Leveraging Technology to Develop an Express Symptom Management Program and Reduce Oncology ED Visits

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In the United States, of the estimated 131 million patients who visited the emergency department (ED) in 2020, only 14% were admitted into the hospital.[1] These data show that many people are presenting to the ED with health issues that likely could be addressed in a less costly care setting. In fact, it was the substantial strain placed on health care workers and organizations by unnecessary ED visits that prompted administrators at Orlando Health Cancer Institute to develop an express symptom management program in July 2021. The program was designed to effectively triage and treat cancer-related symptoms in the outpatient setting. Dana Salcedo, MSN, APRN, AGACNP-C, NP-C, an outpatient infusion and express symptom management nurse practitioner, took the clinical lead on the project. Her team had 1 goal: to capture patients and address their concerns before they needed to go to the ED.

Program Inception

Like those of most cancer programs and practices around the country, staff members at Orlando Health Cancer Institute and its outpatient services were significantly impacted by the COVID-19 pandemic. Our experienced, long-term oncology nurses were facing burnout and choosing to leave our workforce. As we struggled to replace those experienced individuals with newer and less experienced nurses entering the field, we faced greater demand and volumes across all our sites and expanded from a team of 62 physicians to 104 physicians in less than 2 years. These concurrent events had this impact:
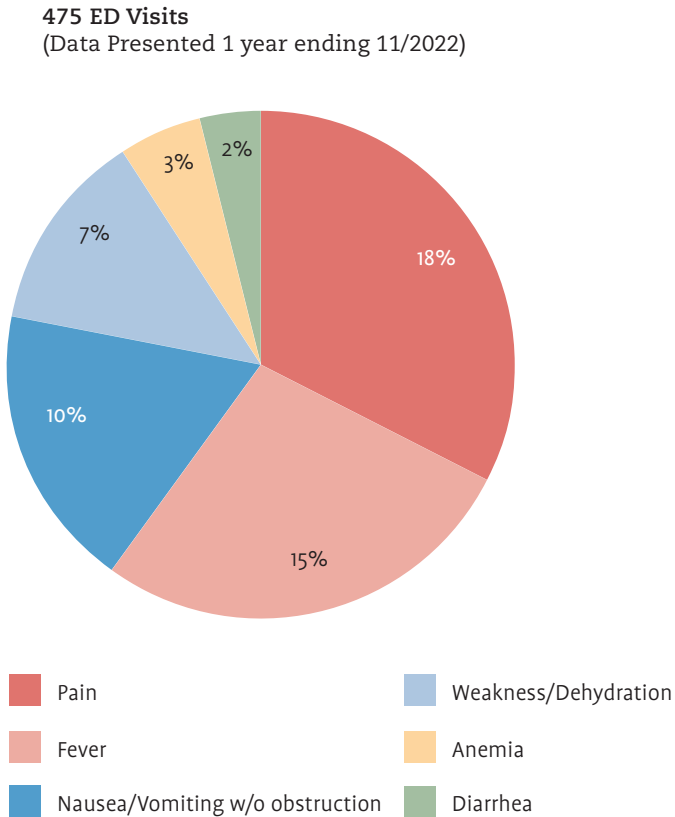
- A growing number of active oncology patients visited the ED (in some cases, multiple times)
- Patients complained about the inability to contact the cancer care provider or cancer care team during the day when they felt ill or experienced acute symptomatic concerns
- Clinical teams were overextended and unable to handle patient calls and messages about acute needs
- An OP-35 (Centers for Medicare & Medicaid Services outpatient chemotherapy measure) that was less than ideal
- Deficits in the care continuum for many patients were noted by our infusion advanced practice provider (APP) and chair placement teams.

Staff at Orlando Health Cancer Institute collected data on patients who arrived at the ED by means other than ambulance and then were discharged soon after (Figure 1). Members from quality, operations,
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> The express symptom management team was able to help patients with cancer in managing their symptoms over the phone, in person, or, when indicated, through hospital admission.

Figure 1. Reasons for ED Visits at Orlando Health Cancer Institute—January 2022 to November 2022

475 ED Visits
(Data Presented 1 year ending 11/2022)

Pain — 18%
Fever — 15%
Nausea/Vomiting w/o obstruction — 10%
Weakness/Dehydration — 7%
Anemia — 3%
Diarrhea — 2%

Legend:
- Pain
- Fever
- Nausea/Vomiting w/o obstruction
- Weakness/Dehydration
- Anemia
- Diarrhea

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and infusion teams then convened to analyze these data, finding that 55% of patients with cancer who presented to the ED could have been successfully managed in the outpatient setting.

