

Gastrointestinal Disease–Specific Survivorship Care: A New Personalized Model Integrating Onco-Wellness

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Abstract

Although the number of gastrointestinal (GI) cancer survivors is projected to increase in the coming years, there are currently no survivorship care models that address the specific and growing needs of this population. Current survivorship care models were evaluated to assess their suitability for GI cancer survivors. A survivorship care model based on foundational wellness principles is under development to address the specific needs of GI cancer survivors. This model delivers a cohesive and collaborative care continuum for survivors of different GI malignancies. Oncology providers in GI departments and internal medicine providers in survivorship programs are positioned to provide a comprehensive approach for the care of patients treated with curative intent. Survivorship care is introduced at the conclusion of active treatment in the form of an Onco-wellness consultation, an in-person or telemedicine comprehensive care plan creation and review by our Survivorship Program. Personalized care plan including long term and late effects of treatment, nutrition, physical activity and rehabilitation recommendations, prevention of secondary malignancies and psychosocial needs are reviewed. As patients transition from active treatment to survivorship within the GI Program, the GI Advance Practice Professionals (APPs) are well-positioned to deliver comprehensive survivorship care specific to the GI patient's needs while integrating recommendations and principles from the Onco-wellness consultation. With projected shortages of both oncology and primary care physicians, such an APP-based model has the potential to bridge gaps in the survivorship care continuum and mutually benefit patients and physicians.

Keywords

screening, survivor, prevention, onco-wellness, gastrointestinal cancer, survivorship care

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Introduction

In January 2019, there were 16.9 million cancer survivors in the United States. By January 1, 2030, it is estimated that the population of cancer survivors will increase to more than 22.1 million.¹ The number of cancer survivors increases each year as improvements in screening protocols result in earlier diagnoses with higher survival rates due to concomitant improvements in systemic and local treatment modalities.² After treatment, cancer survivors can experience lasting physiological and emotional effects and have the potential for tumor recurrence, as they are at an increased risk of long-term morbidity and premature mortality related directly to the

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cancer, comorbidities, and exposure to cancer treatments.³ The survivorship burden is borne not only by individuals with a personal history of cancer but also by their family members, friends, and caregivers.⁴

To meet the various needs of cancer survivors, a variety of survivorship care models have been presented. Shared-care models involving the oncology care team and primary care physician were identified most often in the caring for colorectal cancer survivors.⁵ These models were used to provide ongoing care, screening for tumor recurrence, evaluation for secondary-tumor occurrence, cancer prevention, management of late side effects, and coordination with primary care and specialty physicians.⁵ However, many of these models are too broad with respect to cancer type and do not offer sufficient guidance on how to address the unique needs of other gastrointestinal (GI) cancer survivors. GI cancer patients (gastric, pancreas, liver, colon, rectal, and anal) often undergo not only chemoradiation therapy but also complex GI surgeries with associated cancer-related sequelae and treatment-related late effects. GI cancer survivors also have GI-specific cancer risk factors. Missing from the current spectrum of survivorship programs is a GI cancer-centered model that incorporates strategies specifically intended for this particular patient subgroup, while also integrating wellness principles. One survey-based study on survivors of lower GI cancers reported that, although oncology providers may focus on physical sequelae of treatment, they have not traditionally considered symptoms of fatigue, cognitive changes, and sexual dysfunction as changes that result from treatment or impact quality of life.⁶

In 2006, the Institute of Medicine reported that poor communication between providers, lack of coordination of care, and uncertainty about who provides long-term care are significant challenges to cancer survivorship.⁷ GI cancer survivors are particularly vulnerable to poor outcomes because of the cancer's effects on multiple organ systems, the risk of recurrence, and the associated late effects of therapy that can lead to negative long-term health consequences. Indeed, in this survivor population, mental and physical wellness also remains poorly addressed throughout the acute, extended, and permanent phases of cancer survivorship.⁸

Little is known about the ways in which existing models of survivorship care can better address the unmet needs of GI survivors of different organ systems and the intricacies of the care they require. Innovation is needed to deliver personalized, comprehensive, and risk-based survivorship care⁹ that is aimed at addressing the specific needs of GI cancer survivors. This paper describes a novel GI cancer-centered survivorship care model, the GI Onco-Wellness delivery model, currently being piloted at our high-volume NCI-designated Comprehensive Cancer Center and details the transformative potential of the way care can be delivered to patients with GI cancer.

