Filling the Gap: APP Utilization to Meet Care Needs in Oncology

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A model for integrating APPs into a radiation oncology satellite clinic

In Brief

Cancer prevalence is increasing, and there is a gap between the growing number of patients and the number of oncology providers. Effective use of advanced practice providers (APPs) can help bridge this care gap. The quality improvement (QI) initiative discussed in this article involved integration of an APP into a radiation oncology satellite clinic to provide long-term follow-up care. This QI initiative demonstrated that care provided by the APP led to a 97 percent patient satisfaction rate. The APP also identified an average of 2.6 new care needs per patient—despite 70 percent of patients being seen by other oncology specialties. Though initial data suggest that this model may be cost-effective, further studies are ongoing. This model may be generalizable to any oncology program or practice to allow for growth of patient volume.

Across the United States, both cancer incidence and the number of cancer survivors are growing, increasing the demand for specialty trained oncology providers. In recent estimates by the American Society of Clinical Oncology, there was an estimated 1.8 million new cancer diagnoses and 16.9 million survivors with a cancer history in the United States in 2020.[1] In contrast, there is a downward trend in the number of oncology providers to care for this growing patient population. More than 20 percent of oncologists are nearing retirement, and less than 15 percent of oncologists are younger than 40 years of age.[2] Given the upward trend of cancer prevalence, there is a demand for timely access to oncologists to administer therapy, manage treatment-related side effects, and provide follow-up care. An immediate, available, and potentially cost-effective solution to address the demand for these services is to strategically deploy oncology-trained APPs to augment the existing oncology workforce. In 2019, the American Association of Nurse Practitioners reported an 8 percent increase in nurse practitioners entering the workforce.[3] This increase represents a rising number of APPs who can fill workforce gaps within cancer programs and practices.

Setting the Stage

Vanderbilt-Ingram Cancer Center is centrally located in Nashville, Tenn., with strategically located satellite clinics designed to provide access to cancer care for rural portions of the state surrounding the greater Nashville area. Even with these satellite locations, many patients still commute long distances, at times across state lines, to obtain specialty care in our network.

One of our radiation oncology satellite clinics, located in Franklin, Tenn., was traditionally staffed by two radiation oncologists, with each physician attending clinic on alternating days. The recent population growth of middle Tennessee brought with it a concomitant need for radiation oncology services at our Franklin facility and other satellite locations. Due to physician staffing needs across our network and the desire to maximize access to cancer treatment for this growing population, new patient consultations were prioritized over follow-up visits in physician templates, resulting in scheduling challenges for patients needing routine post-treatment follow-up care at our Franklin location. As a result, only 22 percent of patients who finished treatment at the Franklin clinic were seen in long-term follow-up in the year prior to the initiation of our QI intervention.

Going forward, patients who complete radiation oncology treatment at the Franklin satellite location are prospectively offered the opportunity to return for follow-up in the NP-led clinic.

Though all treated patients have some oncology follow-up (e.g., with the patient's medical or surgical oncologist), staff believed that the unique needs of patients treated with radiation were not being adequately met due to lack of follow-up care availability in this satellite clinic. Recognizing that specialty-trained APPs are equipped to provide long-term follow-up care and surveillance, as well as survivorship care in partnership with their physician colleagues, our radiation oncology team proposed to use an APP to bridge this gap.

Accordingly, in 2020, our radiation oncology team of physicians, a nurse practitioner, nursing, and administrative staff developed a QI initiative with the goal of integrating an APP into the Franklin satellite clinic, thereby ensuring long-term follow-up for patients treated in radiation oncology. Additional goals were to increase patient satisfaction, identify areas of unmet patient needs, and improve new patient access by reducing follow-up burden for physician colleagues. Ideally, our radiation oncology team felt that the utilization of the APP team member would allow our physician providers to focus on addressing new patients' needs and treatment planning.

The Role of APPs in Oncology at Vanderbilt-Ingram Cancer Center

Prior to the development of this QI initiative, APPs were only employed in radiation oncology at our main campus in Nashville. Over the past few years, these team members partnered with physician colleagues in various roles. APPs played a key role in a variety of patient encounters, including urgent inpatient consults, outpatient follow-ups, and outpatient survivorship appointments. The demonstrated versatility of APPs at our main campus made these professionals a natural choice to augment the workforce in a satellite clinic.

Stakeholder Buy-In From Administrative and Physician Leadership

Our radiation oncology team compared the services offered at our main campus to those at our satellite clinics, revealing a significant gap in radiation oncology-specific follow-up care at the Franklin location. In response, our radiation oncology team proposed to develop a long-term follow-up clinic at the Franklin location. Physician leadership was open to this proposal and agreed that the integration of an APP at the Franklin satellite location was feasible and would lead to a meaningful expansion of oncology specialty services.

