

CASE STUDY SERIES: LEVERAGING INNOVATION A Front Line Approach for Point-of-Care Ultrasound



Impact & Reach of The Academy Members

The Academy member health systems have evolved through consolidation and organic growth during the lifespan of The Academy. In most cases, they are the private sector leaders in their communities by developing fully integrated, population-based services. We have taken seriously our mission of assisting executives to build successful enterprises, which has led to the variety of services that now comprise The Academy.



As pace of change in the healthcare industry increases, the value of learning from the best educators and your peers

becomes more critical." - James H. Skogsbergh President & CEO, Advocate Health Care

Did You Know?

The Academy Top-100 Health Systems Represent:

- 65% Net Patient Revenue
- 67% Inpatient Visits
- 40% ER Encounters
- 46% Outpatient Visits
- 44% Healthcare Employees
- 44% Employed Physicians
- 4% GDP

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The Academy Case Study Series

The Academy Case Study Series is designed to highlight the challenges and opportunities of Leading Health Systems. The cases, developed by The Academy researchers, present actual activities and events from Leading Health Systems that assist in The Academy's peer learning programs, including Executive Forums, Collaboratives, Fellowship Programs, and the Physician Leadership Program.

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The Innovation Case Study Series

Accelerating the adoption of innovative technologies in today's multi-hospital health systems has become a greater priority as technology advancements, regulatory changes, payment transitions and clinical restructuring transform healthcare in increasingly rapid cycles. Through a five-part case study series, we use the example of point-of-care ultrasound, a potentially disruptive, yet adaptable imaging technology, to explore the stages of adoption from organic growth through facilitating innovation. Point-of-care ultrasound has been documented to improve quality, patient benefit, and cost efficiency which make it an ideal technology from which to study and learn.

Introduction

Case Study Overview: Leveraging Innovation for Front Line Care Delivery

The growth and adoption of point-of-care ultrasound has re-engineered care pathways to improve clinical quality and reduce costs. The integration of ultrasound technology into existing care practices by an urban private practice, New York Physicians Group, and geographically diverse health system, Allina Health, has facilitated improved population health outcomes across the continuum of care. By providing real-time visualization right at the patient's bedside, ultrasound technology offers a tool for diagnosis and scalable treatment coordination across care mediums.

Transforming Patient Care for Population Health

The Healthcare Environment

Multi-hospital health systems are facing an evolving set of opportunities and challenges as the healthcare industry undergoes transformation. Major transitions include¹: providing more services for less reimbursement, decreasing the variation of care and increasing efficiency, and transitioning from a volume to value-based payment system.

As health systems work towards lowering their expense structures, they will create an integrated continuum of services. In this environment, health systems are redesigning their care management model to support a multi-disciplinary team of care providers, and increasingly employing physician groups to improve coordination and collaboration around hospital-based services.

The Delivery Continuum - Increasing Focus on Ambulatory Care

Health systems that focus on the entire continuum of care will promote more effective population health management. As health systems reduce performance variance, eliminate overtreatment, enhance prevention, manage chronic disease and improve quality across the continuum, they will deliver overall better outcomes at lower costs.

With the emergence of more advanced managed care markets, efficient ambulatory operations are essential to effective patient care and population health management. The separation of ambulatory from inpatient care creates complexities as providers recognize the need for similar support structures that are costly to duplicate in multiple locations. As health systems employ various hospital-based physician practices and groups, there will be a proportionately greater need to coordinate care between providers.

Innovation - A Toolkit for Care Coordination

Primary care continues to serve as the initial entry point to the health care system for many patients and is the conduit for more specialized downstream services. As market forces continue to evolve and emphasize outcomes across the continuum of care, health systems will need to innovate their care approach to improve ambulatory patient services and access.

Advances in technology have enabled care to be delivered through noninvasive procedures, and have also allowed the management of care to be more seamless and portable. Forward-thinking health systems should strive to adopt innovations amongst its front line providers to promote a more skilled-provider force, coordinate care between employed and independent clinicians, and improve long-term patient outcomes.

Study Purpose

The purpose of this study is to present two distinct approaches to leveraging ultrasound technology at the front lines of care for population health management.

Study Approach

Models for front line incorporation of innovation for population health were developed through interviews with primary care physicians, Dr. John Postley and Dr. David Case at New York Physicians Group in Manhattan, New York; and physicians and management executives at Allina Health headquartered in Minneapolis, Minnesota.

