



ASSOCIATION OF COMMUNITY
CANCER CENTERS

MULTIDISCIPLINARY
CHRONIC
LYMPHOCYTIC
LEUKEMIA CARE



QUALITY IMPROVEMENT
CASE STUDIES

TABLE OF CONTENTS

Introduction	2
Quality Improvement Case Studies	2
The Outer Banks Hospital	4
Billings Clinic Cancer Center	7
The Ohio State University Comprehensive Cancer Center - The James Cancer Hospital and Solove Research Institute	10
Conclusion	13
Additional Resources	13
References	15
Appendices	16
Acknowledgements	23

INTRODUCTION

Chronic lymphocytic leukemia (CLL) is the most common leukemia diagnosed in adults in the U.S., and it accounts for 25 percent to 30 percent of new leukemia cases.¹ CLL is an indolent non-Hodgkin lymphoma that is characterized by the progressive accumulation of functionally incompetent monoclonal B lymphocytes, most often in the blood and bone marrow.² The malignant cells associated with CLL are identical to those of small lymphocytic lymphoma (SLL), which primarily occurs in lymph nodes.

The American Cancer Society estimates that 21,250 new cases of CLL will be diagnosed in 2021.¹

Providers in the community setting generally have less experience diagnosing and treating CLL, given its lower incidence rate compared to other cancers. To optimize the delivery of care to patients diagnosed with and being treated for CLL in local communities, the Association of Community Cancer Centers (ACCC) launched an education project, *Less Common Cancers in the Community - Chronic Lymphocytic Leukemia*.

After inviting its Cancer Program Members nationwide to apply to participate in quality improvement (QI) workshops, ACCC selected three regionally diverse cancer programs to take part in workshops between November 2019 and January 2020. The workshops provided an opportunity for multidisciplinary cancer care teams at each participating site to review their current systems concerning team coordination, communication, and quality of care for patients with chronic lymphocytic leukemia. ACCC worked with each site to develop a QI plan using the Institute for Healthcare Improvement's Plan-Do-Study-Act (PDSA) methodology.³

The PDSA cycle uses increments of change to optimize clinical care delivery processes and involves extensive discussion among stakeholders to characterize a problem, identify causes that contribute to the problem, and describe how QI interventions can address the problem. From there, programs plan and implement an intervention for improving care, observing the results of the intervention, and acting on what is learned—often by refining the intervention itself.⁴

All three sites conducted the bulk of their QI activities from February 2020 to November 2020. ACCC evaluated the progress of program participants' QI plans with periodic check-ins and pre- and post-data collection from baseline to six months post-launch. ACCC also interviewed program participants about their experiences with implementing the plan.

These QI interventions were impacted by staffing shortages and reductions in patient volume due to the COVID-19 pandemic. Nevertheless, the three sites involved in this initiative not only continued to creatively implement their interventions, but they also strove to meet the needs of all of their oncology patients by shifting, where possible, to virtual visits.

QUALITY IMPROVEMENT SITES

- **The Outer Banks Hospital (TOBH)** is a 21-bed, full-service critical access hospital in Nags Head, North Carolina, with an affiliated partnership between Vidant Health System and Chesapeake Regional Healthcare. TOBH serves a diverse coastal community of approximately 35,000 year-round residents, expanding to more than 250,000 residents in the summer season. The cancer program at TOBH is part of a larger network of nine Vidant hospitals, five radiation oncology sites, and outpatient clinics.
- **Billings Clinic Cancer Center** is a comprehensive inpatient and outpatient cancer center that is part of the Billings Clinic Health Care System in Billings, Montana. Billings Clinic Cancer Center provides medical oncology, gynecologic oncology, radiation oncology, infusion and apheresis services, and cancer research at a central downtown location in Billings. Through a network of oncology providers and satellite facilities in Montana, North Dakota, and Wyoming, Billings Clinic Cancer Center provides oncology care to patients within a 350-mile service area, including rural and underserved communities. Billings Clinic Cancer Center also serves a large Native American patient population representing numerous western tribes that have unique oncology needs.

- **The Ohio State University Comprehensive Cancer Center - The James Cancer Hospital and Solove Research Institute (“The James”)** is a nationally and internationally recognized cancer center noted for its excellence in cancer care and research. The James is also a leader in treating CLL. The hospital treats patients referred from the surrounding Ohio area to West Virginia, Canada, and beyond. Most patients with CLL are referred by community oncologists for a second opinion, while a small portion are directly referred by their primary care providers. Approximately 30 percent of patients come to The James to participate in one of its open clinical trials, of which there are 500 at any given time. Patients are also referred from other parts of The Ohio State University for additional evaluation.

Epidemiology and Risk Factors for CLL

CLL affects men more than women and has an age-adjusted incidence of four to five people per 100,000 population.¹ It is considered a disease of mainly older adults; the median age at diagnosis is approximately 70 years, and incidence increases rapidly with age.¹ Incidence is higher among White adults in the U.S. than among Black adults or Asian Pacific Islanders.⁵ Risk factors for CLL include genetic predisposition,⁶ exposure to Agent Orange, and exposure to radiation. Diagnosis is often incidental in asymptomatic adults when a routine exam reveals lymphadenopathy or blood count reveals absolute lymphocytosis. Approximately five percent to ten percent of adults present with B symptoms of lymphoma, such as weight loss, fevers, night sweats, and extreme fatigue.⁷

Current Treatment Modalities and Best Practices in CLL Care

CLL is a heterogenous disease without a cure, although some patient subsets have survival rates without treatment that are similar to the general population. CLL is often slow-growing, and many patients with early-stage asymptomatic CLL are initially managed with “watchful waiting” until symptoms become significant. Following risk stratification, treatment is indicated for patients with active disease, as determined by the International Workshop on Chronic Lymphocytic Leukemia.⁷

