

Oral chemotherapy: Not just an ordinary pill

Help your patients achieve optimal benefits from this therapeutic option.

By Nancy Thompson, MSN, RN, AOCNS, and Amy Christian, MSN, RN, OCN

FRAN, A TRIAGE NURSE in a busy primary care office, receives a call from Marla Rodriguez, whose mother is a long-time patient. Marla says her mother has an intense red rash over most of her trunk. Fran asks her standard questions based on her triage symptom-management protocol for rashes: Does the rash itch? Do you see it anywhere else besides the trunk? Do you see pustules? How long has your mother had the rash? Has she started new medication or used new soaps or lotions lately?

Marla replies that her mother just started taking a drug called sorafenib. Fran accesses Mrs. Rodriguez's file in her electronic health record (EHR) and discovers she was recently diagnosed with renal cell carcinoma and referred to a medical oncologist. When she asks Marla how long her mother has been on the medication, Marla says she began taking it within the last week.

Fran assumes Mrs. Rodriguez is seeing a medical oncologist outside her facility's EHR system, as she doesn't see notes from an oncologist and Mrs. Rodriguez's medication list isn't up-to-date. To gain more insight into the possible cause of the rash, Fran consults scanned documents in her file and finds a letter from the medical oncologist summarizing her treatment plan and the side effects of sorafenib, an oral medication; skin rash is listed as a serious side effect.

In recent years, the Food and Drug Administration has approved many new anticancer medications that are taken primarily by mouth. In fact, an estimated 30% of cancer drugs in development are oral, and the trend is increasing.

Some practitioners tout oral chemotherapies as more convenient and flexible. But are they really? The change from parenteral to oral cancer medications brings new challenges. Patients taking oral drugs may end up being seen by many different healthcare team members, some of whom may be unaware of the possible toxicities of these therapies—or even that the patient's taking them.

Benefits of oral therapy

Patients undergoing treatment for

cancer are living longer, and cancer increasingly is becoming a chronic illness. Oral chemotherapy has certain obvious benefits.

- Patients don't need to spend hours in a clinic infusion room receiving therapy. Patient advocates see this as a major quality-of-life improvement because it gives patients more time at home with their families and doing activities they enjoy.
- Patients may not need to take as much time off work during treatment.
- Patients have more flexibility to travel during treatment.
- Oral therapy eliminates some logistic and financial barriers, such as transportation to and from I.V. treatment centers and child-care and parking costs. In rural areas, this can be crucial because the closest treatment center may be hours away and weather may complicate travel. In urban areas, parking costs can pose a hardship to families already struggling with high medical costs.
- Oral therapy eliminates the cost of I.V. supplies and reduces nursing time in infusion suites.
- Oral therapy nearly eliminates the need for venous access and central venous access devices, such as peripherally inserted central catheters and implanted ports—along with the risks and costs of these devices. Many patients find venous access uncom-



LEARNING OBJECTIVES

1. Identify the benefits and drawbacks of oral chemotherapy.
2. Discuss nursing interventions related to oral chemotherapy.
3. Describe medication management of oral chemotherapy.

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Common drug and food interactions

Oral chemotherapy may interact with certain drugs, foods, and supplements. Make sure you're aware of the common interactions below.

Drug interactions

- Acid-suppressing drugs, such as proton pump inhibitors
- Antibiotics
- Anticonvulsants
- Antidepressants
- Antifungals
- Antihypertensives
- Coumadin-derived anticoagulants

Food, beverage, and supplement interactions

- Alcohol
- Calcium
- High-fat foods
- Grapefruit juice
- Lactose or dairy products
- Tyramine-rich foods, such as wine, aged cheese, and yogurt
- Vitamin and herbal supplements



portable and complain they feel like a pincushion after multiple blood withdrawals and I.V. sessions. And central venous access devices raise the risk of infection and bleeding in already immunocompromised patients, who also may be thrombocytopenic.

Drawbacks of oral therapy

Although most patients appreciate the advantages of oral chemotherapy, the oral route shifts the burden of proper drug administration to them and their family. Cancer treatments—including oral ones—must be given on specific schedules and may require either the presence or absence of food. They may interact with other drugs and certain foods and nutri-

Myths and facts about oral chemotherapy

Patients, nurses, and healthcare administrators may have misconceptions about oral chemotherapy. Below we separate the myths from the facts.

