

# PQI IN ACTION



**TRIFLURIDINE AND TIPIRACIL  
(LONSURF®) FOR METASTATIC  
COLORECTAL CANCER**



**NCODA'S POSITIVE QUALITY  
INTERVENTION IN ACTION**

# INTRODUCTION

In an effort to promote higher quality patient care, NCODA created the NCODA Positive Quality Intervention (PQI) as a peer-reviewed clinical guidance resource for healthcare providers. By providing Quality Standards and effective practices around a specific aspect of cancer care, PQIs equip the entire multidisciplinary care team with a sophisticated yet concise resource for managing patients receiving oral or IV oncolytics. This PQI in Action explores how the medically integrated teams at the University of Illinois Cancer Center and Baptist MD Anderson Cancer Center incorporate the information found in PQIs as part of their daily workflow. This article will discuss how utilizing the **Trifluridine and Tipiracil (LONSURF®) for Metastatic Colorectal Cancer** elevates patient care.<sup>1</sup>

Baptist MD Anderson (BMDA) was founded in 1941 as a partnership between Baptist Health and MD Anderson Cancer Center, and serves Northeast Florida. The center has pioneered a multidisciplinary approach to cancer care and is ranked among the top cancer centers in America. BMDA and Houston-based MD Anderson are clinically and operationally integrated to provide the most personalized and innovative patient care. BMDA is a comprehensive cancer center that treats all cancer types and is a dynamic cancer research center that manages approximately 40 ongoing oncology clinical trials. BMDA offers pharmacy residency and research opportunities to interested pharmacy candidates.<sup>2</sup>

The University of Illinois in Chicago (UIC) Cancer Center serves patients in Cook County and Chicago. Cook County is home to 40% of the population of Chicago and is designated as a medically underserved area. UIC invests in an Education and Career Development Program (ECDP) for pre- and post-doctoral physicians and residents. The ECDP is a National Cancer Institute (NCI)-funded research program that focuses on cancer disparities research.<sup>3</sup>

## THE PARTICIPANTS

### University of Illinois Cancer Center Chicago, IL



**Shikha Jain, MD, FACP**  
Chief Hematologist Oncologist  
Associate Professor of Medicine in the  
Department of Hematology and Oncology



**Karyn Morgan, MSN, APRN,  
FNP-C, AOCNP**  
GI Oncology Nurse Practitioner



**Noor Naffakh, PharmD, BCOF**  
Clinical Assistant Professor,  
Pharmacy Practice  
Hematology Oncology  
Pharmacy Clinical Specialist

### Baptist MD Anderson Cancer Center Jacksonville, FL



**Robert Zaiden, MD**  
Medical Oncologist  
Physician-in-Chief



**Megan Kranz, PharmD, BCPS, BCOF**  
Clinical Oncology Pharmacist  
PGY2 Residency Director



**Candice Childress, RN, BSN**  
Oncology Nurse



**Sarah Griffis, MSN, ARNP, FNP-C**  
Oncology Nurse Practitioner



**Lazette Tutson, RPhT, CPHT**  
Oncology Pharmacy Technician

# LONSURF APPROVED INDICATIONS AND MEDICALLY INTEGRATED DISPENSING

The first-line treatment of colorectal cancer is a combination of fluorouracil-based chemotherapy (oxaliplatin and irinotecan) and vascular endothelial growth factor-based therapy such as bevacizumab in patients with RAS wild type (RASwt) tumors. Upon disease progression, patients with good performance status may be considered for a rechallenge in the third- or fourth-line with chemotherapy, EGFR therapies for RASwt and other targeted agents depending on the actionable mutations.<sup>4</sup>

LONSURF® is a combination of trifluridine, a thymidine-based nucleoside analog, and tipiracil, a thymidine phosphorylase inhibitor that inhibits the breakdown of trifluridine. Trifluridine interferes with DNA synthesis and inhibits cell proliferation after uptake into the cancer cells. The combination of trifluridine/tipiracil has demonstrated anti-tumor activity against KRAS wild-type and mutant human colorectal cancer xenografts in mice.<sup>5</sup>

LONSURF® in combination with bevacizumab was found to be statistically and clinically significant for improved overall survival (OS) compared to trifluridine/tipiracil monotherapy. The RECURSE international trial showed a survival benefit of 7 months with trifluridine and tipiracil vs 5.3 months with placebo (HR 0.68, [0.58, 0.61],  $p < 0.001$ ). Notable side effects include, neutropenia reported in 38% of patients as well as decreased appetite (4%), nausea (3%) and vomiting (2%).<sup>6</sup>

