

EXECUTIVE SUMMARY

Combating the Communication Crisis

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Real-Time Team Communication **ACROSS HEALTHCARE ENTITIES**



Pulsara connects clinicians immediately, when time is of the essence.

WHAT IS PULSARA?

Pulsara is a communication platform that connects clinicians across healthcare entities in real-time. Built on mobile technology, Pulsara helps providers minimize miscommunication and delays in emergency care.

The future of healthcare communication: Connected Teams

Our communication platform unites the right clinicians at the right time for the right patient. Unfortunately, in the event of a time-sensitive emergency, the patient's journey is currently coordinated by one-to-one (phone calls, handheld radios, faxes) and one-to-many (pager) communications. This communication is critical, and if the call list is inaccurate, the radio report is misunderstood, erroneous pages are sent, fax or email goes missing, or answering service is busy, the time to lifesaving care can be delayed and crucial information can be lost.

The Pulsara platform addresses this problem, providing transparency and streamlined communication when time is essential.

THE PROBLEM: **THE OLD WAY**

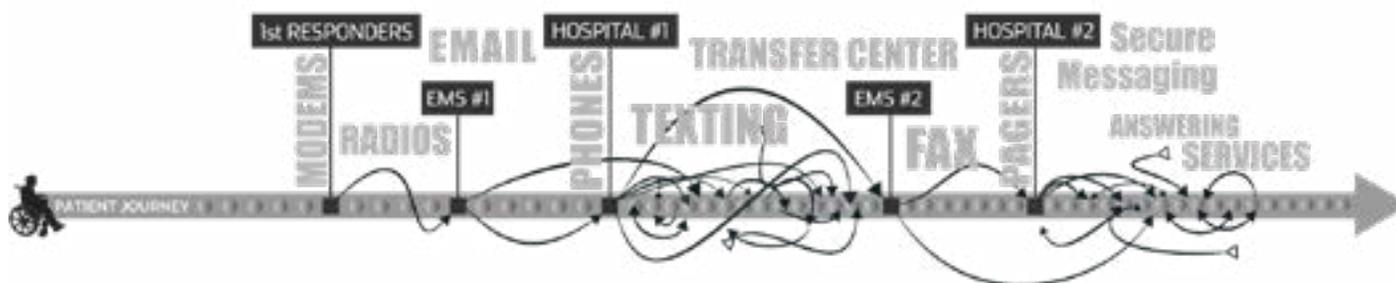
Communication Breakdowns

Communication breakdowns and care coordination problems often cause preventable adverse patient care events, which are particularly acute in the emergency setting. Despite a growing focus on the importance of communication, the difficulty remains in achieving safe and reliable verbal communication within interdisciplinary teams.¹ One study showed that major trauma team communication was audible in only 56% of cases and understandable in 44% of cases.²



Archaic Technology

In the absence of a unified communication platform and knowledge of which providers are currently assigned to the patient across healthcare entities, clinicians cannot communicate consistently with each other when seconds count. While teamwork and communication in the clinical setting may be improved through training, the main culprit is our archaic, scattered healthcare communication infrastructure. This is usually a mix of handheld radios, pagers, emails, fax machines, answering services, and call centers.