The inclusion of metrics for evaluation of the patient experience, feasibility, and, ultimately, cost-effectiveness was essential for implementation and stakeholder commitment to this proposal. Equally important were clear guidelines for scope of practice and physician partnership. With physician support, our team met with the Radiation Oncology Department's chief business officer, who—after seeing an unmet need and a feasibility plan—also approved the proposal. With buy-in from physician and administrative leadership, our team discussed how to implement a clinic schedule that would minimize the impact on APPs employed at our main campus. These discussions broadened to include satellite clinic management at the Franklin location, in addition to coordination of global scheduling for multiple providers. Lastly, our team met with essential staff at the Franklin satellite clinic, including front desk specialists and nursing, to prepare for an increased volume of patients on APP clinic days. Overall, stakeholders were supportive and enthusiastic to grow services and improve patient care.

Specialty-Focused Training

Vanderbilt-Ingram Cancer Center's medical director reached out to a nurse practitioner (NP) employed at our main campus who was formally trained as a family NP. With this NP on board, the next step was to provide specialty-focused training. Though there is an oncology board certification program for NPs needing formal specialty training, our radiation oncology team at the Franklin clinic provided specialty-focused training during the NP's three-month orientation process instead. The NP received additional training for survivorship appointments from an APP who was executing survivorship visits at our main campus clinic. Across the Vanderbilt network, our APPs work under the guidance of their physician partners, within their scope of practice, to refine their clinical and patient care skills with a focus on oncology.

Template Development and Schedule

Implementation began with one half day of clinic per week for six months (June 2020 to December 2020). Our team began patient recruitment by systematically calling those who had completed radiation treatment within the last six months at the Franklin facility and who were initially not scheduled for radiation oncology-specific follow up due to staffing limitations. We asked whether they would be willing to return to the Franklin clinic for their follow-up care. Going forward, patients who complete radiation oncology treatment at the Franklin satellite location are prospectively offered the opportunity to return for follow-up at the NP-led clinic. Patient volumes grew incrementally, and the NP's presence was expanded to one full clinic day per week for the next six months (January 2021 to June 2021). This resulted in a full year of data collection, and we are currently evaluating a proposal for expanding this clinic to two full days per week.

Patient Care Satisfaction Survey

To assess patients' experiences at the NP-led clinic, our team modified an existing evidence-based patient care satisfaction survey to focus on cancer-related care.[4] Patients were provided an iPad at the end of their follow-up visits to complete the survey.

Each question presented a Likert scale that ranged from *strongly agree* to *strongly disagree*. After hearing that the survey was anonymous and meant to guide future long-term clinic modifications, as well as provide assessment of the current program, all patients agreed to complete this 15-item questionnaire.

Quality Care Assessment

As stated previously, patients treated with radiation oncology at the Franklin location did receive follow-up from providers (surgical and/or medical oncologists) at other locations. However, based on prior experience and comparison with radiation oncology services offered at our main campus, our team thought that radiation oncology patients had unique follow-up and survivorship needs and/or side effect profiles that would benefit from radiation oncology-specific follow-up care. To evaluate whether the NP-led follow-up or survivorship care offered at the Franklin location added quality care, rather than simply increasing unnecessary office visits, the NP performed a prospective assessment of unmet care needs at the time of the visit. We also retrospectively compared the number of patients who completed a course of curative radiation oncology treatment who had a follow-up visit more than 90 days after completion of treatment before this QI intervention to those who had a follow-up visit more than 90 days after completion of treatment during implementation of the NP-led clinic. Below are three patient case studies that show how quality of care was improved after implementation of the NP-led clinic.

Case Study 1: Early Lung Cancer Identified

The NP saw a 68-year-old male for a three-month follow-up visit after treatment for prostate cancer. This visit was scheduled as a survivorship consultation. One of the elements of survivorship is identifying candidacy for routine cancer screenings (e.g., colonoscopy, PAP smears, mammograms) and ensuring patients complete these screenings. It is not uncommon for patients to forget to follow through with routine health screenings during cancer treatment because these screenings are considered lower priority in the face of active malignancy. Once patients complete treatment, it is important to direct them back to the routine of regular health visits and screenings.