The SUNLIGHT trial investigated the safety and efficacy of LONSURF® in patients with refractory metastatic colorectal cancer (mCRC) following two chemotherapy regimens. Results showed that LONSURF® combined with bevacizumab had a statistically and clinically significant improvement in OS of 3.3 months vs LONSURF® alone (10.8 months vs 7.5 months, HR:0.61, 95% confidence interval[CI]:0.49-0.77,  $p < 0.001$ ) with approximately 30% of patients in the combination arm receiving granulocyte colony stimulating factor (G-CSF) support compared to 19% with LONSURF®.<sup>4</sup>

LONSURF® is indicated for the treatment of adult patients with:

- Metastatic colorectal cancer as a single agent or in combination with bevacizumab for patients who have been previously treated with fluoropyrimidine-, oxaliplatin- and irinotecan-based chemotherapy, an anti-VEGF biological

therapy, and if RASwt, an anti-EGFR therapy.<sup>5</sup>

- Metastatic gastric or gastroesophageal junction adenocarcinoma patients previously treated with at least two prior lines of chemotherapy that included a fluoropyrimidine, a platinum, either a taxane or irinotecan, and if appropriate, HER2/neu-targeted therapy.

The recommended dosage for LONSURF® is 35 mg/m<sup>2</sup> twice daily on days 1 through 5 and days 8 through 12 of each 28-day cycle. LONSURF® is an oral formulation that should be taken with food.<sup>5</sup>

LONSURF® monotherapy or in combination with bevacizumab can be dispensed by the medically integrated team, giving patients immediate access to the medication and improving overall care. NCODA defines Medically Integrated Dispensing (MID) as a dispensing pharmacy within an oncology center of excellence that promotes a patient-centered, multidisciplinary team approach.<sup>7</sup> The MID is an outcome-based collaborative and comprehensive model that involves oncology healthcare professionals and other stakeholders who focus on the continuity of coordinated, quality care and therapies for cancer patients.<sup>7</sup> The MID model can optimize the management of patients on therapies such as LONSURF® by improving patient identification for therapy, guiding patient counseling about side effects and required testing, and management of adverse events.<sup>8</sup>

[CLICK HERE TO VIEW PQI](#)

NCODA offers multiple tools to aid the MID practice in managing oncolytics. The LONSURF® toolbox contains Oral Chemotherapy Education sheets, links to Lonsurf treatment calendars and clinic appointments calendars, LONSURF®

Starter Kits that include caregiver brochures, pillboxes, and thermometer, an NCODA Financial Assistance Tool (database), and of course the Positive Quality Intervention clinical resource documents.<sup>1</sup>

# PHARMACISTS AT THE CORE OF MID AND MULTIDISCIPLINARY CANCER CARE

**B**oth cancer centers at UIC and BMDA use medically integrated dispensing and take a multidisciplinary team approach in the treatment of patients with cancer. Robert Zaiden, MD joined BMDA in 2015 as a gastrointestinal (GI) and genitourinary (GU) medical oncologist. Zaiden is the coordinator for the GI medical oncology multidisciplinary tumor board, and the interim chair of the department of cancer medicine. He insists that having a pharmacist on the team is what differentiates a good cancer center from a great cancer center. Pharmacists consider all aspects of clinical management through reviewing lab tests such as absolute neutrophil count (ANC), monitoring changes in patient status, suggesting dose reductions and making recommendations for the management of toxicities. Zaiden adds that “experts across institutions agree about the value of pharmacists and the importance of working with oncology pharmacists to improve clinical patient care.”

Shikha Jain, MD, FACP is a hematologist and medical oncologist, and a tenured associate professor of medicine in the Division of Hematology and Oncology at the UIC Cancer Center. Jain stressed the important role of pharmacists in her practice. Pharmacists answer questions, coordinate oral and IV treatment scheduling, and follow up on treatment initiation. If the treatment is ordered from an outside pharmacy, the clinical pharmacist will contact the pharmacy and ensure that patients receive the treatment on time.

Megan Kranz, PharmD, BCPS, BCOP, is a board certified oncology pharmacist at BMDA, the postgraduate residency year 2 (PGY2) director, and works at the GI, GU, neurology and sarcoma cancer clinics. Kranz notes that medically integrated teams are embedded in each of the clinics and provide education about oral and intravenous cancer drugs. “Pharmacists are the medication experts who take time to explain to patients the logistics of treatment, the process of obtaining oral cancer drugs, the length of treatment, expected side effects, and the management of side effects. Pharmacists are the treatment regimen logistical experts”, says Kranz. In addition, patients can send messages through the patient portal which directs their questions to providers and are addressed promptly. “The patient portal resource is an essential piece of patient care,” added Kranz.

Genetic testing is done in stage III and stage IV mCRC, following approval by a patient’s insurance, explains Kranz.

