ACADEMY FOR EXCELLENCE IN HEALTHCARE

IMPACT ASSESSMENT PAPER

Utilizing Lean Techniques to Improve the Nurse-Patient Relationship in an Outpatient Chemotherapy Infusion Center

Academy for Excellence in Healthcare IAP C-10 SCCC

April 14, 2017

THE OHIO STATE UNIVERSITY
FISHER COLLEGE OF BUSINESS

In collaboration with

CardinalHealth

Utilizing Lean Techniques to Improve the Nurse-Patient Relationship in an Outpatient Chemotherapy Infusion Center

Improvement focuses on improving patient satisfaction

Undergoing cancer treatment can take a physical, mental, and emotional toll on patients. The last thing a healthcare provider wants to do is unnecessarily contribute to those challenges. Improvement initiatives at Sylvester Comprehensive Cancer Center in Miami-Dade and Broward counties in Florida had sought to minimize the time it takes patients to receive treatments. The Comprehensive Treatment Unit (CTU) in Miami is Sylvester's largest, and it provides blood, chemo, biotherapy, and other non-oncology infusion treatments. Over the past three years, the average arrival-to-chair wait time for patients at the CTU was reduced from 44-48 minutes in FY 2014 to 28-32 minutes in FY 2017. But shorter wait times did not necessarily translate into satisfied patients.

The Miami CTU consists of a fast-track unit, where treatment typically takes less than one hour and includes injections, port flushes, dressing changes, and short IV infusions. Another unit handles infusions that usually last more than two hours. CTU leadership and staff began to recognize that in addition to treatment times, there was a need to improve patient satisfaction for the longer treatments, as measured by ranking for the Press Ganey "likelihood to recommend services" question. External forces also were making an attention to satisfaction necessary across all Sylvester departments: Competing cancer centers were opening in the area. In addition, the Centers for Medicare & Medicaid Services (CMS) might hold Prospective Payment System exempt providers, such as Sylvester, accountable for satisfaction measures, in lieu of metrics that do not apply to cancer centers, such as readmission rates. The Press Ganey scores could eventually affect CMS reimbursements.

Lauren Wernsing, Clinical Nurse Specialist, says that as an organization Sylvester has been focused on operational excellence, especially turnaround times. Other Sylvester locations have consistently ranked high (99) on the likelihood-to-recommend measure, but 24/7 hours and three times the volume of other locations have led to inconsistent scores at the Miami CTU, ranging from 99 to 3. Management established a goal to consistently meet the benchmark National Cancer Institute (NCI) rank of 60 for the likelihood-to-recommend question.

> **Sylvester Comprehensive Cancer Center University of Miami**
>
> Sylvester Comprehensive Cancer Center is part of the University of Miami Leonard M. Miller School of Medicine, and the only university-based cancer center in South Florida. Sylvester opened in 1972 and was designated a Cancer Center of Excellence in March 2015. More than 250 Sylvester physicians and scientists are dedicated to cancer care annually for:
> - More than 300,000 outpatients
> - More than 4,000 new cancer patients
> - More than 32,000 patients receiving chemotherapy.
>
> Sylvester has six satellite locations in Miami-Dade and Broward counties. In addition to clinical services, Sylvester also offers a range of psychosocial and physical programs to cancer patients, including art therapy, pet therapy, acupuncture, massage therapy, music therapy, and palliative care.

Lean Learning at AEH

In 2015, a team from Sylvester's Ear, Nose, and Throat Clinic had attended training at the Academy for Excellence (AEH) in Healthcare at The Ohio State University. Wernsing says that Angela Olier-Pino, Executive Director Clinical Operations Infusion services, wanted the Miami CTU team to "also learn the tools, see if we could look at the unit in a different way, see what are we missing, [and identify] what else can we do to try to improve this score."

A CTU improvement team attended AEH training in October 2016 and learned about lean tools and techniques, including voice of the customer, value-stream mapping, standardized work, use of A3s and A3 thinking, and visual management. For many it was their first hands-on experience with operational excellence and lean techniques, despite having seen lean in practice by Sylvester leadership.

