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IMPACT ASSESSMENT PAPER

## Reducing ED Throughput Time for Discharged Patients

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## Reducing ED Throughput Time for Discharged Patients

### *Improvement project overcomes resistance with patient-centric focus*

The mission of Campbell County Health (CCH) in Gillette, Wyoming, is “serving our community by providing a lifetime of care with dedication, skill, and compassion.” The organization’s vision is to be the first choice for healthcare and wellness in Wyoming by providing excellence every day, and its core values are centered on people (fairness and dedication), care (constant pursuit of safety and quality), service (care and compassion), and business (fiscal responsibility and integrity and transparency).

In many ways, CCH is following its vision and adheres to its core values, indicated by the numerous awards the provider has received in recent years (e.g., the 2017 Mountain Pacific Quality Health Hospital Award, and being named one of the “150 top places to work in healthcare” in 2018 by *Becker’s Hospital Review*.<sup>1</sup> Yet no organization is without an ability or need to improve.

The CCH emergency department (ED) had been tracking throughput time — arrival to departure — for discharged patients against national benchmarks, says Marie Edwards, ED Director. Unlike other measures routinely reviewed for the ED, this one consistently had underperformed. For all of 2017, CCH had recorded “red numbers,” with ED throughput time surpassing that of national data. The extended waiting time in the ED and delays in the process could potentially lead to patient dissatisfaction (patient satisfaction scores and patient comments had begun to reflect this) and poor outcomes.

Edwards adds that, despite recognizing the problem, CCH did not have a process to solve it — fixes often were developed, communicated, and tried somewhat randomly. “There was nothing there that would sustain anything, and it was just like a solution idea. ‘Oh, I think this little piece here might help.’ But then it’s not sustained. Prior to [the improvement] project, we never took the whole thing apart and said, ‘What can each person do that would contribute to it?’ Instead it was like an idea or a thought here and there, ‘Let’s try this,’ but then no real follow-through.”

#### **Campbell County Health**

Campbell County Health (CCH) in Gillette, Wyoming, has evolved from a 31-bed red brick hospital built in 1953 to a 90-bed acute-care community hospital. CCH includes:

- 14-bed emergency department (ED) that receives approximately 65 patients per day
- Medical group with nearly 20 clinics
- 160-bed long-term care facility (The Legacy Living and Rehabilitation Center)
- Powder River Surgery Center.

Approximately 1,300 individuals are employed at CCH, which includes 80 physicians, physician assistants (PAs), and advanced practice registered nurses (APRNs). The healthcare provider also offers more than 20 specialties.

<sup>1</sup> “150 top places to work in healthcare | 2018,” *Becker’s Hospital Review*, April 8, 2018.

## Leveraging Lean Learning at AEH

Bud Lawrence, the Process Improvement Coordinator at CCH, had attended a healthcare conference in June 2017, where he met Chris Dillinger, coach and faculty member of the Academy for Excellence in Healthcare (AEH) at The Ohio State University and the Director of Operational Excellence at Cardinal Health. Lawrence learned about the AEH program and brought the information back to his organization, thinking it was a great opportunity for CCH. “It allows me to take a team to Ohio State,” says Lawrence, who supports lean initiatives throughout CCH. “They learn and speak the same language as me. They are teaching the same tools as I am teaching. It was a huge benefit for us to be able to bring a team there, educate them in a fairly short period of time, and then come back and work on this project.”

CCH formed an ED cross-functional improvement team (“The Team Wolverines”) to attend the AEH training in January 2018. Lawrence and Edwards, the project leader, extended an invitation out to the physician group for their involvement and selected other members directly or through a department supervisor. While at AEH, the CCH team learned about and improved their understanding of lean tools and techniques, including value-stream mapping, gemba observations, A3 reports, and data analysis. The team reported their initial improvement-project findings to AEH in May 2018.

### CCH Improvement Team

- Marie Edwards, ED Director
- Rachelle Gingerich, ED Nurse
- Karen Wolf, ED Patient Access
- Dr. Jon Kerr, ED Physician
- Bud Lawrence, Process improvement Coordinator

“The tools — like the value-stream mapping, trying to define what was value-added vs. non-value-added, and [awareness and reduction of] batching — were all eye-opening experiences [that enabled me] to look at our process, see where there were some issues, and help us to examine the process a little bit better,” says Rachelle Gingerich, ED Nurse. It helped her and the others understand the objectives and approach of Lawrence and work together from a common lean framework. “It was very helpful, not only for this project but for projects that we take on in the future,” she adds.

