Health Information Exchange: From Meaningful Use to Healthcare Transformation
Simply Advancing Healthcare – Together

In the February 4, 2010, issue of the New England Journal of Medicine, National Coordinator for Health IT David Blumenthal wrote that the core elements of HITECH “are best understood not as investments in technology per se but as efforts to improve the health of Americans and the performance of their health care system.” What Blumenthal hopes to create is nothing less than “an electronic circulatory system for health information that nourishes the practice of medicine, research and public health, making health care professionals better at what they do and the American people healthier.”

Carefx agrees. Like Dr. Blumenthal and his colleagues at ONC, we’re committed to helping healthcare organizations achieve their personal vision of advancing the quality and safety of patient care delivery through solutions that streamline and simplify clinical and business workflow and connect clinicians to the information they need - where, when, and how they need it.

Despite the pride Carefx takes in its proven solutions, the people of Carefx realize that there are no easy answers to the quality, efficiency, safety and technology challenges that lie ahead. Healthcare is plagued by severe gaps between and among diverse systems, departments and facilities. Providers struggle to manage care transitions, as they cope with shifting requirements and deadlines for meaningful use of health IT.

Carefx wants this white paper to bring some clarity and depth to the conversation. Among the issues covered:

- What are some of the most notable challenges faced by hospitals, IDNs, HIEs, physicians and other providers in exchanging and sharing healthcare information?
- What elements, functions and features must these groups consider in purchasing, refining and extending systems capable of facilitating the exchange of health information?

Lending their credibility and insight to this dialogue are four experts in health information technology and health data exchange: Marc Holland, CEO and Managing Director, System Research Services; Lynne Dunbrack, Program Director, Health Provider Research, IDC Health Insights; David Hansen, a healthcare consultant, economist, entrepreneur and author; and Jennifer Covich Bordenick, CEO, eHealth Initiative.

These experts focus on some of the key categories within health information technology, including medication reconciliation, quality measurement, monitoring and reporting, e-referral, collaboration and patient engagement – areas that Carefx concentrates on, as well. Plus, we’ve included a checklist at the conclusion of this document to help you make the best, informed decisions on health information exchange solutions.

We invite you to review our ongoing series of briefs on topics and cases related to medication reconciliation, e-referral and other functions. Challenge us with your reactions and questions by calling 480.833.5010 x444 or e-mailing me at ahurd@carefx.com.

Together we can create new approaches for how healthcare information is collected, grouped, targeted and shared. The result: Nothing less than the advancement of healthcare and better health for everyone.

Sincerely,

Andrew Hurd
Chairman and CEO
Carefx Corp.
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The Imperative of Data Exchange

Healthcare is in the midst of a profound transformation—a process in which information technology is driver and catalyst. The growth of health IT rests on the growing adoption of EHRs and EMRs, as well as growth in clinical intelligence applications, unified communication systems, real-time location and tracking systems, integration platforms, and enhanced communications network infrastructure.

On the horizon, says Marc Holland, CEO and Managing Director of System Research Services, is the “virtual medical enterprise,” a product of mergers, acquisitions and horizontal integration of integrated delivery networks, as well as an effort by smaller providers to gain competitive advantage through alliances and affiliations, all of which are being accelerated by federal and state government health IT policy and funding initiatives. The emerging concepts of the medical home and episode-of-care reimbursement models will drive the evolution of such virtual medical enterprises. To be successful, these new care models will require improved care coordination. Improved IT infrastructure and investment and health information exchange will be critical to their success.

Health information exchange is central to the five core goals of meaningful use. Requirements for 2011 demand that healthcare providers seeking to receive federal EMR/EHR incentives demonstrate that they have the capability to produce and share an electronic summary care record for every transition in care (place of service, consults, discharge). Further, they must demonstrate the “capability to exchange key clinical information (e.g., discharge summary, procedures, problem list, medication list, allergies, test results) among other providers of care and patient authorized entities electronically.” In addition, physicians in office settings must write and transmit at least 75 percent of their patient prescriptions electronically.

Requirements expected to take effect in 2013 call for providers to be able to electronically share relevant, patient-specific data with state and federal disease registries and public health agencies. Requirements expected to take effect in 2015 call for providers to be able to “access comprehensive data (electronically) from all available sources.”

