



## Dramatically Improving Surgical Throughput

### Real-Time Location System Enhances Workflow Management System

*Operational decisions in perioperative environments if not made correctly, can lead to delayed cases, extended work-days and ultimately reduced capacity to provide services. The day-to-day challenges combined with the ongoing legal and compliance requirements increase the complexity of decision making. Perioperative workflow management systems have been designed to improve decision making challenges. One option that unites both decision making and compliance issues in an efficient and effective manner incorporates real-time location systems (RTLS) technology with patient status updates. RTLS-based workflow management systems provide instant updates, immediate capture of patient movement and data collection which makes patient flow transparent throughout the perioperative environment.*

#### Workflow Management Systems versus Documentation Systems

Surgical documentation systems promise to capture documented times to provide airport style or 'big board' views to help manage departmental workflow. In reality these systems provide rich tools to document:

- Patient assessment,
- The plan of care, and
- The care that was given.

By definition, this approach provides information after care is given and relies on user compliance to input or record in a timely fashion. In this approach, the nurse's attention is focused on providing patient care, and later, during pauses in care giving, attention then shifts to documentation.

This latency in documentation rarely accommodates the immediacy needed to provide actionable information for those managing the schedule. Additionally, as documentation is being recorded, the timing of key events relies on memory, anecdotal confirmation or best guess. Any of the times ultimately recorded is dependent upon the accuracy and variability between departmental clocks and individual's watches.

Workflow management systems are designed to provide a transparent view of every patient's location and their current status facilitating efficient movement of patients through perioperative services which helps to improve patient, surgeon and staff satisfaction. Efficient use of perioperative resources creates opportunity to increase throughput and revenue.

#### Workflow management systems provide:

- Real-time capture of critical events that drive decision making at the point of care – e.g. Patient ready for OR, Surgery begins and Closing begins etc.

- Accurate reflection of current schedule including add-ons, emergent/urgent cases and cancellations
- Collection of data and capability to produce reports for short and long range planning
- Charge persons with the ability to make appropriate decisions by providing real-time information regarding the location and status of every patient scheduled to have a procedure performed that day.
- Real-time capture of patient location from time of arrival through departure
- Notification via email to pagers of key events such as "Closing begins on Dr. Jones patient in OR 6" to PACU charge nurse, orderlies and anesthesia techs so that care is pro-active instead of re-active.
- Decision support timers that alert staff when key events should happen, such as re-dosing the pre-operative antibiotic if surgery hasn't begun within 1 hour of administration
- A visual to do list with outstanding items for completion before the patient enters the OR
- Graphic displays designed for team members that are accessing these visuals can be customized by user preferences
- Web access by surgeons, staff and patient families with proper security credentials
- Method to identify and collect events that impact throughput and quality of care
- Ability to quickly customize the system to meet the needs of the hospital's unique environment and patient flows

#### Decision Making Challenges

The Joint Commission on Accreditation of Healthcare Organizations has identified communication as a top contributing factor for error in surgical services. Deciding what to communicate and when, takes years of experience. Possessing the knowledge of patient status and location requires diligent monitoring. An RTLS based system helps reduce the need for supervisors to communicate the location of their patients – allowing more focus on patient care, which ultimately leads to better patient satisfaction. RealView, PeriOptimum's patient tracking system, achieves this objective through its real-time communication capabilities.

In addition to communicating the patient's location and status, the ability to identify bottlenecks that impact surgical

throughput can be discovered with the potential to prevent or minimize these delays. With the ability to identify bottlenecks, caregivers are given an opportunity to avoid or eliminate issues proactively. Once a potential bottleneck is identified, there is an ability to quickly communicate with all team members for efficient resolutions. This system then becomes a value-added approach to workflow management.

*“This system reduces the amount of calls between physicians’ offices, staff and family members allowing our new and experienced staff more time to provide quality care.”*

*- Bonne DuCharme, RN CNOR*

The ability to communicate with all care givers quickly and efficiently provides significant value to the perioperative workflow decision making process. For example, while using the RealView system, an OR charge nurse can visually observe in real-time that a patient has not arrived in pre-op and has the ability to quickly rearrange the schedule to maximize room usage instead of just waiting for a patient to arrive. This quick and efficient decision making decision based upon real-time visual workflow can save the staff wasted time, capitalize on operating room space and optimize surgical capacity utilization. Another example includes shared knowledge within the pre-op area for a surgeon which is ahead of schedule. In this scenario, the pre-op staff can easily modify their patient’s perioperative flow and adjust the schedule appropriately while preparing patients to automatically alter to the surgeon’s pace.

A RTLS based system makes these modifications visible, in real-time, allowing staff to make efficient and effective decisions that achieve organizational goals.

Improved communication is not the only value afforded by an RTLS system.