Even with limitations to our clinic space, APP capacity, and staffing levels, we had to act. Our infusion advanced practice registered nurse (APRN) agreed to start the express symptom management program with 1 triage nurse to assist with same and next-day chair placement within our 6 infusion locations. With this new program, patients would be able to have either a virtual visit or same-day work-up and treatment within our downtown infusion center. The 2-person team managed acute adverse effects (AEs) of chemotherapy and radiation, including infectious workups, pain and supportive care, and patients at-risk for electrolyte derangement, partnering with the primary oncologist in all planning and intervention.

The team quickly worked with the marketing team to create print pieces (Figure 2) and educational in-services to target patients, RNs, patient navigators, and physicians throughout our 15 clinical out-patient locations. Within 2 weeks, rack cards were shared with the clinical teams, and refrigerator magnets were handed out to patients for ready reference. In addition, information about the new express symptom management service was added as a component of the initial infusion visit.

Even with these efforts, we did not receive the expected level of patient engagement at program launch. Traditional communication with and messaging to patients and providers clearly was not sufficient. Staff at Orlando Health Cancer Institute had to do more if patients were to be managed proactively to keep them out of the ED and avoid any associated and preventable admissions. Our goal at Orlando Health Cancer Institute is always to minimize bacterial and viral exposure of patients with cancer, especially when they are at the highest risk and immunocompromised during treatment.

Leveraging Technology

To assist in fine-tuning the express symptom management program, staff at Orlando Health Cancer Institute implemented a business intelligence dashboard to collect data on patients with cancer who presented to the ED (Figures 3 and 4). Armed with this information, the team was able to track unnecessary ED visits that could have been managed via express symptom management in real time and not while waiting for OP-35 data. The dashboard allowed for tracking and monitoring of these high-risk patients and created a measurable outcome. The express symptom management team was able to help patients with cancer in managing their symptoms over the phone, in person, or, when indicated, through hospital admission.

In 2022, the express symptom management team further advanced these services by partnering with the information technology (IT) team to create automated MyChart (Epic Systems) messages delivered before infusion (phase 1) and after infusion (phase 2). These automated messages are triggered by the electronic health record based on the scheduled chemotherapy appointment. Now patients receive reminders (Figure 5) and education (Figure 6) before infusion and, most importantly, a treatment message that includes a self-management algorithm of common AEs and management strategies after infusion (Figure 7). For issues beyond self-management, patients

The team at Orlando Health Cancer Institute poses with its 2023 ACCC Innovator Award.

Figure 2. Marketing Piece With Referral Information

are instructed to call members of the express symptom management program for clinical evaluation.