Hospitals also face standard implementation issues, including process changes and the need to implement a data exchange infrastructure. “Today, hospitals may get information from physician practices in the form of paper documentation,” says Holland. “The real issue is whether a hospital’s internal systems currently have the capability to accept, input and use that information in electronic form, and whether it will have the capability to receive that information electronically by 2011.”

Health information exchange is already gaining acceptance—largely through (1) community-based, open health information exchanges designed to facilitate communication between unrelated, cooperating providers, (2) proprietary health information exchanges that allow for information exchange only among owned or closely affiliated organizations and (3) state-run sponsored health information exchanges. Ten of 15 transaction types used by HIEs are related to meaningful use, according to the eHealth Initiative’s sixth annual HIE survey.

Experts are optimistic. Healthcare consultant, economist, entrepreneur and author David Hansen envisions a community-wide information system “that allows Marie, a diabetic who is allergic to penicillin, to show up unconscious at any emergency room, yet get care from doctors who know her special medical needs.”

But health information exchange remains an evolving concept. “The prevalence of data exchange goes back to the amount of data being digitized among providers,” says Lynne Dunbrack, Program Director, Health Provider Research, IDC Health Insights. “Adoption rates of EMRs are increasing, but they’re not consistent across care settings. Plus, it’s far harder to exchange data when 80 percent of healthcare transactions are still paper based.”
Although physician portals have become increasingly commonplace, what is needed, Holland says, is not merely passive data, but active data – data that is tied to automated processes that enhance workflow. Providers need the ability to access data from multiple sources, integrate it into their workflow, make decisions, execute processes and automatically update multiple source systems. Such “composite applications” represent the essence of a system-oriented architecture (SOA), which he believes will play a critical role in IT-enabled horizontal and vertical integration and process improvement.

And yet, technology is but a partial solution. Data sharing will never achieve its promise without solid organizational and revenue models that both enable and spur widespread provider participation, according to Hansen. Equally important, providers must manage understandable anxieties over funding and maintenance costs, potential litigation, and shame over public exposure of errors, while controlling their competitive urge to protect internally generated data.

Core Challenges of Electronic Data Exchange

Given the new and emerging demands of health information exchange, how will providers excel in performing functions that improve quality, reduce costs, and enhance efficiency and patient safety? Here’s how experts view some of the core challenges in health information exchange:

Medication Reconciliation

Ideally, a medication reconciliation module aggregates medication sources from disparate systems and care settings, including emergency department (ED), inpatient and ambulatory EMRs, HIEs and pharmacy benefit management (PBM) data sources. Clinicians can then pull a newly reconciled list into any clinical encounter, saving time and closing medication loops by reconciling a patient’s discharge medications into an ambulatory EMR.

“But even more critical to the improvement of care quality is the ability to incorporate confirmations from data sources, such as SureScripts/RxHub, that the medications prescribed, whether through electronic or written prescriptions, were actually filled and are currently active.”

Marc Holland
CEO and Managing Director
System Research Services

Jennifer Covich Bordenick, Chief Executive Officer at the eHealth Initiative and its Foundation in Washington, D.C.

Since 2002, Jennifer has provided leadership for education and research components of the eHealth Initiative and its Foundation, including working groups, the online eHealth Initiative Toolkit, eHealth Initiative’s Annual Conference, Annual Awards Program, Partnership for Connecting Communities for Better Health Program, annual health information exchange (HIE) survey, Connecting Communities Coalition, and many other programs.
Fortunately, e-prescribing has already begun to pave the way for medication reconciliation. “Medication reconciliation is at a nascent stage because e-prescribing is just getting adopted, integrated and made part of ambulatory EMRs,” IDC’s Dunbrack says. “With Medicare incentives for e-prescribing, we’re bound to see greater penetration of e-prescribing tools. And with more electronic data, it will be easier to support medication reconciliation across multiple care settings.”

“But even more critical to the improvement of care quality is the ability to incorporate confirmations from data sources, such as surescripts/rxHub, that the medications prescribed, whether through electronic or written prescriptions, were actually filled and are currently active,” states Holland.

