Using TRIZ Innovation Tools

IN A RAPID IMPROVEMENT WORKSHOP





CASE STUDY

NOVACES®
Advancing Process Improvement.

At a Glance

Industry
Healthcare
Full-Service Community Hospital

Department
Emergency Department

Business Issue
Order-to-collect time needed to be reduced and a new process put in place.

Approximately 30% of the delay in STAT lab tests was due to order-to-collect time.

Methodology Applied
TRIZ Innovation Tools

Business Impact
- Improved order-to-collect time by 66%

Background

A Rapid Improvement Workshop (RIW) was conducted to address coordination of patient care in the Emergency Department of a community hospital. The RIW was the result of a ProcessVSA that had focused on reduction of turn-around-time (TAT) for STAT lab tests.

During the ProcessVSA, a value analysis of the process revealed that 30% of the delay in TAT was due to the order-to-collect time, or from physician entry of the order to collection of the specimen. A lack of coordinated access to the patient by ancillary services (lab, radiology, respiratory, etc.) was identified by root cause analysis to be a key contributor to delayed STAT lab orders. About 25% of the time, the phlebotomist would respond to the ED to collect the specimen only to discover that the patient was not in the bed. The phlebotomist would then seek out the nurse caring for the patient to determine where he had been taken and when he was likely to return. If the patient had been taken, for example, to Radiology for a CT, the phlebotomist would then go on to collect other specimens, often on other hospital units. Upon return later to collect the specimen, the phlebotomist might find that an EKG was being performed or a respiratory treatment being given, causing further delay.

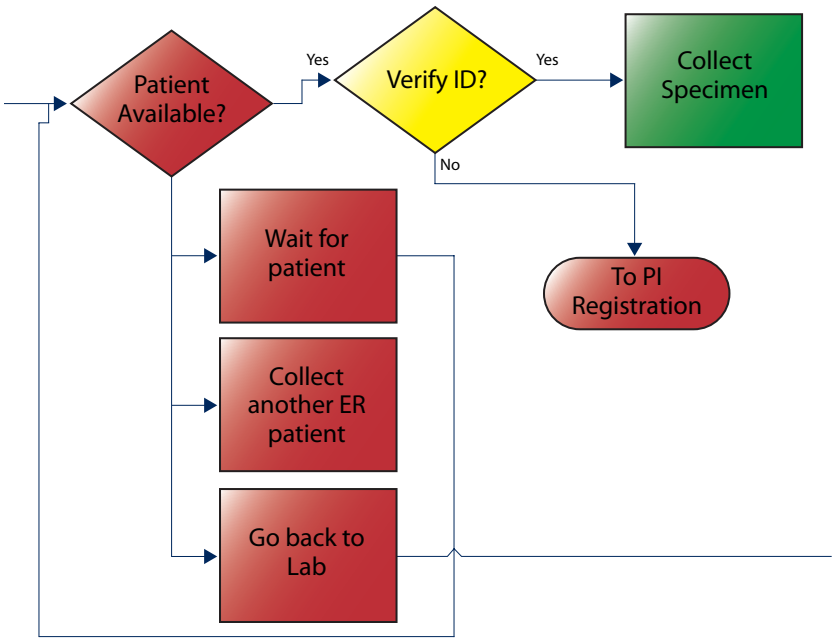

Figure 1. Related section of the process map.

Investigating the Problem

The goal of the Patient Care Coordination RIW was to reduce order-to-collect time by coordinating access to the patient. It was immediately apparent to the team that a new process was required. It was agreed that it was the inherent role of the ED nurse to coordinate ED patient care. The order in which specimens were collected, diagnostic studies conducted, and emergent treatments administered should be determined by the needs of the each patient, the tests and treatments ordered, and nursing logic. Some radiological studies take only a few minutes to complete while others take 20 minutes or longer. A specimen takes just moments to collect, but common laboratory studies require an average of 28 minutes of processing. If care was

properly coordinated, the patient could be taken to Radiology while his CBC and COAG are being processed in the lab. Some means of communicating to ancillary providers was needed.

