
Workflow in Healthcare

A White Paper



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Introduction

Today's healthcare marketplace requires providers to respond to a multitude of increasing pressures. Healthcare organizations can no longer rely on a fee-for-service payment structure to finance the provision of quality patient care. Instead, providers are being forced to accept lower fees and higher financial risk. To cope with this risk, healthcare providers seek to cut costs while maintaining the highest possible standards of care. Various initiatives are currently being employed toward this end, including enhanced utilization review programs, the creation of clinical practice protocols and disease management programs, and general cost containment initiatives.

Many providers recognize the need to go beyond these initiatives and that their future success depends upon embracing the next frontier in quality improvement and cost containment. These providers understand that future gains can only be obtained through innovative changes in the care delivery (and documentation) of higher quality services which, at the same time, consume fewer resources. Other industries have met similar challenges by applying the concept of *workflow* to their business practices. Now, healthcare providers are turning to workflow and new technology to help them reach their goals.

Workflow Defined

Workflow is defined as :

Any task performed in series or parallel by two or more members of a workgroup to reach a common goal.

"Tasks" refers to any activities or actions undertaken by individuals. "Series or parallel" implies tasks performed one after another or simultaneously. "Workgroup" means a team of individuals working on the same project. Finally, "common goal" indicates that a group's various activities are performed in concert and contribute to a well-defined and agreed upon outcome.

At a granular level, workflow functions to:

- *Deliver* information to the appropriate people;
- *Organize* information to be immediately useful;
- *Ensure* that the information is acted upon;
- *File* information and record actions taken.

The specific needs of the healthcare industry make it an ideal match with workflow concepts. Healthcare involves complex procedures that include both clinical and administrative tasks. As a result, workflow increases efficiency and effectiveness through the maximal use of relevant, timely information. This pressing requirement makes healthcare unique among industries in its ability to take advantage of the information benefits provided by the implementation of workflow concepts.

Healthflow™ Defined

Healthcare workflow applies the principles of workflow to the delivery of healthcare, hence healthflow.

Healthflow = Healthcare + Workflow

Creation of a particular healthflow process requires the stringing together of various healthcare tasks, both clinical and administrative, to achieve a desired outcome in the most efficient manner possible.

In healthcare today, clinical protocols represent one type of limited healthflow process. For example, a critical pathway attempts to sequence care tasks, coordinate medical and non-medical care resources, and set a defined timeline to ensure that milestones are met. Administrative protocols, which involve processes such as obtaining prior authorizations and providing clinic referrals, are healthflow processes as well. Historically protocols have remained limited in their usefulness in part because developers have rarely incorporated both clinical and administrative activities into one comprehensive care protocol. This lack of integration hinders the delivery of care, as the effectiveness of protocols is often dependent upon many administrative tasks being properly executed at the correct time. An extensive healthflow approach merges clinical and administrative tasks, allowing providers to deliver higher quality care in a cost efficient manner.

In detail, a healthflow process involves:

- Identifying a target process: for example well baby care, or breast cancer treatment;
- Defining both clinical and administrative tasks to be performed by a workgroup;
- Breaking tasks down, in some cases, into more specific actions which can be done by different individuals but which, when completed together, accomplish the original tasks;
- Deciding upon the skill set required to perform each task or action (e.g., physician, nurse, technician, receptionist);
- Understanding the sequence in which the tasks are to be performed;
- Recognizing and applying conditional rules and logic branching, so that only necessary and indicated tasks are performed;
- Planning the sequence of tasks, assigning the tasks to individuals, then documenting the process so that others can understand and follow it;
- Creating the forms, documents and instructions needed by individuals at each step to perform the tasks (e.g., disease management flowcharts).

Healthflow Example

A well baby visit to a pediatrician's office illustrates the integration of clinical and administrative protocols within a healthflow process. The clinical tasks performed in this situation include recording the infant's height, weight and other vital signs, and administering proper immunizations. The administrative tasks include checking membership eligibility, completing necessary insurance or encounter forms, providing Advisory Committee on Immunization Practices (ACIP) immunization guidelines, tracking height and weight to norms, and distributing patient information sheets (e.g., immunization side effects). Integrating these tasks into an efficient, well thought-out healthcare healthflow process helps deliver necessary care efficiently with maximization of outcomes.

Healthflow Automation

Healthflow automation comprises the following routines.