In the summer of 2023, phase 3 of the program began by expanding the post-infusion trigger to include automated messages following every treatment. The team worried that patients would develop message fatigue and anticipated hearing patient complaints about receiving too many messages, but the opposite occurred. After phase 3, the express symptom management team saw a sudden spike in use (Figure 8) and contributed this uptick to the additional
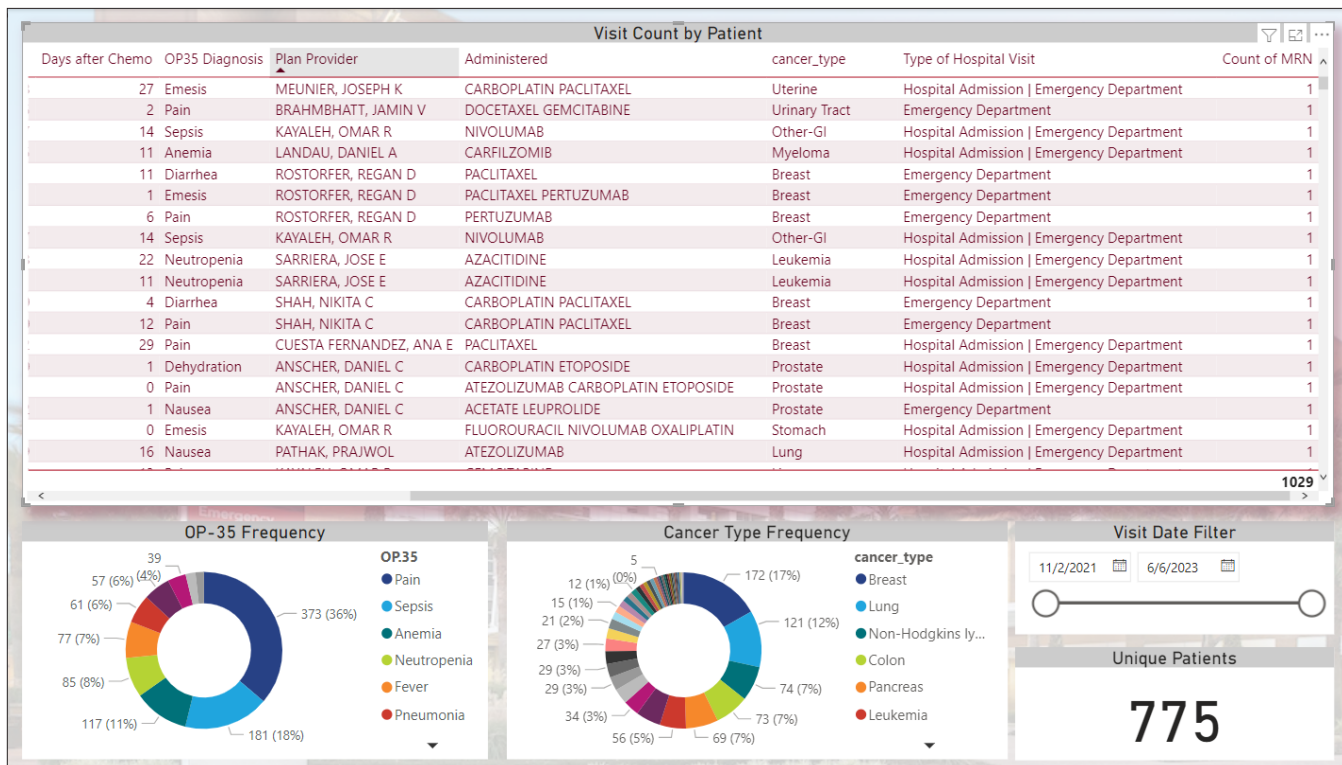
Figure 3. Examples of Business Intelligence Dashboard Tracking of ED and Unplanned Admissions
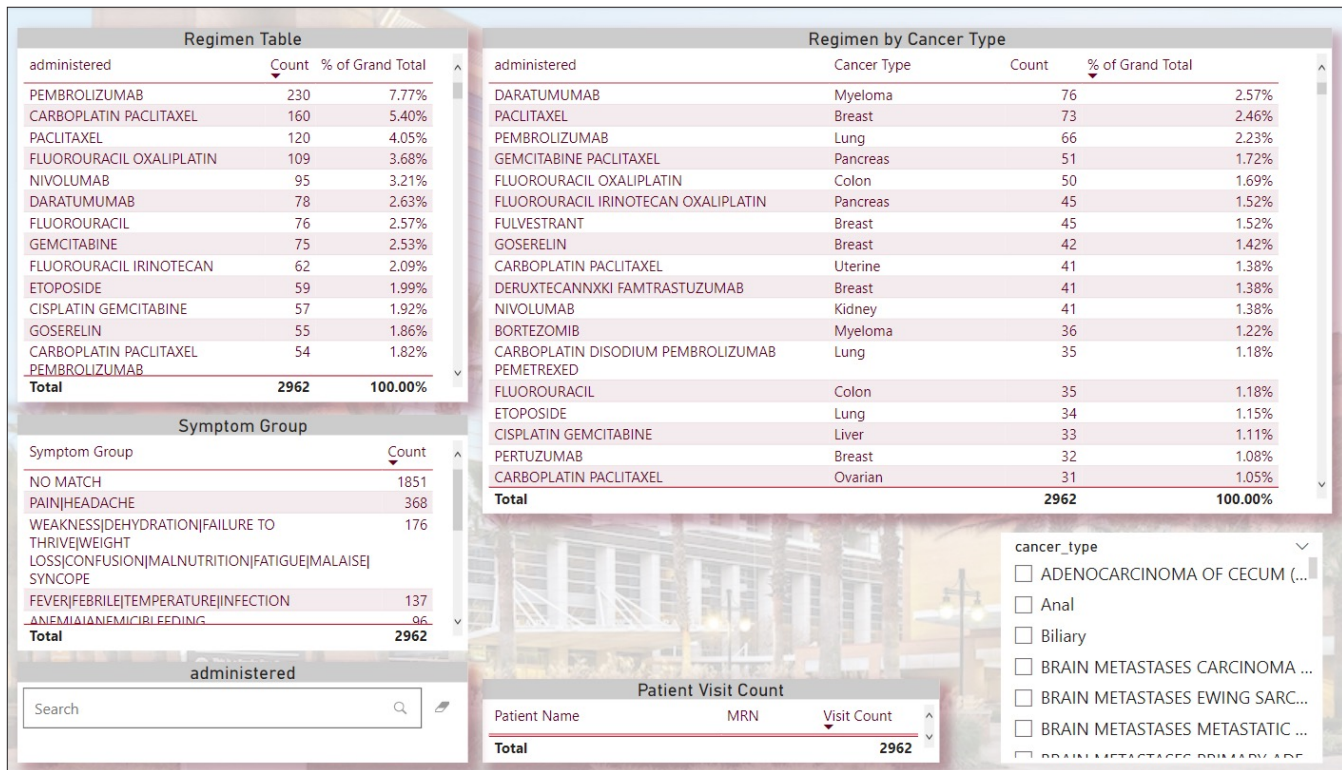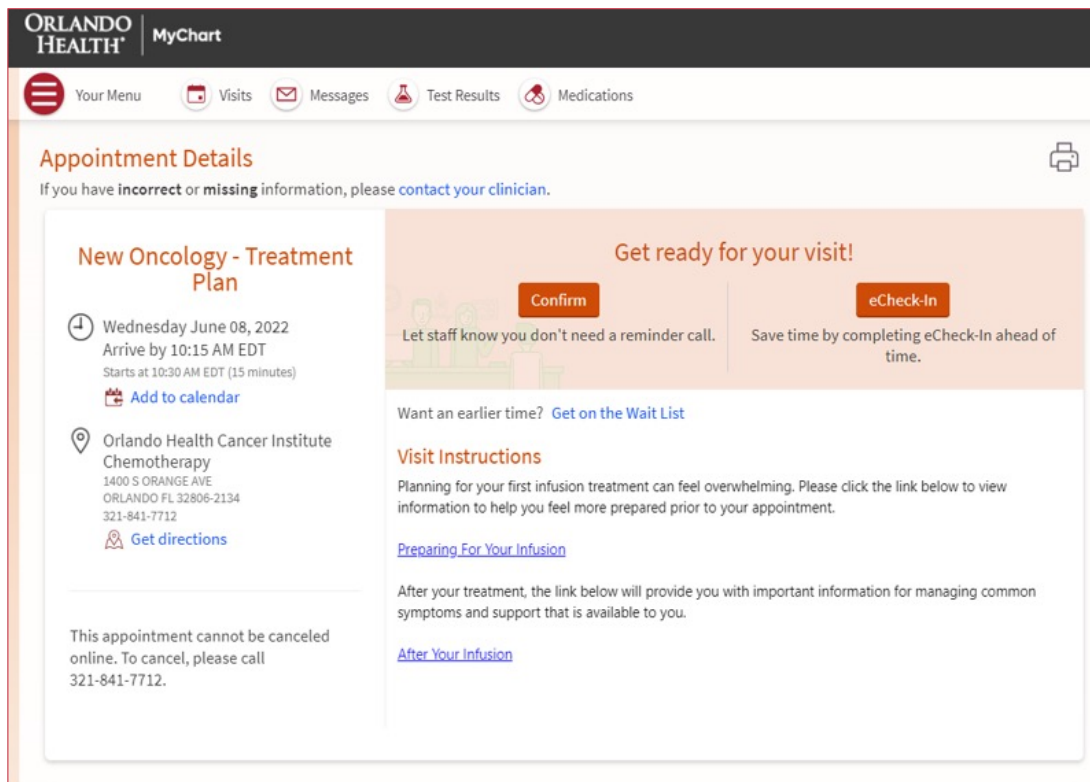