Myth	Fact
Oral chemotherapy is less toxic than chemotherapy given by other routes.	Oral chemotherapy can cause just as many dangerous side effects as chemotherapy given by other routes.
Oral chemotherapy is less effective than parenteral chemotherapy.	Oral administration doesn't make chemotherapy less effective.
Oral chemotherapy is more convenient for patients.	Oral chemotherapy may be less convenient in some ways. Patients (not clinicians) are responsible for taking drugs, which may have complicated schedules or administration instructions. Also, in some cases, oral chemotherapy is given in combination with parenteral therapy.
All patients prefer oral chemotherapy.	Some patients prefer to go to a healthcare facility on a regular schedule for chemotherapy so they don't have to bother taking it daily.
Asking patients about their medication adherence is a reliable way to assess adherence.	Studies show patients don't always tell providers about missed doses or that they've altered the way they're taking medications.
Oral chemotherapy requires less nursing and pharmacy time.	Although oral chemotherapy eliminates nursing time in infusion suites, it may increase both nursing and pharmacy time for patient education, telephone follow-up, and verifying insurance benefits.
Oral chemotherapy is best for older patients.	Older patients may be more forgetful about taking their medications at home and are at greater risk for drug interactions because they typically take multiple drugs in addition to chemotherapy.
Oral chemotherapy is less expensive.	Oral chemotherapy can be just as expensive as parenteral chemotherapy and may entail more out-of-pocket expenses for patients.

tional supplements, which can lead to toxicity and inefficacy. (See *Common drug and food interactions*.) Also, some patients on oral chemotherapy complain they feel less supported because they're not seeing healthcare providers regularly to help them manage treatment and toxicities.

Patient adherence can be a concern for providers, who are accustomed to knowing exactly which drugs their patients have received because they receive them in a clinic or hospital. Providers may find patients don't always take their medications as ordered, with significant ramifications for treatment and disease outcomes.

What's more, some patients may decide not to take prescribed therapies because they can't afford them. Or they may forget to take them or may stop taking them when toxicities set in.

Some healthcare administrators mistakenly believe oral cancer therapies require less nursing staff. (See *Myths and facts about oral chemotherapy*.) But experience shows oral chemotherapy requires significant nursing time for patient education and telephone consultations. For clinic nurses, determining patients' insurance coverage, estimating patient costs, and accessing available financial assistance programs can be time consuming. (See *Cost considerations*.)

Multidisciplinary approach

Supporting patients who take oral chemotherapy at home requires a team approach involving physicians, nurses, pharmacists, financial counselors, and other professionals. Many cancer patients have comorbidities, which increases the need for a multidisciplinary approach.

This underscores the importance of all healthcare team members to identify themselves in the EHR and

Cost considerations

Oral chemotherapy agents are among the most expensive new drugs on the market. Of the 12 drugs approved by the Food and Drug Administration for various cancer conditions in 2012, 11 cost more than \$100,000 for 1 year of treatment. After just one or two treatment cycles, some Medicare patients may reach their Medicare Part D coverage gap ("donut hole") and may have to pay more toward medication costs until they qualify for catastrophic coverage.

Although most major pharmaceutical firms provide co-pay assistance and resources to help patients obtain insurance approval, Medicare patients are prohibited from accepting such assistance. To address this issue, independent charitable co-pay foundations have been established to provide grants to patients unable to afford their out-of-pocket co-pays.

document their care thoroughly, to make sure everyone knows the patient is receiving oral chemotherapy. Before treating chemotherapy side effects, they should refer patients to their oncology provider or consult with the oncology team. Clinicians should encourage patients receiving oral therapies to contact their prescriber's office to manage side effects. To help prevent drug-drug and drug-food interactions, medication errors, and untoward effects, all team members must be kept current on what drugs the patient's taking.

Mrs. Rodriguez has comorbid hypertension and hypercholesterolemia. Her renal cell carcinoma required resection of one kidney, so she's being followed by her urologist. The oncologist's summary of her treatment plan, which Fran found in her file, notes that she's taking sorafenib at home and lists its potential side effects. So when Fran receives her daughter's call, she knows to refer Mrs. Rodriguez urgently to her oncologist, who admits her to the intensive care unit to rule out Stevens-Johnson syndrome, a life-threatening skin condition resulting from an allergic drug reaction. The treatment summary proves essential in helping Fran grasp the seriousness of the patient's rash—and this enabled her to intervene quickly and appropriately.



But keeping multidisciplinary team members informed isn't enough. The patient's family and personal caregivers also need to be engaged. With oral chemotherapy, the responsibility of ensuring the "five rights" of medication administration no longer belongs to the care team in the I.V. infusion unit. This responsibility shifts to the patient and home caregivers.

