In the ambulatory care setting, chemotherapy regimens have become increasingly complex with the combination of induction treatments and oral medications. Nurses at one cancer center implemented an oral adherence tracking documentation system in the electronic health record (EHR). Oncology nurses assessed and monitored adherence to oral chemotherapy at each clinical encounter and during telephone calls and then documented findings in the EHR. After implementing this new standardized approach, adherence rates were captured as a metric for the organization.

**AT A GLANCE**
- Poor adherence to oral chemotherapy may lead to loss of treatment efficacy, increased toxicity, and increased hospital use and stays, all of which increase healthcare costs.
- EHR oral adherence-tracking tools are beneficial to patients and oncology nurses.
- Initial oral adherence pilot data showed improvement in adherence rates but inconsistencies in adoption of the EHR workflow by all disease management groups.

**Oral Chemotherapy Adherence**

A novel nursing intervention using an electronic health record workflow

German Rodriguez, MSN, RN, Minerva A. Utate, MSN, ANP-BC, OCN®, George Joseph, MS, RN, and Thelma St. Victor, MSN, FNP-BC

Oral chemotherapy and combination treatment have made chemotherapy regimens increasingly more complex. More than 30 oral cancer therapies are approved for use in the United States, and many more are in the pipeline (Walter et al., 2013). Adherence is defined as the extent to which patients are able to follow the recommendations for prescribed treatments, to take medications correctly, which includes the correct dosage taken at the correct time, and to fill the prescription in a timely fashion (Hugtenburg, Timmers, Elders, Vervloet, & van Dijk, 2013). Poor adherence to oral chemotherapy may lead to loss of treatment efficacy, increased toxicity, and increased hospital use and stays, all of which can increase healthcare costs (Arthur et al., 2015).

**Adherence**

A few reasons for nonadherence to oral chemotherapy regimens may be access to medication, limited insurance coverage, side effects, complex schedules (e.g., multiple doses), and patient lack of understanding (e.g., level of education) (Greer et al., 2016; Schneider, Hess, & Gosselin, 2011; Wood, 2012). Patients and healthcare providers face many challenges with managing and monitoring adherence to oral chemotherapy agents. Nurses play a critical role in managing oral chemotherapy because of close relationships with patients (Walker, 2016). The most important factors in achieving patient adherence to oral chemotherapy include effective communication between clinicians and patients (Wood, 2012). Patients need education about their disease, possible side effects, and the importance of taking the prescribed medication as ordered. In addition, patients should have an informed collaboration with the clinicians at the start of the oral therapy and throughout treatment (Wood, 2012).

Healthcare professionals need effective and sustainable measures to monitor adherence to oral chemotherapies; however, establishing practical methods for measuring adherence is not an easy task when the patient is self-administering medications at home (Arthur et al., 2015). At the Laura and Isaac Perlmutter Cancer Center in New York, New York, the Multidisciplinary Oral Chemotherapy Task Force set a goal to establish a robust standardized process workflow for ongoing assessment of patients’ adherence to oral chemotherapy. In an effort to ensure that patients were taking oral anticancer medications and refilling prescriptions, a novel tracking documentation system was created in the electronic health record (EHR). Nurses can assess for oral chemotherapy adherence in a systematic way, enroll their patients using the workflow, and document findings in the EHR.

**KEYWORDS**
oral chemotherapy adherence; electronic health record; workflow

**DIGITAL OBJECT IDENTIFIER**
10.1188/17.CJON.165-167
**NOVEL APPROACHES**

**Documentation System**

Using the workflow, a section titled “oral chemotherapy” appeared as part of the documentation area when a nurse opened a patient EHR. Nurses assessed patients during office practice visits or via telephone encounter and documented the following EHR domains: patient adherence, patient symptoms, oral chemotherapy synopsis, and oral chemotherapy tracking flow sheet.

For patient adherence, the following questions were asked by nurses either in the office or via telephone:

- Do you sometimes miss taking your chemotherapy pills?
- Do you ever feel that it is OK to miss your chemotherapy pills?
- Do you ever decide to stop or hold your chemotherapy pills without telling your doctor?
- How many chemotherapy pills do you currently have?
- Do you have a refill prescription for your future doses?

In addition, the nurse responded to a question to determine adherence for a patient: Is the patient adherent? All questions were answered with “yes” or “no.” A cascade of responses presented for the nurse to select the most appropriate answer after entering the patient response. For example, if a patient responded “no” for the question about having a refill prescription for future doses, four choices appeared: (a) medication is too expensive, (b) my pharmacy does not carry this chemotherapy, (c) I have no health insurance, or (d) other.