**“PHARMACISTS ARE THE MEDICATION EXPERTS WHO TAKE TIME TO EXPLAIN TO PATIENTS THE LOGISTICS OF TREATMENT, THE PROCESS OF OBTAINING ORAL CANCER DRUGS, THE LENGTH OF TREATMENT, EXPECTED SIDE EFFECTS, AND THE MANAGEMENT OF SIDE EFFECTS. PHARMACISTS ARE THE TREATMENT REGIMENS LOGISTICAL EXPERTS.”**

Megan Kranz, PharmD, BCPS, BCOP

It is not approved in earlier stages when the risk of relapse is lower. Improved genetic profiling is a step towards precision medicine and the use of targeted treatment options. Kranz adds that “the application of precision medicine through genetic testing will allow providers to reserve chemotherapy for later-lines and avoid unnecessary toxicities.”

Sarah Griffis, MSN, ARNP, FNP-C, is an oncology nurse practitioner at BMDA. Griffis says pharmacists are greatly beneficial to the team because of the education they provide to patients. “The cancer patient journey is overwhelming. As patients progress through the stages of diagnoses and treatment, there is an overload of information from laboratory, magnetic resonance imaging (MRI), and scans. Treatments are modified frequently and new treatments are introduced.”

Pharmacists provide in-depth discussion of side effects and inform patients about what to expect, how to manage side effects, and the rationale for holding a dose for one week then restarting. The availability of the pharmacist and the drug calendar that accompany their education can greatly improve adherence. Additionally, patients can reach out to pharmacists with questions when needed. Griffis states “printed materials reviewed by pharmacists and patients are an additional reference that patients can read later at home. After the visit, patients have more time to assimilate information and can call us back if they have questions. The pharmacist discussions with the patients are essential.”

# THE POSITIVE QUALITY INTERVENTION: A VALUABLE CLINICAL RESOURCE FOR THE MULTIDISCIPLINARY TEAM

**T**his article explores the benefits of PQI utilization as a core standard of the MID and how its adoption can benefit any practice. UIC and BMDA position their Medically Integrated Teams to optimize the delivery of cancer care to patients and view the PQI as a very helpful resource. This section will explore the clinical practice settings and implementation of PQIs, and how it advances patient care on a daily basis.

Griffis shares that “the PQI resources are helpful to nurse practitioners, nurses and pharmacists. The PQI contains clinical information, dosing, toxicities, side effects and monitoring. It is helpful in finding talking points with patients before nurses go into patient rooms to do their education. It is a quick and useful resource.” The PQI is a quick reference that outlines clinical trial information, starting doses, treatment length, side effect management, counseling talking points. It is a resource for nurses, nurse practitioners, pharmacists and providers looking for important information about LONSURF® in one single document. LONSURF® is typically used in later-lines and practitioners tend to be less familiar with it compared to earlier-line agents. Interestingly, Griffis suggested including steps for dose reductions in the PQI as well as the proposed patient education at every dose reduction. Practitioners are often looking for information online and a pharmacist is not always available to guide them regarding this.

**“THE PQI RESOURCES ARE HELPFUL TO NURSE PRACTITIONERS, NURSES AND PHARMACISTS. THE PQI CONTAINS CLINICAL INFORMATION, DOSING, TOXICITIES, SIDE EFFECTS AND MONITORING. IT IS HELPFUL IN FINDING TALKING POINTS WITH PATIENTS BEFORE NURSES GO INTO PATIENT ROOMS TO DO THEIR EDUCATION. IT IS A QUICK AND USEFUL RESOURCE.”**

Sara Griffis, MSN, ARNP, FNP-C

Noor Naffakh, PharmD, BCOP is a clinical hematology/oncology pharmacy specialist at University of Chicago Illinois and an assistant professor at the school of pharmacy. She also co-directs the precision oncology tumor board with one of the physician oncologists. Naffakh notes that the PQI is a great resource. She thinks it is important to understand the trials supporting LONSURF® indication, dosing, and different parameters. “I liked the suggestion to start treatment on Monday, this is a great tip that I had not thought of, and I will integrate this into my practice. I will apply this to other regimens as well. It made me think of better ways to manage other regimens that will make it easier for patients. The links to calendar are great. I will be using those as well since I typically create them by hand.”