Methods

A PubMed literature search was conducted to determine the extent to which survivorship care models address the specific

needs of GI cancer survivors. Our research interest was focused on how survivorship care can be better organized to address the unmet needs of survivors of different GI cancers in a cancer center. A literature search found that studies on care models of survivors of different GI malignancies are lacking. In August 2020, a PubMed literature search was conducted using the keywords "GI cancer survivorship" and "models of care," which identified 76 results. Based on these results, we have identified a need to develop a survivorship care model focusing on personalized yet comprehensive risk-based care for survivors of different GI cancers. The model was designed to specifically address the needs at an NCI-designated comprehensive cancer center.

The existing gaps in the care of GI cancer survivors and the lack of care models to address the level of detail needed to provide care for survivors of GI malignancies motivated our group to propose a GI patient-centered care continuum for survivors at a large cancer center. Our GI department sees close to 900 analytic cases per year of the various malignancies involving different GI organ systems inter- and intra-departmentally to meet the needs of the patients. Because the uniqueness and the different levels of acuity of cancer-related sequelae of the diagnosis and treatment, there is a need to organize survivorship care for survivors of different GI cancers to better support them during transitions in care. On the basis of the needs of our institution, we have divided these GI survivors into 6 subcategories of GI cancer to align them with the disease-site specific specialization within our comprehensive GI tumor program: esophageal and gastric cancers; pancreatic, hepatocellular and biliary, neuroendocrine, and peritoneal cancers; and colorectal and anal cancers. Survivors face unique physical, psychological, and social changes due to high disease burden and aggressive multimodal treatments in each of the subcategories.¹⁰ The GI Onco-Wellness model tailors survivorship care to the individuals in each subcategory with regard to the long-term and late treatment-specific effects.

In this model, upon completion of treatment, each patient treated for curative intent in the GI department is offered a wellness consultation in the Survivorship Program led by a collaborative group of internal medicine physicians, oncologists, and APPs. A treatment summary and personalized care plan is reviewed with each patient and caregiver in the survivorship clinic. The treatment summaries include concise information regarding pre-existing comorbid conditions, cancer diagnosis from the time of presentation, tumor location, risk factors of the specific cancer type, clinical stage, tumor markers at the time of diagnosis and posttreatment, neoadjuvant chemoradiation therapy used, number of cycles, and major complications that occurred during the treatment. The treatment summaries also provide details on the type of surgery performed, surgical pathology, nodal status, major comorbidities, adjuvant chemotherapy cycles and dates, and treatment-related major complications. The care plan not only includes surveillance recommendations on the primary GI cancer but also expands on screening recommendations for second cancer screenings. The plan is a great opportunity to assess patients for

risks for second cancers and initiate low-dose lung computerized tomography scans, personalize breast health screening recommendations with mammography and breast MRI, and refer and follow closely for cervical, colon, and prostate cancer screenings.

In the GI department, patients transition care to our onco-wellness APP from the original GI Oncology treatment team. This APP has the opportunity to integrate the recommendations from the Survivorship Onco-wellness consultation to expand care to include discussion not only on surveillance regarding blood work, imaging, and the frequency and duration of endoscopic procedures but also to educate and counsel patients on long-term/late effects of therapy, discuss nutrition and physical activity guidelines, and assess psychosocial health.

Results

Available Literature on GI-Cancer Models of Care

Previous studies have reported on models of survivorship care.¹¹ The American Society of Clinical Oncology's Survivorship Care Compendium has comprehensively outlined current models of long-term follow-up care for cancer survivors (summarized in Table 1).¹² Our search did not identify any articles describing clinical models of care intended to meet the needs of survivors of different GI malignancies, nor were there any articles on how this care should be better organized following cancer therapy.