Edwards says the work at AEH helped them to see and evaluate the whole ED registration process, and then track and analyze each part of the value stream. Despite working 30 years in the ED, she saw the department in a new light: “Even if I think that I know what’s going on, when you actually follow all these steps, do your data collection, and sit and watch it, maybe things really aren’t happening that way.”

“It laid a formal foundation upon which we all were able to work in the same way,” adds Dr. Jon Kerr, ED Physician. “It’s just a telescope and a microscope at the same time that helped us, like Marie said, to see the ER in the same way and enabled us to communicate about each of the problems. It gave us the language to communicate about some of the problems that we identified, in a very formal way, that seemed very thorough. It gave us a very accurate picture of what the ER was.”

When the improvement team returned to Wyoming, it added five additional members (two nurses, a clinical supervisor, and a representative from patient access), and enlisted the executive support of Bill Stangl, VP Physician Services, and Andy Fitzgerald, CEO. The team chose to focus on throughput for discharged patients because their analysis of disposition showed that discharged patients were by far the highest volume of ED patients (e.g., approximately 1,600 patients discharged home in December 2017 vs. less than 200 admitted). The expanded improvement team gathered data on the ED discharge process, such as day-of-week census and cases per hour, and mapped the current state of the ED. For example, the team tracked value-add vs. non-value-added time across the process.

Every member of the expanded team was assigned to “go see” the ED and follow three or more patients through the department, tracking them from when they came in the front door until they walked out. During their observations they collected times for how long it took a patient to make the journey; assessed staff interactions at each step; and watched for any struggles, delays, or waiting/patients cued up. “It was interesting because the team thought they knew what was happening, but when they really watched what was happening, it was completely different,” says Lawrence. “They learned a lot by doing that. I think that was valuable to really understand the problem that we were working on instead of assuming that we knew... We used that data to build our value-stream map, but I think that was very valuable for our team to see it happen.”

“As we were doing these observations, one thing that we kept as our focus was that this is about the patient, that this is patient-driven,” stresses Edwards. “Healthcare organizations are very siloed. Everyone is looking at wanting their own piece of the job to work well for them. And so the major focus of this is the patient. Sometimes you had to just bring it back to, ‘What’s best for the patient?’ I think that we identified right away as we were watching — and it was kind of alarming — the lack of a sense of urgency that the staff overall has about throughputting patients. There was nothing urgent about it.”

After observing the process and collecting data, the team met for a three-day offsite kaizen. At the event the team received support from leadership, and invited associated departments (e.g., radiology, labs, patient-care technicians, information technology, respiratory therapy) to observe, ask questions, and contribute ideas. During the kaizen, the team examined the root causes of the ED throughput delays:

- Batching when signing up for patients
- Triage process not standardized
- Constantly policing staff
- Techs overutilized or underutilized
- RN not available when needed
- Patient access busy with other, non-registration duties
- Doctors busy
- Transportation

The team’s value-stream map recorded a total lead time across the ED (226 minutes). The map also tracked the hands-on time (processing time) with patient by a physician, nurse, or staff member (76 minutes, of which 57 minutes were value-added time and 19 minutes were non-valued added) and overall



Lawrence says the observations, data collection, and “knowing the truth helped us come to the right countermeasures to fix the problem, instead of previously not having a method,” he says. “We just assumed we knew, and we just made some changes and saw what happened. And generally it didn’t work out.”

The data also helped the team to make others aware of the real conditions in the ED, even when staff perceptions were quite contrary. “The data was really necessary to demonstrate that perceptions were inaccurate and to show that, ‘No, that’s really not what happened,’” says Edwards.

“One of the strengths of what we did was that we went in and really collected some robust data, and we felt like that data was actionable,” says Dr. Kerr. “It was a good depiction of what happens in an emergency department. We collected the data at all different times of day and night and busy and less busy days. We felt like it was pretty representative and pretty generalizable. With that kind of strong, robust data, we felt like we had a real good snapshot of what the ER is, and because of that we were able to convince a lot of people that [there was a difference between] their perception and reality. It certainly convinced me of some of the appropriateness of the countermeasures that we came up with.”

“I think it also gave us a little bit more clout with the staff, just in the fact that we actually did go out there, watch it, look at it, and see how the process worked, before we made the changes,” adds Gingerich.