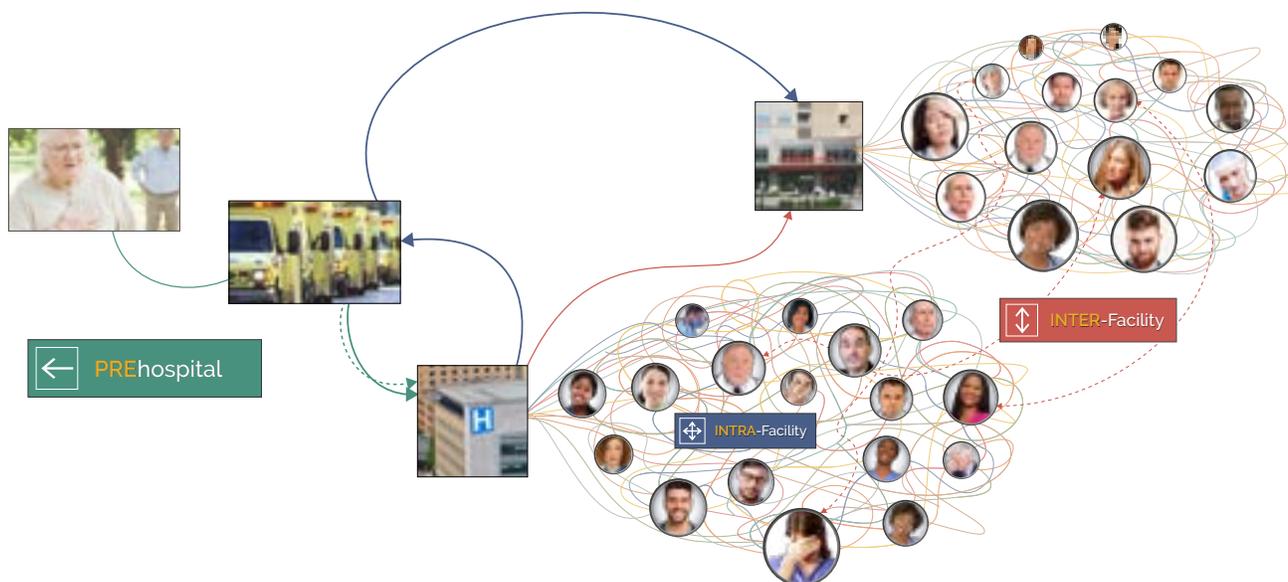


¹ I.J. Smith (Ed.) The Joint Commission Guide to Improving Staff Communication. Joint Commission Resources, Oakbrook Terrace, IL; 2005; Cameron KA, Engel KG, MD, McCarthy DM, et al: Examining Emergency Department Communication Through a Staff-Based Participatory Research Method: Identifying Barriers and Solutions to Meaningful Change. Annals of Emergency Medicine. 2010; 56(6):614–622; Engel KG, Buckley BA, McCarthy DM, Forth VE, Adams JG. Communication amidst chaos: Challenges to patient communication in the emergency department. Journal of Clinical Outcomes Management. 2010;17(10):17-21.

² Bergs EA, Rutten FL, Tadros T, Krijnen P, Schipper IB: Communication during trauma resuscitation: do we know what is happening? Injury. 2005; 36(8):905-11

Complexity of Multiple Systems of Care

The broken system described above is just ONE hospital. Making the problem even more complex and prone to delays and errors, is the complexity of systems of care across the country — MULTIPLE hospitals within a region — some rural, some urban — and MULTIPLE EMS agencies. Each facility or agency has different levels of care and communication infrastructure.



With these archaic communication tools, how do we execute a complex protocol? What happens when a planned protocol breaks down? How do we get back on track or adapt to a situation? Hospital teams are coordinated by radios, pagers, and a multitude of phone calls instead of a central communication hub. These outdated systems are not responsive in real time. During emergency events, it is often difficult — if not impossible — to communicate with and know the availability and readiness of medical resources at each hospital.

Result of Inefficient Communication?

Our healthcare teams are in silos and we are wasting significant amounts of money. A 2013 Institute of Medicine report estimated that \$765 Billion of healthcare spending was wasted in 2010, with more than half being attributable to unnecessary and inefficiently-delivered services.³ We need to unify communication workflows across healthcare entities, regardless of a patient's method of arrival, condition, or whether the patient is transferred.