Patient Needs

GI survivors' needs are managed by the medical, surgical, or radiation oncology treatment teams within the department. GI cancer survivors treated with curative intent have different treatment needs, and it may be difficult for all of them to transition to a general survivorship clinic or primary care physician due to high burden of treatment-related toxicity and long-term and late effects. Surgical interventions have a major impact, especially on esophageal, gastric, and pancreatic malignancies.¹⁰ Therefore, standardization of survivorship care at various transition points may be challenging for survivors of different GI malignancies.

Clinic Constraints

Although long-term and late effects related to surgery, chemotherapy, and radiotherapy are well known by oncology providers, there may be a lack of consistency in the timing of introducing discussions specific to survivorship care delivery across different GI cancers. Furthermore, current practices provide survivors with effective oncologic care but may neglect their overall wellness. Providers with busy clinic templates that are oncology specific do not afford enough time to address the evolving needs of patients as they transition from being a GI cancer patient to GI cancer survivor.¹⁴ One study reported that it takes 90 minutes on average to complete a Journey Forward Survivorship Care Plan for colorectal cancer survivors who

received surgery and chemotherapy.¹⁴ Data show that cancer survivors face unique psychosocial, reproductive, genetic, and employment concerns.⁸ Therefore, oncology teams are challenged to efficiently personalize survivorship care.

Along with the demands of administration and documentation, there are further reductions in patient-facing visit time despite the fact that the top 3 ways cancer survivors wanted education about treatments, screenings, and surveillance testing was during in-person visits from a healthcare professional.¹⁵

Physician Demands

There are many constraints placed on oncology clinics that result in increased levels of stress when caring for complex, ill patients. This increased stress contributes to burnout.¹⁶ Oncologists may feel an undue burden to dedicate the time needed to comprehensively address survivorship because of already increasing demands. One study, which was based on a survey of 178 matched pairs of patients and physicians, suggests that physician burnout can impact patient outcomes.¹⁷ Patients can be further negatively affected by an already stressed care delivery system. Furthermore, most oncology clinics may not be resourced appropriately to focus on psychosocial concerns and wellness education due to a focus on disease-specific diagnoses and treatments.¹⁵ Delivering risk-based, personalized, comprehensive survivorship care is becoming increasingly significant in this changing landscape.¹⁸ There is a call for innovative delivery models of care that are pathway-driven and based on the complexity of cancer survivor needs. The call is to not only improve care but also accommodate the rise in physician shortages and shift to value-based care.⁹

Patient Preferences

Many of the existing models lack specific guidance on how to organize holistic survivorship care for survivors of different GI cancers. For example, GI cancer survivors are at an increased risk of specific nutritional complications due to radical surgical procedures that distort the anatomy and physiology of the GI tract.¹⁰ In one retrospective study in particular, gastric cancer survivors were found to still struggle with nausea, vomiting, reflux, and eating restrictions 5 years after undergoing subtotal gastrectomy.¹⁹ Obesity is also a formidable comorbid condition and is linked to worsened cancer prognosis after treatment and an increased likelihood of secondary-tumor development.²⁰ The transition from the acute phase to the extended phase of survivorship can be a critical period to motivate individuals to adopt risk-reducing behaviors.

There is increasing evidence suggesting GI cancer patient subgroups desire nutrition and activity recommendations as early as during or shortly after completion of therapy²¹ and seek recommended interventions for healthy living and interventions for weight management.²² Patients and caregivers may be more motivated in the posttreatment phase to consider changing lifestyle patterns.²³ Accordingly, there would likely be a higher chance that patients follow through with recommendations on

Table 1. Summary of American Society of Clinical Oncology's Survivorship Care Compendium Models of Long-Term Follow-Up Care.^a