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- Graphical documentation of the healthflow process;
 - Electronic design and distribution of forms;
 - Order initiation, completion and documentation;
 - Linkage of forms to databases;
 - Routing of information gathered at each step to subsequent workers, as needed;
 - Monitoring of the process on a real time basis;
 - Measuring and testing the efficiency and effectiveness of the workflow (e.g., process time and cost statistics).

The enormous job of tracking large numbers of tasks by multiple individuals requires automation to implement complex workflow in the distributed healthcare environment. Personal computers, wireless local area networks (LANs), hand-held input devices, networks and E-mail provide the backbone on which healthflow automation is based. Software, such as hyper-text markup language (HTML) authoring tools, Active-X^(TM) and Java script, can convert paper forms to electronic ones, thereby making critical information available at several points simultaneously over common, standardized user interfaces and networks (e.g., Netscape® browser). For example, receptionists log insurance information in the patient's chart using a desktop computer while a nurse at a different location records vital signs in the same record on a hand-held computer connected via a wireless LAN.

This automation makes physician orders standardized in format, reducing the likelihood of error, duplication or omission. Further, as completed tasks are documented, an easily accessible record of what care patients receive is created. This clear, accurate record of specific patient information improves communication among providers. Moreover, this information is available at the point of service, when and where the clinician needs it most. Finally, the logic branching in healthflow allows flexible implementation of previously agreed upon courses of action which produce the best outcomes. This decision support permits the clinician to concentrate on the more complex clinical choices presented by patients, rather than the routine clinical tasks, such as immunizations or cancer screenings, which can best be managed through automation.

Current paper-based procedures do not provide as many benefits. On the most basic level, paper protocols are not convenient point of service tools, and integrate poorly into providers' schedules. The paper-based approach is also highly inflexible. Workflow automation removes the limitations of paper-based protocols by utilizing computers to handle many activities that are both labor intensive and susceptible to human error.

For example, workflow automation of administrative tasks can seamlessly check membership eligibility by polling an external database, or generate follow-up letters for patients requiring return office visits for blood pressure monitoring.

Workflow automation of clinical tasks is demonstrated by the collection and processing of all drug orders through drug-drug interaction expert systems or a patient specific allergy database.

Benefits of Automated Healthflow

Many of the principles in healthflow are already being applied in healthcare without the benefit of automation. Nearly all hospitals, managed care organizations, and utilization management firms use paper-based clinical protocols and care plans. Disease management strategies, whether in the areas of oncology, cardiology, or specific diseases such as asthma, are further examples of the widespread use of such protocols. While these procedures and principles are

widely utilized, they lack the enormous benefits associated with electronic distribution, decision support and automation.

Automated healthflow delivers significant and measurable benefits. These include

- Standardization of care delivery;
- Increased availability of information at the point of care;
- Linkage of processes with outcomes;
- Collection of primary clinical data for provider profiling and analysis;
- Integration of varied clinical information from multiple sources into a central data repository;
- Electronic transfer of information through customizable, easy to use forms;
- Application of emerging information technology to manage and distribute healthcare data;
- Integration of clinical and administrative activities to work in concert toward a specific outcome;
- Facilitation of guideline implementation and modification through standardization of guideline delivery process.

Automated healthflow reduces the variance in outcomes of care by following a well-defined, carefully formulated healthflow process. Standardized healthflow processes are developed around diagnostic and treatment techniques which have been proven through extensive research and clinical practice. When a particular healthflow process is implemented, both its quality and its cost can be measured and monitored to determine the usefulness and efficiency of that process. If evidence exists that the process does not produce a desired outcome, changes can be made quickly, and the results of those changes measured.

Large databases, which provide storage for huge amounts of clinical data, are a crucial component of automated workflow systems. The information stored in these databases can be accessed and analyzed instantaneously by physicians and clinicians at the point of care. In addition, the databases organize the process of care information into a format that allows providers to understand their patterns of care, and modify them if necessary. These databases link process, and related activities, to outcomes.

Summary

The pressures associated with the competitive, quickly-changing healthcare marketplace require the use of all available tools to deliver the highest quality care at the lowest cost. Workflow, as employed by other industries, delivers significant increases in both productivity and quality of services. Likewise, the application of automated workflow techniques to the healthcare industry delivers measurable and immediate benefits. Automated healthflow provides the necessary information technology for care-givers to deliver efficient and effective care.