



Improving Clinical Workflow Through Effective Context and Identity Management

WHITE PAPER

Sponsored by: CareFx

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EXECUTIVE SUMMARY

Access to timely, reliable, complete, and context-relevant information at the point of care is widely expected to improve clinical workflow. These improvements, in turn, are expected to help resolve many of the cost, patient safety, and quality challenges plaguing the U.S. healthcare system. But most U.S. hospitals are just beginning the long and arduous journey toward the digitization of their clinical information and their use of a fully functional electronic medical record (EMR). Huge challenges must still be overcome to achieve this critical goal. A few relevant facts highlight the difficulties clinical and IT management face:

- Only 10-20% of U.S. hospitals have a complete portfolio of clinical operational applications based on 2006 estimates.
- Even those hospitals with (or currently installing) extensive clinical application portfolios continue to struggle to integrate relevant data from disparate source systems due to a diversity of software suppliers, versions, and technical architectures.
- Although current market sentiment suggests that the debate between proponents of best-of-breed versus integrated, single-source solutions has tipped in favor of the latter, instances of true single-source IT environments still remain a rarity.
- Of hospital IT application development resources, 40% are devoted to integration services.
- Investment capital is limited; hospitals have far greater IT needs than their budgets allow, forcing them to prolong the life of legacy applications.
- Data and architectural standards, while emerging, are still years from widespread adoption by software suppliers or hospitals.



As a consequence, hospitals are faced with numerous security and data integration issues:

- Coping with disparate applications that provide different navigational frameworks, information sets, presentation formats, and content, each with its own access methodology
- Easing the burden of users who must cope with multiple passwords and sign-on procedures
- Minimizing the effects of data redundancy and difficulties in synchronizing/integrating the update of like data (e.g., patient address change) across multiple applications
- Protecting the confidentiality and privacy of patient information and complying with regulatory and legal requirements while facilitating and auditing access by authorized care professionals
- Efficiently and cost-effectively managing security across multiple platforms and applications

The experienced few that have made this commitment recognize that that implementing an EMR is not a goal, but a journey. Tools that facilitate single sign-on, improve clinical workflow, and provide a more efficient level of data, process, and application integration offer significant benefits to hospitals at all levels of IT maturity. Even those hospitals that commit to an integrated, single-source solution will spend years in the transition and, ultimately, will still face the need to integrate their primary vendor's products with a significant number of clinical applications from internal sources or secondary vendors. Wisely, even vendors of integrated product suites now recognize the need for their products to coexist with those from other sources and are bundling their offerings with tools that facilitate access to, and integration of, foreign applications.

In a survey by IDC Health Insights and sponsored by Carefx, clinicians revealed the magnitude and pain that these challenges present in everyday clinical work and how these challenges affect clinical quality, outcomes, and their personal productivity.

Survey findings suggest that investment in tools that simplify patient information access and streamline clinical workflow that clinicians like and will use must be a high priority. For example, 65% of survey respondents cited inefficient clinical processes as the top challenge that they believed clinical software would help overcome, while 86% expected that software to provide workflow improvements. Based on these findings, it is clear that tools that provide consolidated views of clinical information offer great value and, absent such tools, investment in all other initiatives will yield less than optimal benefits.

IN THIS WHITE PAPER

This white paper presents data from a survey by Health Industry Insights and sponsored by Carefx. Survey objectives were to:

- Understand the clinician process and HIT pain points in accessing electronic clinical information.
- Determine the most important HIT attributes that clinicians believe would improve clinical information access.
- Identify how better clinical information solutions would improve clinical processes and outcomes.
- Provide insights into respondents' existing IT environments and future directions.

The white paper includes the following sections:

- Methodology
- Situation Overview
- Future Outlook
- Conclusion

METHODOLOGY

The objective of this survey was to understand the perceived value of improved access to secure, aggregated patient data by direct caregivers, including physicians and nurses. Health Industry Insights developed and fielded a Web-based survey of 35 questions relating to healthcare professionals' knowledge, needs, attitudes, and behaviors regarding patient data aggregation. Responses from 51 hospital-based clinicians were analyzed. Respondents included:

- Physicians (42%)
- Nurses (31%)
- Clinical informaticists (27%).