The group of initial countermeasures would be addressed during a Phase 1 implementation, with a go-live date set for March 8, 2018. “I really liked [the PICK] process, which is kind of a cost/benefit analysis,” says Dr. Kerr. “We chose multiple solutions and broke them down into three phases, and we felt like we are going to initiate some changes at Phase 1 that aren’t too difficult and aren’t too costly and still have great benefit. I feel that by doing it that way we really had a lot of personal buyin, and we felt very strongly that these were the right solutions because we had torn it down to such a basic level. It was a very logical, very appropriate way to address the issues we identified.”

The team’s goal was to reduce ED throughput time for discharged patients from the 150-minute average in 2017 to 120 minutes by March 31, 2018. The national throughput time, based on data from the Centers for Medicare & Medicaid Services (CMS), was 138 minutes.

## Implementation

The improvement team believed the changes they would implement in Phase 1 were “fairly simple” and “not life altering,” and so they were surprised to encounter substantial resistance among the ED staff. Individuals notified the team of their displeasure in multiple ways, revealing how much people in the organization did not want to change how they work.

Lawrence says the team had kept the Phase 1 countermeasures at a manageable level in order to be able to efficiently implement, study, and revise the new methods as necessary (i.e., PDSA). But he and his

colleagues never envisioned the level pushback they received from staff — the most he’s encountered in any improvement project, he says, despite the countermeasures being relatively common approaches to such healthcare process problems. Some employees cited reasons that the change should not be made, which turned out to be incorrect (e.g., the new process would violate EMTALA), and others indicated they simply would not adhere to the changes or, if necessary, quit, notes Lawrence.

“It was extremely poisonous,” recalls Gingerich of the initial reaction after Phase 1 go-live. “It was pretty much all over the place. The ones on the team understood that it was a good idea. You had a couple out there that were willing to try it, at least.” But, she adds, for the most part the nurses, technicians, and patient-access personnel “absolutely didn’t like any of it”; surprisingly, physicians were the least resistant. She and her team members knew they would have to counteract the opposition, and they shifted time to plan for Phase 2 in order to regroup around Phase 1. The team needed “to make sure that we still all agreed upon the changes that were made were the best for the project, to support each other, and then to come up with ways to do this.”

“When we went in and started analyzing the complaints, the negativity, and what everyone was saying, not once, not ever, did anyone come up with a reason that it was bad for a patient,” says Dr. Kerr. “When we began this process, we all sort of started with this one general idea: this is a patient-centric issue. We’re doing this so that we can help the patient. And here we are believing that we have 100 percent buyin, that in healthcare we do what we do so that we can benefit the patient. But, interestingly, it became a very personal issue, and people didn’t want to change. Not because they didn’t believe that it was beneficial to the patient, but rather because they felt like, ‘It’s going to make me work hard’ or ‘It’s going to make me do something that I haven’t had to do in the past.’ And that was a barrier that we never anticipated, not at that level.”

Lawrence says the team tried to understand the reasons for the resistance: “When we would press people, the ones who refused, they couldn’t give us a better solution. They couldn’t give us a reason we thought that held any water of why they didn’t want to do it. So, in the end, we decided that we’re just going to press forward. We really tried to be nice. We really tried to do it the right way and get them on board... We involved the right people. They needed to trust each other, and they needed to rely on each other. That’s how lean works. We had representatives from everywhere we thought necessary... They were excited for change, but when it came down to it, they really didn’t want to do it. It took the team by surprise in a lot of ways.

Pressing forward meant calling on their executive sponsors for assistance, which, in hindsight, the team wishes they had done earlier because the resistance created unnecessary delays and encouraged negativity to brew. The sponsors were familiar with lean methods and recognized the value of the changes the team was trying to implement. “They approved the project, and their purpose is just for things like this, to help you remove barriers when you run into them,” says Lawrence, adding that the sponsors’ message to staff was simple and direct: “The process changes developed by the lean team are not recommendations. These changes are not optional.”

The team moved on to Phase 2, determined not to give up and ready to let their colleague know that the ED throughput project was not going away. The team also sought to do a better job of communicating why the changes needed to be made, and they addressed this regularly, such as before and after huddles. They also established a suggestion box where staff could identify problems and offer ideas, which resulted in some “great ideas” being given to the team and a greater sense of involvement for some staff.

In addition to surfacing the deep pockets of cultural resistance, Phase 1 also forced the team to examine the data comparisons they used to initially gauge ED throughput. The team had relied upon data from the CMS for their comparisons, but found vagaries that caused them to question the approach: It was unclear if CMS was using mean or median figures for the comparison. In addition, CCH was providing its comparison to CMS based on less than 1 percent of patients (as instructed by the CMS). The revelation for the team was to examine and improve performance against CCH’s *current, observed best performance*, thus creating a mindset of continuous improvement that is willing to surpass national benchmarks.

