

VoIPcare White Paper

Overview of qMetrix™ for Healthcare

Executive Summary

Hospitals and healthcare providers in recent years have been challenged to manage costs while delivering higher quality health care to patients. Government, regulatory agencies such as the Centers for Medicare and Medicaid Services (CMS) and The Joint Commission, and private payers are increasing requirements for reporting of quality metrics and indicators. Value-based purchasing is being discussed as all components of the healthcare industry begin to address the issue of bending the cost curve to control escalating expenses. IT solutions are likely to be of benefit, and various software systems utilizing conventional computer input methodologies have been developed in both the hospital and clinic settings. The burden is increasing, however, and it has been estimated that a 250 bed community hospital may collect almost 1500 quality indicators of different types in a variety of software programs. There is a growing interest in refining these information systems and many types of products have been proposed, but in general the current methodology used to collect data is inefficient, costly, and often delayed and untimely. The **qMetrix™ for Healthcare** system represents a new method for collecting and managing healthcare performance metrics utilizing a tablet device platform (the Apple iPad™) with integrated data collection designed to streamline the collection and reporting of quality and/or operational data. The second key feature of the system is that it provides immediately actionable information derived from the collected operational data. **This system represents advanced technology which supports our belief that with increasing demands for the collection of quality metrics, healthcare providers will require systems that enable them to collect and view data in real time. The technology enables the provider to collect metrics in a more efficient and timely manner, receive immediate visual feedback about performance against defined measures, reduce repetitive data entry and eliminate redundant processes. The system provides healthcare organizations with the decision support tools that enhance their ability to analyze performance against quality metrics in a near real time environment. No other product provides this capability.**

Performance metrics will become even more important as a basis of hospital payment in the future. Section 3001 of the Affordable Care Act (ACA) authorizes the establishment of a quality incentive pay-

ment program for Inpatient Prospective Payment System (IPPS). This becomes effective with the FY 2013 payment determination for Medicare discharges occurring on or after October 1, 2012. As stated in a recent CMS communication, “the Hospital Value Based Purchasing Program (Hospital VBP) is designed to link payment to quality processes and outcomes and to transform CMS from a passive payer of claims to an active purchaser of care. The Hospital VBP program moves from providing an incentive to the nation’s acute care hospitals for reporting measures to paying for quality performance. Under Hospital VBP, payments to high performing hospitals will be larger than those to lower performing hospitals, using the IPPS to provide financial incentives to drive improvements in clinical quality, patient centeredness and efficiency.” This program will provide an incentive by making a percentage of the base operating payment to hospitals for all Medicare discharges contingent upon performance. This amount is estimated to be 2% to 5% and will affect \$3 to \$5 billion of current Medicare reimbursements to hospitals. The proposal also describes a performance assessment model that incorporates quality measures, including clinical processes of care, patient perspectives, and clinical outcomes. These measures will be used to calculate a hospital’s total performance score which will be utilized to determine payment (Source: CMS). Some analysts estimate that within five years approximately 9% of a hospital’s Medicare payments will be tied to collecting and reporting quality metrics.

The Technology Problem

The current retrospective system of collecting quality information/metrics for a hospitalized patient is illustrated in Figure 1. In this example from a typical hospital, it is clear that quality data is only collected after the UB-04 form is generated by the hospital medical records department following discharge of the patient. A vendor is frequently used by hospitals to identify patients for quality indicator collection based on discharge diagnoses listed on the UB-04 forms. Chart auditing is then carried out by the hospital to collect the data which is subsequently sent back to the vendor for reporting. The entire process takes anywhere from four weeks to four months to complete, and is consequently inefficient, costly, labor intensive and delayed. Although some providers believe that electronic health record (EHR) systems will address the quality indicator collection issue, it is unlikely to be a solution anytime soon in view of the variety of measures collected and the frequent changes in requirements. The **qMetrix™** system is continually updated and reprogrammed so that all measures and requirements are current.

