

SPECIAL REPORT

# Nine Ways Real-Time Feedback Improves Performance

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WATCH**

Every Record. In Real Time. Automatically.

Most EMS agencies struggle to perform quality assurance and quality improvement in a timely manner. Although they recognize its importance, they lack the resources to have a truly proactive quality management system. Instead, they often only review individual cases when complaints arise or mistakes are made, or they rely on a tedious process of chart review that often lags days, weeks, or even months behind.

A passive and delayed quality management system is no longer adequate in today's healthcare environment. Prehospital providers who are committed to helping their patients must also be committed to closely examining the quality of their care and working to make it better. More than ever, EMS systems also need to demonstrate value—to their communities, their patients, and to payers. Medicare payments to hospitals and physicians are now impacted by their ability to meet certain quality benchmarks, and it is likely only a matter of time before the same is true for EMS providers. Without a robust and timely quality improvement process, agencies will not know where they need to make improvements, and may face financial penalties as a result.

A more dynamic quality management system that provides faster and more comprehensive feedback to practitioners,

agency leaders, and other stakeholders will allow EMS systems to improve clinical and operational performance, increase employee and customer satisfaction, prepare for value-based purchasing, and create a safer and more effective system.

More than ever, EMS agencies need to take a systems-wide approach to quality improvement. Real-time, comprehensive, automated analysis of patient care records and other data sources allows them to do just that. With new technologies, EMS agencies have new ways to identify trends, prioritize quality improvement efforts, and examine their policies and processes to make targeted changes that improve the quality of patient care and operations.

From athletics to education, vehicle safety to healthcare operations, real-time feedback has been shown to make a difference.

# 1 Clinical decision-making

Real-time feedback in medicine isn't anything new. In fact, real-time feedback is as simple as measuring SpO2 levels while administering oxygen or ETCO2 levels after intubating a patient. Those numbers provide instant feedback in order to measure the effectiveness of an intervention and the status of the patient.

If those vital pieces of information were not available immediately, they clearly would not be helpful. Finding out EtCO2 levels hours after an intubation may provide paramedics some useful information for the next incident, but certainly didn't help the patient.

With technology advancing, it is clear that real-time feedback in medicine is becoming more sophisticated. In the hospital setting, physicians who enter an order for a medication with the wrong dose are often given a warning. While such systems have not caught on in EMS—most likely due to the fact that most ePCRs are not completed until after patient care has been transferred—a faster recognition of errors or omissions by EMS providers would benefit patients. If medication errors are discovered within minutes, rather than days, patients and hospitals could be notified sooner, possibly allowing for actions to be taken to mitigate the error.

In EMS, some providers are now receiving real-time feedback on CPR compression rate and depth. Studies have demonstrated small improvements in CPR performance among teams that were using CPR feedback devices,

both in training scenarios and actual cardiac arrests. While this technology is still new and has yet to demonstrate significant improvements in patient outcomes, it does show the potential for quality improvement—after all, if EMTs and paramedics can adjust CPR rate and depth in the middle of a cardiac arrest, then other feedback mechanisms may also lead to improvements in care.

## 2 Safer and more efficient driving

Many ambulance services have already discovered the benefits of real-time feedback for its drivers. Whether through systems that alarm when seatbelts are not worn to “black boxes” that record and alert when unsafe driving actions are taken, the prevalence of feedback in the front cab of the ambulance has increased dramatically in recent years.

The limited research in feedback for both commercial and private vehicles indicates that it provides some benefit. A 2005 study of an ambulance service reported that risky behaviors decreased when the feedback device was present, leading to a demonstrable cost savings for the company. The effect was likely the result of several factors, including the instant notification when an unsafe action was taken, as well as drivers simply knowing that they were being monitored. Researchers also argue that drivers learn and benefit more from actually experiencing errors (and receiving feedback), rather than simply hearing theoretical

explanations in a classroom or other setting.

Outside of EMS, studies have found that providing feedback on fuel efficiency to drivers can increase the number of miles they can drive on a gallon of gasoline. Utility companies have also recognized the importance of real-time data, with research demonstrating that homeowners who have continuous feedback will significantly decrease energy usage.

These simple efforts show the power of using data that has been available for years but in the past was often hidden or only shared during annual reports. If feedback can be used to create safer drivers and more efficient energy users, it can be used to create better caregivers and more efficient EMS systems.

### 3 Infection control

In a study of hand hygiene in a hospital, employees were told that video cameras would be installed to see whether employees were following protocol. Despite the presence of the cameras, compliance rates remained low—less than 10 percent—for several months. Then, researchers began displaying compliance rates on screens in the hospital and distributing them via email. Almost instantly, hand-washing rates shot up, more than doubling in just one week, and reaching 80 percent in a month.