Evolving Role of Point-of-Care Ultrasound in Care Delivery

Point-of-care ultrasound (PoCUS) is increasingly becoming the preferred imaging modality in patient care. A paradigm shift from select medical specialties (notably anesthesia, obstetrics, critical care, emergency medicine, and cardiology) to an array of specialties, has allowed clinicians to address focused clinical questions in real time at the patient's bedside. Compelling outcomes data across these clinical areas suggest PoCUS presents a unique opportunity to complement the physical examination and create efficiencies in care delivery pathways.³

As training becomes easier and ultrasound proficiency evolves as a core competency in medical education, the use of PoCUS across all clinical specialties will increase.⁴ Our research^{5,6} suggests that health systems will find value in PoCUS not only for inpatient applications (e.g. central line insertion, nerve blocks), but in ambulatory settings for remote monitoring (e.g. Banner Health's e-ICU) and diagnostic screening (e.g. Abbott Northwestern Internal Medicine Department).

Complement to the Physical Exam

PoCUS technology extends the physician's diagnostic capabilities beyond the limits of the physical examination with the potential for more accurate diagnoses and rapid treatment decisions. Where the traditional physical exam may have shortcomings in light of the shift to early, pre-symptomatic detection of disease, PoCUS-enhanced exams provide greater physiological depth and precision in diagnostic evaluation.⁷

In this context, PoCUS is complementary to the routine physical examination and more formal diagnostic assessments (e.g. ultrasounds, echocardiograms) performed by specialists such as sonographers and cardiologists. PoCUS has become a powerful provider tool to understand the physiological state of critically ill patients and to decrease procedural risks; but also to understand the physiology of noncritical patients for early screening of chronic conditions.

New York Physicians Group - Innovating Care Approach in an Urban Environment

The routine use of PoCUS by internists Dr. David Case and Dr. John Postley at their private practice, New York Physicians, attests to the clinical value of ultrasound-guided physical exams for disease management and overall population health promotion. The use of ultrasound by the practice has been demonstrated to significantly increase a their ability to detect a variety of disease states compared to the physical examination.⁸

Drs. Case and Postley are seasoned internal medicine physicians each with over 40 years of experience. Portable ultrasound technology did not enter clinical care until many years after their residency training. Despite not having been formally trained in ultrasound, Drs. Case and Postley did not think twice about pursuit of PoCUS as an opportunity to enhance what they could offer patients.

After a few weeks of a video and simulation-based training regime, Drs. Case and Postley were PoCUS-certified. Initially, the doctors used PoCUS on a case-by-case basis to visualize specific organs that may be identified as symptomatic during a patient's physical exam. However, the case-by-case model was short-lived as both patients and the physicians observed greater value in routine scanning of the entire body.

We viewed PoCUS as an innovative technology that could fundamentally enhance the patient experience and that was enough for us to seek out training and incorporate the technology into our practice. – Dr. John Postley, NY Physicians Group

PoCUS has significantly enhanced my effectiveness as a primary care physician. - Dr. David Case, NY Physicians Group

Today, PoCUS is included as a part of Drs. Case and Postley's regular patient diagnostic exam as a specialty feature of what their practice offers. In just five minutes, patients are scanned head to toe, focusing on key areas: carotid, thyroid, aorta, femoral artery, gallbladder, kidney, urinary tract, bladder, and the testes in males. The doctors

are able to gain enough visualization of the organ to identify early or late signs of chronic conditions such identifying signs of blockages and masses. The physicians are able to use captured scan images to conduct qualitative analyses (e.g. cardiovascular plaque progression and regression, fluid status) and provide patients with personalized visualization of treatment progress.

PoCUS-Physical Exams Promote Proactive Patient Care

Drs. Case and Postley have published several studies testifying to the significant difference in cardiovascular disease detection resulting from PoCUS-supported screening exams compared to traditional physical auscultation and risk assessment.

The unequivocal benefit of using PoCUS in cardiac assessment has been quantified across variables,^{8,9} most notably concluding that 40-50% of the traditional exam recipients identified as low risk were found to have some degree of cardiac symptoms when screened with ultrasound.

Impact on Population Health Management

Over the years, Drs. Case and Postley's use of PoCUS has uncovered serious clinical conditions that would not have been detected through physical examination alone. In conjunction with anecdotal patient testimonials and the data from various New York Physicians Group studies,^{8,9} the practice has attributed the greatest value of PoCUS-screening to:

- **Clinical outcomes**-Early detection of physiological risks initiates treatment interventions at the early-stages of disease, reducing the longevity and severity of conditions.
- **Care coordination** Immediate clinical findings often lead to referrals to specialists early in the care process with archived scans available to facilitate a coordinated treatment approach by the patient's primary care provider.
- **Patient engagement**-Patients demonstrate greater adherence to physician recommendations after a PoCUSenabled exam, suggesting overall greater engagement in the treatment process.
- **Resource savings**-Many structural abnormalities are not readily detectable by auscultation, such as early atherosclerosis and pericardial effusion, and are better screened by using PoCUS. PoCUS has the potential to detect diseases, notably cardiovascular conditions, at an earlier stage, eliminating unnecessary testing and costly care processes typical of late-stage treatment.