Survivorship care model	Description of protocol	Benefits of protocol	Shortcomings of protocol
Oncology specialist care	Follow-up with primary oncologist	Comfortable and provides continuity of care. Beneficial specifically for patients with high risk of recurrence.	Focuses on illness, not wellness.
Multi-disciplinary survivorship clinics	Follow-up with specialized team of providers	Expert care for long-term and late effects. Good for patients requiring complex care.	Resource- and time- intensive. Not all survivors require this level of care.
Disease/treatment-specific survivorship clinics	Clinics specializing in care for common diagnoses such as colorectal and breast cancer	Providers have expertise in one particular area for one group of patients.	Limited to survivor populations with a large number of members.
General survivorship clinic	Clinic implemented at the cancer center, community hospital, or private practice	Provides service for all groups. Cost efficient. May focus on psychological support and medically focused oncology care.	Difficult to provide expert care for all survivor groups in one clinic. Difficult to tailor services for specific needs.
Consultative survivorship clinic	One-time visit to provide treatment summary and care plan	Requires few resources. Empowers patients with knowledge and education.	Limited time to address long-term and late effects. Requires extensive knowledge across survivor groups.
Integrated survivorship clinic	Embedded in the treatment-focused oncology setting	Provided is a survivorship specialist, as part of the clinic team. Survivor receives survivorship/focused care with oncology setting.	Survivors may expect clinician to provide primary care and primary care needs may be unmet. May be difficult to transition patients to primary care when appropriate.
Community generalist model	Care setting at health care system or private practice	Focus is on wellness rather than disease.	Limited provider knowledge about long-term and late effects. Requires provider knowledge and education about survivorship issues. Difficult to update providers and survivors as new information becomes available.
Shared care of survivor	Care for all survivors is coordinated by oncologist and PCP	Survivor continues to benefit from specialists in managing long-term and late effects. Works well for survivors with ongoing, complicated cancer-related health issues.	Resource intensive because survivors require time, expertise, and a strong infrastructure of communication between specialist and PCP. Roles are not clearly defined resulting in care that is omitted or duplicated.
Onco-Wellness Model	GI-specific survivorship care attached to primary oncology team via APPs	APPs can seek consultation from GI-specialist oncologists with medical concerns; APPs can focus on both general wellness and medically-focused oncology care; provides increased continuity of care; expert care for long-term and late effects; patients are directly engaged in the creation of the survivorship care plan; focus on disease-specific patient needs, such as nutritional education.	Resource intensive; not applicable for non-GI related cancer survivors. May need adaptation to smaller cancer centers or community-based oncology practices.

Abbreviations: APPs, Advanced Practice Providers; GI, gastrointestinal; PCP, primary care physician.

^aSummary from the American Society of Clinical Oncology's Survivorship Care Compendium.¹³

wellness.²² Indeed, nutrition education could benefit survivors of different GI cancers to establish health and wellness goals.⁸ Although nearly three quarters of oncologists believe risk assessment and prevention services should be included in the ongoing care of cancer survivor patients, only 60% feel comfortable providing those services,²⁴ thereby reinforcing the need for a specialized survivorship care model for the complex needs of GI cancer patients.

Given the variability and intensity of their needs, GI cancer survivors and providers are faced with challenges when

transitioning to the extended and permanent phases of survivorship.⁷ Thus, patients with GI malignancies also had the highest preference for an in-person meeting with healthcare professionals compared to breast, genitourinary, cutaneous, and gynecological cancer survivors.¹⁵ Because primary care providers are not involved in the original care of the cancer from diagnosis through treatment, there is a possibility of knowledge gaps in the posttreatment care.²⁵ Communication gaps, lack of coordination of care with the oncology treatment team, and inadequate oncologic training of primary care