On April 4, the team went live with Phase 2, which focused on the discharge process (timely physician assessment, timely discharge of patients, timely work/school notes, timely removal of patient from tracking board, improving bedside registration) as well as:

- Stopping piece-meal ordering by physicians and identifying and addressing lost or failed orders
- Establishing a team nursing approach
- Improving the communication of a patient’s readiness for ancillary staff
- Speeding delivery of creatinine results for faster CT scans
- Improving the bedside registration process
- Monitoring staff to ensure adherence to changes being made
- Changing staff schedules (nurses, physicians, patient access) to better align with patient demand
- Improving communication with and interventions from other departments (e.g., physical therapists)
- Relocating patient access to the back of the ED during peak times
- Simplifying the quick-registration process in Meditech. The team found that some external departments had set up fields in the registration program because they wanted to track data specific to their needs but not necessary for an efficient and effective ED registration.

Phase 3 went live on May 24 and includes a number of process changes to keep staff better informed of conditions in the ED and to further minimize waiting by patients. For example, the team implemented the use of a visual daily management board in huddles. The board lists the number of patients, number of patients left without being seen (LWBS), number of patients admitted or transferred, and the median throughput time for discharged patients (see *CCH Visual Daily Management Board*). The throughput numbers are placed on sticky notes: green if they are at or below the national average of 138 minutes and red if they are higher than the national average. The board is updated daily and charts a rolling week. ED staff — nursing, patient access, technicians, and physicians — huddle at the board twice daily (6:50 am and 6:50 pm).



The ED team says the board is one way to help sustain improvements, spurring staff to talk about what went well and why (or what did not go well and why). Gingerich and Edwards say the availability of near real-time metrics (as opposed to end-of-the-month data, as was previously done) has helped to create some ownership of the ED process by the staff.

Other Phase 3 countermeasures include:

- *Reconstruction of triage room:* Contractors will move the triage lobby door and add windows, which will improve triage RN visibility of the ED entry door and the lobby. Contracts have been completed and CCH is awaiting for the contractor to begin.
- *Expanded RN protocols:* This work is underway and led by Dr. Kerr.
- *ED staffing:* The team continues to evaluate the current ED staffing model and its alignment with patient flow data.
- *Streamlined patient discharge:* The team is planning for patient access to complete all paperwork and payment issues while the patient is in the exam room, eliminating the need for a patient to stop at checkout prior to exiting the ED. This change will go live after a patient access staff meeting in June.

### CCH Visual Daily Management Board

	SUN 6-10	MON 6-11	TUE 6-12	WED 6-13	THU 6-14	FRI 6-15	SAT 6-16
# of Patients	57	60		53	58	49	55
# LWBS	1	0		1	0	0	0
# Admitted or Transfer	8	4		2	3	8	7
Median LOS for Dis. pts.	119	92		112	124	102	95

Source: Campbell County Health

### Improvements and Next Steps

Prior to Phase 1, the average ED throughput time for discharged patients was 150 minutes. After Phase 1 and the challenges, the throughput time for March was 139 minutes. Following the regroup and Phase 2, the throughput time fell to 115 minutes in April and 129 minutes in May; on some days the throughput time was less than 100 minutes. Across the three months, patient volume was fairly consistent (the team examined the data and found no correlation between throughput time and patient census). An additional impact is improved door-to-doctor time. Prior to implementation, the average door-to-doctor time was 30.9 minutes (the national average for door-to-doctor time is 20 minutes). Following implementation, door-to-doctor time was 33 minutes in March, 19 minutes in April, and 25 minutes in May.

Most ED staff have gradually begun to accept the changes. “I feel like everybody is working together more, there’s not such negativity, and that they have taken this on as a new process that’s not really all that bad after all,” says Gingerich.

Edwards has been the ED Director for three years and a Clinical Supervisor for many years prior to that. She had an opportunity after Phase 2 to work as a staff nurse in triage with the new process — doing what she has been instructing her colleagues to do. She was delighted by the effectiveness of the new process: “I thought, ‘Why would we ever go back? Why would we ever do anything different? This is perfect. This is how it’s supposed to flow. This is about the patient. This is about getting the patient, when they walk through the door, exactly where they need to be.’ It completely cemented it for me.” That experience also made her aware of patient’s appreciation for the changes and reinforced her willingness to make sure all staff conform.