Many hospitals today are doing concurrent data collection using a manual process. This basically involves multiple manual steps – producing a working list, updating the list with written notes, and then entering the data into the CMS provider input screens. **qMetrix™** eliminates this manual process and provides immediate feedback about uncompleted measures. In other situations the hospital may be reporting the same measures to more than one reporting agency. This requires duplication of effort to

enter the same data in different registries or websites. **qMetrix™** eliminates this additional work by providing a common platform for data collection which is integrated with the reporting vendors.

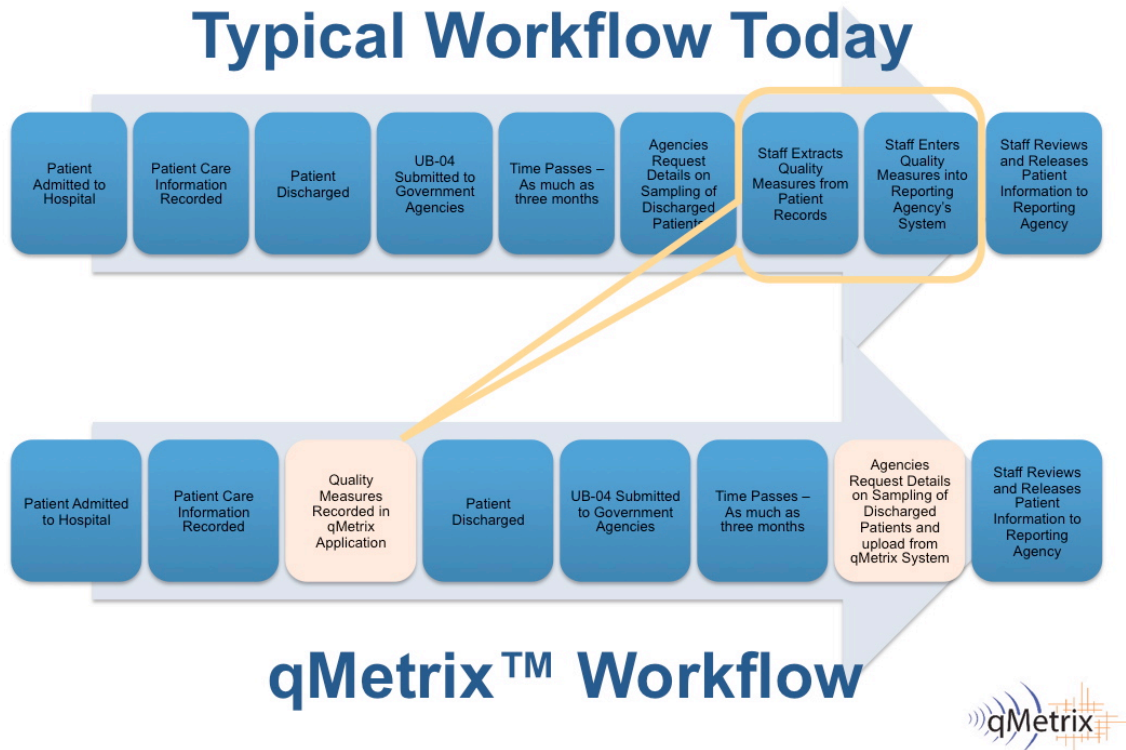


Figure 1. qMetrix™ for Healthcare Workflow

The qMetrix™ for Healthcare Solution

The **qMetrix™ for Healthcare** solution can be described as a method for collecting and managing healthcare performance metrics utilizing an iPad™ platform which enables healthcare providers to collect quality metrics in a more efficient and timely manner than currently available with conventional technology. It also provides **decision support** to the provider through a set of algorithms that are used to ask questions of the provider based on identification of the patient and the diagnosis or procedure. The information is linked to a **common database** that collects information from other sources as well such as direct computer input or laboratory linkages, and produces reports in an appropriate format.