Advanced or symptomatic diseases are considered indications for therapy initiation. Chemoimmunotherapy (e.g., purine analogs such as fludarabine or alkylating agents such as chlorambucil, cyclophosphamide, and bendamustine) combined with anti-CD20 monoclonal antibodies (e.g., rituximab, ofatumumab, and obinutuzumab) have been the therapeutic standard for several years. More recently, oral oncolytics such as Bruton’s tyrosine kinase (BTK) inhibitors (e.g., ibrutinib and acalabrutinib) and B-cell lymphocyte/leukemia-2 (BCL-2) antagonists such as venetoclax, have also been approved to treat CLL as first-line monotherapy or combined with an anti-CD20 monoclonal antibody.² However, because most patients do relapse, targeted agents (e.g., BTK inhibitors, PI3-kinase inhibitors such as idelalisib, BCL-2 inhibitors, and novel antibodies) and investigational therapies (e.g., chimeric antigen receptor T-cells) are increasingly playing a role as second-line therapy and as maintenance or consolidation therapies.

Patients with CLL are at increased risk for infections and require antimicrobial prophylaxis depending on treatment and individual risks.⁸ A multidisciplinary approach to CLL care is vital to educate patients about treatment options, potential treatment-related side effects, and symptoms of disease progression.

THE OUTER BANKS HOSPITAL

NAGS HEAD, NORTH CAROLINA



Addressing Patient Education Deficits

The TOBH cancer program team considered several opportunities for QI interventions that they ultimately rejected due to scope and time limitations. These suggestions included adding vaccine education and immunization compliance to a recently completed outreach initiative to increase influenza vaccinations for at-risk patients. Other QI opportunities included scheduling pharmacy time blocks for patient education on drug/drug interactions and pre-screening assessments; improving the logistics and timeliness of workup/diagnosis and immunophenotyping; and enhancing the process for prompt identification of financial and resource barriers by documentation completion, prior authorization approvals, and authorization signatures early in the CLL patient intake process.

After considering several quality improvement opportunities, TOBH's cancer program identified education for newly diagnosed patients with CLL as an area in need of improvement. TOBH's peripatetic and fluctuating patient population, consisting of people of varied income and health literacy levels, requires significant care coordination with their respective "home" oncology centers as well as

attentive symptom management, especially if they are on a clinical trial. At the project outset, TOBH had no formalized process to ensure their patients and their caregivers receive structured and coordinated education throughout their CLL treatment.

Although patient education at the TOBH cancer program is typically delivered by the physician during a patient's initial treatment plan discussion, the team was not providing patients with adequate education resources. While patients did receive an education summary sheet, the hospital's electronic medical record (EMR) and information technology tools were not efficiently leveraged to document patient education. There was also no dedicated space for patient education, and nursing staff did not provide formal follow-up and/or additional education.

A recent Press Ganey survey of patients being treated at TOBH revealed that 79 percent were satisfied with the cancer education given to all newly diagnosed patients. The hospital's QI teams considered this low compared to its patient satisfaction scores in other areas. A recent staffing expansion provided an additional impetus for streamlining education for patients with CLL.

Implementing Structured, Coordinated Patient Education

The goal of TOBH's QI initiative was to develop new educational materials for existing and newly diagnosed patients with CLL to be delivered in person by a registered nurse from TOBH's oncology clinic. The QI team also planned to conduct a follow-up session with each patient up to two weeks after their initial in-person visit to check in and elicit their feedback on the education resources they received and document that feedback in their EMR.

The team appointed an outpatient RN in the oncology clinic as the key educational resource team member responsible for implementing and tracking the completion of patient education. One month into the project, the QI team had developed an education plan for patients with CLL under watchful waiting with information from the Leukemia & Lymphoma Society (LLS) on monitoring and testing, preventing infection, vaccinations, self-care, and when to contact a health provider.

In appointments with newly diagnosed patients with CLL, the clinic nurse implemented the education plan by sharing TOBH's newly developed "CLL Watchful Waiting Patient Education Handout" (Appendix 1, p. 16) and two LLS publications (Chronic Lymphocytic Leukemia and The CLL Guide: Information for Patients and Caregivers, Chronic Lymphocytic Leukemia). Then, per the newly developed "CLL Watchful Waiting Follow-Up Call Protocol" (Appendix 2, p. 17), a nurse navigator followed up by phone within two weeks of appointments to check in on each patient and obtain their feedback about the education received.

Measuring Progress and Outcomes

Nineteen patients with CLL between ages 50 to 81 were identified during the QI period, including two patients with newly diagnosed CLL. All of these patients received the new CLL education handout and LLS publications and a follow-up call two weeks later from the nurse navigator. All patients reported that at least one part of the education provided was helpful to them in understanding their diagnosis, and they rated the information as either "good" or "excellent." As a result of the follow-up call from the nurse navigator, 70 percent of patients were referred to additional services, such as a social worker, a support group, or another specialist. At the close of the fiscal year, data will be compared to prior years' patient experience scores.



Education is powerful for patients. If they have a new diagnosis, they have all these questions. But if you give them information that they can read to see how they can help control it, I think that gives them power in their disease process. With this program in place, it builds a rapport with the whole family, with the doctors, and all of the staff. Everybody's got a whole outlook on what these patients need regarding treatment and daily living. It's definitely something that we will continue providing for our patients.

Robin Williams, RN, OCN, Lead Oncology Clinic Nurse; RN Lead Educator, *The Outer Banks Hospital*

Enriching Communication and Coordination

Devereux Grindle, director of quality, was the project champion of the initiative. She noted that the project enhanced an existing daily multidisciplinary huddle that enables team members from three different areas—the oncology clinic, infusion area, and radiation therapy department—to discuss the needs of patients with CLL and other cancers. The huddle was an effective vehicle for notifying team members across their three areas when a patient with CLL was receiving care. The daily communication enabled by the huddle also improved communication among the nurses responsible for patient education.