**“I LIKED THE SUGGESTION TO START TREATMENT ON MONDAY, THIS IS A GREAT TIP THAT I HAD NOT THOUGHT OF, AND I WILL INTEGRATE THIS INTO MY PRACTICE. I WILL APPLY THIS TO OTHER REGIMENS AS WELL. IT MADE ME THINK OF BETTER WAYS TO MANAGE OTHER REGIMENS THAT WILL MAKE IT EASIER FOR PATIENTS. THE LINKS TO CALENDAR ARE GREAT. I WILL BE USING THOSE AS WELL SINCE I TYPICALLY CREATE THEM BY HAND.”**

Noor Naffakh, PharmD, BCOP



# MEDICALLY INTEGRATED DISPENSING: SPECIALTY PHARMACISTS SUPPORT ONCOLOGY CLINICAL PHARMACISTS IN DELIVERING QUALITY CANCER CARE

**W**ith increasing complexity of cancer treatment regimens involving IV and oral medications, it is important to maintain a strong communication between MID teams and patients. The MID and multidisciplinary staff have access to patient information and can easily communicate with other members of the team. Having an in-house integrated pharmacy facilitates oral treatment delivery to patients and makes it easy for the clinic to make last minute modifications. Clinical pharmacists trained in oncology have the expertise to provide education, help with financial navigation, and communicate to other members of the healthcare team in a timely manner. The medically integrated pharmacy decreases time to treatment, avoids delays, and greatly reduces fragmentation of care.

“Working with the in-house Walgreens Specialty Pharmacy is greatly convenient”, says Zaiden. It helps physicians control the process by coordinating oral treatments with IV drug administration within the infusion center. It also helps guide patient care plans amid any anticipated drug shortages. “We don’t have to worry about things breaking somewhere else. We can ensure that patients will have their oral treatments at the time of infusion of concurrent IV drugs. We won’t be worrying whether the patient will have their oral treatment on Days 1 through 5 by the time the infusion comes up,” continued Zaiden.

BMDA utilizes an integrated Walgreens Specialty Pharmacy that is located in the same building that patients see the physician and get their infusion treatments. Oncology Clinical Pharmacist Kranz explains that all chemotherapy and cancer drug orders are sent to Walgreens specialty pharmacy which handles insurance approvals and coverage. Walgreens in-house Specialty Pharmacy provides same day medications and is a very convenient service to patients. Kranz informs patients about what to expect at the infusion center, treatment side effects, who to call when side effects occur, and provides continued education at later disease stages. She coordinates care and ensures oral and IV treatments start on the same day. Patients are informed to call the oncology nurse when they

start oral treatments, so the nurse can track ongoing treatment and lab tests are ordered simultaneously.

Kranz explains that Walgreens Specialty Pharmacy inside BMDA will research financial grants for patients who cannot afford their co-pays and are ineligible for patient support programs. In-house pharmacists are very knowledgeable and can provide patient education and ensure they start their oral therapies. They follow up with patients to check about treatment initiation and side effects and answer any questions that they may have. Patient concerns are reported to the in-house clinical pharmacist. Having the specialty pharmacy attached to the hospital allows patients to get their medicines faster, ensuring continuity of care, and improving patient satisfaction. With MID, dose and treatment modifications can be made quicker during a patient’s office visits upon review of recent lab results, new side effects, impact on quality of life, and updated patient goals.

From her perspective, Griffis notes that the medically integrated pharmacy acts as an additional check for cancer treatments before it is provided to the patient. Pharmacists are an additional “set of eyes” doing a comprehensive logistical, clinical, and financial check for patients. Last minute changes in dosage or timing can be made through the in-house pharmacy before the patient leaves the office. It is much harder to make dose modifications or regimen changes when a prescription is processed through a mail order or outside specialty pharmacy.



# PHARMACISTS ENHANCING THE PATIENT EXPERIENCE

**N**affakh at UIC explains that drug orders are entered by providers as part of a treatment plan; then treatment plans are reviewed by a pharmacist before being released by the nurse prior to treatment initiation. IV drugs are reviewed within the treatment plan while oral orders undergo a full clinical review after nurses release them in the orders queue. Oral drugs are sent to the Medically Integrated Pharmacy within UIC. The EPIC program uses care plans that include lab tests, monitoring, and provider alerts. Furthermore, through the integrated pharmacy, pharmacy technicians check for side effects using specific questions before they triage patients according to their answers and escalate to pharmacists for evaluation.

Pharmacists serve as medication experts within the cancer center. They are at the center of communication and liaise between the healthcare team members and the patients. Having a pharmacist can optimize care through various interventions such as dose modifications, dose rounding and other dosing strategies that improve patient adherence and enhance treatment outcomes. Pharmacy interventions improve efficiency at all steps of the prescribing, dispensing and review process. Furthermore, the patient population at UIC includes a large indigent population who have low health literacy and require education. Clinical pharmacy specialists provide the initial interaction, education, and explain goals of treatment to patients. Having a pharmacist resource accessible that patients can trust is vital.