Simple data visualization tools are utilized to enable the provider to monitor quality metrics for both individual patients and groups of patients. Figure 1. depicts the typical workflow today compared to workflow using the **qMetrix™** system. In the usual situation today, data is collected using various methods, but patients that must be reported are not determined until several weeks following discharge. At this time the reporting vendor sends a list to the hospital which then is required to abstract data from the records and put it into the appropriate software program which is sent to the reporting vendor. In the **qMetrix™** system, data is collected and visualized using a simple tablet device platform while the patient is in the hospital. Staff have ready access to all data and missing data is easily determined and obtained for all patients prior to discharge. Data is stored in a secure, HIPAA-compliant database, and when the list of patients to be reported is obtained from the reporting vendor, the data is simply pulled from the database and sent to the vendor. This avoids the costly and time-consuming chart reviews which are currently necessary.

Currently, the **qMetrix™** system includes modules for acute myocardial infarction, heart failure, pneumonia, stroke, surgical care improvement (SCIP), and Get with the Guidelines. Representative input screens are shown below in Figures 2 and 3.

Patient Measure Data

HF Measures

Patient Control Number:
Patient Name:

2135
Calvin Coolidge

Arrival Information

Admission Source: 2-Clinic

Comfort Measures: Day 0 or 1-1

Clinical Trial: No

Smoking

Smoker: Yes

Counseling Given: Yes

LVSD

LVSF EF Value < 40%: Yes

LVF Assessment

Assessment:

Notes

Discharge Medications

ACEI: Yes

ARB: No

Reason For No ACEI or ARB: No

Discharge Instructions

Activity:

Diet:

Follow-Up:

Medications:

Symptoms Worsening:

Weight Monitoring:

Save Cancel Print

Figure 2. Data Input Screen for Heart Failure Measures

Get with the Guidelines Data

HF and GWTG Measures

Patient Control Number:
Patient Name:

2135
Calvin Coolidge

Arrival Information

Arrival Date:

Arrival Time:

Admission Date:

Admission Source: Clinic-2

Cardiac Diagnosis:

Principal Diagnosis:

Heart Rate:

Supine Blood Pressure:

Comfort Measures: Day 0 or 1-1

Clinical Trial: No

Smoking

Smoker: Yes

Counseling Given: Yes

LVSD

LVSF EF Value < 40%: Yes

EF Value:

EF Qualitative:

LVF Assessment

Assessment:

Parenteral Therapies

None
 Dopamine Dobutamine

Discharge Medications

ACEI: Yes

ARB: No

Reason For No ACEI or ARB:

Beta Blocker: No

Reason For No Beta Blocker: Yes

Discharge Instructions

Activity:

Diet:

Follow-Up:

Date of First Follow-Up:

Medications:

Symptoms Worsening:

Weight Monitoring:

Discharge Measures

Discharge Blood Pressure:

Optional Fields

Travel Distance to Hospital

Daily Alcohol Consumption

Figure 3. Data Input Screen for Get with the Guidelines Data

qMetrix™ and VoIPcare Technology

The system currently utilizes an iPad™ platform to collect and represent data. The qMetrix™ system architecture is designed to easily adapt as other technology is developed and incorporated into the system. Future development will include both interactive voice response (IVR) and, at a later stage of development, RFID technology to improve the data collection process. Voice communication is accomplished utilizing any type of telephone connection, although portable devices such as cell phones and IP phones are the recommended choice. IVR applications are being developed using the Speech Server component of the Microsoft Office Communication System™. At the present stage of development, the system utilizes IVR within the framework of a communication system such as Vocera™. The Vocera™ communication system is deployed in many hospitals at this time and will serve as the initial testing platform for the qMetrix™ system. Healthcare providers using Vocera™ will access the system utilizing algorithms for each patient and respond to appropriate verbal questions from the database. The system database contains information for each patient, including admission diagnosis, secondary diagnoses, and planned procedures. The system is configured to ask questions related to appropriate quality indicators based on the patient and diagnosis (e.g., by service line, ICD-9, CPT, DRG and other appropriate codes). Algorithms have been developed to accommodate various types and classes of indicators such as acute myocardial infarction, congestive heart failure, pneumonia, and surgical indicators. The algorithms are updated based upon data entered, and the system intelligence allows changes in the algorithms derived from the changing status of a particular patient or changing requirements from payers or regulatory agencies. Thus, if a patient diagnosis or procedure changes, algorithms and questions regarding indicators may change as well. Various types or categories of indicators used for medical and surgical patients have been identified for the system, and most indicators will fit into these categories.