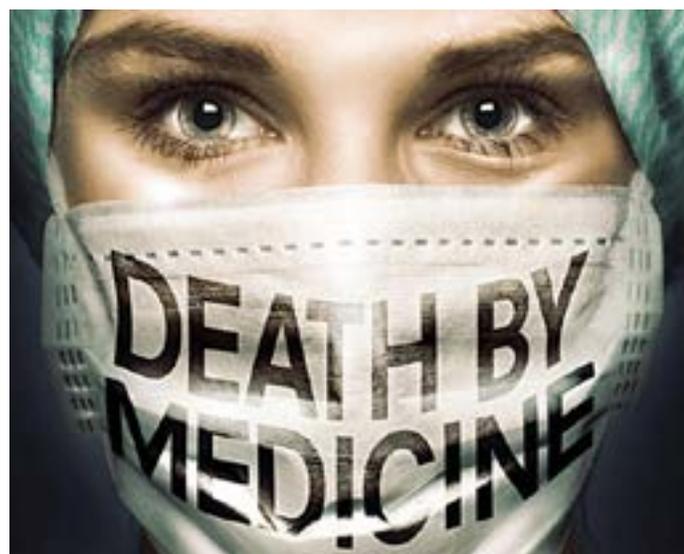
³ Committee on the Learning Health Care System in America; Institute of Medicine; Smith M, Saunders R, Stuckhardt L, et al: Best Care at Lower Cost: The Path to Continuously Learning Health Care in America. National Academies Press (US). 2013.

THE PROBLEM: IS IT WORTH SOLVING?

High-Profile Deaths

Do you know how many people in the US die per year from breast cancer? 40,000. What about gun violence? 40,000. Vehicle crashes? 40,000. What about the opioid epidemic? 50,000.

What if we told you that medical errors secondary to miscommunication kill more people each year than all of these conditions — COMBINED!?⁴



Death by Medicine

With that in mind, think about how much time, effort, money and attention is spent on these conditions. CLINICIAN error is the third-leading cause of death in the US, **causing 400,000 deaths per year and 10,000 serious medical complications every day**⁵, and yet this crisis is not adequately addressed. Experts believe eighty percent of these medical errors occur secondary to miscommunication during transitions of care.⁶ In addition, these errors cost the U.S. an estimated one trillion dollars per year when quality-adjusted life years are applied.⁷

We Can't Afford Not to Solve this Problem

We believe that these are problems worth solving. Hospitals routinely spend \$100 million on an EMR, but how much attention are they paying to solving the healthcare communication crisis? What are we as a nation doing about medical errors? Very little.

⁴ Makary MA, Daniel M: Medical error-the third leading cause of death in the US. British Medical Journal. 2016 May 3;353:i2139 (Abstract)

⁵ Ibid.

⁶ "Joint Commission Center for Transforming Healthcare Releases Targeted Solutions Tool for Handoff Communications," Joint Commission Perspectives. 2012; 32(8)

⁷ Andel C, Davidow SL, Hollander M, Moreno DA: The economics of health care quality and medical errors. J Health Care Finance. 2012; 39(1):39-50.

QUALITY AND COST BENEFITS: **SAVING RESOURCES THROUGH EFFICIENCY**

Improved Quality of Care

In addition to medical errors, there are substantial other costs due to INEFFECTIVE COMMUNICATION. Some of these are related to the QUALITY of the care we provide, and others are related to the COST of the care we provide. For example, a Duke University School of Medicine study in 2017 based on 12 metro sites using the Pulsara platform found that incorporating real-time prehospital data obtained via smartphone technology provides unique insight into acute stroke care.⁸ Researchers also found that activation of mobile electronic stroke coordination in the field appears to promote a more expedited and successful care process.⁹

Beyond Stroke, how many other conditions need TEAM COMMUNICATION that either crosses healthcare entities OR departments within a facility? We can think of a few: STEMI, Trauma, Sepsis, Cardiac Arrest, Pulmonary Embolism, Precipitous Delivery, Emergent C-Section, Emergent Surgery, ANY transfer or consult, Transplant, and ANY rapid response or deteriorating patient on the floor.

Increased Savings

Moreover, industry experts have calculated that 2% of all hospital revenues are thrown down the drain secondary to ineffective communication.¹⁰ More so, 30% of all malpractice cases involve some level of miscommunication.