Naffakh reviews with patients the adverse events of LONSURF® including gastrointestinal (GI) side effects, and hematological side effects such as anemia. The combination of LONSURF® and bevacizumab causes GI adverse events (nausea, diarrhea, vomiting, fatigue, loss of appetite, musculoskeletal pain) while bevacizumab itself can add hypertension and proteinuria that requires monitoring, and impaired wound healing. Patients are instructed to let the clinic know about planned surgeries and procedures. Naffakh provides patients with a calendar that explains scheduling and makes it easy to track. Nurses will also go over the schedule of infusion and oral treatment with the patient in clinic.

“It is best to restart therapy after holding a dose,” says Naffakh. “We prescribe G-CSF or blood transfusion when needed for neutropenia or thrombocytopenia and discuss the use of these agents with the patient. We work to optimize the conditions for the patients, understand their goals of care to enable patients to continue the treatment, and we give patients tips to optimize treatment.”

Candice Childress, RN, BSN Oncology Nurse at BMDA stresses the importance of pharmacists within the multidisciplinary team. “For me,” Childress adds, “the pharmacists are like a double-check in the background for all the details of a patient’s treatment. This includes lab orders, lab test results, treatment modifications, etc.” She notes that pharmacists provide education, information about dosage and side effects, and most importantly spend a long time counseling and listening to patients.

**“FOR ME, THE PHARMACISTS ARE LIKE A DOUBLE-CHECK IN THE BACKGROUND FOR ALL THE DETAILS OF A PATIENT’S TREATMENT. THIS INCLUDES LAB ORDERS, LAB TEST RESULTS, TREATMENT MODIFICATIONS, ETC.”**

Candice Childress, RN, BSN

Lazette Tutson, RPhT, CPhT, Oncology Pharmacy Technician at BMDA, shared a personal experience with cancer, as her husband was recently diagnosed with prostate cancer. Lazette witnessed first hand the difference a pharmacist makes in the journey of a cancer patient as her husband was taken through this journey at BMDA cancer center. “It made me feel so good to see my pharmacist treat a patient like a family member, explaining how the drug works, its effects on the body, and answer all my husband’s questions. The pharmacist really made a difference. I think clinical pharmacists play a big role along with physicians and they are truly underrated,” noted Lazette.

**“THE PHARMACIST REALLY MADE A DIFFERENCE. I THINK CLINICAL PHARMACISTS PLAY A BIG ROLE ALONG WITH PHYSICIANS AND THEY ARE TRULY UNDERRATED.”**

Lazette Tutson, RPhT, CPhT

# PUTTING THE PQI INTO ACTION: IDENTIFYING ELIGIBLE PATIENTS FOR LONSURF®, MANAGING AND MONITORING ADVERSE EVENTS

**T**he Trifluridine and Tipiracil (LONSURF®) Management PQI Background Section identifies all approved indications and provides clinical trial information for the team including various safety and efficacy endpoints.<sup>1</sup> The next section is the PQI Process that lists the steps necessary to deliver the correct treatment. The PQI process instructs the team on the correct dose, blood tests to order prior to beginning of treatment, liver and renal function tests, when and how to dose reduce or withhold the drug, and patient counseling tips on adverse events.

The PQI is a peer-reviewed clinical guidance resource that provides Quality Standards and effective practices around a specific aspect of cancer care. The Medically Integrated Pharmacy team is in a unique position to ensure appropriate treatment, increase compliance, and maximize clinical outcomes. Positive Quality Interventions (PQIs), an NCODA Quality Standard, are designed to operationalize and standardize those practices to achieve these positive clinical outcomes. The **Trifluridine and Tipiracil (LONSURF®) for Metastatic Colorectal Cancer** PQI provides guidance to providers involved in treating patients with Lonsurf.<sup>1</sup>

UIC Medical Oncologist, Jain, shares her approach to treatment with LONSURF®. In the third-line setting, she prescribes LONSURF® in combination with bevacizumab unless contraindicated. Side effects of the combination include hypertension and delayed wound healing. Side effects of LONSURF® monotherapy includes nausea, fatigue, and abdominal pain. Nausea can be managed with ondansetron, prochlorperazine or olanzapine, and can be used in combination with steroids. Dose holding is used as an effective strategy to mitigate adverse events. Jain educates patients about the treatment, side effects, and how to take the drugs while pharmacists provide additional guidance to patients and places oral drugs in medication boxes. Jain notes that patients with cancer come to the office every 1st day of the cycle or every month. She instructs patients to let the clinic know of abdominal pain because GI perforation is a concern with bevacizumab. It is important that patients receive all the necessary information.

“The PQI is very well organized and provides a great breakdown about treatment and side effect timelines, i.e. when patients are most likely to experience side effects. This is an



Noor Naffakh, Pharm D, BCOP, Karyn Morgan, MSN, APRN, FNP-C, AOCNP and Shikha Jain, MD, FACP work together as part of the healthcare team at UIC Cancer Center in Chicago Illinois to provide quality care to the cancer patients in Cook County and surrounding areas.

important question often posed by patients. I typically wait until after the first cycle of treatment to assess side effects. I tell patients to wait until that time and explain that side effects tend to be cumulative and increase as time goes by. The likelihood of developing side effects is a nuanced discussion with patients and also depends on comorbidities of every patient,” noted Jain.