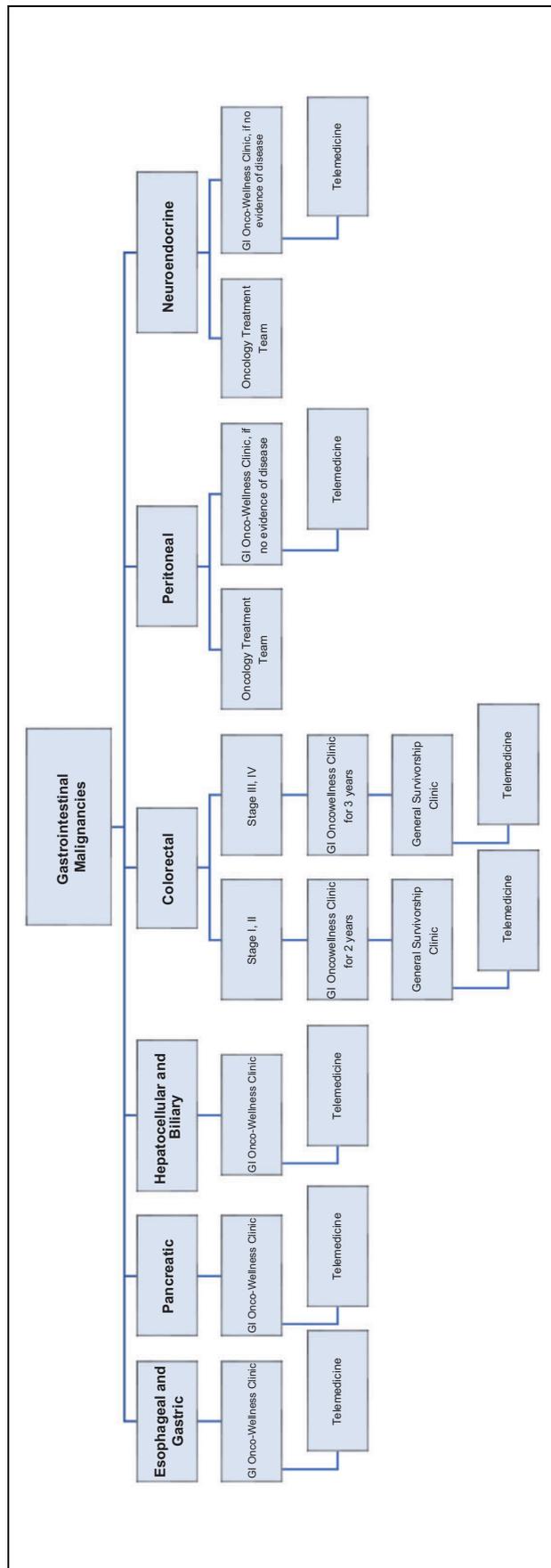


Figure 1. GI Onco-wellness model of care.

clinicians can result in a fragmentation of care in the GI cancer care continuum.

Discussion

The GI Disease Site–Centered GI Onco-Wellness Care

The collaboration led by oncologists, internal medicine physicians, and APP’s allows for a seamless transition for patients treated with curative intent to move to the next phase of their cancer journey following treatment completion. The needs of the patients also determine the duration of enrollment in the onco-wellness clinic based on the priorities of each of the GI subcategories within the GI department (Figure 1). In the colorectal cancer subgroup, which typically represents the highest annual volume of analytic GI cases at our institute, patients treated with curative intent (stage 0-IV with resection) are offered a second transition to the general Survivorship Program within 2 to 3 years of follow-up. For patients with upper GI cancers involving the stomach, esophagus, hepatobiliary system, or pancreas, we provide surveillance by the onco-wellness APP for a minimum of 5 years. Patients with rare tumors, such as peritoneal cancers and neuroendocrine tumors, who have been treated with surgery alone and have no evidence of disease, can also transition within months of treatment completion to the APP for indefinite follow-up care. Posttreatment recommendations vary widely among GI neuroendocrine tumor (NET) patients, highlighting the differences between patients with pancreatic NETs, midgut NETs, hindgut NETs, appendiceal NETs, rectal NETs, and varying Ki-67 indexes.²⁶ The APP individualizes surveillance of this group on the basis of the patient’s tumor site, risk factors for recurrence, comorbidities, performance status, and preference, along with National Comprehensive Cancer Network guidelines.²⁷ After 5 years of follow-up by the APP, all non-colorectal cancer patients are offered yearly surveillance indefinitely, with a combination of in-person and virtual visits.

Although follow-up guidelines for common cancers vary widely,²⁸ our goal is to detect primary recurrence and early-stage second primary tumor occurrence. However, the potential benefits of detection are balanced with the possible harm caused by performing imaging over a prolonged period, including the risk of secondary malignant neoplasms from exposure to radiation.²⁹ Patients’ beliefs about the aims of surveillance follow-up also vary, and compliance with guidelines differ on the basis of patient preferences.³⁰ Late effects from treatment vary by disease site and by an individual’s treatments and comorbid conditions.

The onco-wellness APP collaborates with the appropriate surgical oncologist, medical oncologist, or radiation oncologist, depending on the type of treatment and the extent of multimodal therapies deployed, as needed. They have the opportunity to collaborate with the Survivorship team members, nutritionists, rehabilitation therapists, psychologists, and integrative medicine practitioners to incorporate wellness care, to build a more pathway-based GI survivorship care model.

