Self-Administered Premedication

Improving taxane chemotherapy treatment

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BACKGROUND: Patients receiving taxane therapy are at risk for hypersensitivity reactions without appropriate premedication management. Patients must understand the importance of taking premedications as prescribed to prevent reactions.

OBJECTIVES: The objectives of this study were to implement and evaluate a multidisciplinary practice protocol comprised of standardized nursing documentation of premedication regimens, teaching, and patient adherence to at-home premedication in an electronic health record (EHR).

METHODS: A new process was developed to provide standardized prescriptions, a personalized instruction sheet for patients and families, and a standardized approach to document adherence and teaching in the EHR. Pre- and post-EHR audits were used twice to evaluate the practice changes.

FINDINGS: The findings of the first audit suggested improvement in all practice changes. After the first audit, reinforcement of the changes occurred within the group and with one-on-one meetings. The goal of 90% adherence was met at the second audit.

KEYWORDS
hypersensitivity reactions; taxanes; premedication; electronic health records

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premedication dosing can result in delayed treatments or last-minute dosing, which increases a patient’s risk for a reaction (Mezzano, Giavina-Bianchi, Picard, Caiado, & Castells, 2013).

To decrease the risk of taxane infusion–associated hypersensitivity reactions, premedications must be taken as prescribed. Because the majority of chemotherapy infusions are delivered in ambulatory care settings, the burden of premedication administration has shifted to patients. A theoretical communication perspective suggests that a convincing and precise message should be conveyed to change attitudes and motivations to influence behavior change and, in this case, patient adherence to treatment regimens (Leventhal & Cameron, 1987).

Barriers to adherence include a lack of understanding of dosing schedules, poor knowledge of side effects, and ill-timed dosing schedules (Iuga & McGuire, 2014; Jimmy & Jose, 2011; Oncology Nursing Society, 2016). Older adult patients often have additional challenges to adherence related to cognitive issues and preexisting comorbidities that may require simultaneous dosing of several medications (Jansen, van Weert, van Dulmen, Heeren, & Bensing, 2007; MacLaughlin et al., 2005). Adherence to medications can be affected by dosing schedules, such as intermittent and continuous schedules, the latter of which is easier to incorporate into daily routines (Given, Spoelstra, & Grant, 2011). Teaching materials should be kept as simple as possible to avoid confusion and should clearly explain and illustrate complicated dosing schedules (Schneider, Hess, & Gosselin, 2011; Schwartz, 2012).

Several behavioral models have been adopted to improve patient adherence to self-administered treatment regimens. Successful strategies for promoting adherence to at-home medication dosing schedules include provider telephone follow-up, keeping symptom management logs, and using automated voice response systems (Nieuwlaat et al., 2014; Schneider et al., 2011; Spoelstra et al., 2013; Viswanathan et al., 2012). Although patients have reported value in verbal information on medications, concise, detailed, and comprehensive written information is also an important and necessary educational component (Grime, Blenkinsopp, Raynor, Pollock, & Knapp, 2007). The instructions should include an action plan that can be easily integrated into a daily routine. Cues, such as placing medications at the bedside and setting an alarm, can help improve adherence to at-home oral premedication (Munro, Lewin, Swart, & Volmink, 2007; van Dulmen et al., 2007).

Intervention strategies that most effectively improve medication adherence in patients with cancer include a combination of verbal educational counseling and written aids that provide drug-specific information, schedule tools, and explanations of the possible consequences of nonadherence aimed to reinforce verbal counseling (McGue, Lohr, & Pick, 2014). Messages should be kept simple and precise to meet individual needs, and the teach back method should be used to verify comprehension of the material. In a systematic review investigating pharmacist-led interventions for patient medication counseling (Okumura, Rotta, & Correr, 2014), pharmacists consistently supplemented teaching with written materials for better understanding of drug therapy, which resulted in improved medication adherence. Any single type of intervention, such as written material alone, is unlikely to result in an open, trusting, and supportive provider–patient relationship that encourages patient communication for advice or clarification when needed (D’Amato, 2008).