Managers and charge nurses make assignment decisions based upon a previously created schedule which is constantly changing as the day unfolds. Without a real-time visual display of the

perioperative workflow, adjustments are made in reaction to changes based upon volume or acuity. With the assistance of an RTLS, managers and charge nurses can visually view the patients’ location and status, making decision making proactive instead of reactive. For example, the charge nurse in the PACU may know which patients have already arrived and which patients should be in the OR, but usually is unaware of any schedule changes, cancellations or add-ons. The RTLS system improves scheduling thanks to its constant updating of information.

Visualization of patient volume from unit to unit also allows managers to plan for patient arrival.

Finally, an RTLS based workflow system ensures many quality improvement efforts can be easily quantified for compliance requirements. Quantifying compliance typically requires nurses to review charts and then create a manual report. Capturing these events automatically in the patient tracking system provides a means of ongoing measurement with no extra FTE effort, thus allowing staff to focus on patient care tasks and reducing overtime fees for hospitals. RTLS work flow systems such as RealView assist with compliance by providing multiple methods of alerting staff prior to a missed event such as pre-operative antibiotic administration and timeouts

### Administrative Challenges Addressed by RTLS Work Flow Systems

Today’s hospital administrators are confronted with three initial challenges when assessing surgical services on the surface:

- Patient satisfaction
- Patient throughput
- Care giver satisfaction

Each of which ensures a hospital or healthcare system is financially stable and that the business of medical care is positively growing. While surgical services remains the largest revenue and cost center within a healthcare organization, these three challenges overlap and can be summarized in an alarming statistic – the average operating room operates at less than a 70% capacity.

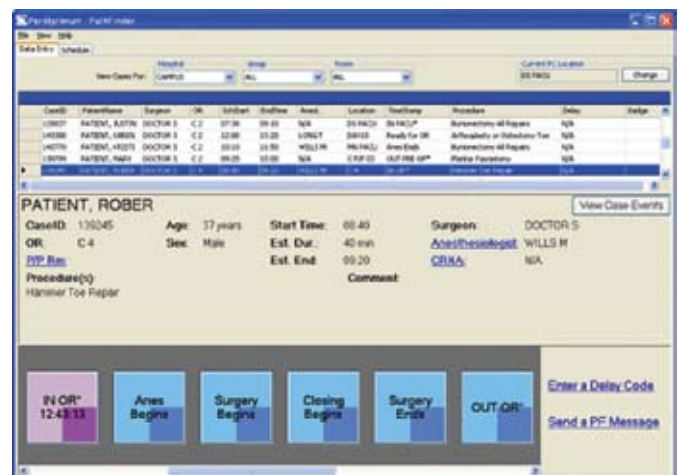
“We have reduced the time spent on clerical tasks, automating data capture to give clinicians specific information they need to respond more quickly and appropriately to improve the quality of care,” said Stacey Youcis, assistant vice president, surgical services at Lancaster General Hospital, Lancaster, PA.

A workflow management system, in particular RealView, provides visualization of real-time surgical case workflow enabling managers and staff to use resources more efficiently. The strength of visualization lies in the predictability of case work, which leads to efficient use. As a result of greater efficiency comes the ability to add capacity to operating rooms enabling more cases, leading to improvements in throughput and increased revenue.

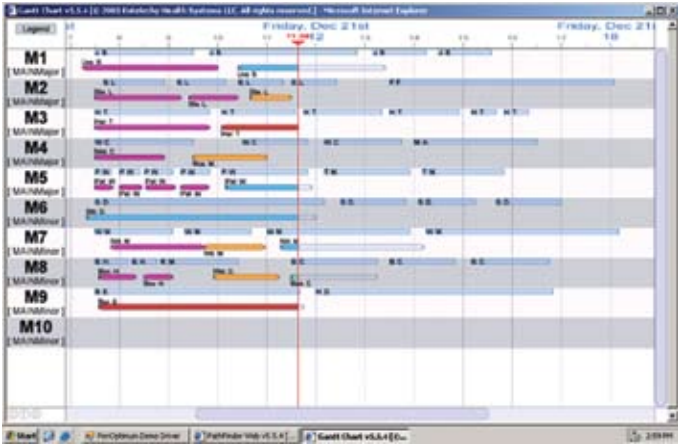
“The visual representation of patient status and the notification of key milestones via text pages, allows our staff more preparation time because they can see what is ahead of them, rather than reacting to a situation,” says Angela Whye, RN, CNOR, IS Coordinator with PinnacleHealth System, Harrisburg, PA.

Ultimately, this tool, an RTLS based workflow management system, supports improved decision making and increases surgical throughput in a manner that adds value to our process. Add to this system a visualization tool and automated notification via paging or text messaging and the most current technology is available with additional benefits.

Hospital administrators are realizing that physicians and surgeons are partners in the healthcare business. RTLS based systems helps to improve



Information is immediately available in a visual format for staff.