**“THE PQI IS VERY WELL ORGANIZED AND PROVIDES A GREAT BREAKDOWN ABOUT TREATMENT AND SIDE EFFECT TIMELINES, I.E WHEN PATIENTS ARE MOST LIKELY TO EXPERIENCE SIDE EFFECTS. THIS IS AN IMPORTANT QUESTION OFTEN POSED BY PATIENTS.”**

Shikha Jain, MD, FACP

BMDA Medical Oncologist, Zaiden, explains that “patients with RASwt and a good response to 5-FU agents are the best candidates for LONSURF®.” Additional considerations for treatment include the patient’s age and tolerability. Cytopenias are an important side effect of LONSURF® as seen in clinical



trials. “Regorafenib should be tried before LONSURF<sup>®</sup>, but it is not a preferred option due to toxicity concerns,” says Zaiden. He also discusses adverse events of LONSURF<sup>®</sup> and bevacizumab combination therapy with his patients. He mentions of fatigue that results from anemia, fevers, malaise, easy bruising, and bleeding. Side effects are managed with dose reductions and dose holding, explains Zaiden. LONSURF<sup>®</sup> is held when platelet levels are <50,000/mm<sup>3</sup>. Notifications about labs are sent through the electronic medical record (EMR) and nurses inform the physician about abnormal hematology lab levels.

Kranz at BMDA discusses common adverse events of LONSURF<sup>®</sup> monotherapy or in combination. For instance, diarrhea is managed by dose reductions and dose delays based on blood cell counts. Patients may require G-CSF and LONSURF<sup>®</sup> may be held for a week while adverse events improve. The main adverse events of bevacizumab are hypertension and proteinuria, for which dose reductions or dose holds may be recommended. Proteinuria is monitored through regular laboratory tests and the dose is adjusted accordingly. Angiogenic side effects have been reported with bevacizumab including blood clots and gastrointestinal perforation; although Kranz says she has not encountered any of these events with her patients.

Kranz explains the coordination of care for LONSURF<sup>®</sup>. She uses bevacizumab calendars and counsels patients to take the drug Monday through Friday, with all other drugs starting at the same time. Calendars aid patients in maintaining medication adherence. Coordinating start times of oral medications with IV medications is practical since treatment can be initiated around infusion schedules. Doses are rounded to the nearest dose sizes. Kranz notes that she has not seen any bevacizumab-related infusion reactions in six years of practice across disease states.

Griffis explains that after getting FOLFOX or FOLFIRI in earlier-lines, patients will receive either LONSURF<sup>®</sup> or regorafenib in later-lines. Regorafenib is limited with hypertensive

side effects and associated risks of stroke and hospitalization. Patient tolerability decreases in later-lines of therapy and LONSURF<sup>®</sup> seems to have better tolerability than regorafenib. LONSURF<sup>®</sup> may be the go-to option for patients with RAS-wt. LONSURF<sup>®</sup> dose can be modified to improve diarrhea. “LONSURF<sup>®</sup> appears to be better tolerated and causes less hospitalizations compared to other treatments,” remarks Griffis. Patients who tolerate treatment after dose holds or reductions may see their LONSURF<sup>®</sup> dose increased again. The dose may be decreased for a cycle before being increased again. The reduced dose is maintained if clinical benefit is seen. If there is disease progression detected on scans, a dose increase may be considered. The dose is modified according to toxicities that develop. Patients tend to prefer higher doses of treatment and they generally resist the idea of dose reductions. However, says Griffis, “maintaining a treatment, even at lower doses, is more important than taking a higher dose with dose interruptions due to side effects. It is rare to see infusion related adverse reactions.” Proteinuria is common with long term use and that is why protein levels are routinely monitored through the EMR.

**“PATIENTS TEND TO PREFER HIGHER DOSES OF TREATMENT AND THEY GENERALLY RESIST THE IDEA OF DOSE REDUCTIONS. MAINTAINING A TREATMENT, EVEN AT LOWER DOSES, IS MORE IMPORTANT THAN TAKING A HIGHER DOSE WITH DOSE INTERRUPTIONS DUE TO SIDE EFFECTS.”**

Sarah Griffis, MSN, ARNP, FNP-C

## CONCLUSION: NCODA, THE MID AND PQI: OPTIMIZING PATIENT OUTCOMES

All the interviewed team members agree that the MID model and the PQI Clinical Resource are valuable to the team and enhance the quality of care. Every day the MID team can make a difference in the life of patients. Pharmacists are at the core

of the multidisciplinary cancer care team, acting as a liaison between the physician providers, nurses, the clinic staff, and the patients. “Pharmacists are indispensable to the work we do everyday. The difference between a good cancer center and a great cancer center is the presence of clinical pharmacists.