The emotional burden of caring for a loved one with cancer can be overwhelming. Errors can result from family members' confusion or poor understanding of the correct dosage, dosing schedule, drug or food interactions, and how to handle and store these potentially hazardous medications.

Building strong, supportive relationships with patients is vital to ensuring they communicate with the healthcare team. Some patients with side effects or other concerns about therapy may minimize them or decide not to "bother" clinicians about them. Or they may fear that if they admit they're having side effects, their dosage may be decreased, which could prevent them from achieving therapeutic goals.

Assessing patients before oral chemotherapy

The success of a patient's oral chemotherapy depends on regular comprehensive reviews of body systems and side effects throughout treatment. When care providers have a good rapport with patients,

Teaching patients about oral chemotherapy

If your patient's taking oral chemotherapy at home, be sure to cover the points below.

Handling, storing, and discarding medications

- Wear disposable gloves when handling medications.
- Wash your hands before and after taking medications and after removing gloves.
- Don't share these (or other) medications with others.
- Don't handle these medications if you're pregnant or lactating.
- Store chemotherapy drugs separately from other drugs to prevent cross-contamination. Unless instructed otherwise, store them in a cool, dry place.
- Return unused medication to the pharmacy for proper disposal. Don't throw it in the trash or flush it down the toilet (it can contaminate waste water).

Exposure precautions

- Know that exposure to drug-contaminated linens and soiled clothing can be hazardous. Wash soiled linens separately, putting them through two washing-machine cycles.
- Chemotherapy drugs are excreted in body fluids, such as urine, stool, saliva, and sweat, as well as semen and vaginal secretions. To decrease drug exposure to family members, flush the toilet with the lid down; men should urinate sitting down.
- Use barrier contraceptive methods.
- Know that sharing food, kissing, cuddling, and hugging are safe and don't pose a risk.

Taking medication as prescribed

- Take the medication at the same time every day, exactly as instructed.
- Ask your healthcare provider if you should take the drug on an empty stomach or with food.
- Don't split, cut, or crush tablets because this could cause them to aerosolize. If tablets need to be split, cut, or crushed, the pharmacy should do it.

these reviews can be extremely successful in detecting and managing side effects.

Before patients start oral treatment at home, assess them to determine if they're good candidates—physically and mentally—for oral administration. Patients should:

- be able to swallow and digest oral medication
- understand the importance of adhering to the drug regimen
- have adequate home supervision to help them adhere to the medication schedule.

Metastatic brain disease, forgetfulness, advanced age, or a history of alcohol abuse or mental illness could interfere with the patient's ability to adhere to the regimen. Also review the patient's history for

polypharmacy and comorbidities, and determine if the patient's symptoms are adequately controlled.

Patient education

Before the patient begins chemotherapy, provide education using the teach-back method by having the patient verbally repeat what you've taught. After assessing the patient's reading level and ability to understand complex instructions, provide easy-to-understand written teaching material. Inform patients what to do if they miss a dose; caution them not to double up on doses. Also, check with the pharmacy on proper medication storage, and convey this in-

formation to the patient. (See *Teaching patients about oral chemotherapy*.)

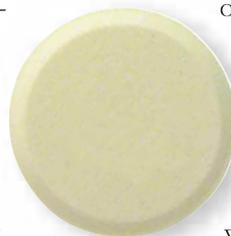
Medication adherence and persistence

Medication adherence refers to the extent to which the patient takes medication in accordance with the prescribed interval and dose of a dosing regimen. *Medication persistence* is the duration from the patient's drug initiation to discontinuation. Both are important in oral chemotherapy.

Nonadherence can mean missing doses or taking them in the wrong amount, at the wrong time, or in the wrong way (such as with food if they should be taken on an empty stomach). Adherence issues aren't new—or unique to cancer patients. For years, primary care providers have dealt with nonadherent patients with chronic diseases, such as hypertension and asthma. In 2003, the World Health Organization recognized nonadherence as an issue of striking magnitude and predicted it would only get worse as chronic diseases increase in our aging population. Dr. C. Everett Koop, former U.S. surgeon general, pointed out, "Drugs don't work in people who don't take them."