ED, emergency department; MRN, medical record number.

Figure 4. Example of Dashboard With OP-35 Data on Patients With Cancer

Chemo, chemotherapy; GI, gastrointestinal; MRN, medical record number; OP-35, Centers for Medicare & Medicaid
Services outpatient chemotherapy measure.

Figure 5. Epic View of the Pre-Infusion Message in MyChart

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patient messaging. Figure 9 illustrates program growth during this 3-phase process.

In addition to tracking the growth in patient calls and visits, the express symptom management team worked closely with the quality team to monitor the dashboard and proactively target disease sites and patient populations who used ED services the most. Working together, the 2 teams developed education pathways and in-service programs for health care providers and support staff. Arming clinicians and other staff members with the appropriate tools and making them comfortable with triaging and sending patients to the express symptom management team as early as possible allowed intervention before patients considered an ED visit and reduced avoidable visits. When a patient needed admission, the express symptom management team worked directly with the primary oncology team to admit patients directly to further protect them from unnecessary exposure to ED environments.

As the express symptom management team grew, so did the demands placed on the 2-person team. Administrators at Orlando Health Cancer Institute used this growth to establish a pro forma and obtain approval to add a second APRN and a part-time full-time equivalent (FTE) staff member to help cover infusion rounds and the growing patient demand for this service. This expansion allowed the APPs to spend additional educational time with patients. (Prior to this program expansion, many patients believed that their time

was rushed.) Adding additional providers had a positive impact on patients and the outpatient clinical teams who used express symptom management services.