The objectives of this study were to implement and evaluate a multidisciplinary practice protocol comprised of a standardized prescription and personalized teaching, along with standardized nursing documentation of premedication regimens, teaching, and patient adherence to at-home premedication and in an electronic health record (EHR).

Methods

Evidence-Based Project Approach
Science and Practice Aligned Within Nursing (SPAWN) was used to structure, guide, and conduct this evidence-based practice project (Boucher, Roper, Underhill, & Berry, 2013). In accordance with the SPAWN structure, if the infusion nurses identified a troublesome clinical issue, the SPAWN team would develop a PICOT (patient population, intervention, comparison group, outcome, and time frame) question, critique the literature, and meet with other clinicians to develop and implement an approach to address the clinical issue and PICOT question.

Baseline Data
Prompted by anecdotal suspicions that patients scheduled for taxane infusions often did not adhere to at-home premedication regimens, clinical nurses performed a retrospective EHR audit of 57 newly treated patients during the past six months (July 2011–December 2011) to assess baseline documentation of (a) prescriptions for at-home premedication, (b) patient teaching, and (c) patient-reported adherence to the dosing schedule. The audit was conducted at Dana-Farber/Brigham and Women’s Cancer Center at Milford Regional Medical Center in Massachusetts, a community ambulatory infusion satellite clinic of a comprehensive cancer center. The findings revealed incomplete nursing documentation of teaching and patient adherence to at-home premedication dosing prior to taxane administration in the satellite clinic. The baseline audit of the EHRs revealed that 50 of 57 patients (88%) received a prescription for at-home premedication from a provider (i.e., medical doctor, nurse practitioner, or physician assistant), but only 21 of the EHRs (37%) documented that teaching was performed by a nurse, and no documentation of patient adherence to the at-home premedication dosing existed.

Evidence-Based Practice Change
Following the audit and analysis of the baseline data, the SPAWN team met with a clinical inquiry specialist and clinical nurse
specialist to design and recommend a practice change to address the audit findings. The evidence-based recommendations consisted of developing and defining a new multidisciplinary process that included (a) implementation of a standardized prescription for the at-home premedication dosing of dexamethasone (Schwartz, 2012), (b) development of a personalized medication dosing instruction sheet for patients and families (Schneider et al., 2011), and (c) implementation of a revised process that included a standardized approach to EHR documentation of patient prescriptions, adherence, and patient and family teaching (Haynes, Ackloo, Sahota, McDonald, & Yao, 2008).

A meeting was convened by the SPAWN team with the medical and nursing clinical leadership, during which the target nurses presented the audit findings, the recommended practice changes, and the overall approach to implementing the recommended changes. The evidence-based recommendation for oral at-home premedication prescriptions for patients receiving taxane therapy was oral dexamethasone taken 12 and 6 hours prior to the start of the taxane therapy, with an additional dose administered at time of the therapy. The dexamethasone dosing was based on approved package label recommendations for paclitaxel premedication, which suggests taking 20 mg of oral dexamethasone 12 and 6 hours before paclitaxel, along with 50 mg IV diphenhydramine (Benadryl®) and 300 mg cimetidine (Tagamet®) or 50 mg ranitidine (Zantac®) IV 30–60 minutes before paclitaxel infusion (Fresenius Kabi USA, 2015). This prophylactic regimen is recommended for patients taking paclitaxel every three weeks, which is the only dosing schedule identified on the label at this time (Schwartz, 2012). The multidisciplinary team agreed on where to document the at-home premedication prescription on the EHR.

An easy-to-read, personalized teaching sheet was created and printed on colored cardstock. The customized instructions on the teaching sheet included the drug name, treatment cycle, and dosing schedule (see Figure 1). Patients were also provided with contact information to reach a nurse for questions. The nursing staff identified and agreed on a place to document the premedication teaching and patient adherence in the EHR.