> **Miami CTU Improvement Team**
>
> - Maritza Alencar, DNP, ARNP-BC, BMTCN™
> - Aileen Alvarez-Lacayo, MSN, AGPCNP-BC
> - Tamara Gort, BSN, BA, RN
> - Rohanmi Perez, BSN, RN
> - Lauren Wernsing, BSN, BA, RN, CPHON

At AEH, the Sylvester team developed their problem statement ("Despite efforts to decrease patient wait times, our rank in the Press Ganey measure of 'likelihood to recommend' continues to have variations and does not consistently meet the benchmark of 60."). The team saw the difficulties in trying to impact such an abstract concept, and looked for ways to make "it concrete, into something that we can divide into smaller pieces, we can measure, we can monitor, we can quantify," says Wernsing. "That was probably the biggest eye-opener for us and one of the biggest things that we got out of [attending AEH]."

Compounding the team's challenge was how the likelihood-to-recommend measure was captured with the survey process. The Press Ganey data for which the CTU was being held accountable was not entirely specific to the CTU, says Aileen Alvarez-Lacayo, Nurse Manager for the Utilization Review Department. For the Press Ganey rank, the CTU is grouped with radiology. Patients may have multiple appointments — some not even in the CTU — and those survey responses are bucketed with CTU performance. For example, Press Ganey identified 10 key drivers that impact how patients respond to the question "likelihood to recommend" Sylvester outpatient services, which is inclusive of CTU. Of the 10 key drivers, five are related to radiation treatment that negatively affected patient satisfaction. In addition, patients have a year to submit surveys, so data may not reflect current conditions and changes underway in a department. Faced with this data dilemma, the CTU team went to the gemba to gather their own information.

The team observed the nurse-patient process and fielded a voice-of-the-customer survey to understand why patients would not rate the unit highly on likelihood-to-recommend. The questions were based on the identified key drivers that reflected the patient experience while in the CTU. Of the 272 patient surveys that were distributed, 65 were returned. Only 10 had negative feedback, six of which highlighted that their plan of care was not discussed. This made it clear that the nurse-patient relationship is a crucial

component and can positively or negatively impact a patient's overall experience. The team also found other issues that delayed treatment and caused patients to be dissatisfied:

- Unsigned orders
- Missing consent to treat
- Malfunctioning lab equipment
- Delays with previous appointments
- Gaps in nurse-patient interaction
- Inconsistencies in workflows/lack of standardization.

"As we did this project, we found out that what we thought was the problem was not really the problem as far as patient perception went," says Rohanmi Perez, Nurse Manager for CTU. The team initially believed that most problems were caused by unsigned orders, which then created delays. After the gemba walk and speaking to patients, they saw that patients were waiting for nurses to have some type of interaction with them. "If the patient was not greeted within the first five minutes of their time being there, then they thought, 'OK, now I'm being delayed.'"

The team developed a value-stream map, which allowed them to break down the CTU process and hone in on areas that they had the power to improve, says Tamara Gort, Nurse Manager for the Nurse Navigation Group. The value-stream map surfaced two major areas for improvement: One would require the involvement of other departments, such as labs, that the CTU team could not control. (For out-of-scope problems, the team began collecting data that it could present to leadership.) The second area of opportunity (shown on the right of *Value-Stream Mapping within CTU*) could be addressed by the team. These steps had a lack of standardization in nurse workflow, in how nurses and patients interacted, and in the stocking of supplies within the treatment rooms.