David Hansen, Healthcare Consultant, Economist, Entrepreneur and Author

David Hansen researches health care business trends, builds start ups, and consults on directions for strategic and organizational change. As a consultant he has aided pharmaceutical companies, hospital systems, medical groups, and information technology vendors to develop IT strategies, target new markets, and adapt organizations. His scans of business and technology trends include publications for the California Health Care Foundation, IT Optimizers®, SRI International, and the Institute for the Future. He has helped lead several health care IT startups. Mr. Hansen’s work builds on graduate degrees in both business and economics from the University of California. His health care perspectives are shaped both by the dozen years spent in Norway, including work in telemedicine and governmental policy, as well as by participating in and observing the dynamic economic model of the Silicon Valley.

“Technology that brings real time data to the clinician at the point of care is the most valuable.”
Jennifer Covich Bordenick
CEO
eHealth Initiative

Providers are searching for innovative ways to measure, monitor and improve quality, while managing costs and saving clinicians’ time. The answer has already arrived in the form of quality measure control panels or dashboards that deliver alerts on patients who qualify for core measures or other standard quality measures.

“Technology that brings real time data to the clinician at the point of care is the most valuable,” says Jennifer Covich Bordenick, CEO, eHealth Initiative.

Clinicians can use such alerts to review data, document reasons for non-treatment or select orders by team member or physician. Patients benefit from care provided by multiple team members, while clinicians are freed of the burden of data collection since data is aggregated from disparate systems and fed into business intelligence or management reporting modules. This streamlines clinician handoff when clinicians take over for each other, especially with more hospitals monitoring how many hours that residents work per week or that clinicians are on call. Poor handoffs are a key source of medical errors.

“As is the case with electronic medication reconciliation, robust core measure solutions are able to deliver actionable information to clinicians,” says Dr. Qi Li. “Organizations can more easily measure, monitor and improve quality, saving physicians’ time, involving the entire care team and isolating important patient care trends.”
Still, the report card on quality measurement, monitoring and reporting is mixed. The majority of hospitals still lack EMRs with the forms to compile data and report on core measures or quality measures for meaningful use. “Even hospitals with fully functioning EMRs still make extensive use of digitized scans of manually completed forms and textual checklists,” says Holland. “With no forms or screens to capture data in a structured way, hospitals fail to report quality measures as a routine byproduct of the practice, relying instead on a retrospective chart abstracting process. Utilizing retrospective abstraction process will not qualify a provider for its HITECH incentive payments.”

eHealth Initiative’s Bordenick agrees: “So much of quality improvement depends on redesign of the workflow so the already available technologies make sense. Healthcare must truly think outside the box and do more than simply automate the physician’s office, hospital, pharmacy or lab.”

**Collaboration and E-referral**

Disorganized, bureaucratic paper-based referral processes confuse and frustrate physicians, translate into less than optimum care for patients and rob providers of the opportunity to generate much-needed revenue.

The ideal electronic referral management solution offers a streamlined, patient-centric accountability process for tracking referrals among diverse healthcare entities—from hospitals, HIEs, and IDNs, to physician practices, pharmacies, external labs and imaging centers. Benefits include more standardized collaboration and more timely and efficient communications. This, in turn, will lead to improved patient care quality and safety and increased referral volume and revenues.

“E-referral has the power to enhance communication and collaboration among physicians, hospitals and patients,” says Dr. Qi Li. “Providers gain through increased referral volumes and revenues at a time of declining reimbursement and fewer elective surgeries.” (For more information on how e-referral was implemented at Boston Medical Center, see Carefx’s companion issue brief, “Electronic Referral Management: Bottom-line Benefits and Quality Gains.”)

Combined with electronic results reporting, referral management has also emerged as an essential tool of the patient-centered medical home, where coordinating care providers arrange care with specialists and organize documents ranging from consult reports and operating room notes to discharge summaries.

“Keeping every care provider in the loop will improve quality, reduce costs and prevent the ordering of redundant tests,” says Dunbrack, of e-referral. “And having data in a digitized format will facilitate the application of analytics, allowing quality measures and embedded decision support to become part of the care process.”