Provider education and implementation of the new practice changes were conducted during one month in staff meetings and by direct communication with the medical staff and nurses. The goal was set at 90% compliance for all three documentation criteria: (a) prescriptions were written and provided to the patient with instructions; (b) chemotherapy teaching was conducted, including a discussion of dexamethasone side effects, and the teaching sheet was given to the patient; and (c) patient-reported adherence to the premedication instructions was documented.

Two audits were performed after implementation. The first audit (T1) was conducted from July 2012 to January 2013 immediately following implementation of the practice changes, and, given those results, a second audit (T2) was conducted 14 months after implementation from September to November 2013.

**Results**

Compliance with the three practice changes varied. The 46 charts reviewed at T1 suggested some improvement from baseline: 43 (94%) of the prescriptions ordered and provided to patients were

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**FIGURE 1.**

**PATIENT PREMEDICATION INSTRUCTIONS FOR DOCETAXEL ANHYDROUS AND PACLITAXEL**

**DOCETAXEL ANHYDROUS (TAXOTERE®)**

You are scheduled to receive docetaxel anhydrous on __________

As part of your treatment, you will need to take 8 mg of the steroid dexamethasone (Decadron®) twice a day, starting the day before your treatment __________ (date), day of your treatment __________ (date), and day after your treatment __________ (date). Side effects of dexamethasone include sleep problems, elevated blood sugars, upset stomach, fluid retention, and muscle weakness. This medication will be called in to your pharmacy. You will need to take it with food.

Repeat this routine with each docetaxel anhydrous treatment unless told otherwise.

**PACLITAXEL (TAXOL®)**

You are scheduled to receive paclitaxel on __________

As part of your paclitaxel treatment, you will need to take 20 mg of the steroid dexamethasone 12 hours before treatment on __________ (date) at __________ (time), and 6 hours before treatment on __________ (date) at __________ (time). Side effects of dexamethasone include sleep problems, elevated blood sugars, upset stomach, fluid retention, and muscle weakness. This medication will be called in to your pharmacy. You will need to take it with food.

Repeat this routine with each paclitaxel treatment unless told otherwise.
documented in the EHR, 21 (46%) records included evidence of nurse teaching of premedication side effects, and 14 (30%) records included patient adherence in EHR documentation. Following the results of the T1 audit, further reinforcement of the new practice was provided to the nursing staff, and a three-month audit was conducted at T2. The T2 audit of 11 records revealed 100% compliance with documented evidence of receipt of patient prescriptions, 100% compliance with premedication teaching documentation, and 91% compliance with documentation of patient adherence.

**Discussion**

Implementation of an evidence-based practice change to address premedication prescriptions, patient teaching by nurses, and self-administered premedication adherence prior to taxane infusions resulted in improved EHR documentation. Verbalization of the practice change with the nurse and physician group and one-on-one reinforcement were required to reach the preset goal of 90% adherence to all the components.

Poor adherence to at-home premedication dosing therapy is a primary cause of treatment delays, hypersensitivity reactions, and poor outcomes. The documentation of a combination of oral and verbal patient teaching was successfully implemented in this study. Patients were prescribed a two-day regimen of at-home premedications requiring minimal documentation for adherence. Documentation of more complex, long-term medication dosing requires more detailed description of adherence, including missed doses, frequent pill count verification, and reasons for patient medication nonadherence, such as a patient’s conscious decision to skip doses because of side effects.

The use of EHRs can improve patient medication adherence and documentation. Brockstein et al. (2011) demonstrated that the use of EHRs had a positive organizational impact by streamlining communication through documentation templates and electronic prescribing, therefore contributing to complete and accurate medication prescription writing and significant improvements in the safety and quality of patient care. The first step in the current authors’ evidence-based practice change was to ensure that a standardized prescription for at-home premedications was written and easily accessible after it was entered in an EHR.