Overall, the QI initiative encouraged nursing staff to be more intentional about initiating patient education at diagnosis and in coordinating that education. To support this coordination, Robin Williams, RN, lead oncology clinic nurse and RN lead educator, hung a white board in the oncology clinic to flag new patients with CLL, and she created a shared spreadsheet to track whether education and follow-up were complete for each patient. Grindle said these workflow tools enabled nurses "to work off of the same script for education and make sure they touch the same points." Williams noted that the initiative allowed nursing staff to not only conduct one-on-one patient education, but also to perform patient assessment, and, when necessary, refer patients to social workers, dieticians, or support groups. "If patients know that they can rely on you to give them feedback for the questions they have, I think that just makes the outcome of the whole process work very well," said Williams.

Lessons Learned to Sustain Patient Education

CLL patient volume was low during the project period, as some patients chose to delay the start of treatment due to the COVID-19 pandemic. However, patients were very receptive to virtual visits, which enabled them to both protect themselves from potential exposure and remain connected with their oncology team. During the QI initiative, the RN lead educator contacted current patients with CLL to review extra precautions they should take to avoid potential exposure and protect their immune systems. The RN lead educator modified her workflow due to pandemic-related staffing shortages. Additionally, support groups and other services went online. Instead of using a dedicated block of time for patient follow-up calls, the lead educator dispersed them throughout the work week to meet the targeted two-week timeframe. However, manual documentation of patient education in an Excel spreadsheet was time-consuming. Moving forward, the director of quality hopes to enhance the data collection process and incorporate patient education tracking into the EMR.

An additional challenge during implementation was the Outer Banks population surge that occurred in late April/early May as the summer approached. With staffing shortages and a subtle, steady increase in new patients as COVID-19 restrictions were relaxed, evaluating patients in a timely manner became somewhat challenging and required a creative deployment of staff to meet the demands.

Expanding Patient Education

Grindle reports that the CLL education process will continue for all newly diagnosed patients with CLL, rather than just observation patients, and she hopes such education will also include other cancer types. TOBH will embed education content into its EMR as a printable resource that nurses can distribute to patients after visits. When staffing expands, TOBH intends to cross-train additional nurses to provide patient education.

During the project initiative, TOBH translated its educational resources into Spanish and hopes to translate them into Thai and Albanian to better serve the respective populations growing in the area. The hospital is also considering adding education information on nutrition. Finally, the initiative prompted the team to review patient access to immunizations in the community and shore up infection prevention patient education at TOBH. Access to immunizations was one of the opportunities that TOBH initially considered as ripe for QI. The team has subsequently established a process to make influenza and other vaccinations, such as shingles, available within the oncology clinic.

BILLINGS CLINIC CANCER CENTER

BILLINGS, MT



Variations in Prescription Ordering and Toxicity Monitoring

During initial workshop discussions, the Billings Clinic Cancer Center team decided that their QI initiative would concentrate on establishing standardized processes for prescription ordering and toxicity monitoring for patients with CLL being treated with oral agents.

Billings Clinic Cancer Center encompasses a vast market area, and not all facilities use its centralized EMR for ordering CLL therapies. As a result, workflows vary, and physicians use different prescribing processes, with each medication having its own unique prior authorization approval requirements. These workflow variations fragment treatment initiation and methods for monitoring toxicities and medication adherence. Moreover, the cancer center has a limited number of IT personnel, and medical staff have varying levels of knowledge about oral anti-cancer treatments and toxicity monitoring, particularly when CLL agents are used in combination with intravenous (IV) or injectable treatments. With inconsistent ordering processes, there is a risk of treatment delays. Conflicting staff priorities, roles, and responsibilities add additional layers of complexity to treatment and workflow processes.

CLL Power Plans

Given these challenges and their potential for increasing patient risk for toxicity and disease progression, the Billings Clinic Cancer Center QI team decided to create CLL treatment regimen-specific Power Plans in its EMR. These Power Plans are based on National Comprehensive Cancer Network clinical practice guidelines, which establish standard orders for tasks ranging from chemotherapy administration to treatment-specific monitoring and management parameters (e.g., referrals to cardiology, electrocardiogram [EKG] monitoring, and patient education). These Power Plans outline step-by-step protocols that include orders for both oral and IV agents, pre-treatment labs, prophylactic medications, infusion protocols, reaction medications, and hydration.

The Billings team had previously developed Power Plans for ordering and administering IV bendamustine, rituximab and bendamustine, and single agent obinutuzumab. Drawing on this experience, the QI team developed ten new Power Plans for chemotherapy agents and defined treatment cycles that included a range of therapies, including acalabrutinib, duvelisib, ibrutinib, obinutuzumab and bendamustine, rituximab, and venetoclax (see example in Appendix 3, p. 19).

Implementing the Power Plans

Given the vastness of the Billings Clinic service area, provider-practice variability, and limited IT/EMR infrastructure, the QI team's protocol standardization efforts were confined to the downtown Billings Clinic Cancer Center location, where staff could establish a core QI team under the guidance of Billings' lead pharmacists. The team felt that piloting the Power Plans during the six-month QI period would allow them to evaluate and refine their new processes before rolling them out across the wider service area.

The goal for the CLL Power Plans was to establish a 72-hour prescription ordering timeframe and achieve a 75 percent staff (including physicians, nurses, and other providers) compliance rate in the adoption of and adherence to a standardized toxicity monitoring process. To achieve this goal, the team identified a physician champion to ensure clinician buy-in, designated IT personnel to provide EMR support, and developed clinical education to ensure protocol adoption. In addition to two pharmacists, the QI team included an oncology clinical coordinator, a nurse informaticist, and a nursing representative. In March 2020, the QI team conducted several "lunch and learn" events with treating oncologists, key members of the oncology treatment team, and infusion center staff to provide an overview of the QI process. These team members were enthusiastic about the Power Plans and expressed commitment to the intervention.