**Lynne Dunbrack, Program Director, IDC Health Industry Insights**

Lynne Dunbrack is a nationally recognized thought leader in the application of information technology (IT) to the business problems of the health industry. Her understanding of industry needs is grounded in experience over the last 25 years working as a consultant and in the healthcare field. Dunbrack is a frequent contributor to industry publications such as Health Affairs, Managed Care Quarterly, Healthcare Review, Health Plan, and Healthcare Management Technology, and has been quoted by national media outlets like The Wall Street Journal, Investor’s Business Daily, Business Week, and San Jose Business Journal. She also speaks regularly at industry conferences.
One thing is sure: No form of collaboration is likely to succeed without intense interpersonal communication and team building. “Quality has less to do with the brilliance of individual providers than the quality of communication across teams and networks,” says Hansen. “Did specialists respect each others’ viewpoints, listen to each other, resolve conflicts, share information and build trust? Technology can provide the documentation but it won’t necessarily bring well-functioning teams together.”

Hansen is convinced that collaborative tools for discussing patient cases and finding experts could reduce gaps in care management by “enabling the formation of high-caliber virtual teams, tailored for an individual patient’s needs. Good tools will allow teams to form rapidly and be supported effectively despite separations of geography, personal network or organization.”

Technology-facilitated collaboration is also likely to accelerate the spread of innovation. While healthcare effectively disseminates fresh insights on drugs and devices, the industry has been slow to share new approaches to care management, with best practices sometimes taking a decade or more to spread throughout the system.

Data exchange could detect variations in care and help providers replace negative practices with positive ones, predicts Hansen, while also facilitating guideline formation. Referring physicians could gain an objective and efficient means of identifying providers with experience in or better methods of treating specific types of patients. And with documentation on infectious diseases collected in a single database, data mining could proceed continuously, helping clinicians pinpoint unexpected infection trends early.

As the industry embarks on this journey, physicians and healthcare executives alike should also keep in mind this overarching theme: the applications that will pave the road this journey traverses will come from many sources. No single provider organization and no single application supplier can meet all of the requirements needed for success; it will take a mix of players and sources, each providing a portfolio of capabilities, to achieve these goals. The key to usability and acceptance of the technology will lie in a single provider’s ability to coordinate these disparate data sources, integrate their capabilities and deliver them efficiently and effectively in context – at the point of care and the point of decision. Software that enables context management will be crucial to that success.

Marc Holland, CEO and Managing Director, System Research Services

Marc Holland, with over 30 years of healthcare IT experience, leads the healthcare research and advisory services practice at System Research Services (SRS). Mr. Holland’s research focuses on EMRs, EHRs, wireless devices, health information exchanges, telemedicine, remote patient monitoring, virtualization, systems integration, unified communications, business and clinical analytics and RFID. He is a nationally known expert in these areas and a frequent speaker at webinars and healthcare information technology conferences. Mr. Holland was one of the original co-founders of SRS, which was first incorporated in 1983.
Conclusions

The experts showcased in this position paper have presented nothing less than a fresh vision for healthcare transformed through the power of information exchange. Whether the focus is on medication reconciliation, quality measurement and reporting or e-referral, the most effective solutions will effectively manage care transitions and close the troubling information gaps between healthcare departments, systems, facilities and venues.

In an ideal scenario, clinicians will have the ability to view real-time patient data (demographics, compliance, patient safety and quality) from a variety of sources in a single view. Real-time quality compliance alerts, medication reconciliation and electronic referral management will undoubtedly enhance clinicians’ ability to keep tabs on patients and make more accurate, evidence-based clinical decisions.

Ultimately, however, the quality of health information exchange will depend on the creativity and commitment of the professionals and patients who exchange the data. And that, in turn, will demand cultural change, communication, conflict resolution and care coordination and re-design.

In facilitating health information exchange, healthcare leaders must give equal attention to the elements, functions and features outlined in the self-assessment tool at the conclusion of this document. Among them: connectivity, interoperability, multiple platform options, access, clinical care, patient engagement, compliance, financials, identity, privacy and security.

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Lynne Dunbrack
Program Director
IDC Health Industry Insights
Self-Assessment Checklist for Evaluation Data Exchange Systems

Impact on Caregivers
- Does the solution provide caregivers with a unified view of patient information from multiple sources?
- Does the solution streamline how clinicians interact with patient data, helping to reduce errors and enhance productivity?
- Does the solution close information gaps among systems, departments, facilities, providers and venues?