The Solution

The ED has an electronic whiteboard that displays patient location and some status information but does not display the information necessary to coordinate patient care. While brainstorming solutions to the problem, the team became mired in frustration related to 'fixing' the electronic whiteboard's software. To generate innovative ideas, the facilitator introduced the TRIZ tool called Ideality. Ideality takes advantage of resources in the system (nursing expertise) and resolves contradictions.

The Ideality Checklist guided the team through a process to define an Ideal Final Result (IFR). An IFR does not introduce any harm into a system or increase the system's complexity. It preserves all of the advantages of the existing system while eliminating the disadvantages.

The solution was a simple, reliable, real-time tool that allows the ED nurse to communicate the appropriate order of care to ancillary services. The tool included a feedback loop so that, if lab was given access before radiology transported the patient to MRI, radiology would know that the specimen had been collected.

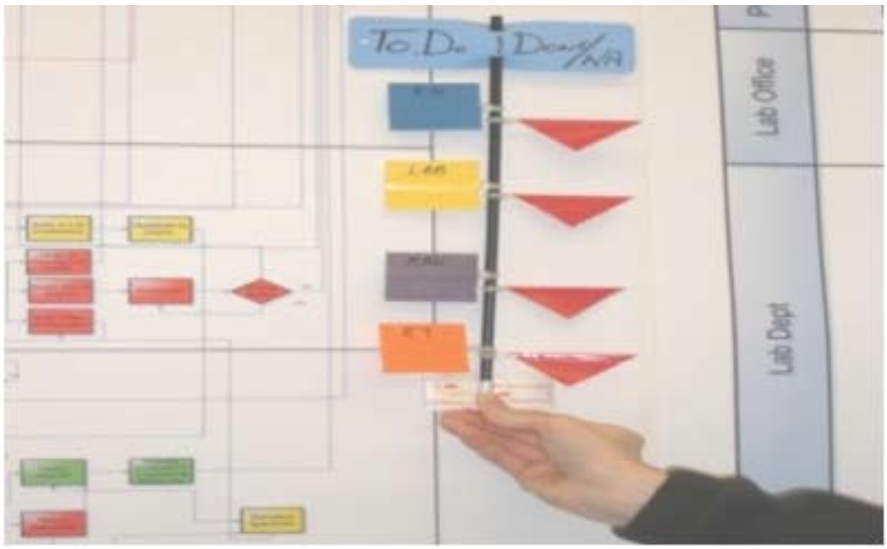

Figure 2. Mock-up of the ancillary care coordination device.

A simple signal flag created from office supplies and found objects, was created and piloted in the ED, order-to-collect time for STAT labs decreased immediately to 16 minutes, a 66% improvement. This savings translated directly to ED LOS, a key cost-driver for the hospital.

Feedback from the ED staff was also collected. The flags were used for several days until the staff could clearly articulate how the flags support the process and how their function could be improved if not constrained by obvious design limitations. This information was then used to create a set of specifications for upgrades to the ED whiteboard software, currently under review by the software developer.