Value-Stream Mapping within CTU
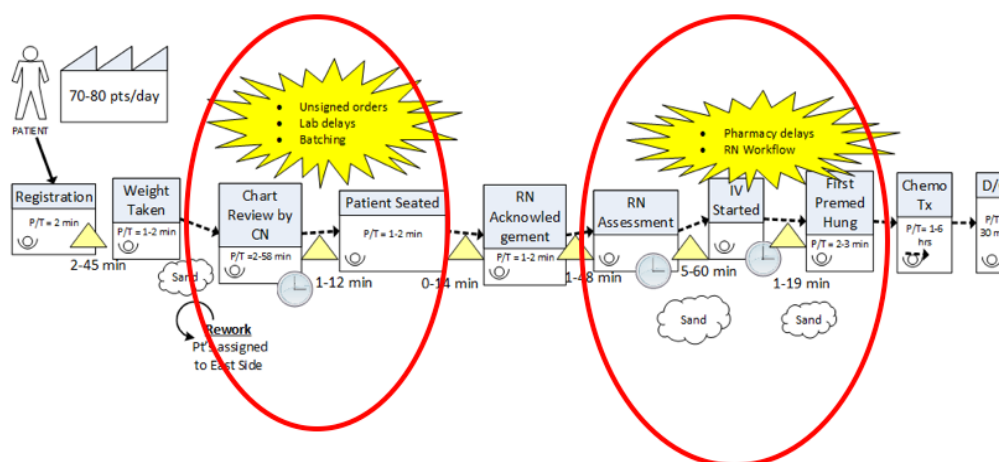
Source: Sylvester Comprehensive Cancer Center

Nursing Assessment
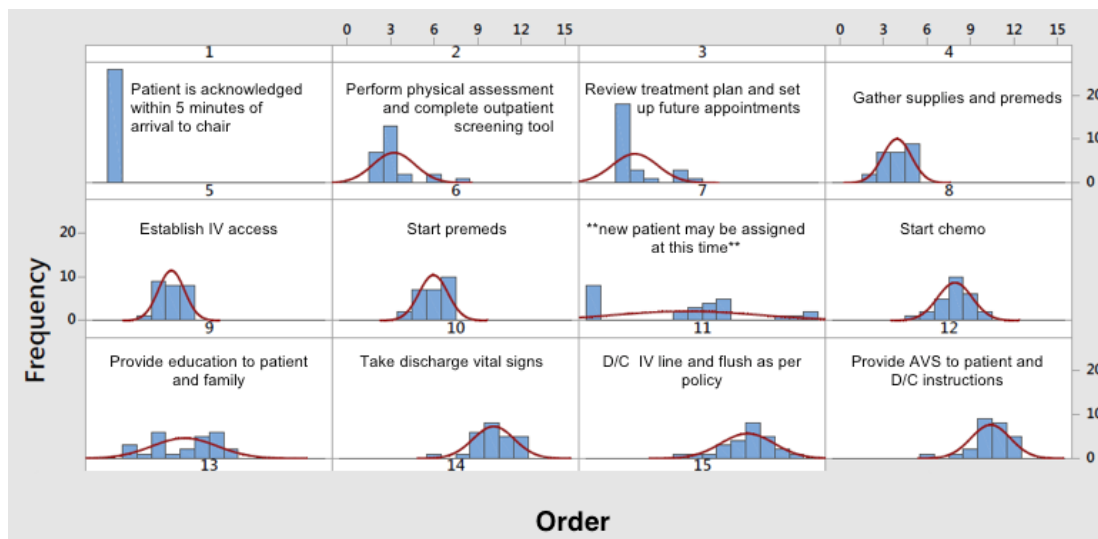
Source: Sylvester Comprehensive Cancer Center

To better understand the nurses' workflow, the team interviewed nurses, and asked how they performed their roles and the order of their activities during treatment. This information was charted with histograms, which highlighted where inconsistencies in the nurse-patient workflow occurred (see *Nursing Assessment*). The team's analysis of nursing and patient information indicated that although wait times are a factor in patient satisfaction — and the focus of past years' improvements — the quality and consistency of the nurse-patient interaction was a key driver in a patient's likelihood to recommend.