With the GI Onco-Wellness model, our faculty oncologists can focus on the care of newly diagnosed patients and those in the early posttreatment period, thus ensuring the maintenance of early access and shorter treatment initiation times.

Our model benefits from the breadth of training that the APPs have received and seeks to position them in a top-of-license capacity. Our APPs have extensive experience in treating all GI malignancies from diagnosis through treatment and have experience with inpatient care, surgical assistance, and postoperative clinical care. They also have experience working closely with team members who specialize in medical and radiation oncology. At our institution, the APPs regularly attend weekly GI Tumor Board meetings and have access to weekly liver Tumor Board meetings and radiology film reviews. With this integration, the APPs have independent clinical schedules that include adequate time for each patient visit; therefore, the wellness-related aspects of care can be addressed. In collaboration with physicians, APPs can be well-positioned to meet the needs of GI-cancer survivors and directly impact their quality of life.³¹

GI cancer survivor-specific needs. Patients treated for GI cancers may overlook nonspecific symptoms that could indicate more serious late complications. For example, after undergoing Whipple procedures, pancreatic cancer survivors may develop diabetes, pancreatic enzyme insufficiency, dumping syndrome, nutritional deficiencies, small bowel bacterial overgrowth, lactose intolerance, anastomotic ulcers, and anastomotic stricture, along with other general abdominal surgical complications. Nonspecific symptoms that may stem from GI cancers and related cancer treatments also include fatigue, unintentional weight loss, early satiety, frequent urination, thirst, gas, bloating, rigors, sweats, flushing, light-headedness, diarrhea, nausea, vomiting, abdominal pain, tachycardia, and light-headedness. Moreover, our long-term patients with anal cancer can experience chronic bowel toxicity, for which they may periodically require formalin injection to stop treatment-related rectal bleeding as well as consultation to decrease fecal incontinence with pelvic floor therapy or sacral nerve stimulation. These long-term and late effects need to be managed with a GI cancer-specific focus to optimize care and improve quality of life.³²

To engage patients in the survivorship discussion, our model solicits patient responses at each visit with an expanded disease-specific questionnaire that assesses and monitors these patient-reported outcomes, including not only treatment-related physical late effects but also anxiety, depression, cognitive function, fatigue, substance use, and sexual health. As part of this strategy, our APPs can focus on the psychological concerns of both patients and caregivers, such as the fear of recurrence.³³ Asking about stress and anxiety helps to ensure that the individual patient's fear of cancer recurrence is understood. To help reduce distress and promote a sense of well-being, we are moving toward integration of digital innovation, more robust support from our psychology and integrative

medicine providers as well as patient and caregiver support groups.

Role of telehealth in GI cancer survivorship care. In the face of a global pandemic with COVID-19, telemedicine is being embraced like never before.³⁴ There is opportunity to leverage virtual health care visits and integrate them into in-person visits to provide more dynamic GI survivorship care based on patient needs. Currently, the wellness consultations in the General Survivorship clinic are offered virtually to overcome the barriers imposed by the pandemic but also to address other pre-existing barriers in health inequity, health literacy, and access to care. Even before the pandemic, patients in the General Survivorship clinic had begun to view telemedicine favorably because of the improvement in access to care. Our findings are consistent with other studies. One qualitative study assessing the incorporation of virtual health in survivorship care among colon cancer survivors treated for curative intent reported participant satisfaction.³⁵ Virtual visits can allow for more efficient delivery of personalized care in a collaborative team-based approach for GI cancer patients following completion of treatment, thereby leveraging the strengths and expertise of various groups in the organization. Virtual access to different disciplines, such as nutrition services, therapists, ostomy or wound care, chaplain and social work, can be timelier and may be more desirable than traditional models. In a recent descriptive cross-sectional study, 92.9% of 421 cancer patients converted to telehealth successfully during the pandemic, without the need for in-person care. Colorectal cancer patients were the second most dominant population in the cohort examined.³⁶ Telehealth in this study provided the highest access for cancer patients treated for curative intent. Thus, there is great potential for adaptability among survivors deemed low or intermediate risk, but there may also be more opportunities to meet the unmet needs of higher risk GI cancer patients with more intense physical and psychological changes related to diagnosis and treatment. Virtual health visits integrated with in-person visits can be a long-term solution for delivering comprehensive and personalized GI survivorship care and can keep patients better connected to the cancer center. Even when the pandemic is successfully contained, policy and reimbursement should continue to support telemedicine, and its impact on patient outcomes and economics will need to be studied.