In my best day, I know less about pharmacotherapy of cancer drugs than my pharmacists do on their worst day,” said Zaiden.

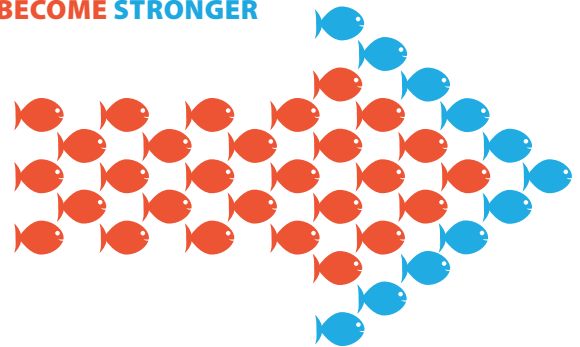
**“PHARMACISTS ARE INDISPENSABLE TO THE WORK WE DO EVERYDAY. THE DIFFERENCE BETWEEN A GOOD CANCER CENTER AND A GREAT CANCER CENTER IS THE PRESENCE OF CLINICAL PHARMACISTS. IN MY BEST DAY, I KNOW LESS ABOUT PHARMACOTHERAPY OF CANCER DRUGS THAN MY PHARMACISTS DO ON THEIR WORST DAY.”**

Robert Zaiden, MD

The PQI resource fosters continuous education about new therapies in a scientific, evidence-based yet brief, easy to digest format for the staff that can also be leveraged for patient education. Hands-on information about LONSURF® inform the identification of eligible patients, the selection of dosage, monitoring of treatment, and management of adverse events. The

PQIs provide the MID program with an easy to use, compact clinical resource guide when discovering the right patient and dispensing LONSURF®. The PQIs help the team ensure they are providing patients with the tools and education to improve clinical outcomes. Pairing Medically Integrated Dispensing with the **Trifluridine and Tipiracil (LONSURF®) for Metastatic Colorectal Cancer** PQI meets NCODA’s Guiding Values of being Patient-Centered and Always Collaborative.<sup>7,8</sup>