Two other aspects of the qMetrix™ system are worth noting. **The system will provide decision support to the providers.** This is accomplished by utilizing the qMetrix™ algorithms which query the

providers with questions about appropriate indicators for a particular patient in a given care setting. The questions thus serve as reminders and are the basis of the decision support concept in this model. **The qMetrix™ system will provide tracking and auditing functionality.** The collection of data in different locations by different providers is tracked by the system and provides the ability to audit many metrics. These include but are not restricted to metrics related to the patient, diagnosis, location, time, care provider collecting information, input accuracy, missing data, and collection rate. The use of algorithms allows questions to be repeated at later points in time to the same or different providers if data are not collected in a satisfactory manner during initial queries.

Leaning the Data Collection Process

Lean methodology is an attractive quality and process improvement tool for healthcare organizations to utilize. In developing the **qMetrix™ for Healthcare** system, it became clear that the system shared a great deal with Lean, with the most important aspect being improved workflow and processes. These comparisons are listed in Table 1. below:

Characteristic	Lean	qMetrix for Healthcare
Cycle-Time Reduction	Reduce the total amount of time required to complete a process	<ul style="list-style-type: none"> • Simplify both collection and reporting by reducing the steps in the process • Reduce data entry time • Increase efficiency
Value Stream Mapping	Chart the sequence of movements of information, materials and production activities in the value stream	<ul style="list-style-type: none"> • Provide value to and manage the workflow by concurrent collection of data • Eliminate duplication of data collection and reporting • Single-entry reporting to multiple registries (e.g., CMS, GWTG)
Five S	Sort, set in order, shine, standardize, sustain	<ul style="list-style-type: none"> • Utilize a standard format and collection system • Eliminate paper entry • Reduce confusion in data retrieval and entry • Standard format for all modules/reports
Visual Management	Arrange the workplace and the service process so that the status of the process can be easily understood	<ul style="list-style-type: none"> • Monitor all data collection and status on visual system in real time • Indicator status color-coded

	by everyone	<ul style="list-style-type: none"> • Decision support
Waste Reduction	Types of waste include overproduction, delays, waiting, transportation, processing, excess inventory, wasted motion, defective parts	<ul style="list-style-type: none"> • Concurrent reporting • Fewer steps • Eliminate retrospective chart reviews • Reduce rework • Increase payments
Mistake-Proofing	Analyze a process to determine where human errors could occur (<i>poka-yoke</i>)	<ul style="list-style-type: none"> • Concurrent data collection • Indicator status color-coded • Verify data, decrease errors • Improved accuracy • Eliminate data loss/improve data security
Just-in-Time	Deliver the material or product at the time and place where it will be used	<ul style="list-style-type: none"> • Concurrent data collection • Reporting on demand • Elimination of retrospective chart reviews • Web-based
Standardized Work	Utilization of agreed-upon work instructions which reflect the best method for completing the process	<ul style="list-style-type: none"> • All data in all modules collected in same format • Status of all metrics available and clearly understood • HIPAA compliant
Business Process Re-engineering	Cycle-time reduction throughout the organization	<ul style="list-style-type: none"> • Common methodology used for data collection in all modules • Improved outcomes/ratings • Increased payments • qMetrix system easily adapted to create additional modules, checklists, or inspection/auditing processes

Table 1. Key Comparisons of qMetrix™ for Healthcare and Lean

Potential Future Development—Meaningful Use and ACOs

A number of customers have inquired about developing a **qMetrix™** module to assist provider organizations in meeting Meaningful Use (MU) criteria. We have evaluated this possibility and believe that the **qMetrix™** system architecture would easily support a module that would be of benefit to provider organizations in tracking the MU criteria and requirements. It should be understood, however, that the **qMetrix™** system is not an electronic health record or a component of a health information exchange.