Of the respondents, the majority were end users of IT technology in a clinical setting (n = 37). The balance (n = 14) identified themselves as clinical informaticists.

Almost a third of the population were strong influencers of technology selection (n = 15); 12% (n = 11) researched vendor solutions and made purchase recommendations, although only 8% (n = 4) actually approved purchases of clinical IT systems in their organization. Those identifying themselves as decision makers were either physicians or clinical informaticists.

SITUATION OVERVIEW

Current Pain Points and Implications

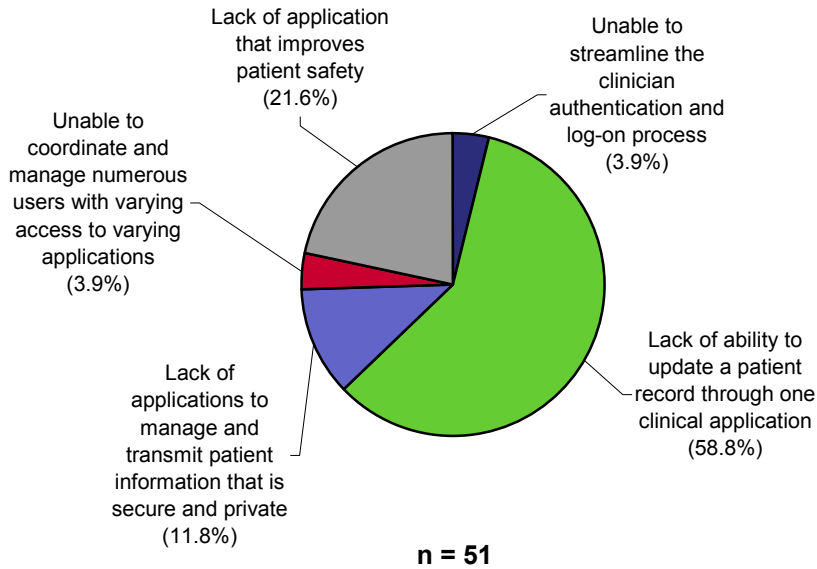
Survey results revealed a challenging, frustrating, and complex environment for clinicians attempting to access and use electronic information in clinical practice. Respondents reported that due to these challenges, patient care and clinical effectiveness are at risk, and otherwise avoidable costs are incurred. A significant minority also professed a general lack of familiarity and comfort with their ability to effectively navigate the various applications they need to access to obtain relevant patient data. Although important, clinicians were relatively less concerned with the time and complexity required by multiple sign-ons to access their hospital's clinical applications.

- The top 3 most important HIT pain points (Figure 1) relating to clinical use of electronic patient information were reported as:
 - Lack of ability to update a patient record through one clinical information application and have it synchronize with all other clinical information applications (i.e., data integration at the context and identity management levels [n = 30])
 - Lack of applications that improve patient safety (n = 11)
 - Lack of applications to manage and transmit patient information in an environment that is secure and private (n = 6)
- The least important related HIT pain points (Figure 2) were reported as:
 - Coordinating and managing numerous users with varying access to different applications (n = 24)
 - Streamlining the clinician authentication and log-on process using a single user name and password to access authorized clinical information systems and applications (n = 22)

Both responses above relate to single sign-on capabilities.