Measuring Impact

In retrospect, administrators at Orlando Health Cancer Institute recognized that it was when the cancer program started to leverage technology on multiple fronts that the express symptom management program first started to grow. As shown in Figure 10, use was increasing slowly until phase 3, when regular MyChart patient messaging was initiated. Indeed, it seemed that patient use of express symptom management services doubled with the flip of that switch. Further, data showed that Orlando Health Cancer Institute was successfully reaching its patients and delivering interventions to keep them out of the ED and hospital.

That said, when data analyst Matt Paster started to gather ED volume and compare data sets, he was initially disappointed to see an increase in ED volume. With his understanding of express symptom management utilization and patient feedback, he performed more analyses to understand these conflicting data. He soon found that data showing an increase and then flattening of ED volume were tied to growth in overall chemotherapy volume. The data showed an almost 30% increase in ED visits; however, when the growth in chemotherapy volume and increased use of express symptom management services was factored in, ED use

Figure 6. Pre-Infusion Education Message in MyChart

Figure 7. Post-Infusion Education Message in MyChart

was actually on the decline. In other words, implementation of express symptom management services was making a considerable impact and decreasing ED visits and use (Figure 10). Extrapolation of these data showed that only about 2% of patients who had gone to the ED needed to be hospitalized; the rest just needed supportive care.

Express symptom management services have also improved and enhanced outpatient clinic flow. Providers find comfort in knowing that they have a resource available to their patients. Patients with cancer who present at Orlando Health Cancer Institute share a similar enthusiasm for the program. The patients absolutely love it—they feel like they have an extra pair of eyes to help them at a moment's notice.

The flourishing strategic partnership between the clinical oncology team and the IT team has been integral to the program's success. As in everything in the current health care environment, the appropriate use of technology is critical for moving forward. Technology allows clinical providers to maximize their time with patients, lets cancer care teams meet patients where they desire during their health care journey, and supports efforts to stabilize staffing challenges and needs. The mission of Orlando Health Cancer Institute is to provide quality of care to all patients. Members of the cancer care team receive many letters of support and thanks from patients. As a patient wrote, "…Without these 2…being there that day, I am pretty sure I would have ended up in the emergency department for dehydration.

They made the difference of going to the hospital or being able to come home that day and rest." This testimonial speaks volumes about the express symptom management program and its importance (Figure 11); it also reflects the improvements and changes made by Orlando Health Cancer Institute. Bringing patients into the infusion center to be assessed, treated, and sent home without exposing them to an unsafe ED environment or unnecessarily admitting them to the hospital is the gold standard. These types of patient feedback and recognition serve as the catalyst for plans to expand and enlarge express symptom management services into regional facilities.

Next Steps in the Journey

Growth in infusion and bone marrow transplant volumes has capped space at Orlando Health Cancer Institute. Currently, administrators are exploring expansion into additional space until its new, larger infusion center is completed in 2024 with 4 to 5 planned rooms for express symptom management. Additional hiring of express symptom management FTE staff members is being planned, which will expand this service onsite in 5 regional facilities and enable patients to stay in their community instead of traveling downtown to the larger infusion center. By end of 2024, with the new space, administrators at Orlando Health Cancer Institute plan to expand hours of operation into the evenings and weekends, as ED use spikes have been noted during those times. The express

Figure 8. Daily Calls to Express Symptom Management Since Program Inception

Number of Express Symptom Management Calls

Month	Value
July 2021	1
Aug 2021	5
Sep 2021	3
Oct 2021	16
Nov 2021	20
Dec 2021	21
Jan 2022	40
Feb 2022	24
Mar 2022	47
Apr 2022	21
May 2022	25
Jun 2022	31
Jul 2022	28
Aug 2022	39
Sep 2022	52
Oct 2022	42
Nov 2022	45
Dec 2022	53
Jan 2023	59
Feb 2023	58
Mar 2023	75
Apr 2023	100
May 2023	167
Jun 2023	196

Figure 9. Express Symptom Management Implementation Timeline

Direct patient education: brochures and chairside education

Clinic nurse, oncology navigation, and physician education

ED education throughout health care system

ENTER EPIC TECHNOLOGY: MyChart messaging: pre-infusion reminder of first chemo (phase 1)

EPIC MyChart messaging: post-infusion self-management symptom check and express symptom management education after the first chemotherapy infusion (phase 2)