The question “Is the patient adherent?” was selected by interdisciplinary team members and clinicians as the key data point to determine patient adherence. This question was intended for the nurse, and it collects the organizational rates of adherence to be compared with national benchmarks. Nonadherence was defined as missing more than one pill.

For patient symptoms, a symptom assessment and toxicity grading scale was performed and documented at each assessment. The validated Common Terminology Criteria for Adverse Events was used to document adverse events for consistency with infusion nurses (U.S. Department for Health and Human Services, 2010).

A synopsis of oral chemotherapy used was provided, including drug name, review date with patient, cycle, dose, route, and frequency. Nurses documented all increased, held, discontinued, or changed medication doses in an oral chemotherapy tracking flow sheet. This flow sheet provided the end user with a historic at-a-glance view of all oral agents taken by a specific patient. A popular feature of this section with the nursing staff was the ability to write comments and enter information that would remind a nurse or a group of nurses to contact the patient in the future to perform an oral chemotherapy adherence assessment. Using this feature, the nurse of a specific disease management group (DMG) could follow up when the primary office practice nurse was absent.

**Pilot Program**

The pilot program began in April 2015 with the participation of 20 nurses for four DMGs: gastrointestinal, breast, hematology, and neurology. Three months after implementation, 71 of 226 participants were enrolled into the electronic oral adherence program. From the 71 enrolled, 68 patients never missed an oral chemotherapy dose; three patients missed doses. The neurology DMG obtained 100% adherence. Nurses’ overall satisfaction with the process was positive. One of the main reasons for satisfaction was the ability to assess and document findings for patients with oral chemotherapy treatment visits during clinical hours and the opportunity to perform the same nursing actions for patients at home. Some nurses were more proactive than others when adopting the new EHR documentation system. The late adopters expressed that there were too many clicks during the initial enrollment of the patient into the electronic workflow. The EHR only prepopulated some data into the documentation workflow, but manual entry into some discreet fields by the nurse was also needed. After the patient was enrolled into the workflow, nurses stated that it was easier to use the new EHR workflow. Nurses expressed that they felt they were positively affecting patient outcomes because they were more engaged with the patients. Patients were very vocal about their satisfaction with the oral chemotherapy adherence follow-up monitoring program because the extra assessments gave them an extra opportunity to ask questions and discuss side effects with healthcare professionals. Patients expressed that these interactions with clinicians provided an opportunity to ask questions and clarify any other concerns pertinent to the oral chemotherapy regimens.

**Conclusion**

Understanding the challenges that prevent patients from adhering to oral regimens is multidimensional. Nurses’ participation in collaboratively designing the look and feel of EHR tools to address oral adherence and coordinate patient care delivery is effective. Overall, nurses felt empowered when the EHR workflow was expanded to all DMGs in June 2015. A total of 304 patients are enrolled in the new workflow. Ten DMGs are live with the new oral adherence workflow.
A new institutional oral adherence policy and procedure was generated and approved by clinical leadership.

Policies and standard operating procedures for EHR workflow and practices, including increasing communication among members of the team, are essential to support best practices. The new policy at the authors’ institution addressed the need for licensed independent practitioners, such as physicians and nurse practitioners, to communicate with the office practice nurse every time a patient was started on a new regimen. Nurse practitioners and physicians were educated to obtain consent prior to initiation of any oral chemotherapy regimen. An e-learning module about the EHR workflow process was developed for nursing educational sessions. The cancer center is now able to capture the number of patients using oral chemotherapy drugs, and adherence rates are collected as a quality metric. The next phase of this project is to implement the role of the oral chemotherapy office practice nurse. The core functions of the nurse are to help patients with planning payments for their oral medications, monitoring adherence and adverse events, tracking prescriptions, and providing patients with resources (e.g., treatment calendars, mobile applications for smartphones, medication reminders). Oral adherence initiatives need ongoing individual and institutional support to achieve positive outcomes.

German Rodriguez, MSN, RN, is the director of nursing and oncology services at New York-Presbyterian Hospital/Weill Cornell Medical Center; and Minerva A. Utate, MSN, ANP-BC, OCN®, is a nurse practitioner. George Joseph, MS, RN, is a senior clinical systems analyst, and Thelma St. Victor, MSN, FNP-BC, is a nurse practitioner, all at the Laura and Isaac Perlmutter Center Center, all in New York, NY. Rodriguez can be reached at ger9041@nyp.org, with copy to editor at CJONEditor@ons.org.

The authors take full responsibility for this content and did not receive honoraria or disclose any relevant financial relationships.

REFERENCES