The value of the **qMetrix™** system would be that it would provide a tracking system to monitor patients in real time to ensure that the MU requirements are being met for each patient and to provide status reports on a regular basis.

Accountable care organizations (ACOs) are an important aspect of the ACA and many experts believe that they will provide the framework for payment reform and cost savings in the years ahead. There is a great deal of interest in ACOs among provider organizations and we have been asked whether **qMetrix™** will be developing an ACO product line. Our research to date indicates that the data requirements for an ACO will be very extensive and will require a formal data warehouse with anticipated costs in the range of \$500,000 to \$1m. At the present time our business plan is to explore partnerships with data warehouse companies while maintaining our focus on developing real-time data collection and reporting tools that are useful to providers in the clinical setting.

Conclusion

In summary, **advantages of the qMetrix™ for Healthcare system** include:

- Integration with existing technology
- Web-based, hosted application environment
- DOD secure, HIPAA compliant
- No equipment or capital investment required
- Tablet device platform (Apple iPad™)
- Flexible and scripted user interface
- Improves workflow process and streamlines data collection
- Integrated data review and reporting
- Data collection requirements continually updated, always current
- Immediate actionable information
- Decision support
- Fully integrated with CMS vendor reporting system

- Rapid implementation, minimal training requirements

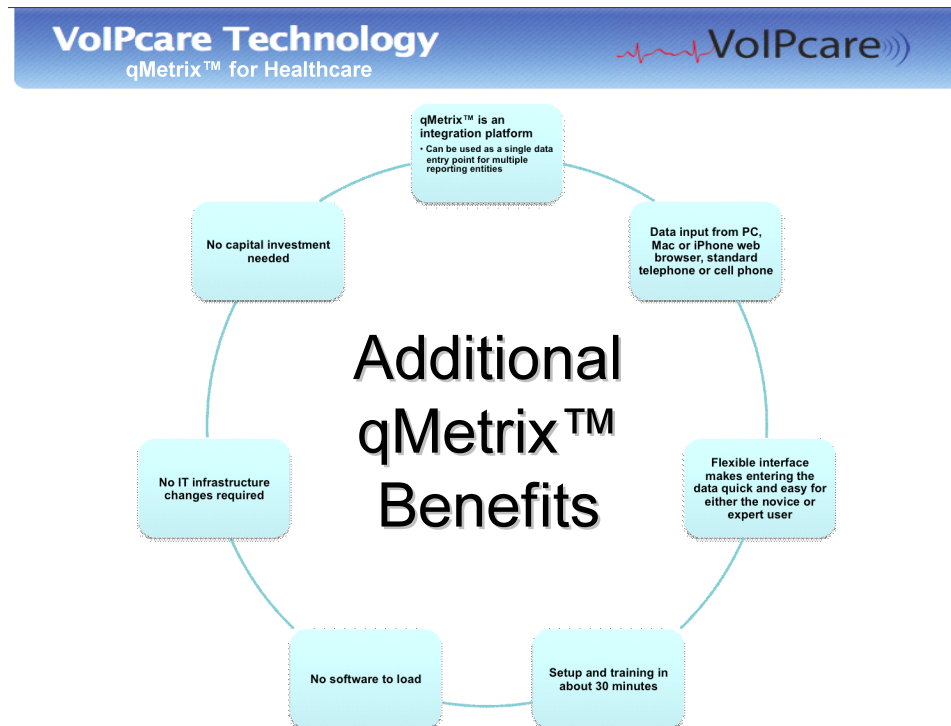


Figure 4. Benefits of qMetric™ for Healthcare

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