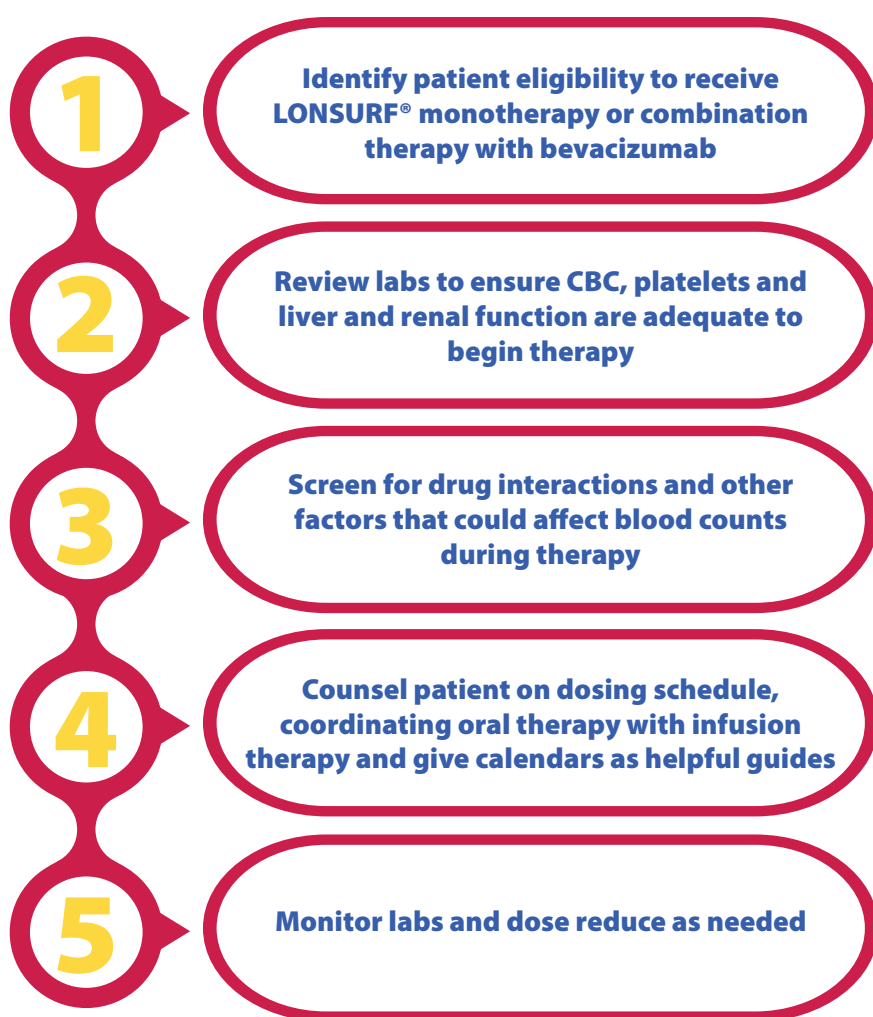
**WORKING TOGETHER,  
WE BECOME STRONGER**



## Helpful Online Resources

- [NCODA Website](#)
- [Oral Chemotherapy Education Sheets](#)
- [Positive Quality Interventions](#)
- [Trifluridine and Tipiracil \(Lonsurf®\) for Metastatic Colorectal Cancer PQI](#)
- [Questions On Dosing of Lonsurf in CRC Patients - Taiho Oncology](#)

## PQI PRINCIPLES:



## REFERENCES

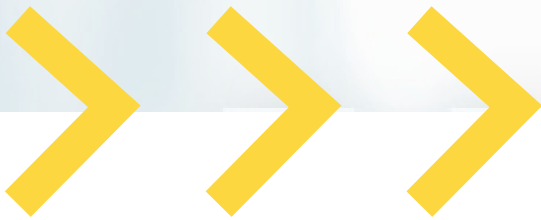
1. Hasiak, JM. Positive Quality Intervention: Trifluridine and tipiracil (LONSURF®) for Metastatic Colorectal Cancer. Available at [https://www.ncoda.org/wp-content/uploads/pqis/Trifluridine-and-Tipiracil-Lonsurf-for-Metastatic-Colorectal-Cancer\\_PQI\\_NCODA.pdf](https://www.ncoda.org/wp-content/uploads/pqis/Trifluridine-and-Tipiracil-Lonsurf-for-Metastatic-Colorectal-Cancer_PQI_NCODA.pdf). Accessed January 2024.
2. Baptist MD Anderson Cancer Center. BaptistMDAndersoncancer-center.com. Accessed January 25, 2024.
3. UI Health. Univerisy of Illinois Cancer Center. Available at <https://cancer.uillinois.edu/>. Accessed January 25, 2024.
4. Prager GW, Taieb J, Fakih M, et al for the SUNLIGHT investigators. Trifluridine-tipiracil and bevacizumab in refractory metastatic colorectal cancer. *N Engl J Med*. 2023;388:1657-1667.
5. Lonsurf (Trifluridine and tipiracil) [prescription information]. Princeton, NJ: Taiho Oncology, Inc; 2023.
6. Atsushi Ohtsu, Takayuki Yoshino, et al, on Behalf of the RE-COURSE Study Group. Onset of neutropenia as an indicator of treatment response in the phase 3 RE-COURSE trial of trifluridine/tipiracil (TAS-102) versus placebo in patients with metastatic colorectal cancer. *Journal of Clinical Oncology*. 2017;35:4\_suppl, 775.
7. NCODA. NCODA announces the defining of the Medically Integrated Dispensing Pharmacy. <https://www.ncoda.org/medically-integrated-dispensing-pharmacy/>. Accessed January 2024.
8. Wimbiscus, B. "Medically Integrated Dispensing: An Alternative to How Oral Drugs Get Dispensed." *Am J Manag Care*. March 14, 2019. <https://www.ajmc.com/view/medically-integrated-dispensing-an-alternative-to-how-oral-drugs-get-dispensed>. Accessed January 2024.





Practice panelist's comments reflect their experiences and opinions and should not be used as a substitute for medical judgment.

Important notice: NCODA has developed this Positive Quality Intervention in Action platform. This platform represents a brief summary of medication uses and therapy options derived from information provided by the drug manufacturer and other resources. This platform is intended as an educational aid and does not provide individual medical advice and does not substitute for the advice of a qualified healthcare professional. This platform does not cover all existing information related to the possible uses, directions, doses, precautions, warning, interactions, adverse effects, or risks associated with the medication discussed in the platform and is not intended as a substitute for the advice of a qualified healthcare professional. The materials contained in this platform are for informational purposes only and do not constitute or imply endorsement, recommendation, or favoring of this medication by NCODA, which assumes no liability for and does not ensure the accuracy of the information presented. NCODA does not make any representations with respect to the medications whatsoever, and any and all decisions, with respect to such medications, are at the sole risk of the individual consuming the medication. All decisions related to taking this medication should be made with the guidance and under the direction of a qualified healthcare professional.



## **NCODA'S POSITIVE QUALITY INTERVENTION IN ACTION**

March 2024