An RTLS-based workflow management system allows staff to visualize their day in support of improved decision making and improved surgical throughput.

this relationship. An administrator that provides surgeons with a perioperative environment that maximizes their ability to complete cases in the least amount of (non-productive) time is a strong motivator for surgeons to bring cases to that facility.

In addition to solidifying the relationship between surgeons and administrators, reducing staff turnover supports increased revenue. Since fewer young people are becoming nurses, the average age of a nurse is well exceeds 40. It takes on average, 9-12 months for nurses without experience to become fully oriented to the OR. Each time an experienced staff person leaves, knowledge gaps open which has the potential to negatively impact throughput. The hospital can invest in tools and technology which provides the staff with an enhanced ability for appropriate decision making,

### Conclusion

Transforming surgical services workflow management from a retrospective view (documentation systems) to pro-active real-time visualization (RTLS – workflow management systems) allows managers to base decisions on current information and adjust accordingly. The advantage of an RTLS-based workflow management system is that events are captured for compliance in an automated manner and communicated to staff as they occur, compared to an antiquated system relying on staff to remember and write down key events.

RTLS-based workflow management systems provide instant updates, immediate capture of patient movement and data collection that produces planning documentation for future needs. One key feature of this system is its ability to notify key

leading to an efficient care delivery model creating a positive work environment.

“This system reduces the amount of calls between physicians’ offices, staff and family members allowing our new and experienced staff more time to provide quality care,” adds Bonne DuCharme, RN, BS, IS Coordinator with PinnacleHealth System, Harrisburg, PA.

staff and surgeons via pagers, text messages or email of events as they occur resulting in fewer delays. Additionally, communication of key events such as patient location and status allows charge nurses in each perioperative area to make decisions about staff assignments, when to call for the next patient, which patient to prepare next and where the patient will go upon arrival to the unit.

To further improve the perioperative environment, the ability to anticipate changes in schedule and patient tracking is a must. Those hospitals that have incorporated a workflow management system continue to boast of the improvements, while simultaneously showing significant revenue growth. These hospitals sight the improvement in communication among all stakeholders in the operating room as the leading component to improvement.

Improvement in communications provides a boost; however, the ability to anticipate and plan for care creates opportunities of efficiency that result in increased throughput and revenue. Within this system, staff has the capability to allocate resources based on the visualized schedule. Allocation creates opportunities to add capacity resulting in increased throughput and revenue.

By making patient flow transparent, hospitals have the ability to improve communication among staff, fulfill compliance requirements through the capture of real-time data and effectively manage operating room resources. This translucent system produces improved surgical throughput and increases revenue potential.

### About PeriOptimum

Organized in July 1998, PeriOptimum strongly believes in the power of information technology tools and analytical support services. Through the use of workflow automation technology and process management technology solutions – the PeriOptimum team supports and improves workflow based on the academic research of Dr. W. David Watkins who quantified the opportunities for growth when perioperative process efficiencies and improved staffing utilization is attained. Find out more about us at [www.perioptimum.com](http://www.perioptimum.com).

### Value of Improved decision making

Improved decision making, as a result of an RTLS based workflow management system, can lead to significant organizational change, positive culture change and improved operating revenue. For example, at Erie County Medical Center, Erie, PA, the implementation of RealView has led to significant improvements throughout its organization.

The following chart below highlights several key indicators from 2004 through 2007 for the Erie County Medical Center, Erie, PA.

<i>Erie County Medical Center</i>	2004	2005	2006	2007
<b>Surgical Cases</b>	8,749	9,209	10,027	11,363
<b>Discharges</b>	15,270	15,123	15,814	16,451
<b>Average Daily Census</b>	347	345	364	376 (Projected)
<b>Growth in Operating Revenue (Millions)</b>	\$271	\$291	\$338	\$367
<b>Operating Margin (Millions)</b>	\$-30	\$-18	\$5	N/A

*Erie County Medical Center is a level one trauma center with 638 licensed beds and 11 ORs.*

# What RealView™ Can Do For Your Hospital

## Improve Your Efficiency

- Real-time automated patient tracking
- Real-time updating of current schedule including emergencies, add-ons and cancellations
- Eliminate hundreds of phone calls per shift
- Totally automated communication from every point in the perioperative environment
- Increase case volume

## Improve Perioperative Work Flow and Total Management

- Enable real-time decision making at every level
- PeriOperative process becomes transparent – no longer silo based
- Optimize surgical flow in a complex environment
- Remove the finger pointing from block management
- Quickly customize your system to meet the needs of your hospital's unique environment and patient flows
- RealView acts as a catalyst for positive culture change removing politics from decisions
- Improve employee satisfaction

## Improve Patient Family Satisfaction

- Improved Press Ganey scores and HCAPS/HCAHPS
- An informed, updated patient family is a happier patient family

## Improve Your ROI Quickly!

- Reach your maximum potential with efficiencies at all levels



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