The Press Ganey data supported the team's observations and analysis, and identified five factors that were CTU-centric and negatively impacted patient satisfaction:
- Explain what to expect during chemotherapy
- Comfort of the chemotherapy treatment area
- Emotional needs of patients addressed
- Explaining to patients how to manage the side effects from chemotherapy
- Informing the patient's family of what to expect.

Developing, Assessing, and Implementing Countermeasures

The CTU team developed a list of potential countermeasures, and then plotted them on a benefit/effort matrix, prioritizing to the top five countermeasures that could be implemented quickly and potentially impact the patient experience in as little as three months. Prior to returning to AEH in late January 2017 to report on their project, the Sylvester team had begun to implement most of their top countermeasures:

5S Drawers

The drawers in treatment cubicles were overflowing with supplies and had no standardization. Nurses often left the rooms in search of missing supplies. Organizing the drawers could reduce the time wasted gathering supplies, and could ease nurse workflow and enable the treatment of patients to be promptly started. "This was a simple solution to try and help the nurses with time management," says Perez. "We were finding that the drawers had plenty of supplies, but not necessarily what the nurse needed for each patient." She says nurses were wasting up to 20 minutes trying to find some supplies, which patients noticed — "My nurse keeps coming in and out to find stuff" — and negatively impacted the patient experience.

The team again surveyed nurses, asking them what suppliers they would like to see stocked in the treatment drawers and how often the supplies were used. During gemba walks, they also watched how often chairs turned over and how that affected the inventory of supplies in the room. The team's objective was to stock the drawers only with the supplies that are needed on a daily basis. Certified nursing assistants (CNAs) round every two hours in the CTU, and they were given the task of keeping supplies at appropriate levels.

After the 5S, "we noticed was that the nurses were not running back and forth to the storage area to gather supplies because everything was in the drawers, and it was neatly organized," says Perez. "Everything is in its place. They know if they open drawer three, they're going to find the IV start kits, they're going to find tape, etc. It's easier for them to navigate through those drawers instead of having to open each and every one, not knowing what they're going to find in that drawer."

Initially when implemented in 10 cubicles, the team received some pushback from nurses. "People don't really respond well to change, but this was something quick and easy we could do," says Wernsing. The team also surveyed nurses during and after the 5S project to see if the changes were working or if the type and volume of supplies should be revised. Members of the CTU team assisted with set up of the drawers, which helped with buy-in, and have been present when CNAs stock the drawers to ensure supply levels are maintained. Eventually nurses appreciated the change and began holding each other accountable for keeping supplies stocked. This quick win helped the team move forward with other countermeasures.

Standardized Nursing Assessment (Checklist)

Low scores on the patient surveys were related to nurses failing to discuss a patient's plan of care. The gemba walks confirmed this, as well as other inconsistencies with nurse-patient interactions, some of which were due to an overemphasis on wait time (i.e., faster was not always better). A standardized assessment process could help to reduce wait time *and* ensure patients receive consistent care every visit to the CTU. The checklist also could improve workflow of patients by allowing the charge nurse to assign patients based on a visual cue at the cubicle — when the nurse reaches a point in the standardized treatment process, he or she is ready for their next patient.

"We found that in our workflow there were many variations, depending on the nurse," says Perez. "That's how we came up with the checklist, and that is what we've been using to try and maintain standardization within our units." In preparing the checklist, the team again engaged the nurses, asking about workflow, order of work steps, and patient safety factors and pharmacy considerations that arose. The CTU team emphasized that there were no right or wrong answers. For the most part, the team documented a consistent approach, adds Perez, which served as a basis to standardize across all nurses. The team believes this standardization eventually will ensure:

- Plan of care is discussed and patient questions are answered
- Patient is ready for treatment prior to initiating therapy
- Timely communication to the pharmacy if there is going to be any change, delay, or cancellation of treatment.