Measuring Progress and Outcomes

At the six-month milestone in August 2020, there were no protocol deviations reported, despite the continued challenge of operating in the COVID-19 environment. CLL patient volume dropped but had increased again by August. The Billings team tracked QI data and trend lines monthly. As hoped, variance rates across the entire QI period decreased from 73.9 percent to 26.9 percent for CLL oncology treatments (Table 1). This data reflects patients identified at baseline and new patients who began treatment at each of the later QI intervals.

TABLE 1. Treatment Variance Rates in CLL

Description	Baseline	3 Months	6 Months
# of Patients Receiving Active Treatment	23	22	26
# of Patients with Variance	17	5	7
Variance Rate	73.9%	22.7%	26.9%

Enhancing Workflow to Reduce Treatment Variances

Marie Sirek, PharmD, BCACP, CPP, the clinical pharmacy specialist who served as the project champion at Billings Clinic Cancer Center, said the newly defined oral oncolytic Power Plans provided a catalyst for change. The project fostered multidisciplinary collaboration and built a cohesive team that enabled providers to understand how to effectively monitor patients with CLL, which subsequently improved time to treatment. Nurses found less missing information in pre-visit chart preparation; providers had better access to standardized orders (particularly lab diagnostics and testing); and pharmacists received automated referrals that notified them of new treatment protocols. Standardized Power Plan reminders were routed to the ordering physician or advanced practice provider via EMR inbox messaging. If a Power Plan order was not placed, additional reminders were sent at the follow-up appointment.

Decreased variances also helped the team avoid duplicate lab draws or testing and complete more timely insurance certifications. Overall, EMR automation and standardized provider orders enhanced workflow processes. Carlos Silva, MD, a hematologist/oncologist and director of Billings' Stem Cell Program, served as the project's physician champion. He was able to design and review Power Plan clinical requirements within the existing forum of provider staff meetings and follow-up emails, which kept the project on task.

The Billings team continued with QI implementation during the COVID-19 pandemic by using virtual visits to monitor many patients on oral oncolytics, which were tracked separately from onsite visits at the downtown Billings Clinic. Several newly diagnosed patients chose to defer treatment, and two patients presented to the clinic to initiate therapy after COVID-19 restrictions were loosened. Additionally, because the initiative focused on the downtown Billings Clinic Cancer Center campus and did not include all the outreach sites, the overall sample size and ability to analyze patient subgroups was limited.

Other challenges during the initiative included the departure of a key staff member and limited access to dedicated IT support to set up and maintain the Power Plans in the EMR. However, pharmacy technicians at the Billings Clinic Specialty Pharmacy were able to assist with Power Plan reminders and initial chart audits, and a pharmacist completed follow-up quality assurance chart audits.

Ensuring Sustainability of the Power Plans

Recognizing that Billings Clinic Cancer Center satellite facilities need similar improvements, the team intends to expand Power Plans to these locations. Notably, this project complemented QI and Lean Six Sigma initiatives already underway at Billings Clinic Cancer Center. The long-term goal of staff is to ensure the sustainability of the project by developing a similar model for other cancer diagnoses and oncology regimens that include oral agents. This future model would merge Power Plans for IV agents and oral oncolytics for patients being treated with combination regimens.

“Implementing the CLL treatment Power Plan increased awareness and understanding of the monitoring required for oral oncolytics for CLL treatment. From utilizing these plans and the education provided before project implementation, we’ve seen less missing monitoring parameters and less variance in patient treatment. Nurses saw fewer same-day orders, and physicians had support for knowing what [orders] to place and when things needed to happen, such as EKG monitoring, baseline echoes, and two-week lab recommendations. These changes translated into less confusion, less risk of toxicity, less wait time for our patients, and increased safety of CLL treatments. We had a team approach, utilizing pharmacists, nurses, physicians, and other expert resources, including an infectious disease specialist to ensure that the Power Plans we developed were meeting patient needs on a multidisciplinary level—not just a pharmacy level. Finally, monthly ACCC check-ins really helped to show us where we were and kept us accountable for what we were working on.

Marie Sirek, PharmD, BCACP, CPP, Clinical Specialty Pharmacist; Project Champion, *Billings Clinic Cancer Center*

THE OHIO STATE UNIVERSITY COMPREHENSIVE CANCER CENTER – THE JAMES CANCER HOSPITAL AND SOLOVE RESEARCH INSTITUTE COLUMBUS, OH



Managing BTK-Inhibitor-Related Hypertension

Workshop participants at The James decided to use the QI initiative as an opportunity to better manage hypertension in their patients with CLL. Hypertension is an emerging long-term adverse effect of using BTK inhibitors (ibrutinib or acalabrutinib), and many of the hospital's QI team members had contributed to a 2019 study that highlighted the challenges to balancing the benefits of ibrutinib against potential cardiotoxicity. The study reported a hypertension rate of 80 percent for all cancer patients at The James being treated with BTK inhibitors.⁹ While hypertension can have devastating long-term complications for patients with CLL, it can also be effectively managed. However, there was no established framework at The James to guide providers on hypertension management for patients treated with BTK inhibitors.