Reduction in Treatment Times

True team communication results in acceleration of clinical workflows. A 2017 study published in the journal *Circulation* found that improvements in treatment times reduced in-hospital mortality from 4.4% to 2.3% and Congestive Heart Failure (CHF) from 7.4% to 5.0%.¹¹ And because in-hospital morbidity is a significant risk factor for readmission, this reduction provides huge value both to hospitals and downstream payors such as Medicare, private insurance companies, and local government entities who fund emergency systems of care.

Other benefits stemming from real-time team communication include reduced turnaround times, reduced false activations, and improved quality metrics and accreditation compliance.

⁸ Andrew BY, Stack CM, Yang JP, Dodds JA: mStroke: “Mobile Stroke”-Improving Acute Stroke Care with Smartphone Technology. *J Stroke Cerebrovasc Dis.* 2017;26(7):1449-1456.

⁹ Ibid.

¹⁰ Jollis JG, Al-Khalidi HR, Roettig ML, et al: Impact of Regionalization of ST-Segment–Elevation Myocardial Infarction Care on Treatment Times and Outcomes for Emergency Medical Services–Transported Patients Presenting to Hospitals With Percutaneous Coronary Intervention. *Mission: Lifeline Accelerator-2.* *Circulation.* 2018;137:376-387

¹¹ “Impact of Regionalization of ST-Segment–Elevation Myocardial Infarction Care on Treatment Times and Outcomes for Emergency Medical Services–Transported Patients Presenting to Hospitals With Percutaneous Coronary Intervention,” *Circulation.* 2018;137:376-387.

THE SOLUTION: REAL-TIME TEAM COMMUNICATION ACROSS ENTITIES

Pulsara is the only platform that unifies prehospital (EMS), intrafacility (within the hospital), and interfacility (between hospitals) communication.

Comprehensive Teams

Clinicians need to shift focus to COMPREHENSIVE TEAMS that follow the entire patient journey and real-time communication across an entire region. Our solution is a HIPAA-compliant and secure mobile application that enables all members of a care team — from EMS providers, to the ED, to a range of specialists in the hospital and/or at a transferring facility — to receive the same information at the same time, bringing together disparate teams with a SINGLE COMMUNICATION CHANNEL.



CREATE, BUILD, COMMUNICATE

Simply CREATE a dedicated patient channel. BUILD the team. And, COMMUNICATE using audio, video, instant messaging, data, images, and key benchmarks. Having everyone on the same page in the same mobile platform provides healthcare teams with ACCOUNTABILITY, ADAPTABILITY, and RESILIENCE. No information falls through the cracks, and the real-time provider feedback reduces confusion, accelerates treatment protocols, and enhances the patient and caregiver experience.

Unified Care Coordination

The coordination of information lies in the unification of communication within a single mobile platform that provides interoperability of critical information systems, turns communication into data, gathers data from already available sources, and shares data. The information gathered through the Pulsara application can be easily accessed by all providers for quality-improvement measures, research, or other purposes.