The CTU team developed an in-service presentation — "The Whys Behind the Checklist" — to explain the need to improve workflow, and its effect on the Press Ganey ranking, patient safety and satisfaction, and financial impact. "They knew we were doing our own personal survey with them, and that the No. 1 theme was that [patients] wanted more time to talk to their nurse about their treatment plan and wanted more time for explanation," says Wernsing. "We showed that through standardization. The charge nurse knows not to assign a patient during the first 45 minutes to an hour, which gives nurses enough time to complete all their documentation and discuss the treatment plan." The training also tied standardization to ensuring that treatment scheduling is discussed. "We've had patients that have missed their last injections, which are very important, prevent them from getting infections, [and helps to keep] their immune system high enough."

The checklist was placed in every patient chart, and implementation began in January 2017. Alvarez-Lacayo says nurses continue to offer feedback on the standardized process, which then gets reviewed and incorporated into an updated checklist. "I think that is a key piece. They really feel that their voice is heard, what they've suggested has been included, and that they've been included, essentially, in the entire process."

Create Oncology Resource Nurse Position

The CTU team's analysis found confusion regarding when chairs or nurses were available for an incoming patient. In addition, nurses occasionally needed help with activities, such as starting IVs or answering clinical questions. When issues like these occurred, they also contributed to delays in patient treatment. The team decided to create an oncology resource nurse position, who would serve as a floor lead to the other nurses, assist with difficult IV starts, and help to get treatments started in a timely manner, when an assigned nurse was still occupied with another patient. The resource nurse also could help the charge nurse identify when a nurse is ready to receive their next patient.

The team defined this new role and its responsibilities, and assigned a senior charge nurse to pilot the role. They also alerted staff to the purpose of the resource nurse and the scope of responsibilities, and

monitored patient loads to see that the resource nurse was not overworked or performed work outside of the prescribed duties.

This countermeasure was well-received by both nursing staff and the resource nurse, "who is like the bridge between the charge nurse and the nurses working on the floor," says Perez. "[The resource nurse] rounds on the nurses, ensuring that they're up to date with what they need to be doing. If they come into a situation where a patient is having a reaction, the resource nurse is able to take care of the other patients so that nurse can dedicate time to that patient having a reaction." By helping with the workflow of the unit, such as filling in for treatment starts, the patient is less likely to feel ignored. "The resource nurse is the one that will go in there right away, greet the patient, and let them know what's happening. She's also the one who's giving patients updates on what's happening with their chart [in the event of lab delays or changes that affect treatment and timing]. They will let them know, 'This is what we're working on, bear with us, we're calling your doctor to ensure that you can get treated today.'"

The ability to fully utilize the resource nurse, however, has initially been limited; some days the resource nurse needs to cover for traditional patient care. Nursing staff in the CTU are often pulled to other areas of Sylvester because of their advanced skill levels — they are the most aware of all the chemotherapies, different infusions, and biotherapies, says Wernsing. As many as eight of 22 nurses may be pulled on a given day. Nonetheless, the team was planning to incorporate more floor-management responsibilities into the resource-nurse role, such as relaying to the charge nurse the status of chairs and nurses.

Update Assignment Sheet with Patient Chair and Nurse

Treatment assignments had in the past been logged only by nurse, time, acuity, and drug treatment — not by chair location/cubicle. Physicians and family occasionally were unable to locate patients, searching throughout the unit until the patient was found. A new documentation procedure could help patient families and members of the healthcare team to more easily locate patients when coming to the CTU, and help the charge nurse to identify if a nurse is ready for their next patient.

This countermeasure also was a quick fix: creation of a document to record nurse, patient, treatment, acuity, assignment time, and cubicle. The CTU team developed a labeling process to make it easy to document the location, and CNAs — who transport patients to their cubicles — have been trained to report the patient location to the charge nurse, who then records the location. While the change is relatively minor, it still required developing an understanding among the nursing staff of the benefits to CTU workflow, and it took some time to implement and monitor. For example, there was an option for patient location on previous documentation, but it frequently went unused; the CTU team plans to enforce use of the new assignment sheet.