Additional factors that posed barriers to hypertension management included:

- Lack of historic chart audits
- Ambiguous ownership of hypertension management
- Difficulty identifying patients with CLL at risk for hypertension
- A need to educate physicians and advanced practice providers about hypertension risk
- Patient anxiety during office visits
- A need to re-educate nursing staff who measure blood pressure (BP) about the proper protocol for obtaining an accurate BP reading

Implementing Hypertension Management

The team developed a focused QI initiative with the aim of actively managing 75 percent of patients with CLL with BP measurement above goal (i.e., BP that is higher than a stated goal for a particular patient). The primary aim was to improve BP documentation, and the secondary aim was to improve BP management. The intervention included four components:

1. Chart audits
2. Education to reinforce nursing staff skills in obtaining accurate BP
3. Standardized patient education on home BP monitoring
4. A home BP monitoring program via self-purchased or local pharmacy BP machines

In April 2020, the QI team conducted baseline manual chart audits on 100 patients with CLL who were currently on a BTK inhibitor (ibrutinib or acalabrutinib) and who had a clinic appointment with one of the five CLL specialists at The James in the prior three months. Although data collection was slated to begin June 1, the start was delayed due to COVID-19 outpatient office visit restrictions. Since the intervention was dependent on in-office BP data collection, the team agreed to launch the study when they resumed face-to-face appointments.

In the meantime, the team developed a hypertension teaching plan (Appendix 4, p. 21) to re-educate nursing staff on how to obtain accurate BP measurements using American College of Cardiology and American Heart Association guidelines on managing hypertension.¹⁰ The plan required nurses to educate patients on how to properly perform BP monitoring at home and clarified for the care team the anticipated workflow for each patient visit (Figure 1).

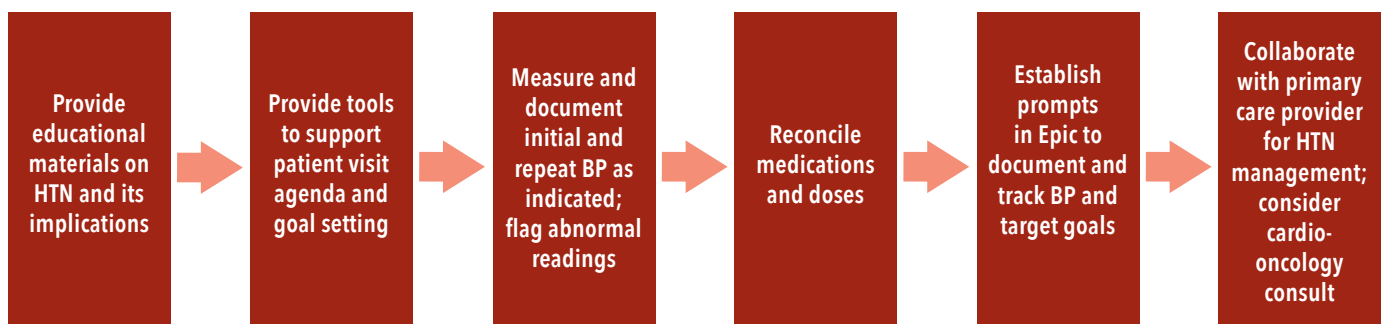
When in-person clinic visits resumed in June 2020, patients received education on how to monitor their BP at home and document their BP readings. Patients either entered their home-monitored BP into their personal logs and returned them at their next clinic visit, or they uploaded their BP measurements into The James' MyChart patient portal. Providers subsequently documented this data in the EMR. Patients with elevated BP at the time of check-in had a second BP taken at the conclusion of their visit as per the workflow (Figure 1). Patients with hypertension were referred to either a cardiologist or back to their primary care provider for treatment and management.

Measuring Progress and Outcomes

At the six-month milestone of the initiative, chart audits had been completed on 100 patients with CLL, as planned. The final sample of charts reflected a different pool of patients from the baseline cohort. It was difficult to use charts from the same cohort of patients because of the unique presentation of CLL and fewer patient touchpoints during the QI period. Due to these circumstances, the team decided to randomize chart selection at post-intervention. The characteristics between the initial and concluding cohorts were fairly matched for age, gender, and race/ethnicity. A slightly increased number of patients in the concluding cohort received acalabrutinib, while a lower number of patients received combination regimens.

In both the baseline and intervention groups, the median BP was higher than average compared to other oncology patients, likely due to the wider inclusion of older patients, as expected for CLL. The team reported an increase in BP documentation from 42 percent to 57 percent. Forty-two of the total 100 patients in the intervention cohort did not have documentation. Of the 42 patients, 21 were on antihypertensive medications, 11 were part of a

FIGURE 1. QI PATIENT VISIT FLOW



HTN = hypertension

clinical trial, and three were using BTK inhibitors in combination with other medications. Patients who needed clinical BP management were either referred to a cardiologist at the Ohio State University (OSU) or back to their primary care provider with additional referrals to a community-based cardiologist for ongoing treatment and management.

Even Modest Increases in BP Documentation Improve Outcomes

Although the initiative led to an increase in BP documentation, the QI team felt it was modest. The anxiety caused by the ongoing COVID-19 pandemic may have diverted staff attention from a nonmalignant diagnosis such as hypertension. Nevertheless, increased documentation signaled that the initiative heightened staff awareness of hypertension as a side effect of BTK inhibitors.


High engagement by the QI team throughout the project was likely key to its success. Alison Neal, MPH, MSL, the senior quality manager for Bone Marrow Transplant/Hematology at The James, participated throughout the QI initiative as its data lead. She said the existing research culture at OSU provided a solid foundation for the intervention. In particular, she said extensive brainstorming and pre-planning prior to project kickoff helped cement the project's focus and allowed for immediate buy-in from internal stakeholders. Physicians may rarely have time or opportunity to reflect on potential QI projects, said Neal, but the workshop planning process provided, "an opportunity for them to schedule time, talk about it, brainstorm, and get feedback from their team."

Seema Bhat, MD, assistant professor for the Division of Hematology at The James, is actively engaged in both patient care and research and served as the project champion. While she was happy with how the project enabled her team to establish an intervention to improve BP identification and management outcomes, she added that a tethered pre- and post-intervention in the same patient cohort would have provided even more robust data, as might have a longer follow-up period.

