

## POCUS' Contribution to Value-Based Medicine

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Few people think that healthcare costs and hospital budgets are sustainable. Eventually, without meaningful systemic change, such pressures will negatively impact healthcare accessibility and the quality of care delivered—not just in the United States, but also globally.

Commentators often point to new, expensive medical technologies as a key driver of burgeoning healthcare expenditures. However, evidence suggests that the relationship between medical technology spending and overall value to the healthcare system is more complex. The necessary shift toward value-based care demands a more careful analysis of which technologies increase value, whether by enabling in-demand procedures or through gains in patient safety, satisfaction, and outcomes.

One way to think about such evaluations is to ask, “What is the total cost of ownership for a specific device, including the ongoing training and education, downtime contingency options, and replacement costs that must be factored in on top of the purchase price? And what is the value of these factors to healthcare delivery?”

With current statistics pegging hospital purchasing at up to 40% of hospital expenses, it's important for hospitals to get this evaluation right—all the more so when such purchases are understood to be made for entire health systems (which themselves have expanded substantially through increasing consolidation). As healthcare leaders recognize, the preferences of individual physicians for certain devices have been definitively outweighed by the benefits of centralized purchasing. Enterprise-wide purchases, even of specialized clinical tools, are now the rule rather than the exception.

What this means for medical device manufacturers, and medical imaging equipment companies in particular, is that they have to work collaboratively with healthcare organizations to develop truly efficacious devices. They also have to demonstrate that their devices (and the manufacturer-provided education and training that should accompany them) can help bring down the cost of care and support better outcomes. No matter where the hospital is on the continuum to value-based medicine, wiser investment in medical devices will help bring it closer to achieving this challenging goal.

### Value Continues to Gain Ground

As value-based medicine gains ascendancy, the reaction across the provider side of the industry has been consolidation. Today 5,000 U.S. hospitals are developing into very large chains, a trend that has accelerated over the past five years. Integrated delivery networks (IDNs) seek to take advantage of the benefits of size, including greater operational efficiency and increased purchasing power.



In this context, the payer response has been to experiment with various partners, and test out different payment models. For instance, in more than 600 active accountable care organizations (ACOs) in the United States, pay-for-performance and bundled reimbursement models are currently being piloted and adopted. Some of the services being brought under these umbrellas include lab tests, imaging, and other procedures that are part of a given care pathway for a particular condition.

The idea is to restructure plans and policies so that coverage terms and payment rates are based on the clinical value and patient outcomes of overall diagnostic/treatment pathways—regardless of the volume of the specific procedures performed. If this transition becomes the industry norm, it will effectively put an end to the traditional fee-for-service payment model.

Because that fee-for-service model has supported medical imaging spending over the past few decades, everyone from manufacturers to end-users will need to adjust as that model is ushered off the healthcare stage. The shift may actually work to support the integration of point-of-care ultrasound (POCUS), as these technologies can help physicians reduce invasive procedures and increase the safety of such procedures when they do occur. In a value-based world, these measurable impacts to patient safety, without any sacrifice to effective diagnosis and/or treatment, make more sense than ever for the delivery of high-quality patient care.

## POCUS' Contribution to Value-Based Medicine (continued)

### The Value of Patient Safety

Nothing is more antithetical to value-based healthcare than hospital-acquired infections (HAI), preventable complications, and errors during procedures and interventions meant to improve health. Ensuring patient safety is thus one of the most impactful ways for enhancing value in healthcare.

POCUS has been shown in numerous large-scale studies to reduce complications and the costs associated with them, specifically by better guidance of central venous catheter (CVC) placement and other needle-based procedures such as paracentesis and thoracentesis. Additional safety implications include using POCUS instead of imaging that uses ionizing radiation, thus eliminating radiation-associated risks to the patient. Such applications directly increase value by reducing or eliminating risks to patient safety, and have resulted in cost savings and improved outcomes at healthcare sites across the U.S.

Because of the technology's versatility and minimal invasiveness, applications continue to emerge that address the value-rich area of protecting a patient's safety.

### Getting Value Out of Your Capital Equipment

The Economist Intelligence Unit has opined that value is the "emerging new currency within health markets." Toward this end, computer vision has emerged as a way to print some of this "new currency." By using machine learning-driven, artificial intelligence to help point clinicians to possible pathology, for instance, imaging analysis is expected to have a substantial impact on the field—though at this point it is only in its formative stages.