ED dashboard creation and organization for targeted intervention and education

EPIC MyChart messaging: at every treatment encounter after infusion, education with a PDF handout involving self-management and contact information for the express symptom management (phase 3)
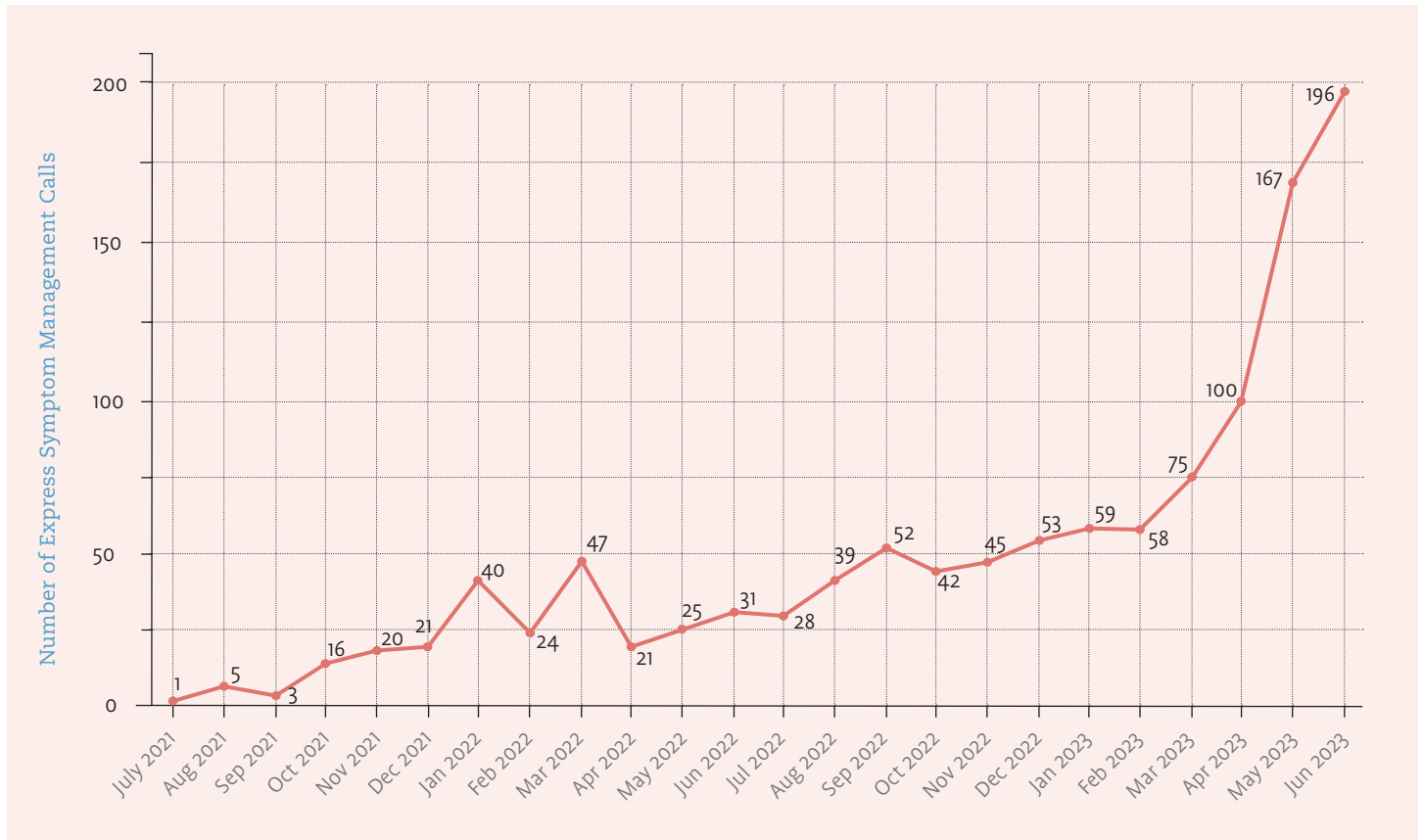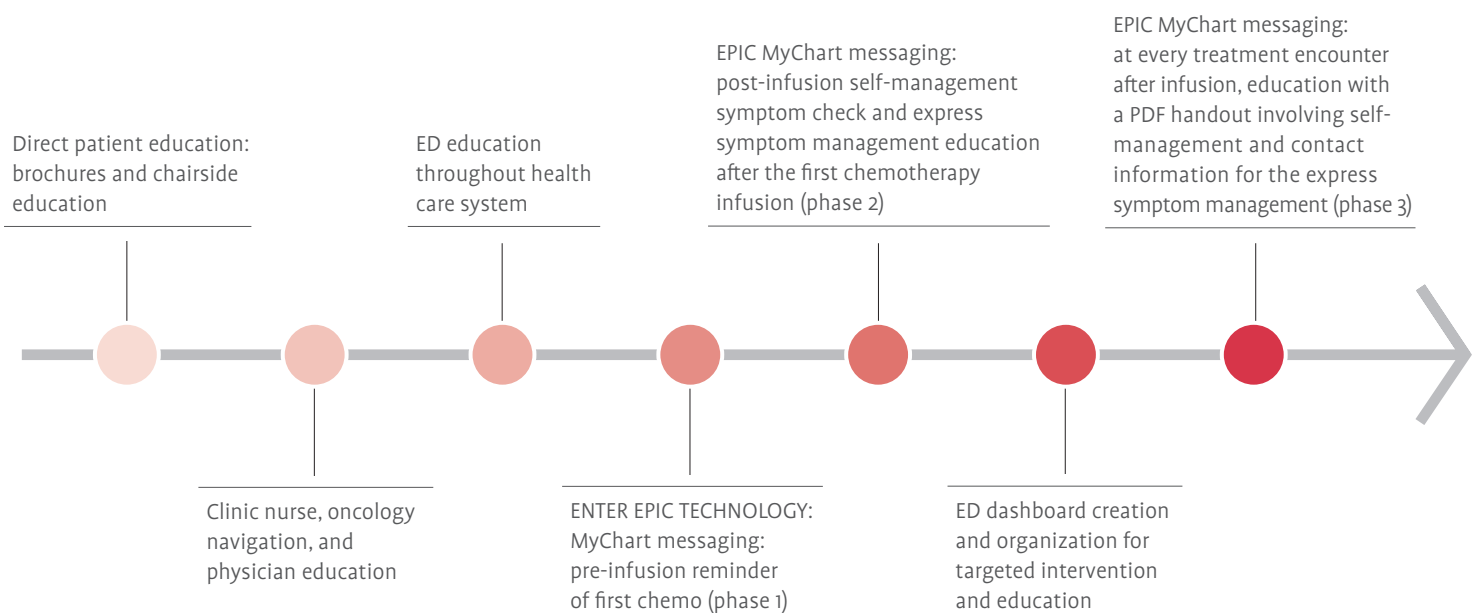
Figure 10. Express Symptom Management, ED, and Outpatient Chemotherapy Volume: A Comparison
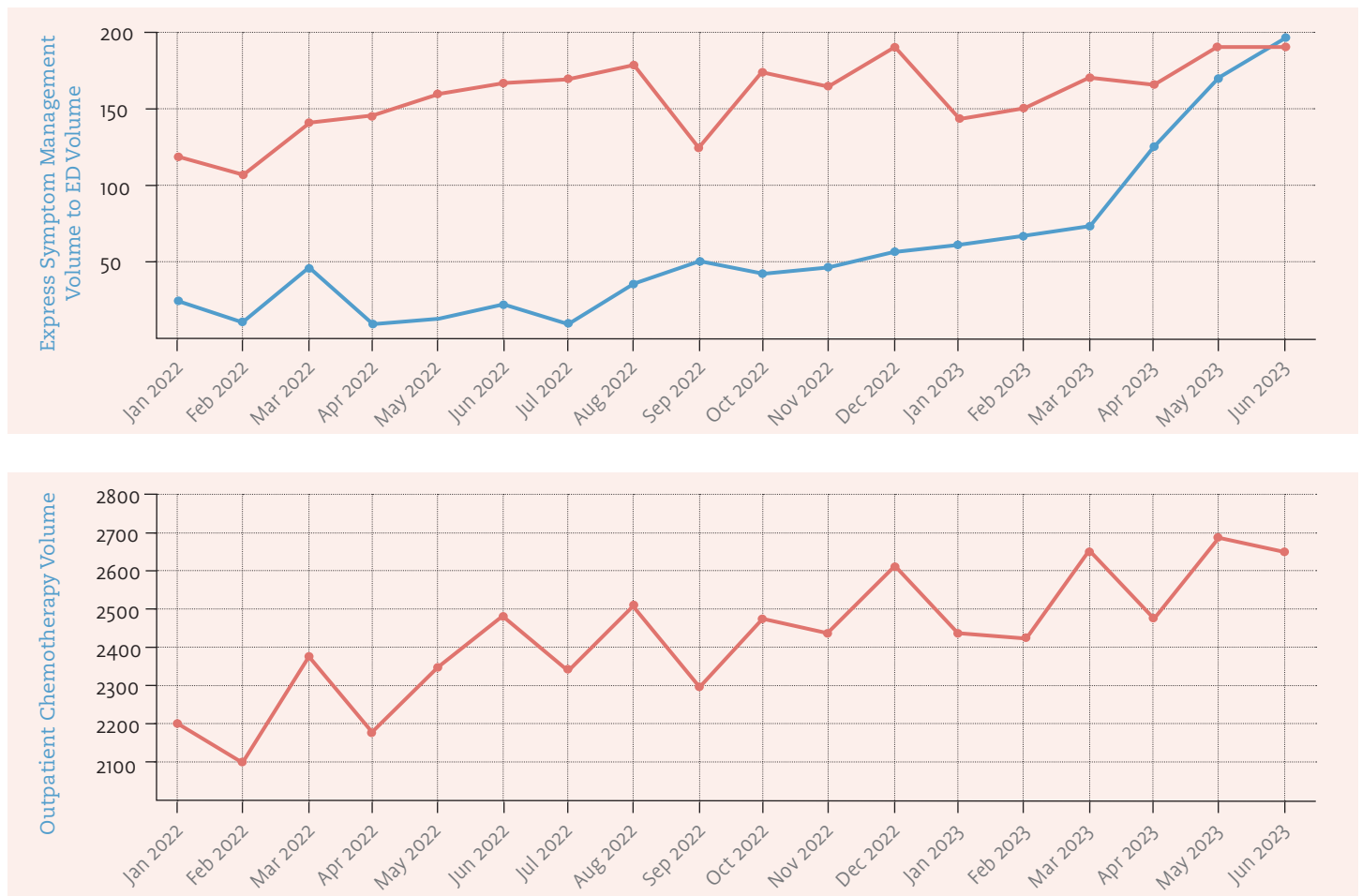