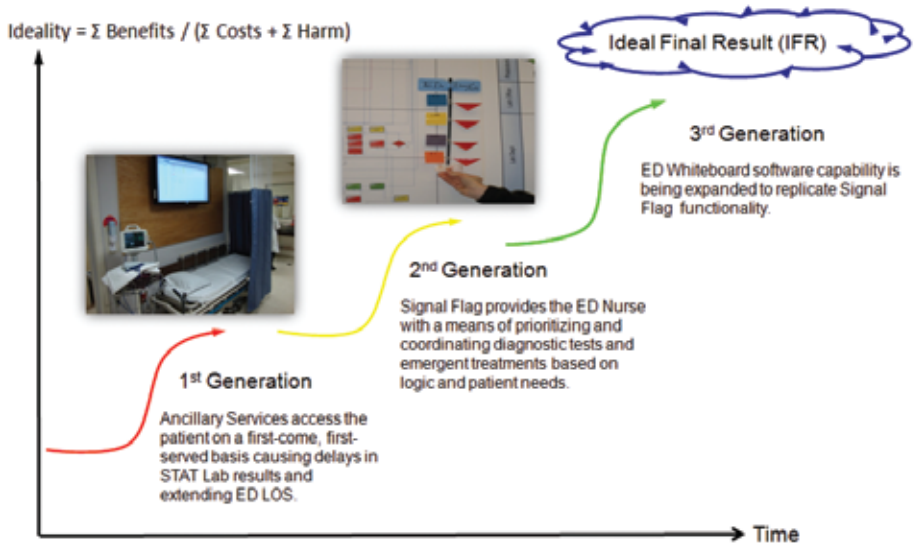

Figure 3. Ideal Final Result

Conclusion

TRIZ tools allowed the team to see beyond the problem and the presumptive solution ('fix' the software) to the ideal solution. A simple, manual interim solution made an immediate impact on the process and, ultimately, produced the model and specifications necessary to make appropriate changes to the software. By clearly communicating the needs of the staff to the software developers after piloting the solution, the ED whiteboard software functions in a way that supports patient care and works very effectively for the ED clinical staff.

About the Author

Vickie Kamataris, Senior Business Consultant

Vickie Kamataris is a senior business consultant for NOVACES. A registered nurse with more than twenty years of clinical experience, Vickie earned her BSN from Southwestern College where she graduated Valedictorian in 1988. She has achieved multiple specialty certifications including CPHQ and is a Lean Six Sigma Master Black Belt. As the NOVACES Master Black Belt for Navy Medicine, National Capital Region, Vickie provides Lean Six Sigma expertise and leadership to develop and guide Lean Six Sigma deployment strategies, lead complex, enterprise-level projects and events, and mentor Master Black Belt candidates at the Bureau of Medicine and Surgery, National Naval Medical Center, and Naval Health Clinics. In her role as Quality Leader for General Electric Corporate Healthcare and Medical Programs, Vickie developed and deployed a balanced scorecard across GE's network of more than 240 clinics in 36 nations. She led multi-disciplinary, cross-functional global teams to improve mean performance related to cost/productivity, compliance, and medical quality indicators from 54% to 96% and led key global initiatives including implementation of an electronic health record, emergency medical response, travel medicine, health promotion and wellness, medical surveillance assurance, disability case management, and development of clinical protocol. She has extensive experience as an educator, serving as hospital education coordinator and adjunct faculty in the Biology department at Cowley County Community College and has mentored and certified physician and nurse Green Belts and Black Belts. She has presented at national and international venues and authored journal articles and papers on a range of quality-related topics including Lean, Six Sigma, and balanced scorecard. Vickie has more than 30 years of experience leading clinical, business, and military teams and has received multiple academic and professional awards. She served as a noncommissioned officer in the US Air Force. Vickie is a member of Sigma Theta Tau International, National Association for Healthcare Quality, the American Society for Quality and the International Society of Six Sigma Professionals.

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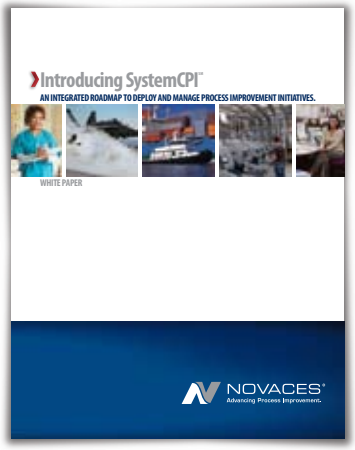

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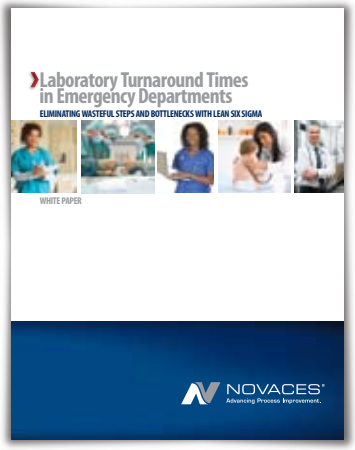

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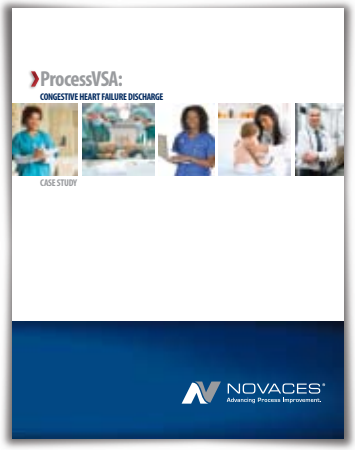

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