Point-of care imaging—ultrasound, in particular—has already proven itself in the value equation by creating substantial efficiencies and increasing the quality of care and patient outcomes. It is, therefore, ahead of the curve in terms of providing healthcare organizations with clinical interventions to cope with the transition. On the most basic level, by delivering services at the bedside and wherever they are needed—rather than transporting patients to designated imaging rooms—ultrasound has taken its place as a catalyst for better, more efficient patient care. More rapid throughput has enabled providers to decrease time-to-care and treatment, creating more efficiencies for patients and providers.

### A Range of Applications

Medical imaging at the point of care is widely used in emergency departments, intensive care units, operating rooms, and within musculoskeletal medicine, as well as for vascular access and in other patient safety applications. Here are three of the areas where POCUS has made the greatest impact:

#### 1. Regional Anesthesia

Before ultrasound guidance at the point-of care became commonplace, regional anesthesia was performed using nerve stimulators. Though effective, the procedure was cumbersome and took more time. Real-time ultrasound guidance offers an improved way of administering the local anesthetic with better accuracy and superior safety. Moreover, the availability of POCUS has facilitat-

ed the development of new types of nerve blocks that may offer significant advantages over older techniques.

With POCUS, nerves and surrounding structures can be visualized, providing clinicians with assurance that the needle is correctly positioned and allowing the amount of anesthetic to be reduced, decreasing the likelihood of side effects. With ultrasound guidance, the procedure is faster, safer, and more comfortable for patients.

Furthermore, clinicians have greater confidence that the block will be effective. Use of ultrasound-guided regional anesthesia has become an established procedure at major institutions, transforming procedures such as shoulder surgery. The reduction in the need for opiate analgesics have significantly increased throughput and has even reduced the length of stay from one to two overnights to, in many instances, cases that are concluded in one day.

Along with contributing to a shorter length of stay for surgical patients and reduced costs, opioid-sparing pain control techniques, such as ultrasound-guided regional anesthesia, also offer healthcare organizations an opportunity to take a leadership role in fighting America's prescription opioid crisis. Increasingly, these techniques are being incorporated in enhanced recovery pathways.

#### 2. Emergency Care

Time is of the essence in the emergency department. Point-of-care ultrasound's portability, ease of use, accessibility, and wide range of applications had made the modality an indispensable piece of medical equipment for triaging patients, making it the most widely and frequently used diagnostic tool. This technology has become the primary tool for the rapid diagnosis of trauma, deep venous thrombosis, investigating pain in the abdomen and pelvis, diagnosing appendicitis in children, and a variety of other conditions and injuries.

In addition to diagnosis, point-of-care ultrasound is used for critical procedural guidance, such as accurate and safe central venous and peripheral IV access, and for patient monitoring. Ultrasound has significantly improved ER department workflow and patient throughput, opening up greater capacity to see more patients and accelerate potentially life-saving care. The implications for patient safety and improved outcomes cannot be overstated, and the bottom-line impact to a hospital is real. Furthermore, patient satisfaction and engagement are improved with the integration of point-of-care ultrasound.

#### 3. POCUS in the ICU

That treating physicians can now see and assess physiological function in real time has been a tipping point in critical care medicine, revolutionizing patient care in the ICU. Previously, clinicians not involved in patient care were responsible for image acquisition and interpretation. Today POCUS is used in the ICU in situ on demand when needed, allowing for accurate, timely diagnosis while preventing the need for dangerous patient transport and exposure to radiation.

## POCUS' Contribution to Value-Based Medicine (continued)

As an example, ICU physicians can now, within minutes, diagnose dyspnea as pulmonary edema and congestive heart failure. The time savings afforded by bedside diagnosis allows ICU clinicians to provide the correct treatment more rapidly, saving lives and preventing adverse events that lead to more serious conditions, related expenses, and longer lengths of stay. All of this contributes to better patient care at a reduced cost.

### Market Growth Reflects Value

As a result of these efficiencies, the utility of ultrasound across departments and specialties, and broader trends like enterprise-wide purchasing, point-of-care imaging has a special role in the shift to value-based care. By improving functionality, performance, and affordability—as well as providing comprehensive training and on-demand, smart support for physician users—value-conscious medical device companies will contribute to the expanded use of POCUS into new care pathways.

As they do so, they will compete on the basis of the major metrics of value-based medicine, including medical error reduction, reduction of readmissions, enhanced patient satisfaction, improved mortality rates, and lower overall healthcare costs.

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