A Cochrane review of medication adherence intervention studies (Nieuwlaat et al., 2014) revealed that very few interventions actually improve adherence; the strategies that improve adherence and clinical outcomes are complex and include frequent interactions with patients. The reviewers concluded that “effective methods to improve adherence must be maintained for as long as the treatment is needed, requiring interventions that can be integrated into the care system in a cost-effective manner” (Nieuwlaat et al., 2014, p. 17). In the current study, prescriptions for short-term at-home premedication dosing were accompanied with written instructions and contact information. Physicians and nurses were involved, and the project included patient teaching and standardized documentation.

An integrative review investigating barriers to adherence in patients receiving oral chemotherapy (Wood, 2012) revealed that patients found that tailored, simple, and brief written information combined with verbal reinforcement was more effective than written information alone. Written information, coupled with direct interaction with providers, can result in trusting relationships between patients and providers. Clear instructions for taking medications, patient confidence in the provider, and belief in the efficacy of the drug also improves patient adherence to prescribed medications (Wood, 2012). Some patients are anxious, hard of hearing, or experience memory problems, making it difficult to remember specific discussion details of treatment options and premedications (Garcia, 2014; Wood, 2012). Patients reported that reinforcement of health information by nurses is particularly helpful in clarifying information that is provided during office visits with physicians (Koutsopoulos, Papanathanassoglou, Katapodi, & Patiraki, 2010).

Written instructions and reinforcement by nurses may help address medication nonadherence. Barriers associated with medication adherence have been investigated in other chronic disease populations, such as in people with diabetes, asthma, and hypertension, and include patient-, provider-, and system-related barriers (Sabate, 2003). In the current study, ill-timed dosing may have been a barrier to patients who were required to take medication every six hours, creating sleep disruptions. Although using cues for nighttime dosing have proven useful (Monro et al., 2007; van Dulmen et al., 2007), the intervention in the current study was successful without them.

Lack of adequate resources for patient teaching and communication is often cited as a barrier to patient adherence (Viswanathan et al., 2012). Patient adherence to premedication in this study was achieved through a pretreatment teaching appointment with a nurse and an easy-to-understand teaching sheet. Both elements have been implemented in the teaching process at the satellite clinic.

**Limitations**

This practice change was successfully implemented in a community ambulatory oncology setting and cannot be generalized to a larger setting. Implementing this type of practice change in a larger, more complex setting could be challenging. This study was limited by staff turnover during the project and the small number of

**IMPLICATIONS FOR PRACTICE**

- Implement a practice change with an individual pretreatment teaching session supplemented by tailored educational materials.
- Address medication nonadherence in patients receiving premedications for taxanes by providing combined episodic verbal coaching and written instructions.
- Use a systematic, multidisciplinary approach to promote documentation of adherence rates to at-home premedication dosing schedules.
records audited during T1 (seven months) and particularly during T2 (three months) compared to baseline. More records may have revealed a different result. In addition, the improvements were measured solely by EHR audit; therefore, these entries may not reflect actual nurse, physician, or patient behaviors. Last, the frequency of hypersensitivity reactions was not evaluated.

Implications for Nursing and Conclusion
Medication nonadherence leads to increased healthcare costs and poor outcomes (Iuga & McGuire, 2014). Nurses can be change agents for implementing important multidisciplinary-related practice changes to improve at-home premedication adherence. Awareness of costs related to medication nonadherence and advocacy for policy improvement related to reimbursement for educating patients are needed. Healthcare reimbursement policies should provide adequate reimbursement to healthcare professionals who conduct patient education on at-home premedication adherence (Iuga & McGuire, 2014; Viswanathan et al., 2012). Nurses can identify barriers that interfere with medication adherence, such as depression, cognitive or sensory deficits, lack of confidence, and cultural health beliefs. Teaching approaches that stress the benefits of adherence, such as Oncology Nursing Society’s (2009) toolkit for oral adherence, and include written and oral communication can be successful in facilitating medication self-management.

A multidisciplinary practice change using standardized prescribing, a personalized medication dosing instruction sheet, and a standardized documentation of the process in the EHR was successfully implemented and met the outlined goals of this study. The findings support the success of using the SPAWN process to improve nursing and physician practice by implementing a sustainable evidence-based practice, resulting in better outcomes.

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