Facilitators of Successful BP Management

Key actions taken during the project helped providers achieve better BP management. For example, Dr. Bhat sent weekly emails and texts to clinical teams to remind them of the importance of managing hypertension in patients on BTK inhibitors. The reminders also prompted providers to document patients' BP and if necessary, refer them to primary care or cardiologists. Tips from the outlined QI plan (Appendix 4, p. 21) educated nursing staff on accurate BP procedures by reminding them to take a repeat reading in patients flagged as potentially having significant anxiety during their office visit. Repeating BP measurements in such patients is important since cancer clinic visits are often anxiety-provoking for patients. "Patients think about what the doctor is going to say, what the blood work is going to look like, and what their scans are going to say," says Dr. Bhat. "They want to know: Is there going to be good news? Is there going to be bad news?"

The team also taught patients how to monitor their BP at home and encouraged them to complete home logs which they were asked to return at their next visit or enter into their MyChart. Dr. Bhat says that by heightening patient awareness of hypertension and encouraging patients to take ownership of their condition, the team gained patient support for home monitoring, which contributed to the success of the intervention. Patients were positive about home monitoring, and they increased their use of MyChart for feedback and log uploads.

 **Moving forward, the team will continue to refine QI data on BTK inhibitor-associated hypertension. This was so interesting and so engaging and so successful, I wish we had done it earlier. It shows that we absolutely can do these types of projects and be successful and build engagement. This was a great opportunity for the team to see that.**

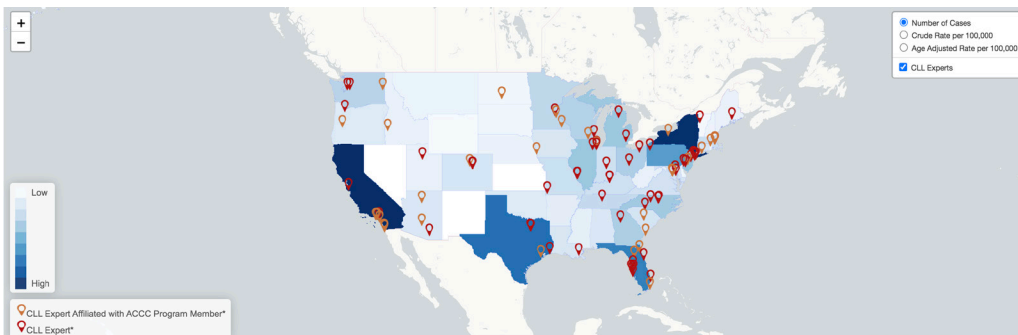
Alison Neal, MPH, MSL, Senior Quality Manager, Bone Marrow Transplant/Hematology, *The James*

CONCLUSION

Although each of the three participating sites in this initiative faced unique challenges in improving their management of patients with CLL, they also shared some of the same logistical challenges and barriers to implementation. Notably, staffing shortages caused by the COVID-19 pandemic were acute across all three sites, and some patients chose to delay treatment until restrictions were lifted. But despite these challenges, all sites demonstrated progress by shifting to virtual patient visits, modifying workflows, focusing on internal operations, and/or delaying project initiation until patient volume increased.

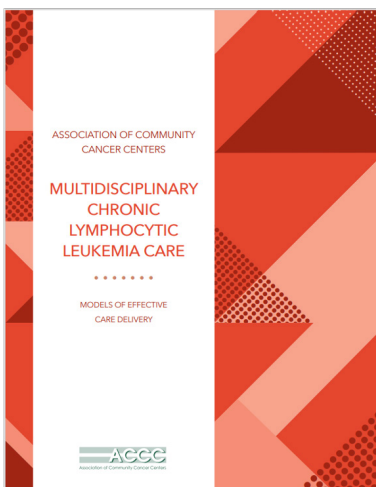
The three QI teams also pointed to similar factors that facilitated the implementation process. First, extensive discussion during the workshop phase allowed teams to identify deficits in quality care that were feasible subjects for QI projects. Second, all teams developed appropriate study measures that were tied to the effectiveness and timeliness of care. Third, the identification of goals that were significant for each individual site, clear measurements for those goals, and the leadership of project champions all helped secure broad commitment to the initiatives from a range of clinical and non-clinical personnel. Teams at all sites appreciated the opportunity to increase their knowledge and skill sets by participating in an achievable QI initiative that created a catalyst for change.

ADDITIONAL ACCC RESOURCES



Online Interactive Heat Map

The heatmap is an incidence-to-provider profile showing where CLL is most frequently diagnosed with an overlay of where expert providers are located across the United States.



Multidisciplinary Chronic Lymphocytic Leukemia Care: Models of Effective Care Delivery

This publication presents highlights of the current CLL treatment landscape and includes examples of effective delivery of patient-focused multidisciplinary care for patients with CLL across different care settings.



Explore these resources and more from the ACCC Multidisciplinary Chronic Lymphocytic Leukemia Care project.

Scan this QR code or go to acc-cancer.org/ctl-care.

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Appendix 1. CLL Watchful Waiting Patient Education Handout



Chronic lymphocytic leukemia (CLL) is a type of cancer involving the lymphocytes in the blood. Lymphocytes are a type of white blood cell that helps your body fight infection. If you have CLL, you are more susceptible to infection.

Because chronic lymphocytic leukemia is slow growing, not everyone needs to be treated right away. People with early-stage disease with no symptoms are carefully monitored for signs of disease progression. This is called “watchful waiting.” Your doctor will work with you to establish a plan to monitor your disease and optimize your health.

Monitoring and Testing

The watchful waiting approach includes regular medical examinations and lab testing to monitor your blood counts and blood chemistry every 3-6 months.