Patients also have been expressing to Dr. Kerr their pleasure at the speed of getting into a room and being seen by the nurse and physician — statements that he’s not heard in the last two years. He also notes that the nurse and the physician now often care for the patient at the same time, which the team had originally defined as a value-adding process. “I think the patients like that more, and they feel like they’re being treated faster,” adds Dr. Kerr. “I am seeing patients be happier and more satisfied with the care that they receive. And, certainly, with a sense of urgency from the physician side, we’re getting in quicker and able to more quickly address the issues that patients have.”

Edwards expects patient care and safety will improve because they’re moving patients back into the ED sooner, rather than having a Clinical Supervisor hold them in the lobby under the watch of a triage nurse; previously, the Clinical Supervisor would assign patients to an ED bed based on nurses’ workload in the treatment area. The change also should help make the ED throughput effort sustainable, although she does find “people who are trying to slip back into what was comfortable for them. That’s definitely a challenge.”

The team is confident of the improvements made to ED throughput, but still dismayed by the human roadblocks they had to overcome and disheartened to learn that some individuals did not want to change what they did, even when it meant better care for CCH patients. A bigger realization for the team, notes Dr. Kerr, is that no single project will help CCH significantly improve care. Rather, the organization will need to develop a process for improvement that helps everything get better — changing the way people think and empowering them to identify and solve problems and continuously improve.

“Why is it that we do what we do?” asks Dr. Kerr. “It is because we’re trying to take care of people. The ultimate goal *is not* to be able to do our job in 120 minutes. We believe that by doing it, by decreasing that throughput time, we really are helping patients, and we are providing a level of care with a sense of urgency and expediency that translates to good medicine. But we wouldn’t sacrifice quality care just so we could hit the 120 minutes. That has been an issue that we’ve had to communicate a few times. As we have worked through this process, we have been communicating to the team that this really is just the beginning and that we want to apply the same formal process — evaluation, implementation, and reevaluation process — through every aspect of the emergency department and of the entire hospital, so that everyone starts thinking in this way and thinking in terms of continuous improvement and looking for opportunities to change and improve across the board. That’s really the direction that we want to move into, and there are some people that probably will never be comfortable with that.”

The ED improvement team eventually forced their way through the resistance, and a cultural transformation has begun. “We’re on a road toward change,” says Dr. Kerr. “It’s not a project anymore, it’s a process.”

## AEH Commentary

The Campbell County Health (CCH) project illustrates a challenge that all improvement efforts face — resistance to change. Change is hard for individuals to accept in any function, department, or organization. The CCH effort, however, was unusual in the level of opposition and negativity that arose in response to making necessary changes. Yet the outpouring of objections also alerted the improvement team and CCH leadership to the presence of behaviors and attitudes that contrast with healthcare objectives — there was a desire among some staff to protect their own interests instead of working to improve the satisfaction and welfare of patients. With this awareness, the improvement team’s work began a larger, cultural change in the organization.

The ED project also highlights effective ways to wear down such resistance and achieve desired results. First, throughout the project the team maintained its focus on the purpose of the project — care of patients. Gingerich says they were “not trying to diffuse situations or make people happy, but instead to focus on what we were doing and why we were doing it.” This patient-centric approach also helps to remove the personal element from process improvements. “This is about our processes and caring for the patients,” adds Edwards.

Second, the team’s buildup of data based on detailed gemba observations revealed what was actually occurring within the ED. The improvement team needed this information to counter misperceptions among staff. The team’s comparisons of its ED metrics to national data and dissatisfaction with that approach also reinforced the need to continuously collect data and improve patient-care measures — relative to the organization’s own best performances.

Lastly and fortunately, the CCH team had what is frequently required in truly difficult circumstances — leadership that understands the value of lean process changes and a willingness to forcefully step in and support a team’s efforts. For improvement efforts that cross department boundaries, there must be clear administration backing so that those involved have the authority to design and implement changes. Without such backing, the CCH project could have been derailed early.

## About AEH

The Academy for Excellence in Healthcare blends in-person class time with hands-on project work, interactive simulations, and recurrent coaching, all aimed at helping healthcare teams spark actionable change at their organization. At the heart of this program is a real-world workplace problem each participant team selects and commits to solving through five intensive days on campus, followed several weeks later by two days of project report-outs and lean leadership training. This project-based approach pays immediate dividends and lays the groundwork for transformational change.



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