Cancer care providers may assume that because cancer is a frightening disease, patients will show greater medication adherence and persistence than patients with other diseases. But this assumption is false. A study of patients taking

oral tamoxifen for breast cancer found that 80% initially filled their prescriptions but by the fourth year, only 50% were filling them. So although medication adherence and persistence with cancer regimens may be better than with other disease regimens, they remain a significant challenge. (See *Helping patients adhere to medication regimens*.)



Helping patients adhere to medication regimens

The following resources and tools can help patients adhere to oral chemotherapy:

- patient education handouts from drug manufacturers
- treatment calendars for assistance with dosing schedules
- pillboxes to promote proper dosing schedules
- electronic reminders, such as cellphones, alarm clocks, and smartphone apps
- trusted websites (such as chemocare.com) that provide education, including how to manage side effects, eat well during chemotherapy, and understand blood counts.

Why some patients don't take their medications

Many theories address why some patients don't take prescribed medications. Generally, the more complex the regimen (including food restrictions, frequent doses, and dosage days that lack an easy-to-remember pattern), the more likely that errors will occur. Also, the more medications the patient takes, the more likely some doses will be missed. And the more side effects a drug has (either anticipated or experienced), the less likely the patient is to take the full dose on schedule.

Patients receiving cancer therapy generally feel better before they start it, but once they begin the regimen and continue to take it, they experience more side effects, including nausea, skin reactions, and fatigue. When they're in control of their regimen (as with home oral chemotherapy), they may choose to withhold doses as toxicities increase. In our case scenario, if Mrs. Rodriguez had simply stopped taking sorafenib and waited for the rash to disappear without calling the physician, she would have received suboptimal treatment and might have had a poor outcome.

Patients have many reasons for not calling their physician. They might assume clinic staff are too busy to talk to them, reaching a nurse is too difficult, or their side effect is an expected one that they just need to "tough out." To help patients manage side effects, urge them to call their oncologist's office

(after hours, if necessary) to report fever, chills, uncontrolled diarrhea, nausea, and vomiting. (See *Indications and side effects of common oral chemotherapy drugs* at AmericanNurseToday.com/?p=24100.)

Many tips and tools have been created to improve adherence, but few have been studied to determine their success. The most effective evidence-based method is for the health-care team to develop a strong relationship with the patient. In today's busy clinics, healthcare professionals may think they don't have time to build a rapport with patients. Yet doing so can be crucial to achieving success with oral chemotherapy, managing side effects, and obtaining the best patient outcomes.

Oral chemotherapy safeguards: An emerging need

Errors associated with chemotherapy have long been a serious concern, prompting healthcare providers to develop a system of checks and balances to prevent dangerous dosages from reaching patients. Oral chemotherapy bypasses many of those checks, underscoring the need to design and implement new safeguards. For instance, for oral chemotherapy drugs, standardized order sets may not exist and dosage calculations may not be double-checked. Recently, many clinics have developed formalized processes for monitoring and documenting patients' medication adherence.

Other concerns

Local pharmacists may be unfamiliar with oral chemotherapy and their dosing schedules. Also, overwhelmed patients may not completely understand all of the instructions provided. What's more, some EHR systems don't include documentation tools that carefully follow oral chemotherapy dosing. In some cases, nurses have had to create their own paper tracking tools to remind them which patients are taking oral chemotherapy and which ones to follow up with.

In addition, patient informed consent is just as important for oral chemotherapy as for parental chemotherapy. Make sure patients understand that an oral chemotherapy drug is just as potent as any other drug and carries certain risks.



Nursing's crucial role

With more patients now using oral chemotherapy, all healthcare team members must stay informed about patients on these regimens. The nurse's role in patient education, care coordination, and follow-up takes on even greater importance for patients who take these potent and potentially dangerous drugs at home. Empower patients to speak up and tell all of their healthcare providers they are receiving oral chemotherapy. By working with other disciplines as a coordinated healthcare team and developing open, honest communication with patients and their caregivers, nurses can help ensure safe, effective treatment. ★

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Visit AmericanNurseToday.com/?p=24100 for a list of selected references and a chart on indications and side effects of common oral chemotherapy drugs.

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Please mark the correct answer online.**1. Which of the following statements about the benefits of oral chemotherapy is not correct?**

- It eliminates some logistic barriers.
- Patients may not need to take off as much time from work.
- Patients have more flexibility to travel during treatment.
- It lessens patients' burden of proper drug administration.

2. A common source of food or beverage interaction with oral chemotherapy medications is:

- orange juice.
- a low-fat food.
- any green vegetable.
- alcohol.