Fans of performance measurement often say, “You can’t improve if you don’t measure.” But that quote is misleading. The real mantra should be

“You can’t improve if you don’t provide feedback.” Measuring without sharing the results of that measurement is not effective. The faster those results can be displayed, and the more frequently they can be updated, the faster people will see the results of their efforts to improve. After all, people have to know in which areas they need to improve in order to make the changes necessary to improve. If that feedback isn’t timely, it is easy to dismiss. But near real-time feedback impacts people when they still remember their actions—such as not washing their hands after seeing patients.

### 4 Coaching

Near real-time feedback allows for coaching almost immediately, which will also lead to immediate improvements in performance. In a study of NCAA athletes, those who received immediate feedback from a coach outperformed those who did not. The study was simple—the athletes were told to jump as high and fast as they can. After the jump, half the student-athletes were told how much power (in watts) they generated in the previous jump. The other half received no feedback.

This simple verbal cue produced significant results—the improvement from jump to jump was higher in the athletes who received the feedback.

The lesson for EMS managers, educators and supervisors is simple—feedback does not have to be complicated to be effective. In this case, the athletes were simply told how they performed, and their performance improved.

For years, EMS practitioners have accepted that there are few actual measures of their performance or ways for them to know where to focus their education and training

That's no longer the case. Technology now allows EMS providers to know just where they perform well, and where they struggle. Supervisors now have tools to provide directed coaching, which doesn't have to take more than a few minutes and can be based on documented past performance—and data. Simply providing that information to paramedics and EMTs may lead to dramatic improvements in how they deliver care.

## 5 Operations and compliance

It seems pretty obvious—the earlier you get feedback, the earlier a correction can be made.

Many agencies measure call-taking times only a monthly or quarterly basis, but real-time measurement and feedback creates a culture of immediate improvement. The North Shore-LIJ Center for EMS in New York uses FirstWatch to monitor performance in several areas, including compliance with dispatch standards. Throughout the shift, call-takers and dispatchers simply have to look up at a screen in the front of the room to know whether or not they have dispatched calls in a timely manner. If a call-taker is struggling to meet standards, a supervisor can address the issue immediately. Since implementing that system, North-Shore LIJ says the call-taker performance

has improved. It's also created a friendly competition in the dispatch center, since no one wants to be the only low-performer of the day.

Agencies are also using FirstWatch for real-time measurement of compliance with other standards, such as chute times, response times, and hospital turnaround times. Real-time feedback on hospital turnaround times allows supervisors to intervene as soon as they are alerted to a problem—by talking to emergency department staff or rerouting ambulances to other destinations—rather than simply pointing to charts and graphs at monthly meetings.

## 6 Employee engagement and satisfaction

Providing feedback isn't just a way to improve service delivery and patient care. Some employers think that saving feedback for annual performance reviews will allow them to avoid confrontation and will avoid upsetting employees. After all, it's pretty common knowledge that no one enjoys his annual performance review.

But that doesn't mean employees don't want to receive feedback. In fact, it's just the opposite—they want regular, timely, and specific feedback. And as a survey published in the Harvard Business Review found, employees want that feedback even if it's negative—as long as it focuses on ways to improve, rather than personal deficiencies.

Executives in every sector are shifting away

from annual performance reviews as leaders realize that employees want more frequent and timely feedback. Having a real-time quality management process allows managers to have those frequent conversations with employees, both about corrections that need to be made as well as positive performance. Employees everywhere want to know how they can improve, and this is no truer than in medicine, where those improvements could make a real difference in the lives of patients and their families.

## 7 Real-time notification and situational awareness

Knowing about certain types of incidents right away, such as major traumas, cardiac arrests, or surgical airways, can give supervisors and managers a heads-up and allow them to reach out to a patient's family, hospital staff, or local officials proactively.

No manager enjoys learning about an internal issue or problem by hearing about it from someone outside the organization. Especially when what they hear is a complaint. Real-time feedback for leaders can help prevent those surprises, by notifying them immediately when a protocol is violated or an unusual event occurs. This allows managers to be more prepared for the potential fall-out, or even to cut-off criticism by disclosing the event themselves.

Many healthcare experts have argued that disclosing adverse outcomes and even mistakes can actually help prevent or at least decrease the damages from lawsuits. While the research

on the relationship between disclosure and liability is equivocal, many anecdotal stories indicate that patients and their families appreciate early communication and honesty.

Many systems already notify certain officials based on dispatch information or through manual processes, but real-time processing of CAD and ePCR data adds another level of sophistication to that process. Dispatch information is often vague or inaccurate—cardiac arrest patients turn out to have been sleeping. Syncope patients turn out to be in cardiac arrest. Using ePCR data to provide immediate feedback provides a more realistic notification system for medical directors, supervisors, public health officials and others who need to be aware when certain events take place.

In St. Charles County, Missouri, these immediate notifications have been useful in tracking the use of mechanical CPR devices. When a PCR is completed for a cardiac arrest, on-duty battalion chiefs receive an automated email notification from FirstPass® if the PCR does not document use of a mechanical CPR device. The chiefs can immediately contact the crew and find out whether and why they chose not to use the device, or if it was simply a documentation error.