Connectivity
- Does the solution extend the value of existing systems by allowing them to interact with each other?
- Does the solution deliver interoperability, rapid deployment and portability?
- Can the solution be customized and extended to meet organization and system needs?

Platform
- Does the solution offer options for optimized data retrieval, standardized and secured data transmission and information coordination?
- Does the solution offer a secure collection of Web services that manage how data is collected, routed and presented to the user?
- Does the solution allow the owner of each database to decide what data to share with others—both inside and outside the organization?

Access
- Does the solution present context-sensitive, clinically relevant patient information at the point of care or the point of decision-making?
- Does the solution offer clinicians the option to access data through a desktop or clinical kiosk, portal or mobile device?

Clinical
- Does the solution support medication reconciliation by aggregating information from the emergency department, inpatient and ambulatory EMRs, ICU and HIEs in real time?
- Does the medication reconciliation function turn data into actionable information by trending and reporting on key data?
- Does the solution deliver quality alerts for patients qualified for core measures and other quality measures?

Collaboration
- Does the solution transform the traditional, paper-shuffling referral process into a disciplined workflow?
- Does e-referral provide members of the care team with composite views of relevant patient information housed in diverse systems?
- Does it help to facilitate and standardize collaboration, improve patient care quality and safety and increase referral volume and revenues?
Patient Engagement
- Does the solution allow patients to pre-register for procedures, submit and track payments and communicate with clinicians?
- Does the solution allow clinicians to store data essential to managing long-term treatments and chronic conditions?
- Does the solution permit clinicians to personalize data relevant to a specific patient’s care?

Compliance
- Does the solution aid in compliance with regulatory requirements by providing a consolidated record of user-initiated activities?
- Does the solution reveal which applications are being used, how frequently, and by whom?

Financials
- Does the solution deliver a summary of revenue and cost dynamics, as well as the option of drilling down for specifics?

Identity
- Does the system maintain privacy and security through centrally managed role-based access?
- Do clinicians have convenient, one-ID, one-password access to all authorized applications?
- Can clinicians access applications regardless of their location or format?
Resources

Agency for Healthcare Research and Quality Center for Health IT
http://healthit.ahrq.gov

American Academy of Family Practice Center for Health IT
http://www.centerforhit.org

American Association of Medical Colleges Health Information Technology
http://www.aamc.org/members/gir/hit/start.htm

American Association of Medical Directors of Information Systems (AMDIS)
http://www.amdis.org

American Health Information Management Association
http://www.ahima.org

American Hospital Association Issues: Health Information Technology
http://www.aha.org/aha_app/issues/HIT/index.jsp

American Medical Association Health Information Technology
http://www.ama-assn.org/ama/no-index/physician-resources/16195.shtml

American Medical Informatics Association
http://www.amia.org

Center for American Progress: A Historic Opportunity—Wedding Health Information Technology to Care Delivery Innovation and Provider Payment Reform
http://www.americanprogress.org/issues/2009/05/health_it.html

Center for Health Transformation
http://www.healthtransformation.net/home

Centers for Medicare & Medicaid Services Health Information Technology
http://www.cms.hhs.gov/Recovery/11_HealthIT.asp

Certifying Commission for Health Information Technology
http://www.cchit.org
College of Healthcare Information Management Executives
http://www.cio-chime.org

Department of Health and Human Services Health Information Technology/Office of the National Coordinator for Health Information Technology (ONC)
http://healthit.hhs.gov/portal/server.pt

eHealth Initiative
http://www.ehealthinitiative.org

Health Information Technology Standards Panel

Health Resources and Services Administration Health Information Technology
http://www.hrsa.gov/healthit

Healthcare Information and Management Systems Society
http://www.himss.org/ASP/index.asp

Health Information Technology Standards
http://www.hitsp.org

IDC Health Insights
http://www.idc-hi.com

Integrating the Healthcare Enterprise
http://www.ihe.net

Kaiser.edu: Health Information Technology-Background Brief
http://www.kaiseredu.org/topics_im.asp?id=655&imID=1&parentID=70

Markle Foundation Connecting for Health
http://www.connectingforhealth.org

System Research Services