Allina Health - An Outreach Strategy for Rural Access

As the patient population becomes more complex, the diagnostic ability of traditional clinical tools is insufficient in practicing evidence-based medicine.² Health systems are increasingly turning to innovative approaches to redesign clinical practices to address this gap in patient care. Allina Health is one such innovator that is working to improve quality of care through expanding use of PoCUS technology as part of its outreach strategy.

A Platform to Scale Delivery

In pursuit of health system growth, Allina Health embarked on a strategy to develop a tight network of affiliated facilities and care providers to deliver integrated specialty services coverage across the continuum of care. Innovative technologies, such as PoCUS, support telehealth's promise to improve quality and efficiency, reduce costs, and allow extended access to specialty services over larger geographic areas.

Innovations such as PoCUS facilitate telehealth as part of a larger organizational strategy to connect our health care providers and patients across the geographically-diverse Allina Health Network." - Ken Paulus, CEO, Allina Health While Allina Health is a leading provider for comprehensive specialty care (e.g., stroke, neurology), access to this level of expertise in its regional hospitals is limited. PoCUS adoption, as part of its outreach strategy, allows Allina Health to improve rural access to care in a lower-cost setting by connecting its providers to patients. This outreach broadens Allina Health's market, increasing

its reach to include the 80% of Minnesota's population outside of metropolitan areas. The use of PoCUS helps Allina Health connect with health care providers and patients to become indispensable in its market, and supports the transition to risk-based reimbursement where connections with patients are of greater value than discharges and visits.

With over 20 outreach sites across the state of Minnesota, Allina Health has successfully implemented PoCUS using the Internal Medicine Bedside Ultrasound Program's (IMBUS) training platform in its ambulatory care settings to provide primary care providers the means to diagnose and treat conditions without engagement of additional costly resources.

Impact on Population Health Management

Allina Health's early tracking of patient outcomes in both its hospitals and ambulatory settings⁵ presents a unique strategy for integrating care delivery at low cost across its care network through:

- Scalable solutions PoCUS has allowed Allina Health to improve its care in rural markets by offering treatment at the point of care and in a lower cost setting with a pipeline to specialty care centers if needed.
- **Specialty care savings** Initial evaluation of the primary care applications of PoCUS throughout Allina Health suggests the greatest resource savings occur for GI, HEENT, Pulmonary, and Musculoskeletal case treatments.

Looking Forward

PoCUS has emerged as a powerful tool for bedside physical assessment. Although the use of ultrasound as a diagnostic instrument by radiologists and cardiologists is well-established, another paradigm has emerged in which front line clinicians use ultrasound to answer limited point-of-care questions and integrate their findings into their patient assessment and management.

PoCUS allows front line providers to conduct evidence-based physical diagnosis to more effectively tailor patient care both inside and outside the walls of the hospital." - Dr. David Tierney, Abbott Northwestern Hospital, Allina Health

Critical to the widespread success of PoCUS will be a concerted multispecialty effort to formulate simplified, evidencebased guidelines for ultrasound examinations, and to provide instructional support to in-training and practicing primary care frontline providers.⁴

New York Physicians Group and Allina Health are two models in the early stages of development. As the industry continues to transform and payment models evolve toward population health models, PoCUS will play an increasing role in front line use.

Lessons Learned

- Front line incorporation of PoCUS into the physical examination has the potential to improve the quality of care and reduce costs through early disease detection and scaled delivery, improving patient-centered population health management through early diagnosis.
- Health systems will leverage technologies such as PoCUS to coordinate care delivery between ambulatory and inpatient providers, tracking patients across the continuum of care.

Discussion Questions

Does your health system's strategic infrastructure promote innovation across care delivery settings?

How can your health system leverage innovations to promote population health management?

What can your health system do to encourage community physicians to adopt new technologies and innovations?

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About The Academy

The Academy provides unique, executive peer learning, complemented with rigorous and highly targeted research and advisory services to executives of Top-100 health systems. These services enable health system and industry members to cultivate the relationships, perspective, and knowledge not found anywhere else.

The Academy has created the first and only knowledge network exclusively focused on Top-100 health systems. This learning model is based on a proven approach refined over 16 years working side-by-side with members.

THE ACADEMY KNOWLEDGE NETWORK



The Academy Member Health Systems -

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