FIGURE 1

Most Important HIT-Related Pain Points

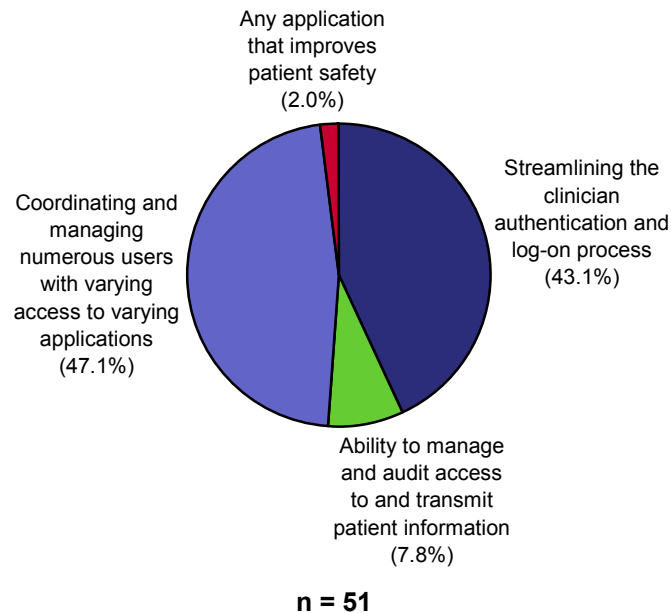


Source: Health Industry Insights, 2006

When comparing the top pain points against the least important pain points, the ability to have data integration at the context and identity management levels focusing on the patient is more important than the ability to have a single sign-on/access feature. In interpreting these findings, however, it should be noted that the vast majority of respondents were end users of clinical systems and were not responsible for security management, system administration, or compliance reporting.

FIGURE 2

Least Important HIT-Related Pain Points



Source: Health Industry Insights, 2006

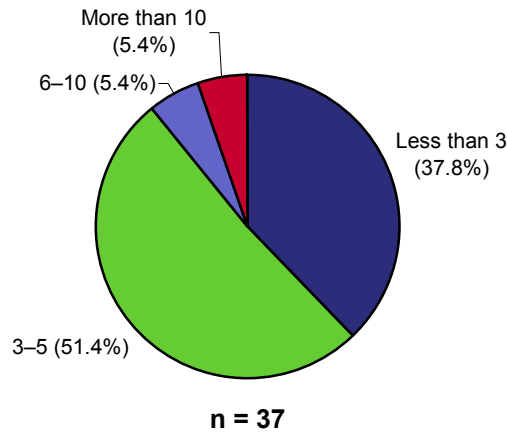
Number of Applications

The number of applications and varying navigation and workflow schemas make access and use of electronic information challenging (see Figure 3).

Survey results show that 62% of the 37 survey respondents involved in direct patient care (n = 23) had to access three or more unique clinical IT applications to obtain patient information.

FIGURE 3

Number of Applications



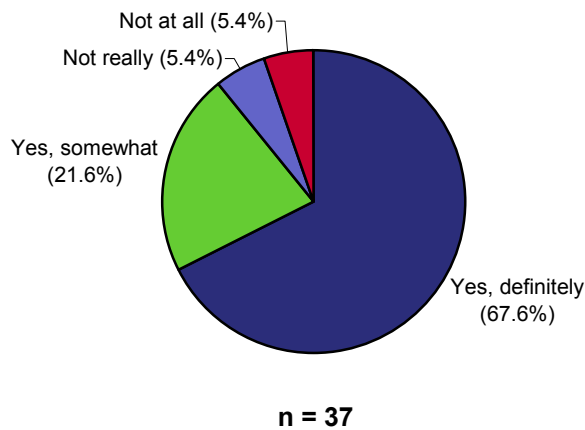
Source: Health Industry Insights, 2006

Application Workflow and Navigation

Over 30% of the respondents professed to a lack of familiarity with the workflows and navigation among the various back-end clinical applications they routinely accessed (see Figure 4).

FIGURE 4

Familiarity with Application Workflow and Navigation



Source: Health Industry Insights, 2006

Survey respondents reported that these challenges have a direct effect on patient care quality and costs.

- **Duplicate patient tests.** Of the survey respondents, 57% (n = 29) answered that the number 1 reason physicians are forced to order duplicate sets of tests on patients is because they did not know that the test had already been ordered by another clinician; 29% indicated that test results are often misplaced or difficult to access (n = 15).
- **Serious complications.** Although only a minority, it was significant that 11% of the survey respondents (n = 4) answered that, in their experience, at least one patient had experienced serious complications as a result of the time it took to find or access clinical information.