IT'S ABOUT TIME

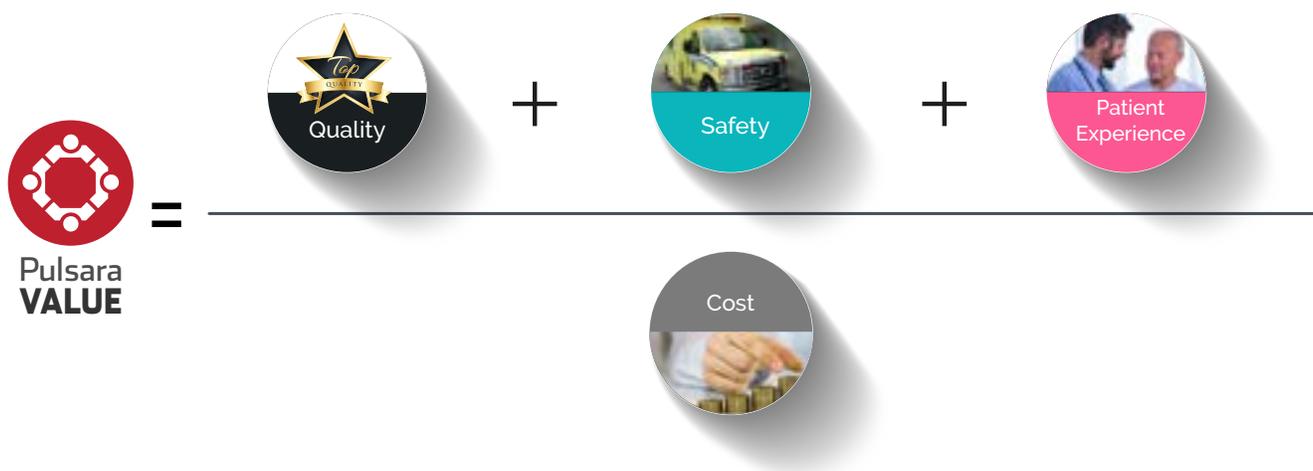
BUILDING THE ROI CASE: **HEALTHCARE VALUE**

Federal Policies

Federal policy priorities, stimulated by the Affordable Care Act and the Centers of Medicare and Medicaid Services (CMS) Quality Strategy, have brought a focus on the need to deliver care that provides a quality patient experience within healthcare systems. Rarely does reduction in cost equate to better care. However, Pulsara is the exception. By using our communication platform, facilities have seen a decrease in care times, a reduction in costs, and better patient outcomes.

Pulsara Valuation Tool

We've adopted the following valuation tool based on Federal guidelines. For those using Pulsara, the goal to provide better care while saving costs is possible.



Communication Barriers Broken Down

Widespread adoption of a unified healthcare communications platform — Pulsara — will significantly impact the communications crisis and improve value. By connecting the awaiting hospital teams with vital EMS crews, we are breaking down the communication barrier from first medical contact through stabilization of the patient at the hospital. This includes emergency cases that show up by ambulance, private vehicle, or are transferred from smaller hospitals to comprehensive centers. By unifying teams with the same clear, concise information, we can decrease the time to treatment and the number of medical errors due to miscommunication, saving not only wasted medical dollars, but also precious lives.

OUR VISION

To be the accepted EVIDENCE-BASED STANDARD OF CARE

AHA's Mission Lifeline, Get With The Guidelines, and various Regional initiatives help build appropriate SYSTEMS of care, which come with definite benefits and improvements. HOWEVER, there is still a communication problem within these systems.



Objective Corroboration

Any communication solution that care teams choose MUST be evidence-based. We have an online Resource Page, which has all of our case studies and publications from peer-reviewed journals, and more, all in one place.

Establishing Regional Systems of Care

Pulsara is now in 20 states and Australia, and we are rapidly expanding. The systems who have been using the Pulsara platform have seen very consistent improvements in treatment times, with the average facility reducing their treatment times between 20%-46%.