Challenges in implementation. Because the concept of long-term survivorship care overlaps many disciplines of medicine, evolving the practice patterns to meet the needs of GI cancer survivors can be challenging. Some barriers many organizations face is the time and resources needed for survivorship care plan creation, reimbursement concerns for survivorship care delivery, and coordinating care with primary care providers to provide more cohesive care.³⁷⁻³⁹ Only when providers have the appropriate infrastructure and dedicated commitment and support from organizational leadership will there be opportunity to make transformational change. By embedding Onco-Wellness principles by APPs early into discussions and at each

surveillance visit with patients and caregivers, this survivorship strategy can overcome the barriers that existing models face to provide care that GI cancers survivors deserve. The fact remains that if unaddressed, the same unmet physical and psychological needs of GI cancer survivors will linger on months to years after treatment, and models of care that address these concerns early and appropriately will be positioned for success.⁴⁰ In collaboration with providers in the GI Oncology Department and the Survivorship Program, our onco-wellness APPs are not only able to provide disease-specific care, they also have appropriate clinic time to discuss and evolve the personalized survivorship care plan recommendations and deliver care more longitudinally for this specific survivor group. They will be able to collaborate with the primary care providers and provide them with care plans and updates.

Future directions. Like many academic institutions, our center is currently expanding its access and clinical reach with satellite facilities in our region. A central challenge for such expansion efforts is modeling how best to maximize staffing effectively and efficiently while maintaining the highest standards in clinical care quality and patient satisfaction. Given the novelty of our model, we are currently discussing with our colleagues in the Satellite Oncology Group how to replicate our model throughout our satellite network. This work involves our ongoing efforts to quantitatively measure the impact of our model in our main center retrospectively and to integrate prospective evaluation of our new centers, which will be coming available in the near future. Data on the cost effectiveness of this APP-driven model are essential to determine whether such APP staffing will exist at all satellites or just specialized centers. Whether such staffing models align with high rates of patient satisfaction remains to be determined. Our group is currently evaluating cost, time savings, and feasibility for scaling to other sites within our network.

Conclusions

Survivorship care models vary greatly across specialties and institutions. Further work within the survivorship community is needed to better understand the advantages and limitations of current survivorship models.¹⁰ Our GI Onco-Wellness survivorship model provides much needed specificity for disease-focused, comprehensive, and risk-based posttreatment cancer care to GI cancer survivors. This personalized model provides opportunity for the oncology providers to continue to care as dictated by risk but allows for early introduction of survivorship care more systematically. With projected shortages of both oncology and primary care physicians, an APP-derived model can be mutually beneficial for both fields of oncology and primary care. Streamlining care with dedicated APPs maximizes top-of-license professionalism while preserving access to specialist faculty for new patients, ensuring that time-to-treatment is not compromised. Patients requiring survivorship care because of complicated GI diagnoses, treatments, and long-term and late effects of multimodal therapies will benefit

from the resources that are available in this model. We define a system of GI cancer-specific survivorship care that is delivered with intent and purpose to focus on the patient's cancer journey. The model is focused on preserving the overall wellbeing of our survivors and fostering a more sustainable survivorship infrastructure within the changing medical landscape. We plan to conduct future studies to measure the impact of the model by collecting mixed method quantitative and qualitative data. This further study is needed to determine whether the new model we have developed can be used by other institutions to improve health outcomes with the current standard of surveillance care for patients with GI cancers. Future studies focusing on the economic savings can help inform additional impacts of this APP-driven model.

Authors' Note

Due to the conceptual and theoretical structure of this review, ethical permission from the Institutional Review Board was not required or applied for.

Abbreviations

APP	Advanced Practice Professional
CT	Computerized Tomography
GI	Gastrointestinal

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