling software and experienced nurse reviewers to identify patients who are at high risk of readmission, and a multidisciplinary team in the community provides intensive support that includes both physical and virtual visits to ensure continuity of care. Patients with conditions such as cardiac insufficiency have home monitoring equipment and transmit the results to their clinical team. “Given the shortage of doctors and nurses, there’s no option but to use telemedicine,” says Dr. Rachelle Kaye, Director of the Maccabi Institute for Health Services Research. “It’s the only way to deal with the resource issues.”

Maccabi physicians also use video conferencing to consult with each other and to have specialists meet remotely with primary care physicians, patients, and families.

Several recent Maccabi initiatives use technology to provide added convenience and support for collaborations with members. Patients have access to a 24-hour-a-day call center and can use a secure online portal, kiosk, or smart phone application to make appointments, find urgent care information, check lab results, manage their medical records, and more. Increasingly, patients expect these services, according to Dr. Kaye. “People are demanding that we use technology,” she says. “They can do their banking online, and don’t see any reason not to be able to refill a prescription or check their lab results online.”

Maccabi has also created a “voice of Maccabi” program that enlists members and patients to engage in Internet-based dialog with the institution.

“**We have a tremendous opportunity to improve care by providing a better transition from the hospital to the community. We need to do better discharge planning, and give GPs greater visibility into what has been done while the patient was in the hospital.”**

– Barbara Stuttle, PhD, RGN, National Clinical Lead for Nursing, UK

**Specialist Consults:**

The Children’s Hospital at Westmead, Westmead, Australia

Located 28 km from Sydney, The Children’s Hospital at Westmead is committed to ensuring that sick children in remote parts of New South Wales are not disadvantaged by unequal care. The hospital conducts outreach clinics across the state and provides telepsychiatric services to children in New South Wales. Recently, the hospital began using PC-based teleconferencing to facilitate consultations between primary care providers and hospital-based specialists.

Dr. Geoffrey Ambler, a pediatric endocrinologist and tertiary diabetes specialist at The Children’s Hospital, reports that he used to travel great distances to consult with pediatricians and their most complex patients at distant primary care clinics and hospitals. This frequently involved airplane flights, hotel stays, and time away from his family. With teleconferencing-based collaboration based on the Microsoft Lync* unified communication system, Dr. Ambler supports his remote medical colleagues and their patients without the cost and disruption of travel, enabling him to see more patients. Patients and their families meet with their primary pediatrician to conduct the conference. Dr. Ambler says physicians, patients, and families all love the service, with one pediatric patient commenting, “I like seeing my doctor on TV.”
Overcoming Obstacles
Delivering coordinated, collaborative care is not easy. It requires profound cultural shifts, payment restructuring, new roles and responsibilities, redesigned workflows, and advances in information tools and technologies, among other changes. Where do you start? Many healthcare leaders suggest focusing on what’s best for patients. Look at what is preventing you from delivering great care, and identify who you can work with to remediate the situation. Here are other suggestions:

Communicate the reasons for change. Change is not easy, so it’s important to emphasize the goals and necessity for new approaches. “Establish collaboration as a clear goal and objective,” says Dr. Kaye. “Devote time, energy, and thought to bringing it about.” Everything you learned in deploying EHRs will be equally relevant as you design and implement collaborative workflows.

Be systematic. “Coordinated care involves a paradigm shift from thinking I’m only responsible while you’re sitting in front of me in the office, to being responsible for your care whether you’re coming into the office or not,” says Dr. Nevin. “To make that shift, you need to be very rigorous about what your processes are, who’s doing them, and how you are going to make the most of each encounter with the patient. In high-functioning collaborative environments, every member of the team understands their role and knows what they need to do for the model to succeed.”

Define new roles. Collaboration can involve adding new roles and modifying existing ones. “As we incorporate telecommunications and telemonitoring into the day-to-day care of chronically ill patients, we’re impacting the relative roles of doctors and nurses,” Dr. Kaye says. “Increasingly, the nurse is the primary contact, with physician backup. We’re reconceptualizing the role of the doctor in caring for the chronically ill patient. We’re trying to conceptualize the call centers as something that supports and extends rather than supplants the primary care physician, but it’s tricky.”

Build teamwork skills. Collaboration is at heart a people process. Provide training experiences that help physicians develop team leadership skills and help individualists learn to work as teams. “Physicians may not traditionally see themselves as part of a team,” says Dr. Dwyer. “Getting them to understand how to drive performance improvements as team leaders is new—we need to figure it out.” Break down traditional hierarchies by having physicians and nurses pair up and shadow each other for half a day. Invite hospitalists to visit practices, and hold educational forums. Don’t underestimate the power of cultural resistance, but don’t be cowed by it either.

Have physician champions. Build support for collaborative tools by giving physicians and others a role in shaping them. Engage clinicians early and involve them in all major decisions. Since physicians, nurses, and other clinicians are notoriously busy, make tools as easy and automatic as possible.

Understand the workflow impact of new technologies. Dr. Dwyer relates an early Virtua project that provided in-home remote monitoring technology for high-risk patients. The project aimed to reduce ED visits, but instead, they went up. “We did a great job of identifying problems, but we hadn’t created the alternatives to going to the ED to assess them,” he recalls. Since then, Virtua has collaborated with long-term care nursing staff, urgent care centers, and primary practices to provide alternate assessment paths when tele-monitoring indicates a potential problem.

Match devices to the user, task, environment, and compute model. Mobile devices can enhance productivity and convenience for most collaborative workflows, but no single device is right for every situation. Devices should align with organizational objectives and be embedded within a comprehensive information architecture that provides necessary levels of connectivity, security, and privacy. When confidentiality must be maintained, devices with hardware-assisted security technologies can provide added insurance. On the other hand, don’t make a fetish out of privacy and security. “Privacy and security are important issues, but don’t let them become an excuse for avoiding progress, as some nations have,” says Buddrus.

Help shape the future. Technologies will continue to evolve, so get involved in creating the changes you want to see. Talk to vendors about the enhancements and new features that are necessary for the ways you want to collaborate. Participate in focus groups and user group forums. Advocate for making collaboration and teamwork an integral part of professional education for physicians, nurses, and others.

Don’t wait. Look for a payer partner, but don’t let the lack of one deter your efforts. Understand that there are financial risks in delaying the move toward collaborative care. “As Wayne Gretzky used to say, you want to skate to where the puck is going to be,” Dr. Dwyer says. “Collaborative care is the right thing to do, and it takes a significant amount of time to do it. If you wait too long, you may be at a competitive disadvantage, because you can’t just turn it on in a day.”

“We kept focusing on what was best for the patients. Some of our biggest skeptics became very vocal champions once they saw the benefits for patients.”

– Janice Nevin, MD
Christiana Care
Building Success

Information technologies are an important enabler and success factor for collaborative care initiatives. Well-chosen solutions and platforms, grounded in well-implemented change processes, can give each member of the healthcare team—including patients and their families—the information and support they need to improve outcomes, accessibility, and costs.

Intel and Microsoft can help you envision how technology can augment your strategic initiatives and provide the communication and collaboration capabilities your organization and your patients require. Learn more about how Intel and Microsoft can help you apply the power of technology to improve healthcare.

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5. Testimony of Gerard F. Anderson, Ph.D., Johns Hopkins Bloomberg School of Public Health, Health Policy and Management, before the Senate Special Committee on Aging. The Future of Medicare: Recognizing the Need for Chronic Care Coordination, Serial No. 110-7, pp. 19-20 (May 9, 2007).

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