This patient had a significant smoking history and met lung cancer screening guidelines. To the best of our knowledge, he had not been referred for recommended annual low-dose computed tomography scans by his other healthcare providers. During the survivorship visit, the NP referred the patient to our lung cancer screening clinic where smoking cessation is discussed in detail and patients are scheduled for low-dose computed tomography screening. An early-stage lung cancer was identified in the scan. The patient did not have lymph node involvement and was not a good surgical candidate, so he had stereotactic body radiation therapy to treat his lung cancer. The patient was treated at our Franklin satellite location and remains in long-term follow-up with the NP for both his prostate and lung cancers.

Case Study 2: Survivor Fitness

A 53-year-old female presented to the NP-led clinic after breast cancer treatment for routine follow-up and a survivorship visit. Survivorship visits include assessment of mental health and patient education about available resources following treatment conclusion. During treatment, patients commonly have profound fatigue, leading to muscle loss and an increased risk for long-term decompensation. It is not uncommon to observe weight loss or weight gain in this setting. Sometimes patients have surgeries that lead to body dysmorphia (deformity or abnormality in the shape or size of a specified part of the body). This can lead to a lack of confidence and struggles with patients' mental health in the form of depression and relationship issues if they do not feel able to be or want to be sexually intimate with their partner.

In this patient's case, she struggled with fatigue, weight gain, and body dysmorphia after bilateral mastectomies. The NP referred her to Survivor Fitness—a program directed toward cancer survivors in middle Tennessee where patients work with a personal trainer for free or at a reduced cost. By her next follow-up appointment, the patient had an intentional weight loss of eight pounds and was feeling less fatigued after routine exercise. Although this patient still has a lengthy recovery ahead, the NP noted an increase in her self-esteem and momentum in her physical and emotional healing.

Case Study 3: Lymphedema

A 47-year-old female presented for routine follow-up after breast cancer treatment. In discussion of potential side effects following treatment, the NP identified lymphedema as negatively affecting her quality of life. Additionally, the patient reported pain in her breast after radiation due to formation of significant scar tissue. The NP referred the patient for lymphedema physical therapy, and she was fitted for a compression bra, sleeve, and gauntlet. In the NP's next visit with the patient, there was noted improvement in the patient's lymphedema and scar tissue in her breast that led to better quality of life and less pain in her breast, without the use of medications. Before the lymphedema physical therapy, the patient had been unable to perform a self-breast exam because the breast was too tender for palpation, but, with the reduction in pain, she had begun performing monthly breast exams herself.

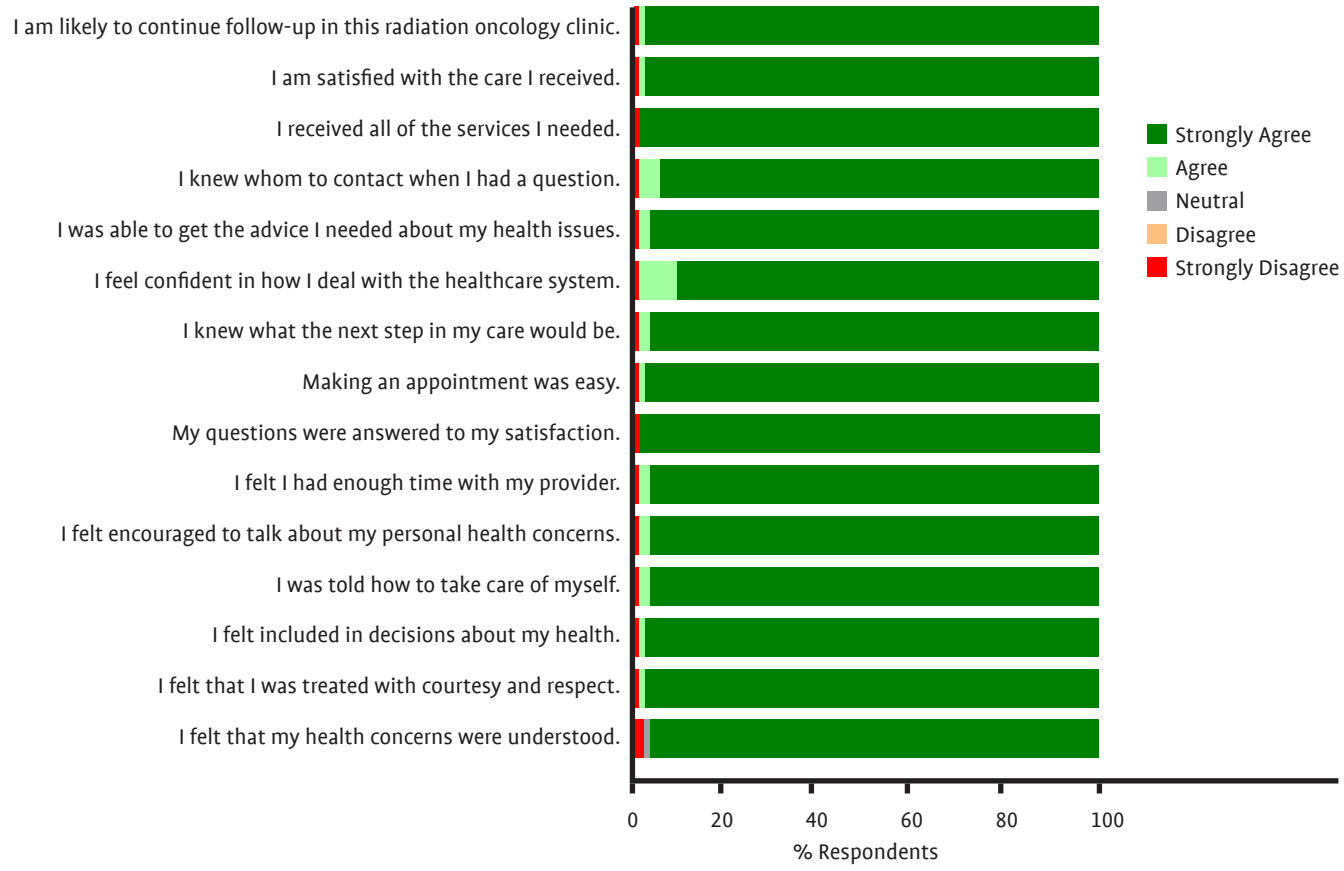
Patient Satisfaction Survey Results

Though these case studies provide snapshots of the care provided in the NP-led clinic, they are reflective of the vast majority of the patient population the NP sees. Ninety-seven percent of patients felt that they would likely continue their follow-up care in the Franklin location if given the opportunity to do so (Figure 1, page 18).

More Patients Receive Follow-Up and Survivorship Care

After implementation of the NP-led clinic, the number of patients who received long-term follow-up care (defined as 90 days or more from their last day of treatment) after completing a radiation course with curative intent increased by 45 percent, from an absolute follow-up rate of 22 percent from February 2019 to February 2020 to 40 percent from June 2020 to June 2021. Of the 222 follow-up visits over the course of the QI initiative, the NP saw 68 patients, accounting for 31 percent of all follow-up visits.

Figure 1. Patient Satisfaction Survey Results*



*Results of anonymous Patient Satisfaction Survey administered immediately after each patient's visit with the nurse practitioner, showing the percentage of respondents with degree of agreement with each statement.

NP integration also increased survivorship care in the Franklin location. Before—and after—implementation of the NP-led clinic, physician-based follow-up visits at the Franklin location did not include survivorship visits. By contrast, 26 percent (or 18 of 68 patient encounters) of the NP's follow-up visits were categorized as survivorship visits.

NP-Identified Care Needs

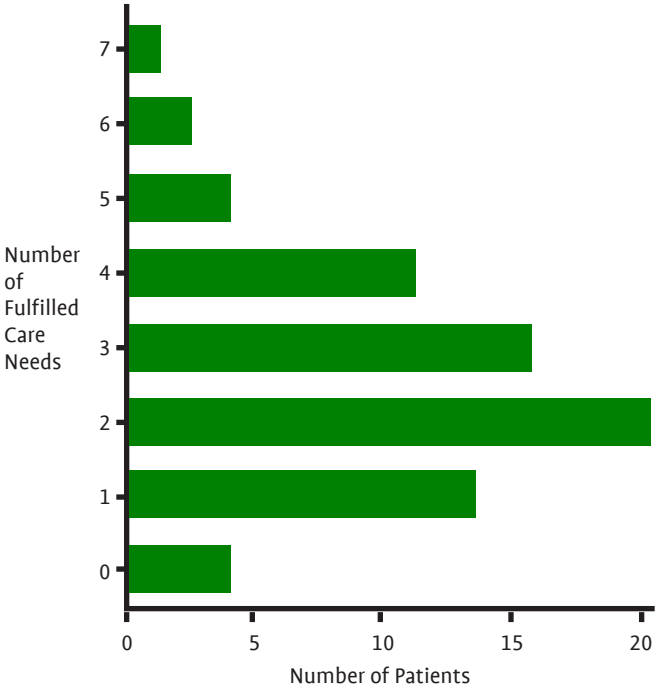
Data from the needs assessments given to patients at the NP-led clinic found that the NP met an average of 2.6 and a median of 2 new care needs per patient seen in the clinic, even though more than 70 percent of patients were seeing at least one other oncology-focused specialist (Figure 2, right). As an example, one patient had seven unmet care needs addressed by the NP. As noted in the above case studies, meeting just one of these care needs can have a significant impact on patients' lives. Only three patients—less than five percent of those seen in the clinic—had no identified needs at the time of their follow-up with the NP. We divided the identified care needs fulfilled at the time of follow-up into distinct categories. The most common services provided by the NP were healthy lifestyle discussion, recommendations for symptom management, and cancer-related fatigue.

Limitations and Additional Benefits Initiative

The NP-led clinic was initiated during the COVID-19 pandemic. Some patients cancelled or did not want to present for follow-up care during this year of data collection. The pandemic may have contributed to a reduction in the number of patients presenting for follow up. Two patients hesitant about visiting the NP-led clinic in person agreed to a telehealth visit.

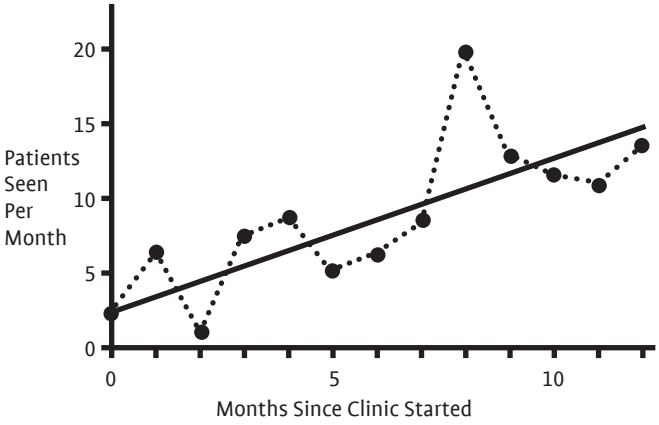
We implemented this NP-led clinic at one satellite location to serve as a pilot that would be generalizable to other oncology satellite clinics. There was a slow start to the establishment of this follow-up care clinic, which is not uncommon with similar services within Vanderbilt-Ingram Cancer Center. However, patient volumes significantly increased over the course of the year (Figure 3, right). From June to December 2020, the NP saw an average of five patients per month. From January to June 2021, the NP saw an average of 12 patients per month, with a continued upward trajectory and a fitted linear trend with an R^2 value of 0.59.

Figure 2. Care Needs Fulfilled By APP*



*Distribution of the number of patients (*x*-axis) versus the number of fulfilled care needs met (*y*-axis).

Figure 3. Patient Volume in NP-Led Clinic*



*Graph of the number of months since the NP started seeing patients at the Franklin clinic (*x*-axis) versus the number of patients seen by the NP per month (*y*-axis), with a best-fit linear.

Although the main objective of this QI initiative was to improve patient satisfaction and establish long-term care post-radiation therapy, the NP-led clinic has the potential to deliver a significant cost benefit to our institution. In busy clinics, the use of an APP for appropriately selected follow-up patients will free up physician time for new consultation visits and treatment planning activities. As noted, the overall follow-up rate for patients treated with curative intent increased by 45 percent with the introduction of the NP-led follow-up clinic. Again, though our goal at the outset was to improve patient care, the NP visits generated revenue for our institution that would not have been captured otherwise. More detailed analyses of this model's cost effectiveness are currently ongoing to ensure sustainability and to prepare for expansion of APP services at other satellite clinics and at our main campus. OI

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Acknowledgments

We acknowledge Steve Gambill and Christopher Stewart for assistance in generating patient lists for evaluation; Angela Thompson and Dr. Eric Shinohara for facilitating the project; and Rachel Conklin, PA-C, for her assistance in generating the patient survey. Finally, we thank the staff at the Franklin clinic, including the management, nursing, front office, and staffing physicians—Drs. Anthony Cmelak and Corbin Johnson—for their support of the clinic and project implementation.

Disclosure of Interest

The authors report no conflict of interest or funding.

References

1. 2020 Snapshot: state of the oncology workforce in America. *JCO Oncol Pract*. 2021;17(1):30. doi: 10.1200/OP.20.00577

2. 2021 Snapshot: state of the oncology workforce in America. *JCO Oncol Pract*. 2021;17(5):224-226. doi: 10.1200/OP.21.00079

3. American Association of Nurse Practitioners. More than 290,000 nurse practitioners licensed in the United States. Published March 3, 2020. Accessed March 10, 2022. aanp.org/news-feed/290-000-nps-licensed-in-us

4. Jean-Pierre P, Fiscella K, Freund KM, et al. Structural and reliability analysis of a patient satisfaction with cancer-related care measure: a multisite patient navigation research program study. *Cancer.* 2011;117(4):854-861. doi: 10.1002/cncr.25501