Figure 11. Patient Testimonial

Good morning.

I called [the] Express Symptom Management [team], as I was having major diarrhea issues, and I felt very dehydrated with my chemotherapy treatments. I just did not feel good. They took the time to ask me questions to get the information needed to help me. Within an hour, these ladies wanted me to come to the cancer center to get the fluids and the testing I needed to find out why I was having such an issue. They kept me informed the entire time I was at the center that day. I was updated on everything that was going happen, and [they] made sure that I was OK. Since then, they have made sure that I have seen the correct doctors and made sure that I would be seen and [be] taken care of. They both have called me to follow up with my issue and [have] made sure I was being seen and being helped. They really cared, and that made me feel like I was important to them and not just another patient. I wanted to say that without those 2 ladies being there that day, I am pretty sure I would have ended up in the emergency department for dehydration. They made the difference of going to the hospital or being able to come home that day and rest.

Thank you for the great care.

symptom management team is excited about the considerable impact it will have with this expansion.

On the technology front, the next phase includes an AE questionnaire that will be sent through MyChart to patients for self-reporting. These will be data that Orlando Health Cancer Institute staff can use to enhance and develop new components of the express symptom management program and to design further interventions. For the first 3 phases, Orlando Health Cancer Institute members only worked within the Epic MyChart realm for automated communications. The Institute's MyChart activation rate hovered around 70%; accordingly, the team understands that delivery of this same information has been missed in 30% of patients. To reach these individuals, the express symptom management team is working closely with IT to activate texting and email communication based on individual preference to ensure that all patients receive critical information about the express symptom management service.

The advisory board suggests that these 4 tactics be used to reduce ED visits and hospitalizations:[2]

1. Implementing standardized telephone triage
2. Implementing flexible scheduling systems
3. Deploying advanced practice providers
4. Creating dedicated space for urgent care

With APPs already deployed in the express symptom management program and a planned expansion, growth in Orlando Health Cancer Institute's patient volume and demand led organically to a focus on triage and flexible scheduling. Currently, the Orlando Health Cancer Institute has a task force focused on cloning the triage process and skillset of its express symptom management program throughout its outpatient clinics. This training will help to minimize the time spent within the messaging matrix and increase the number of patients directed immediately to the express symptom management team for care. Other work in progress includes establishment of clear lanes of operation and separation of infusion rounds accomplished by APPs from the express symptom management program to allow for more add-ons throughout the day—that is implementation of flexible scheduling systems. With growth in both the infusion and express symptom management programs, being intertwined with staff accomplishing infusion rounds has limited the express symptom management team's ability to have contact with patients.

The staff at Orlando Health Cancer Institute is excited about the next steps and looks forward to reporting successes and achievements at the end of 2024. Aside from best serving its patients and communities, the Express Symptom Management program will have significant impact on overall cost of care, quality outcomes, and best practice in value-based care for patients with cancer and the systems that treat them. **OI**

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