Use of Solutions that Provide Secure Access to Aggregated Patient Clinical Information Through a Single Access Point

Indicative of the relatively primitive state of clinical systems integration, 40% of the respondents reported that their healthcare organization had not yet implemented clinical solutions that aggregated patient information at the user level or through a single access point.

Healthcare Organizations Without Solutions: Perspectives

Among those respondents working in environments that have not implemented solutions that either aggregate patient data through a single source application or at least provide an integrated view of multiple sources through the use of a context and identity management tool, there are high expectations of solutions that improve electronic access to patient information. Such solutions are expected to improve clinical workflows, staff retention, staff productivity, and access to information, and also address care quality, patient safety, and resource management challenges.

Business Benefits

When asked what top business challenges could be overcome with the use of a context and identity management system that aggregated patient information, the survey respondents who did not have a system (n = 34) reported:

- Inefficient clinical workflows, the top challenge, could be overcome (65% of respondents, n = 22).
- Improved clinician satisfaction/retention could be expected (62% of the respondents, n = 21).

- Improvements in staff productivity could be expected (59% of respondents, n = 20).
- Decreased data access time could be expected (53% of respondents, n = 18).
- The solution would improve patient safety. A similar percentage indicated that they expected improved quality of care, decreased care costs, and improved resource management (44% of respondents, n = 15).

Operational (Workday) Benefits

Survey respondents were asked what daily process improvements could be expected with a clinical information system that aggregated patient clinical information such as a context and identity management system. Of the survey respondents who replied "no" to having a system (n = 29 out of 34), most expected reductions in process time and reduced process redundancy.

- Of the respondents, 86% expected that repetitive or redundant steps in their daily workflow would be eliminated.
- Of the respondents, 62% expected a reduction in the time they spent accessing multiple patient information applications (n = 18), including the time spent logging on and off of different applications (n = 17).
- Of the respondents, 48% expected that it would facilitate navigating multiple applications and remembering multiple user names and passwords (n = 14).
- Of the respondents, 45% expected that it would provide increased assurance that the information displayed was complete and reflective of the most recent information (n = 13).
- Of the respondents, 41% expected that it would facilitate their ability to view, compare, or reconcile data from multiple sources (n = 12).

Healthcare Organizations with Solutions: Perspectives

One-third of the respondents (33%, n = 17) indicated that their organizations had implemented a clinical information system that aggregates patient clinical information through a single access point. In accessing patient information, respondents utilized clinical data repositories (47%, n = 24), patient portals (67%, n=36), or a context management solution (20%, n = 10).

Top benefits mentioned were:

- Increased quality of care (77%, n = 13).
- Improved patient safety (71%, n = 12).
- Improved compliance with HIPAA regulations (71%, n = 12).
- Improved clinician satisfaction/retention, cost savings, more efficient clinical workflows and enhanced care team collaboration (53%, n = 9).
- Improved patient outcomes (47%, n = 8).
- Increased staff productivity (47%, n = 8).
- Enhanced clinical decision making (41%, n = 7).
- Reduced data access time (41%, n = 7).

Operationally, the top benefits reported by those with such solutions are:

- Aggregates patient information in a unified view (23%, n = 12).
- Automatic linking of data from disparate sources, (22%, n = 11).
- Significant time reduction was the top benefit (22%, n = 11). When asked to quantify the savings, 53% reported savings of 30 minutes to 1 hour a day, (n = 12), while 22% reported between 1–2 hours a day (n = 5).
- Security using single ID/password (10%, n = 5).

FUTURE OUTLOOK

The number of clinical applications and access tools will continue to grow. Three emerging market scenarios will fuel the need for patient information aggregation tools:

Scenario 1: Increasing use of mobile technologies in the patient care and home care market.

Based on the growth of Mobile Clinical Devices (MDC) in the healthcare organization, the need for an integrated single sign-on technology and connectivity will become a key focus in the future. Today, drug databases, patient management applications (e.g., ADT), and EMR access are the top 3 MDC growth focus areas worldwide. This will grow dramatically over the next two years.