Streamline Patients with Same-Day Clinic Visits

The CTU team had identified a high number of patients who were coming to CTU directly from the clinic without the necessary documentation (e.g., physicians not signing orders or updating consent forms). The

clinic patients can be treated in a timely manner if orders are signed and consent is completed prior to them arriving at CTU for their appointments. They usually have been at Sylvester for many hours, with many appointments and many interactions, says Alvarez-Lacayo. They are tired by the time they get to the CTU, and any glitch or delay at the end of the day is amplified and reflects on CTU performance.

The CTU charge nurse typically reviews treatment orders 48 hours in advance, and notifies the patient of their appointment. Information on clinic patients and their orders, however, were not reviewed. Patients scheduled for the clinic were contacted by their physician's office, and the CTU and physicians agreed that they did not want to burden the patient with another notification. "But as these patients came into the CTU after seeing their physician, the orders were not signed, labs were not addressed, or other concerns were not in the new chart system, which then caused a delay for the patient," says Perez.

The CTU team conducted a gemba walk at the clinics that were forwarding patients, looking for ways they could help to resolve the problem. The team conducted an in-service for clinic managers, who then educated their staffs about the need for orders and consent forms to be signed. They reviewed this criteria with the director of ambulatory clinics, who helped them to develop a "Same Day CTU" form/checklist to build in accountability. In January, the checklist was implemented; however, its usage was misinterpreted in the clinics. "They were signing it, but they didn't basically do what was on the checklist," says Gort. "They just checked it off."

Nurses for the physician clinics thought the checklist was a reminder for them to inform the physician of the required action, not that the action had been completed. Perez and Wernsing spent time with nurses in the clinic, reviewing how they could electronically confirm if orders have been signed, and were planning to meet with the director and the manager of the unit to see if the checklist was feasible. The CTU team is hoping to re-implement the countermeasure because missing orders is a major issue that leads to patient dissatisfaction. Patients are dismayed that their orders are not ready when they come to CTU from their physician visit, says Wernsing. "Then they wait for an hour and half until they get hold of the doctor to sign the order. It's something that really shouldn't be happening."

CTU Improvements and Next Steps

The team reported back to AEH their early results in January: the Press Ganey likelihood-to-recommend rank had improved for November and December 2016 to 65 and 93, respectively. In March, data showed the rank had fallen to 31 for January, so the team did not meet the goal of maintaining the NCI rank of 60 for three consecutive months. However, Press Ganey surveys can continue to arrive and be tabulated months after the treatment date.

Since January and the continued implementation of countermeasures — the nurse checklist did not go live until mid-January — "we have seen a continuous upward trend in most of the identified key drivers, which gives us hope that this will continue and will ultimately, consistently impact our likelihood-to-recommend rank," says Wernsing.

Some factors also have remained out of the team's control of the Press Ganey rank. For example, comfort of the chemotherapy treatment area has not been addressed because the area will be renovated in 2017. A follow-up survey of patients revealed some areas for continued improvement, such as a slight rise in the number of patients who said their plan of care was not discussed. The team believes that continued use and enforcement of the nurse checklist will address this issue. The team's ongoing project maintenance will include:

- Daily spot check of supply drawers
- Continue to develop the role of the oncology resource nurse
- Weekly spot checks of the assignment sheet
- Weekly chart audits and daily observation of nursing checklist utilization
- Daily feedback to clinic management for incomplete Same Day CTU forms.

"Our focus [in March] has been trying to maintain what we've implemented so far, especially with the checklist," says Wernsing. "That's really quite a mountain to climb. We are observing what the nurses are doing, and also giving them real-time feedback." She says that for new hires to the CTU, the checklist process has been easier and welcomed; they see the checklist as a useful guide, and they're not having to revise past practices. The checklist is communicated to new hires as part of their orientation, and progress is reviewed every two weeks.