Preventing Infection

- Wash your hands often and well, using soap and warm water or use alcohol-based hand sanitizer.
- Use good oral hygiene by cleaning your teeth and gums with a soft toothbrush.
- Avoid contact with people who are sick or have a cold.
- Thoroughly wash fresh fruits and vegetables.
- Cook meat and eggs thoroughly to kill any germs.
- Do not share food, drink, utensils or other personal items.
- Use gloves for gardening.
- If possible, avoid handling pet waste. If necessary, be sure to wash your hands thoroughly immediately after cleaning up after your pet.

Vaccinations

- The flu is serious for people who have cancer. A flu shot is your best protection against the flu. It is highly recommended that you get a seasonal flu shot every year.
- It is recommended that you get the pneumococcal vaccine to help prevent infection caused by a type of bacteria called *Streptococcus pneumoniae*.
- For those age 50 and over, the Shingrix vaccine helps your immune system defend against shingles. This is a 2-dose vaccine with the second dose given 2-6 months after the first.

Taking Care of Yourself

- Avoid smoking or using tobacco products.
- Eat a healthy diet.
- Exercise regularly.
- Practice meditation and guided imagery and use massage therapy.
- Drink green tea. (It contains an extract known as EGCG that may slow progression of CLL.)

When to Contact Your Healthcare Provider

Call the Hematology/Oncology Clinic at 449-7272, option 3 to speak to the nurse if you experience new or worsening symptoms of:

- Fatigue
- Chills or night sweats
- Fever higher than 100.4
- Swollen lymph nodes in your neck armpits, stomach, or groin
- Unexplained weight loss

Additional Resources

- American Cancer Society www.cancer.org
- National Cancer Institute www.cancer.gov
- Leukemia and Lymphoma Society www.lls.org

Appendix 2. CLL Watchful Waiting Follow-Up Call Protocol

Patient Name _____

Date of call _____ Date of last visit _____

To prepare for this follow-up call, review the EMR for the following prior to the call:

- Unexpected ER visits since last visit with Dr. Guenther. If yes, review with Dr. Guenther prior to the call.
- Date of last Flu Vaccine _____
- Date of pneumococcal vaccine _____
- Date of Shingrix vaccine _____
- Date of next follow up appt with Dr. Guenther _____ labs drawn _____. If no follow up scheduled, verify Dr. Guenther's plan and schedule follow-up visits.
- Have the CLL Watchful Waiting Patient Education handout and 2 CLL booklets from the Leukemia/Lymphoma Society in front of you or handy when you make the follow-up call.

Good morning/afternoon Mr./Mrs. _____. This is _____ calling from the Outer Banks Hematology/Oncology Clinic. I am calling to follow up from your last clinic visit with Dr. Guenther or Jennifer Cox (NP) on _____. After your appointment, we met (if Robin is the caller) or you met with Robin Williams, the clinic nurse (if someone else completes the call) to review your plan of care and discuss ways to optimize your health.

I am calling to see how you are doing and follow up with you to be sure we have explained this information clearly and check with you to see if you have any additional questions. Do you have time to answer a few brief questions?

If there have been any unexpected ER visits, add a Statement/Question.

1. During your last visit in the clinic, we reviewed a 2-page hand-out that explained how CLL makes you more susceptible to infection and talked about some ways to prevent infections. Did you find that handout to be helpful to you? Yes/no Are you able to incorporate any of these recommendations into your lifestyle? _____

2. I see in your record that you obtained _____ vaccinations. That is excellent.

If no vaccines listed in EMR... Have you been able to follow up about getting the recommended vaccinations? If no.... Do you have any further questions about getting the recommended vaccinations? Or... Based on the information that was shared with you, how likely are you to obtain the recommended vaccinations?

If the patient obtained vaccines since their last visit: That is great to hear! I can update that in your electronic medical record for you.

3. I am glad to hear that you are doing well. Can we talk about what symptoms you would need to call our clinic if they occur? (Use teach-back method.)

4. I see your next visit with Dr. Guenther or Jennifer Cox (NP) is scheduled for _____. Provide directions on lab draw prior to visit. Is that still a good date/time for you?

5. In closing, I'd like to ask you one more question. Overall, how valuable was the education session with the clinic nurse? Excellent (5), Good (4), Fair/OK (3), Poor/Not helpful (2), N/A (1)

6. Do you have any further comments? _____

7. It was great speaking to you this morning/afternoon. If you have any further questions or concerns, don't hesitate to call us at 449-7272 option 3 to speak to the clinic nurse.

Appendix 3. A Sample Power Plan

Unique Plan Description: **ONC acalabrutinib - Clinic**
Plan Selection Display: **ONC acalabrutinib - Clinic**
PlanType: **Medical**
Version: **1**
Begin Effective Date:
End Effective Date: **Current**
Available at: **Billings Clinic Downtown**
Relevant Diagnosis/Problem: **Chronic lymphoid leukemia, disease**

Ancillary & Oral Chemo Orders

Activity

Place powerplan with prescription orders at least 2 WEEKS PRIOR to start of treatment to allow time for prior authorization (NOTE)*

- Chemotherapy Intent

Medications

- acalabrutinib 100 mg oral capsule (Rx)*
100 mg = 1 cap(s), PO, q12H, Instructions: Take acalabrutinib 100mg capsule every 12 hours., X 30 day(s), # 60 cap(s), Refill(s) 0
- allopurinol 300 mg oral tablet (Rx)*
= 1 tab(s), PO, qDay, Instructions: Begin allopurinol 3 days before the start of acalabrutinib oral chemotherapy., X 30 day(s), # 30 tab(s)

Laboratory

Pre-Treatment Labs

Draw labs day before or day of oral chemotherapy start (NOTE)*

- CBC, Diff
Routine, T;N
- CMP
Routine, T;N
- Uric Acid, Blood
Routine, T;N
- Phos, Blood
Routine, T;N