The near real-time feedback allows for an immediate reaction—whether that means additional training for the crew, correction of documentation errors, or replacement of a malfunctioning device. It also provides supervisors with greater situational awareness about the performance of their subordinates even before anyone has had time to review the PCR.

## 8 Accountability and billing

To a system like the Richmond Ambulance Authority, efficient billing operations are critical to maintaining service. Every time a patient care report is not completed on time or lacks key information, the billing department must track down the information, decreasing the efficiency of the operation. Even then, missing or late reports often still result in lost revenue.

Many agencies must manually run reports to find missing PCRs; some lack the resources to run those reports frequently, and don't discover the error for hours or even days or weeks.

In Richmond, using FirstPass for real-time feedback on ePCR completion allows the agency to use technology to monitor whether a provider hasn't completed a report. Before he or she leaves at the end of a shift, those reports have to be completed. The system has raised completion rates to nearly 100 percent, and it's done without individual supervisors having to spend time every day running reports and chasing down personnel. That not only keeps the agency in compliance with state regulations, it also makes the billing department's job easier—and maximizes revenue.

## 9 Clinical quality improvement

Although there is limited research on the timing of feedback in the EMS environment, some studies in non-EMS educational settings indicate that students who receive immediate feedback typically show more improvement than those

who receive delayed feedback. The reasons for this aren't exactly clear, but intuitively, most EMS providers probably don't need much convincing to believe it. After treating hundreds of patients and completing hundreds of training scenarios, remembering the details of an incident after more than a few days is difficult—learning from that incident after you've forgotten the details is even harder.

Imagine one organization, where patient care reports are read days or weeks after an incident. A QI officer comes across a case during a routine chart review: a 52-year-old feeling weak and lightheaded. The agency's protocol calls for paramedics to perform a 12-lead ECG in this case, but none is documented. The QI officer sends an email to the paramedic, who sees it on his next shift. His response? "I probably did one and forgot to document it," he says. "Was there a complaint or problem?" In further discussions, it's clear he doesn't remember all the details of the case.

In another organization, all patient care reports are reviewed by an automated system. Within hours of completing a patient care report, a paramedic receives a phone call from her supervisor, wondering why a 12-lead ECG was not documented. "I did one," she replies. "Maybe I forgot to upload it." She is able to look in the archives of her cardiac monitor and find the ECG, and edit the report. Her QI officer reports it as a documentation error, not a clinical error. The paramedic remembers to upload the ECG into her report on her next call.

# Real-Time Quality Improvement with FirstPass®

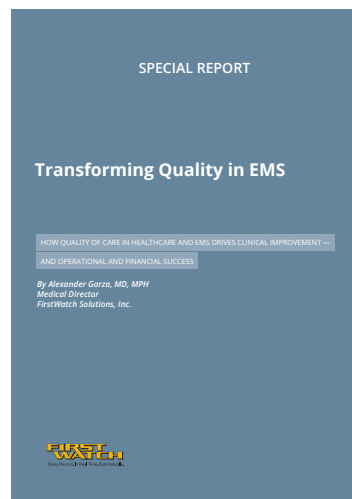
That can be your organization, with FirstPass. FirstPass is real-time, automated quality assurance software that compares your agency's PCRs to evidence-based bundles of care and to the agency's protocols, serving as the initial step in the quality improvement cycle. FirstPass continuously monitors these records and other data, sending alerts when a protocol deviation is discovered. Instead of spending all day sifting through patient care reports, supervisors can focus on what really matters—looking at where improvements need to be made and how to make them. FirstPass looks in real-time at quality metrics in four major areas:

- System performance measures. This includes response time intervals or cardiac arrest survival rates.
- Clinical performance measures. These evidence-based measures include bundles of care for STEMI, stroke, and other critical conditions.
- Patient safety/risk reduction performance measures. Also evidence-based, these measures would include airway management and narcotics administration.
- Financial performance measures. These measures look at the system's efficiency, such as unit hour utilization or costs per capita.

FirstPass's easy-to-use interface allows managers, medical directors, or other designated agency personnel to then view the records that fail automated tests and determine why they failed. These records can then be further annotated—as documentation errors, protocol deviations, appropriate treatment decisions, etc.—giving agencies more thorough and accurate data to use when identifying trends and prioritizing quality improvement efforts.

With FirstWatch and FirstPass, agencies have a critical eye on operations, clinical care, and documentation from the second someone dials 911 until the incident has ended. Real-time feedback and notifications lead to real-time quality improvement, providing the best care to your patients and the community you serve. To learn more about what FirstPass can do for your agency, visit [www.firstwatch.net/what-we-do/enhancement-modules/firstpass](http://www.firstwatch.net/what-we-do/enhancement-modules/firstpass).





**Be sure to read “Transforming Quality in EMS,” a special report from  
FirstWatch Medical Director Alex Garza, MD, MPH:**

[www.firstwatch.net/wp-content/uploads/2013/12/FirstWatch-Report.pdf](http://www.firstwatch.net/wp-content/uploads/2013/12/FirstWatch-Report.pdf)

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