A positive reinforcement for CTU staff to adhere to new practices has been the creation of a recognition form, which patients are encouraged to submit (Perez says the number of recognitions submitted by patients has been overwhelming). The CTU also has begun selecting a "Nurse of the Month" and "CNA of the Month." These designations are based on the Press Ganey surveys, where a satisfied patient is able to identify the nurse and/or CNA handling their treatment. "That's been a great motivator for our nurses and our patients as well," adds Perez.

The team has continued to collect anonymous feedback from nurses, soliciting their questions or concerns regarding the changes. In addition to restarting the Same Day CTU form, other lower-priority countermeasures originally identified by the team will be addressed when the time is right. For example, the CTU is divided into two physical areas — East and West — with insufficient communication between the two. The team plans to have the charge nurse on the West side do all patient assignments for both the East and West wings (only one charge nurse for the CTU). Other potential countermeasures include:

- Retrain customer-service staff and CNAs on daily job duties
- Improve chart preps, such as checking for consent and therapeutic monitoring tests, as indicated by institutional policy
- Update current scheduling template to ensure patients are scheduled for 7:00-8:00 am time slots, otherwise the team will change nursing work hours
- Apply visual management for chair optimization.

The CTU team plans to acquaint other Sylvester locations with their standardized procedures. Each of the satellite locations in Miami-Dade and Broward counties have their own CTUs. A CTU Council, which

consists of satellite leaders, meets every two months, and the nursing checklist has been discussed in that environment. "The whole [Sylvester] system is undergoing a large effort to standardize across all sites," says Wernsing. "So, if we have a patient, no matter what site they go to, they can expect the same process."

Alvarez-Lacayo says that Executive Director Olier-Pino "has really been a champion here at the University of Miami," getting the project underway, supporting the team with tools and knowledge, and helping to communicate the new CTU standardized processes to Sylvester leadership, which should help expansion of best practices to satellite locations. Gort adds that Olier-Pino has encouraged nurses to develop their nursing practices as well as learn the "the language of business" and lean techniques that can advance their work, the improvement initiative in which they are involved, and their profession.

AEH Commentary

The Sylvester Comprehensive Cancer Center project illustrates that there is no replacement for going to the gemba, observing colleagues as they work in the process, and capturing the voice of the customer/patient. Even though the Sylvester team had Press Ganey data related to patient satisfaction in the Comprehensive Treatment Unit (CTU), the improvement team recognized the limits of this data and the need to supplement it with their own information and analysis.

The project also highlights how a presence at the gemba can help to build buy-in with colleagues for the changes that are needed. Any change in a process, no matter how small, is often met with resistance by those who are subject to the change. The CTU team knew that nurse participation was critical to achieve their objectives, and so they repeatedly sought nurses' insights on how to proceed and feedback as changes occurred. The CTU team also began their implementation of countermeasures with a change that could positively impact nurses as well as patient satisfaction — 5S of supply drawers — which proved to be a quick win and helped build momentum for more involved countermeasures to come.

Most healthcare processes involving patients are exceptionally complex, usually relying on multiple departments and multiple roles. Changes in one department or targeting one measure can have unexpected consequences: e.g., efforts to reduce wait times in the CTU unintentionally affected patient satisfaction. This underscores a primary tenet of lean thinking: when making changes, consider the *overall* process or value stream and, most important, the effect on the customer/patient.

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.

THE OHIO STATE UNIVERSITY

FISHER COLLEGE OF BUSINESS

In collaboration with

CardinalHealth

Improve Physician Rounding with Comprehensive Medical Unit

- Lauren Wernsing
  Clinical Nurse Specialist
  Sylvester Comprehensive Cancer Center, University of Miami
  305-243-1875
  lwernsing@med.miami.edu

- Margaret Pennington
  Faculty Director
  The Academy for Excellence in Healthcare
  The Ohio State University
  614-292-3081
  pennington.84@osu.edu

For Program Information

- Beth Miller
  Program Director
  The Academy for Excellence in Healthcare
  The Ohio State University
  614-292-8575
  miller.6148@osu.edu