4 Weeks

- +28 Days** CBC, Diff
Routine, T;N
- +28 Days** CMP
Routine, T;N
- +28 Days** Phos, Blood
Routine, T;N
- +28 Days** Uric Acid, Blood
Routine, T;N

6 Weeks

- +42 Days** CBC, Diff
Routine, T;N
- +42 Days** CMP
Routine, T;N
- +42 Days** Uric Acid, Blood
Routine, T;N
- +42 Days** Phos, Blood
Routine, T;N

2 Months

- +60 Days** CBC, Diff
Routine, T;N
- +60 Days** CMP
Routine, T;N
- +60 Days** Uric Acid, Blood
Routine, T;N
- +60 Days** Phos, Blood
Routine, T;N

3 Months

- +90 Days** CBC, Diff

- +90 Days** CMP
Routine, T;N
- +90 Days** Uric Acid, Blood
Routine, T;N
- +90 Days** Phos, Blood
Routine, T;N

Cardiology

Risk of atrial fibrillation/flutter with acalabrutinib. Consider EKG monitoring for patients with cardiac risk factors or signs and symptoms of cardiac arrhythmias**(NOTE)***

- EK Electrocardiogram Complete
T;N, Patient on acalabrutinib chemotherapy treatment
Comments: Risk of atrial fibrillation/flutter with acalabrutinib. Consider EKG monitoring for patients with cardiac risk factors or signs and symptoms of cardiac arrhythmias.

Consults

- Clinic Onc Ancillary Consults(SUB)*

Scheduling

Referrals

- SC Referral to Oral Oncology Pharmacist
Acalabrutinib oral chemotherapy start, Follow-up Medication Monitoring | New Start - Education
- SC Return Appointment Oral Oncology Pharmacist
Acalabrutinib treatment, Follow-up Medication Monitoring

Provider Visits

- +14 Days** Return Appointment Oncology
T+14;N, 2 Week Follow Up - ONC ibrutinib, Override Clinician Return
- +28 Days** Return Appointment Oncology
T+30;N, 1 Month Follow Up - ONC acalabrutinib, Override Clinician Return
- +28 Days** Return Appointment Oncology
T+60;N, 2 Month Follow Up - ONC acalabrutinib, Override Clinician Return
- +90 Days** Return Appointment Oncology
T+90;N, 3 Month Follow Up - ONC acalabrutinib, Override Clinician Return
- Follow Up Orders Placed
T;N, ONC acalabrutinib - Clinic orders placed.

***Report Legend:**

DEF - This order sentence is the default for the selected order
 GOAL - This component is a goal
 IND - This component is an indicator
 INT - This component is an intervention
 IVS - This component is an IV Set
 NOTE - This component is a note
 Rx - This component is a prescription
 SUB - This component is a sub phasetextControl

Appendix 4. The James' Hypertension Teaching Plans

Staff Teaching Plan

Incorporate best practices for hypertension control in clinical practice with strategies including:

- **Accurate measurement of blood pressure**, using evidence-based techniques including obtaining more than one blood pressure reading.
- **Correct cuff size:** If a cuff is too small, it will produce a higher reading, and if a cuff is too big, it will produce a lower reading.
- **Correct placement:** Place cuff directly on the patient's bare arm.
- **Feet flat on the floor:** Have the patient sit in a chair (not a bed) with feet flat on the floor, legs uncrossed, and back supported. Seated Systolic Blood Pressure (SBP) can be up to 8 mmHg higher when measured on an exam table when compared to a chair.
- **Arm at heart level:** Ensure the patient's arm is straight and at the heart level.
- **No talking:** Instruct the patient not to speak during BP measurement.
- **Eyes level with manometer:** Remind the healthcare provider to keep their eyes level on the manometer if taking a manual BP measurement.
- **Proper inflation of cuff:** Do not over-inflate the blood pressure cuff.
- **Wait:** Have the patient sit down 5-10 minutes before measuring their BP. BP usually decreases by about 10 mmHg after a 5-10-minute wait. Repeating BP measurement is the standard of care for adults with hypertension and helps account for BP variability. Wait at least one minute between BP readings. For clinical decision-making, BP should be based on an average of two or more readings.
- **Recheck blood pressure at the end of the visit.**
- **Empty bladder:** Allow the patient to use the bathroom prior to a BP measurement. A full bladder can impact the accuracy of the results.

Patient Teaching Plan

- **Incorporate home blood pressure monitoring into clinical practice.** Home BP measurements can be more accurate than office BPs, if done accurately.
- **Select appropriate equipment:** Verify the use of automated validated devices; arm cuff monitors are preferred. Wrist cuff or finger monitors are less accurate.
- **Instruct patients on home BP monitoring procedures:** Tell patients to ensure at least ≥ 5 minutes of quiet rest before measuring their BP. Also tell them to avoid smoking, caffeinated beverages, or exercise for 30 minutes before measuring their BP. Tell patients to sit with their back straight and supported (e.g., use a straight-backed dining chair rather than a sofa), to keep their feet flat on the floor with their legs uncrossed, to support their arm on a flat surface (e.g., a table) with their upper arm at heart level, and to place the middle of their cuff directly above the bend of the elbow.
- **Instruct patients to take multiple readings:** Take at least two readings one minute apart both in the morning before taking medications and in the evening before supper. Ideally, obtain BP readings daily during the week prior to a clinic visit and during any week after a change in the treatment regimen.
- **Tell patients to bring their monitors to clinic appointments** so staff can verify monitor accuracy and review built-in memory when available.

ACKNOWLEDGMENTS

ACCC is grateful to the Advisory Committee, Partner Organization, cancer program staff, and others who graciously contributed their time to this publication.

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A publication from the ACCC education program, "Multidisciplinary Chronic Lymphocytic Leukemia Care." Learn more at acc-cancer.org/cll-care.

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This publication is a benefit of ACCC membership.

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This project is sponsored by:

