

# Improving Quality and Cost of the Oncology Advanced Practice Provider Chemotherapy Privileging Process

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**BACKGROUND:** Managing antineoplastic orders, side effects, and symptoms is a primary role of oncology advanced practice providers (APPs). Antineoplastic management (ANM) is complex because of risk of medication errors, narrow therapeutic range of agents, frequent dose adjustments, and multiple drug regimens.

**OBJECTIVES:** This article describes an academic institution's review of current practice for ANM privileging and employing Plan-Do-Study-Act (PDSA) cycles to develop a revised process relevant to APP practice, addressing efficiency, accessibility, and cost-effectiveness.

**METHODS:** Using consecutive PDSA cycles, the team revised the didactic portion of the ANM privileging process and collaborated with nurses, pharmacists, and physicians for mentoring expertise.

**FINDINGS:** The revised process resulted in increased relevance of ANM didactic content while requiring 75% less time to complete. To date, all ANM-privileged APPs at the institution (N = 49) have completed the revised ANM privileging process, with a 100% pass rate on the competency assessment.

## KEYWORDS

chemotherapy privileging; advanced practice providers; quality improvement

## DIGITAL OBJECT IDENTIFIER

10.1188/24.CJON.263-271

**THE PROJECTED DEMAND FOR ONCOLOGY SERVICES** is anticipated to outpace the supply of oncologists by 2030, emphasizing the essential role that advanced practice providers (APPs) play in the delivery of oncology care (Reynolds & McCoy, 2016). Oncology APPs, who include advanced practice RNs and physician assistants as part of an interprofessional team, assist in the development of treatment plans for patients with cancer and manage side effects in collaboration with medical, surgical, and/or radiation oncologists. Prescribing and treatment management are identified as two of the top four patient care activities for oncology APPs (Bruinooge et al., 2018).

## Background

Although the responsibilities and volume of oncology APPs have continued to increase, limited curricular focus on oncology in graduate education for advanced practice RNs and physician assistants exists (Hollis & McMenamin, 2014). Many oncology APPs augment their practice with on-the-job training or postgraduate independent study (Alencar et al., 2018). A primary role for providers working with patients with cancer is managing antineoplastic orders, side effects, and symptom management. Although there is a lack of current data on APP oncology-specific care management, 78% of APPs (N = 164) who entered oncology practice reported they were not prepared for chemotherapy and bi-therapy competencies and 70% reported perceiving a deficiency in the ability to care for patients experiencing oncologic emergencies (Rosenzweig et al., 2012). Given the complexity of antineoplastic management (ANM) associated with clinical practice, the need for establishing a structured training program for oncology APPs and assessing competency in clinical practice is evident.

Throughout this article, the term ANM will reference (a) the safe and appropriate management of how, when, and to whom chemotherapeutic or cancer chemotherapy agents, as well as radiosensitizers, biologics, hormone therapy, and immune modulators and/or related agents, are prescribed, modified, and administered; and (b) the prevention of and interventions required to minimize and treat antineoplastic side effects and toxicities in those receiving them.

## Literature Search

A team conducted a literature search using Scopus®, CINAHL®, and PubMed® databases, as well as Google Scholar™, to identify contemporary APP ANM

privileging processes. The following key search terms were used: *chemotherapy AND credentialing AND advanced practice providers, APP AND chemotherapy privileging process, and chemotherapy privileging.* Search results did not identify articles related to ANM privileging processes, so search terms were modified to include *hematology oncology AND fellowship programs and anti-cancer therapy privileging.* Inclusion criteria comprised peer-reviewed articles published in English between 2016 and 2022. A research librarian assisted in a thorough search for appropriate resources and terms. Of the four articles identified, three addressed APP hematology-oncology fellowship programs, and one discussed chemotherapy privileging in an academic medical center. The use of the search term *fellowship programs* was based on the expectation that ANM-related education or privileging-related information would be included in the curriculum for oncology APP fellowship programs.

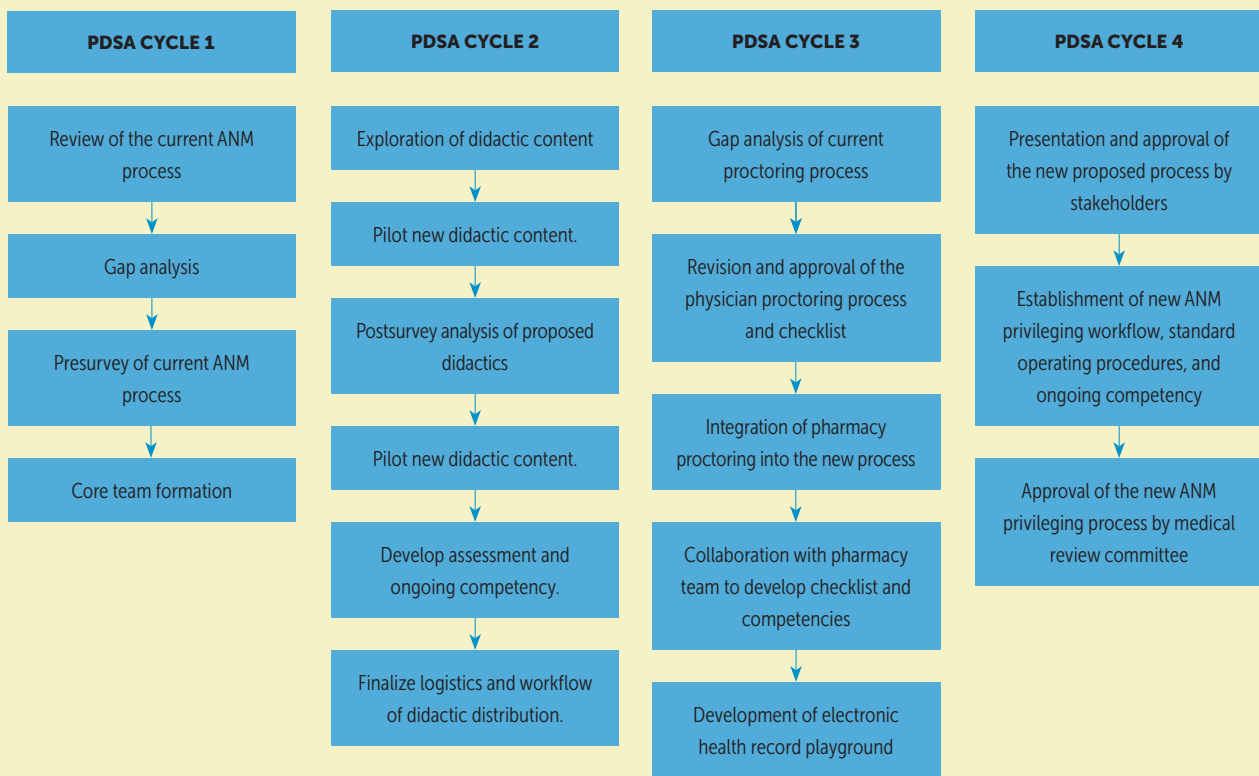
**Purpose**

ANM presents an increased level of complexity because of the potential for medication errors, frequent dose modifications,

**“All ANM-privileged APPs have completed the process with a passing rate of 100% for the competency assessments.”**

narrow therapeutic range of medications, and the constantly changing landscape of oncologic drug regimens (Bryant-Bova, 2016; Garfield et al., 2013; Goldspiel et al., 2015; Greer, 2023). From entering an order to providing the final administration,

**FIGURE 1.** OVERVIEW OF THE PROJECT WORKFLOW OF THE ANM PRIVILEGING PROCESS USING PDSA CYCLES



ANM—antineoplastic management; PDSA—Plan-Do-Study-Act

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the process has the potential for significant errors (Bryant-Bova, 2016; Garfield et al., 2013; Goldspiel et al., 2015; Greer, 2023). The American Society of Clinical Oncology (ASCO) and the American Society of Health-System Pharmacists recommend that practice settings establish specific policies and procedures to ensure healthcare providers prescribing antineoplastic therapy are competent to perform these functions (Goldspiel et al., 2015). The Oncology Nursing Society (ONS) developed benchmarks to improve and standardize quality care, including pharmacologic assessment, risk of treatment toxicity, and prevention and management of treatment-related toxicities, through the Oncology Nurse Practitioner Competencies (Coombs et al., 2020). The current article details the quality improvement process undertaken to revise the privileging process at the Simmons Comprehensive Cancer Center (SCCC) at the University of Texas Southwestern Medical Center in Dallas for APPs to prescribe and manage antineoplastic therapy, including management of associated symptoms and side effects of treatment, while assessing and maintaining competency in ANM, with the intent to improve quality, patient safety, and efficiency within the care delivery system.

## Methods

### Improvement Approach

The team used the Plan-Do-Study-Act (PDSA) cycle framework to improve and modify the oncology APP ANM privileging process (Institute for Healthcare Improvement, n.d). A review of the APP antineoplastic privileging process at the cancer center was step 1 of the PDSA cycle (see Figure 1). The review's purpose was to identify gaps and revise and streamline a process relevant to the oncology APP role and clinical practice, with the intent to improve quality, patient safety, and efficiency within the care delivery system. Institutional review board approval was not required because this project was designated as quality improvement. As a result, an interprofessional team consisting of nurse practitioners, a clinical nurse specialist, physician assistants, physicians, and pharmacists was formed to guide and oversee the initiative.

### Data Collection

At the initiation of the PDSA cycle, planning began with obtaining data through a cost analysis of the didactic portion of the existing ANM privileging process and conducting four semistructured interviews with oncology APPs who had completed the existing ANM privileging process. Dissatisfaction with the current process, specifically the time needed to complete the didactic course content, and the structure for obtaining the ANM privilege stood out in their feedback.

A formal needs assessment was then conducted among the APPs who had completed the current ANM privileging process (N = 52). Assessment data were collected and managed using protected REDCap electronic data capture tools hosted at the University of

Texas Southwestern Medical Center (Harris et al., 2009, 2019). Survey questions were tailored to measure satisfaction with current course content, ease of online access to modules, time spent on completion of the didactic content, relevance of the content to individual practice, and satisfaction with the overall proctoring

**TABLE 1.**  
SAMPLE CHARACTERISTICS OF PRESURVEY PARTICIPANTS (N = 22)

CHARACTERISTIC	n
<b>Type of participating advanced practice provider</b>	
Physician assistant	12
Nurse practitioner	10
<b>Highest education level</b>	
Master's	20
Doctoral	2
<b>Years of experience<sup>a</sup></b>	
Less than 5 years	9
5–9 years	7
10 years or greater	5
<b>Clinical practice setting</b>	
Ambulatory care	12
Acute care	10
<b>Primary oncology specialty</b>	
Medical oncology	14
Hematologic malignancies	7
Gynecologic oncology	1
<b>Current antineoplastic management privileges</b>	
Fully privileged	18
Completing education modules	2
Granted privilege to learn and being proctored	2
<b>Length of time since initial privilege completed<sup>a</sup></b>	
Less than 6 months	3
6–12 months	6
More than 12 months	9

<sup>a</sup>May not add up to total N because not all participants answered the specified questions

experience based on data received in cycle 1 of the PDSA process. Content relevant to clinical practice was a key needs assessment measure because clinical knowledge and competence are significant contributors to patient safety in rapidly changing healthcare environments (Zaitoun et al., 2023). Demographic data collected included credentials, highest degree earned, clinical practice setting, primary oncology specialty, and years in practice (see Table 1).

Data reviewed from the individual interviews and initial needs assessment identified the following gaps with the ongoing ANM privileging process:

- Relevancy to scope of practice: Didactic content focused mainly on basic concepts of oncology and cancer, which targeted APPs new to oncology and did not provide a comprehensive overview of ANM, including treatment monitoring and side effects.

**TABLE 2.** ONCOLOGY ADVANCED PRACTICE PROVIDER SURVEY RESULTS PRE- AND POST-ANTINEOPLASTIC MANAGEMENT DIDACTIC REVISION

SURVEY STATEMENT	EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
	n	n	n	n	n
<b>Describe how you would rate the following:</b>					
<b>The structure of the education modules</b>					
Preimplementation	3	1	11	7	1
Postimplementation	3	4	-	-	-
<b>Ease of accessing the required modules</b>					
Preimplementation	2	7	10	4	-
Postimplementation	2	2	2	1	-
SURVEY STATEMENT	STRONGLY AGREE	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	STRONGLY DISAGREE
	n	n	n	n	n
<b>The required modules were relevant to attain the overall learning objectives.</b>					
Preimplementation	3	11	4	5	-
Postimplementation	5	2	-	-	-
<b>The content provided enhanced my expertise and knowledge managing patients on antineoplastic regimens.</b>					
Preimplementation	3	13	5	2	-
Postimplementation	1	6	-	-	-
<b>I gained new knowledge that I will apply to my clinical practice.</b>					
Preimplementation	4	14	2	3	-
Postimplementation	1	6	-	-	-
<b>The content was appropriate for my level of experience.</b>					
Preimplementation	3	11	4	5	-
Postimplementation	2	5	-	-	-

**Note.** Baseline (N = 23), 44% response rate; follow-up results (N = 7) from pilot of new didactic content with 7 randomly selected oncology advanced practice providers

- Time: More than 120 hours were required to complete the didactic part of the process.
- Ease of access: Users were required to navigate multiple websites to access the content and submit paperwork from each site to complete the process.
- Cost: The health system cost for APPs to complete the required didactic courses ranged from \$900 to \$1,000 per APP; it was not inclusive of the paid time required for the APPs to complete the courses.
- Quality and safety: Existing ANM policies and standard operating procedures did not delineate the APP role per Quality Oncology Practice Initiative standards (ASCO, 2020).

### Exploration of Didactic Content

During the second PDSA cycle, the team evaluated current ANM privileging didactic content by comparing the content available through multiple professional oncology organizations, including ASCO, ONS, the Advanced Practitioner Society for Hematology and Oncology, and the Hematology/Oncology Pharmacy Association (HOPA). Didactic content specific to ANM education for oncology APPs through professional oncology organizations was not identified during the project's 12-month time frame.

Pharmacists, as members of the interprofessional oncology care team, play a key role in ANM. Pharmacists working in the oncology setting often obtain Board Certified Oncology Pharmacist certification to practice (HOPA, 2013). The Board Certified Oncology Pharmacist educational resources and program focus on the complexity of drug therapies used in oncology, as well as management of cancer- and drug-related adverse events (Board of Pharmacy Specialties, n.d.). The General Oncology Pharmacy Education Core Competency Certificate Program provides fundamental oncology pharmacy education to pharmacists and healthcare practitioners.

Content of the HOPA Core Competency education was examined in detail for potential use as the primary educational course for APP ANM privileging (HOPA, n.d.). The team determined eight modules in the Core Competency Program bundle to be relevant and applicable to the role and scope of oncology APPs. A 25-question knowledge assessment, using REDCap electronic data capture tools, evaluated the efficacy and learning gain of the APPs completing the HOPA didactic portion of the ANM process (Harris et al., 2009, 2019). A score of at least 80% was established by the team to assess APP competency and knowledge gained after completing the didactic portion of the process.

### Piloting the New Process

A pilot study assessed the relevance and ease of use of the HOPA modules for the ANM privileging process. Seven APPs selected by a random number generator participated in the pilot to complete the eight HOPA didactic modules within four weeks. Three of

**FIGURE 2.**  
DIDACTIC COURSES FOR THE REVISED  
ANTINEOPLASTIC PRIVILEGING PROCESS

#### HEMATOLOGY/ONCOLOGY PHARMACY ASSOCIATION

- Basic Oncology
- Calculating Appropriate Doses of Anti-Cancer Medications for Hematology/Oncology Patients
- Designing and Implementing Supportive Care Plans
- Effective Patient Education
- Evaluation of Chemotherapy Orders and Initial Patient Assessment
- Extravasation—When Chemotherapy Misses the Mark
- Monitoring and Modifying Cancer Treatment Plans
- Safe Handling of Hazardous Drugs

#### ONCOLOGY NURSING SOCIETY

- Essentials in Advanced Practice Symptom Management
- Essentials in Oncologic Emergencies for the Advanced Practice Provider

**Note.** This figure lists the modules adapted as the required didactics for the revised antineoplastic management process.

the APPs had not completed the didactic content in its entirety; however, they had completed a majority of the modules and were included in the postimplementation survey. The seven APPs then evaluated the didactic content using a survey and participated in an open forum to obtain contextual feedback on the content.

### Results

Analysis of the survey results and forum discussion compared the pilot results to the expected outcomes. All of the participants (N = 7) completed the postpilot survey. Results demonstrated an improvement in the overall satisfaction of the HOPA content, with all participants noting the content as more relevant to the APP scope of practice (see Table 2). Participants also requested that additional information on oncologic emergencies and symptom management be included as part of the didactic education.

Based on the pilot survey results and group feedback, the eight HOPA Core Competency modules were integrated into the ANM privileging process. The ONS Essentials in Oncologic Emergencies for the Advanced Practice Provider and Essentials in Advanced Practice Symptom Management courses were identified as comprehensive and relevant to the role of the oncology APP and included as part of the didactic education (see Figure 2) (ONS, n.d.).

The Joint Commission (2024) states that components of a privileging process should include the creation of a procedures list, application process, and evaluation process, specifying delineated privileges, notifying the relevant personnel of privileges, and monitoring privileges and quality-of-care issues. Therefore,

after completion and assessment of the didactic content, the process was revised to be inclusive of all Joint Commission components, with inclusion of pharmacy and physician proctoring, formulating standard operating procedures, and documenting ongoing competency as added requirements.

**Pharmacy Proctoring**

Developing proficiency in navigating and understanding treatment plans in the electronic health record (EHR) is essential in ANM management (Adelson et al., 2014). During the third PDSA cycle, the addition of pharmacy proctoring ensured that oncology APPs gained EHR skills, as well as knowledge of disease-specific treatment plans, national guidelines, and clinical trial information. A pharmacy proctoring process and checklist, developed in collaboration with SCCC pharmacists, standardized information provided to APP learners and assisted pharmacy preceptors in evaluating APP ANM competencies. Learners were given access

to an EHR playground specific to their specialty to assess their level of understanding after pharmacy proctoring.

**Physician Proctoring**

The physician proctoring requirement was modified during the third PDSA cycle to improve formulating and revising treatment and supportive plans based on symptoms, laboratory results, and radiologic findings in real time for patients. The prior ANM process had focused on creating a log of patients the APP comanaged with the collaborating/supervising physician(s). The goal of physician proctoring with the revised ANM process was to foster comprehensive learning and conversations on shared decision-making, while facilitating an in-depth discussion for disease-specific care plans. The updated physician proctoring format offers the physician an opportunity to provide feedback to the APP and approve the final training experience before finalizing the ANM privileging process with the Professional Staff Office. Like the pharmacy proctoring component, a physician proctoring process and checklist standardized the learning experience for collaborating/supervising physicians and APPs.

**Competency**

The goal of assessing competency is to ensure the APP can demonstrate the elements required to deliver safe, quality care (Joint Commission, 2022). ASCO QOPI® Certification Program Standards include a description of how competency is demonstrated and documented by clinical staff who order, prepare, and administer chemotherapy (ASCO, 2020). A competency framework for SCCC APPs with ANM privileges, developed during PDSA cycle 3, was integrated into an ANM competency checklist (see Figure 3) to maintain ANM privileging.

**Revised ANM Privileging Process**

Table 3 outlines the most notable outcomes of this project. The revised ANM APP privileging process has reduced the hours required to complete the didactic portion by 75% while enhancing the content relevant to ANM management by the APPs, and improved the cost associated with the process by about \$6,000 per APP. To date, 49 ANM-privileged oncology APPs have completed the revised ANM didactic portion, with all APPs completing the knowledge assessment for competency with a passing rate of 80% or greater, and 13 new APPs have completed the ANM antineoplastic privileging process, saving the organization about \$78,000.

**Discussion**

The aim of the ANM privileging performance improvement project was to use the PDSA cycles to identify gaps and incorporate clinically relevant didactic materials, while addressing aspects related to cost and time required to complete the ANM privileging process for oncology APPs (see Figure 4). Of note, the new

**FIGURE 3.**  
REVISED APP ANM COMPETENCY  
REQUIREMENTS

**EVALUATION**

- Acceptable performance on Ongoing Professional Performance Evaluation
- Review ANM decisions with collaborating/supervising physician(s) during documented monthly quality meetings.

**EDUCATION**

- Complete 10 CE/CME hours each fiscal year related to antineoplastic and/or symptom management.
- Complete 2 of the following each fiscal year:
  - Attend a Simmons Cancer Center Pharmacy lecture; documentation required
  - Attend an Oncology APP Education Committee CE/CME event; documentation required
  - Case study presentation: Present a case study pertaining to ANM, symptom management, or supportive care to APP colleagues; documentation of presentation and attendees required
- APP manager reviews education requirements during annual performance evaluation.

**SAFETY**

- Self-report antineoplastic near misses or errors via organizational safety event reporting system.
  - Notify supervising physician(s) and APP manager.
  - Additional education may be required.

ANM—antineoplastic management; APP—advanced practice provider; CE—continuing education; CME—continuing medical education

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streamlined process resulted in ANM didactic content reported by participants (N = 49) to be more relevant to APP practice while requiring 75% less time to complete. These findings are based on results from the pilot and data gathered since implementing the change. The revised ANM privileging process also included pharmacy proctoring, EHR simulation training, and a modified physician proctoring component. The health system approved the revised process, and all ANM-privileged SCCC APPs (N = 49) have completed the process with a passing rate of 100% for the competency assessment. Standardization within the modified process allows for knowledge assessment at baseline and post-completion, and ongoing evaluation of competency, in addition to a mechanism to annually assess competency and the ability to refine or modify the required modules over time.

Overall, the revised and implemented SCCC APP ANM privileging process aligns with the present scope of practice of oncology APPs and is readily available to all organizations providing an integrated plan for maintaining ongoing competency, while improving efficiency of clinical practice.

### Limitations

Limitations related to revising SCCC APP ANM privileging may have some institutional specificity. A percentage of providers at SCCC were previously managing ANM; additional content may be required to further augment the knowledge of APPs new to an oncology-specific role and practice. However, pre- and postimplementation assessments and the streamlined didactic content are not institutionally specific and are readily available to all organizations and practice settings. An additional limitation is the number of APPs who completed the revised privileging process;

### IMPLICATIONS FOR PRACTICE

- Collaborate with physicians, pharmacists, and RNs to facilitate an enhanced patient experience when receiving antineoplastic treatment.
- Use a structured and standardized advanced practice provider (APP) privileging process and competency in antineoplastic management to establish trust and a collaborative care relationship between APPs and RNs when addressing patient outcomes.
- Tailor onboarding and education specific to APP antineoplastic prescribing and management of side effects to standardize the patient care approach.

with a relatively small sample size (N = 49) for this project, the application and results may not be generalizable to another institution's APP population.

Only descriptive data were gathered throughout the PDSA cycles; an additional limitation was that no parametric testing was performed to examine the statistical outcomes relevant to this quality improvement project. Finally, the goal of the quality improvement project did not examine the direct impact on patient experience, quality, or safety; no patient outcomes data were gathered to indicate that achievement led to enhanced patient safety or care quality, so patient impact related to this initiative remains unknown. The outcomes that may reflect enhanced patient safety and/or quality of care require further examination. Of note, a strength of this privileging process is that standardization of the ANM privileging process is not mentor specific, allowing for consistency in patient care management.

### Implications for Nursing

A streamlined and standardized approach to ANM management facilitates the interprofessional collaboration of the APPs,

**TABLE 3.**  
OUTCOMES OF THE REVISED ANM PRIVILEGING PROCESS

CATEGORY	BASELINE	POSTINTERVENTION	OUTCOME
Didactic time (hours)	Greater than 100	Fewer than 25	75 or fewer hours
Cost per APP <sup>a</sup>	Greater than \$8,000	Less than \$2,000	Savings of \$6,000 per APP
Relevancy	Oncology concepts	Focus on APP role in ANM	Clinical relevance may positively affect patient outcomes.
Proctoring	Physician	Physician and pharmacist	Interprofessional approach
EHR training	Epic Beacon	Epic Beacon and EHR simulation	Provides hands-on experience
Competency requirements	Recommended	Ongoing competency requirements	Improvements in clinical outcomes and patient safety
CE/CME hours	87 hours	20 hours	67 fewer CE/CME hours awarded

<sup>a</sup>Includes APP time to complete ANM process and is based on an average of \$55 per hour  
ANM—antineoplastic management; APP—advanced practice provider; CE—continuing education; CME—continuing medical education; EHR—electronic health record

physicians, pharmacists, and RNs for patients receiving anti-neoplastic treatment. Greer (2023) describes managing oral antineoplastic treatment, specific to roles within the interprofessional team. One aspect of the oncology RN and APP role is to ensure management of treatment-related side effects and symptoms, in addition to prescribing and refilling prescriptions. These roles are best managed safely and efficiently when members of the interprofessional team collaborate (Greer, 2023). An interprofessional approach additionally allows for streamlining and enhancing detailed education of prescribed drugs for the patient and caregiver during each cycle of antineoplastic therapy. Access within the APP, pharmacy, and RN care team is also an integral aspect of patient education. In a qualitative study, Bossert et al. (2020) reported that patients with lung cancer and caregivers felt most vulnerable when care appeared fragmented or varied among the care team, emphasizing that a functioning interprofessional care team augments safety and comfort for patients and caregivers. Thus, a collaborative care approach to treatment-related effects within the APP/RN and pharmacy care team enhances the patient experience.

Finally, tailoring onboarding and education of the APP for ANM privileging, specific to prescribing antineoplastic therapy and managing antineoplastic-related side effects, maintains a standard approach to management of the patient receiving ANM. This quality improvement project illustrates the process of developing and implementing an APP-led project to improve

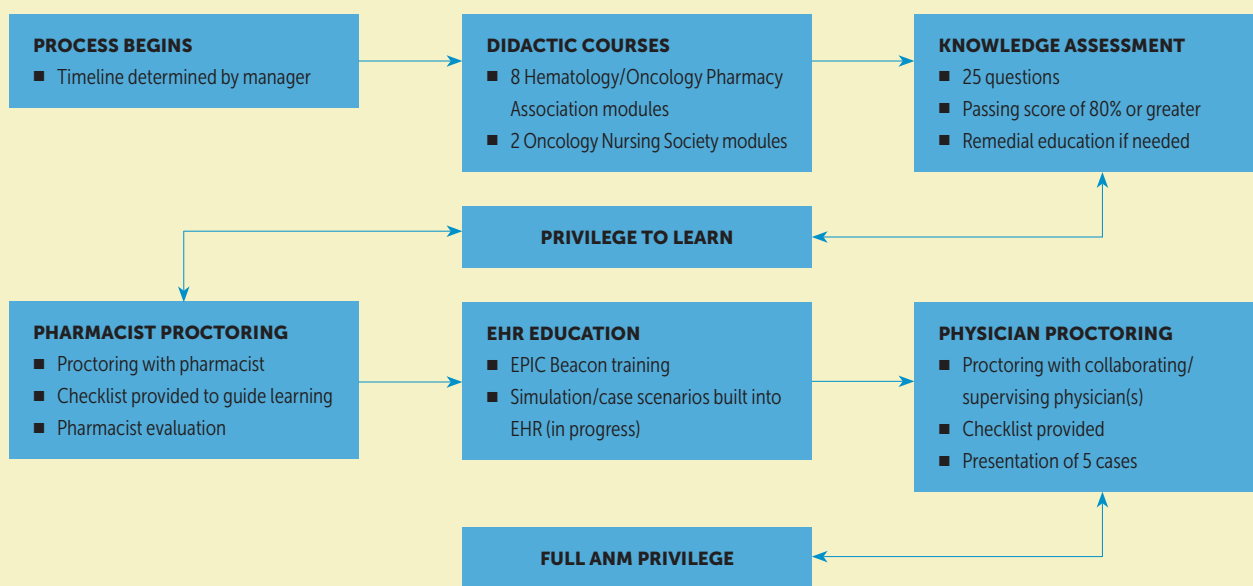
APP professional practice. In addition to streamlining and standardizing the approach to ANM, the outcomes demonstrate enhanced clinician satisfaction and efficiency in ANM privileging and patient care management, while addressing system costs.

### Conclusion

Oncology APPs have a key role in treatment and symptom management for patients receiving systemic therapy. Adopting a streamlined and standardized approach to ANM privileging requires interprofessional collaboration among oncology APPs, nurses, pharmacists, and physicians. This quality improvement project provides a foundation for other clinical practice settings to evaluate the relevancy, efficiency, and cost of their ANM privileging processes and ensure that evaluation of clinical competence is included.

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**FIGURE 4.** REVISED ONCOLOGY APP ANTINEOPLASTIC PRIVILEGING PROCESS FLOW



ANM—antineoplastic management; APP—advanced practice provider; EHR—electronic health record



The authors take full responsibility for this content and did not receive honoraria or disclose any relevant financial relationships. The article has been reviewed by independent peer reviewers to ensure that it is objective and free from bias.

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## QUESTIONS FOR DISCUSSION USE THIS ARTICLE FOR JOURNAL CLUB



Journal club programs can help to increase your ability to evaluate the literature and translate those research findings to clinical practice, education, administration, and research. Use the following questions to start the discussion at your next journal club meeting.

- What did this article reveal to you about advanced practice provider antineoplastic prescribing privileging processes?
- What is your organization's advanced practice provider antineoplastic prescribing privileging process?
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