<https://www.pulsara.com/resources>

IT'S ABOUT PEOPLE

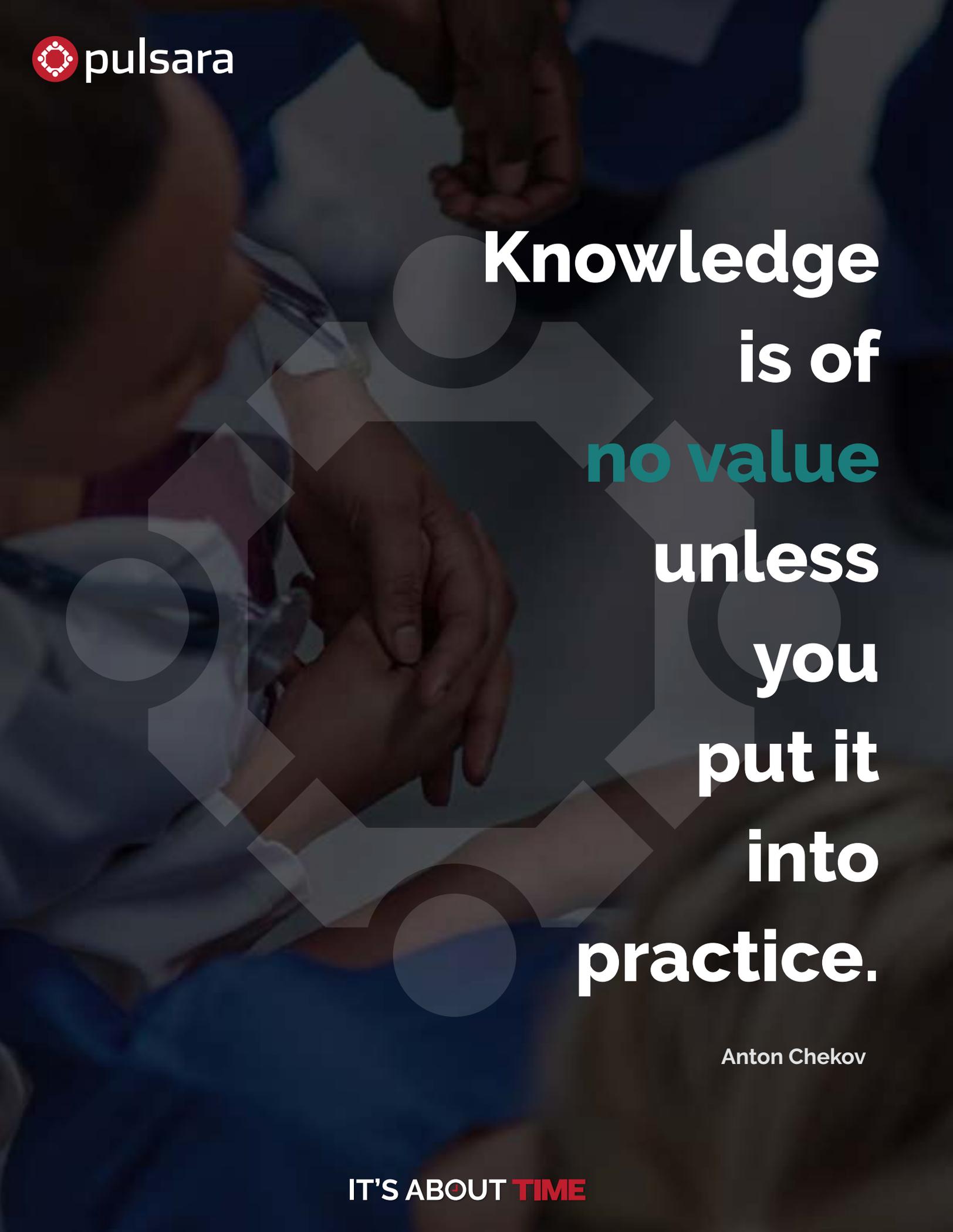
CONCLUSION

Ensuring the best outcomes and value can only be achieved by efficiently coordinating a complex system of care for every patient's method of arrival, every time-sensitive emergency, and every stage of the care process. The most effective emergency treatment is delivered through integrated systems of care. We can establish these critical relationships and ensure that healthcare communication is standardized, unified, and simplified throughout the care continuum by unifying communication on a single platform.



Pulsara is the Solution

Pulsara can fix these crucial communication deficiencies with a simple tap in our application. With Pulsara, everyone is connected. Everything is transparent. By coordinating communication among caregivers and across healthcare entities, workflows are optimized, resulting in increased efficiency, shorter time to treatment, and reduced miscommunication and medical errors.



Knowledge
is of
no value
unless
you
put it
into
practice.

Anton Chekov