HII research shows that key decision makers plan more extensive deployments of Mobile Clinical Devices (MCD) in the next 12–24 months. Access to the following applications are expected to experience the greatest growth rates:

- Electronic medical records
- Physicians notes
- Clinical pathways/care protocols
- Drug databases and other medical references
- Medication administration
- Care plans
- Order entry
- Charge capture
- Patient management
- Laboratory and diagnostic test results (absent the availability of a comprehensive EMR)

Scenario 2: The increasing number of technologies, applications, data sources, and data access points as shared cross-enterprise healthcare information exchange initiatives (including RHIOs).

The new (mobile) access tools and the introduction of broader health information exchange initiatives suggest that access and application heterogeneity of clinical information systems environments will continue for some time. Solutions that provide effective strategies to enable an efficient and secure means to access consolidated, single-view patient information from multiple systems through multiple technologies will be highly valued as the need for information and connectivity grows more urgent.

Scenario 3: The increasing number of healthcare provider organizations desiring to integrate hospital-based clinical applications with physician practice-based or clinic-based EMRs.

The rate of EMR adoption in physician practices is rising dramatically. Surveys by multiple industry organizations indicate that the number of physician practices reporting that they have installed an EMR has doubled in the past several years. Based on the number of practices actively engaged in evaluating and selecting an EMR, this is expected to double again in the next two years. But integration between hospital clinical data sources and those in their offices is essential for

physicians to accrue the full measure of EMR benefits. Since most physician practices operate autonomously from the hospitals with which the physicians are affiliated, little, if any, standardization of PMS/EMR applications is likely to occur. Hospital IT staffs, faced with the daunting task of integrating a multiplicity of products, will seek out products that facilitate this integration in the least invasive, most cost-effective manner possible, while maintaining high standards of security and compliance with their internal technical standards. IM/CM products that provide a standard platform and afford the same level of accessibility and workflow efficiency between disparate internal and external systems as between unrelated internal systems will be highly valued.

CONCLUSION

In this survey, key areas of pain experienced in the clinical setting can be attributed to lack of unified IT and the difficulty in delivering efficient, timely, and context-sensitive information to end users. Many provider organizations have not yet invested in comprehensive clinical systems that offer the promise of highly integrated views of clinical data. Even for those healthcare organizations that have made investments in large, integrated systems (such as Cerner, Siemens, or GE Healthcare Systems) and begun to integrate these systems at the macrolevel, effective data integration at the point of care stubbornly remains a key issue at the end-user level. This clinical end-user survey suggests that an effective tool that can both simplify patient information access and streamline clinical workflow can help to alleviate current pains in the provider space. Vendors that can help to quickly and effectively address these pains will be able to exploit an advantageous niche.

Favored solutions will:

- Provide a unique approach centered on streamlining hospital workflow rather than requiring hospitals commit to comprehensive clinical information systems or incurring the cost of traditional systems integration approaches.
- Maximize operational efficiency and provide capabilities beyond single sign-on/identity management in the areas of data and task tracking, communication, and context management, by developing technology compatible with almost any operating system.
- Leverage existing technologies and provide dynamic, automated, and patient-centric information integration between disparate source systems at the user-session level.
- Provide time savings by eliminating multiple user ids and passwords and enhance the quality of patient care through improved data display and timely data access.

- Ensure improved compliance and security by eliminating the incentives to share user ids and passwords.
- Provide compliance with key privacy and security regulations (i.e., HIPAA, JCAHO, Sarbanes-Oxley) through administrative oversight of the user access at the facility or enterprise level and enhanced audit capability.

For most hospitals, the holy grail of a comprehensive, patient-centric, and fully integrated view of clinical data remains an elusive goal. Tools which leverage the value of whatever source data a hospital may already have in digital form and which can cost-effectively facilitate the integration of additional data sources as they come online represent the most effective strategies for achieving this goal.

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