3. Which of the following statements about oral chemotherapy is correct?

- It is less toxic than chemotherapy given by other routes.
- It may increase nursing time.
- It is less effective than parenteral chemotherapy.
- It requires less pharmacy time.

4. Which of the following statements about patient selection for oral chemotherapy is correct?

- Older patients may have more problems adhering to oral chemotherapy if they're taking multiple medications.
- Older patients and those who are frail are ideal candidates for oral chemotherapy because it causes less stress.
- Nearly all patients prefer oral chemotherapy when given the choice.
- Oral chemotherapy is more convenient for patients.

5. Which statement about costs and oral chemotherapy is correct?

- Oral chemotherapy medications are among the least expensive new drugs on the market.
- Oral chemotherapy medications are less expensive than chemotherapy delivered parenterally.
- Some Medicare patients may reach their Medicare Part D coverage gap after just one or two treatment cycles.
- Medicare patients typically don't reach their Medicare Part D coverage gap until after four to five treatment cycles.

6. Which of the following patients may be a good candidate for oral chemotherapy?

- A man with pancreatic cancer who has metastatic brain disease
- A man with gastric cancer who has a history of alcohol abuse
- A woman with lung cancer who adheres well to her medication regimen
- A woman with breast cancer who is frail and doesn't have caregivers

7. Patient education regarding disposal of unused oral chemotherapy medications should include instructions to:

- put them in the recycling bin.
- throw them in the trash.
- flush them down the toilet.
- return them to the pharmacy.

8. Patient education regarding safe handling of oral chemotherapy should include instructions to:

- proceed with handling the drugs even when pregnant.
- avoid wearing gloves when handling these drugs.
- store chemotherapy drugs separately from other drugs.
- store all drugs in one location to promote medication adherence.

9. Patient education regarding oral chemotherapy should include the instruction to:

- crush tablets to make them easier to take.
- take the medication at the same time every day.
- take the tablet with milk.
- take an extra dose if you've missed a dose.

10. Patient education related to exposure to oral chemotherapy should include which of the following?

- Postmenopausal women don't need to use contraception.
- Kissing poses a risk for exposure.
- Wash soiled linens separately, using two washing-machine cycles.
- Men should stand up when they urinate.

11. Which statement about medication adherence and persistence is accurate?

- Pillboxes typically aren't useful in helping patients take oral chemotherapy medications as prescribed.
- Patients with cancer are more likely to take their oral chemotherapy drugs as instructed.
- Medication adherence refers to the duration from the patient's drug initiation to discontinuation.
- Medication persistence refers to the duration from the patient's drug initiation to discontinuation.

12. A common side effect of capecitabine is:

- hand-foot syndrome.
- pulmonary embolism.
- hypokalemia.
- vaginal discharge.

13. A common side effect of tamoxifen is:

- hand-foot syndrome.
- pulmonary embolism.
- hypokalemia.
- vaginal discharge.

Indications and side effects of common oral chemotherapy drugs

This chart lists common indications and side effects of selected oral chemotherapy drugs.

Generic name	Brand name	Common indications	Common side effects
Abiraterone	Zytiga®	Prostate cancer	<ul style="list-style-type: none"> • Arthralgia • Fluid retention • Hypokalemia • Myalgia
Capecitabine	Xeloda®	Colorectal and breast cancer	<ul style="list-style-type: none"> • Diarrhea • Hand-foot syndrome • Nausea and vomiting • Neutropenia • Stomatitis
Everolimus	Afinitor®	Breast, renal, and pancreatic cancer	<ul style="list-style-type: none"> • Infection • Hyperglycemia • Stomatitis
Ibrutinib	Imbruvica®	Chronic lymphocytic leukemia	<ul style="list-style-type: none"> • Anemia • Diarrhea • Neutropenia • Thrombocytopenia
Imatinib mesylate	Gleevec®	Chronic myeloid leukemia, myelodysplastic syndrome, acute lymphoblastic leukemia	<ul style="list-style-type: none"> • Diarrhea • Fluid retention • Nausea and vomiting • Neutropenia • Thrombocytopenia
Lenalidomide	Revlimid®	Multiple myeloma	<ul style="list-style-type: none"> • Fatigue • Itching • Rash • Neutropenia • Thrombocytopenia
Palbociclib	Ibrance®	Breast cancer	<ul style="list-style-type: none"> • Fatigue • Neutropenia • Pulmonary embolism
Sorafenib	Nexavar®	Liver, renal, and thyroid cancer	<ul style="list-style-type: none"> • Erythema • Hand-foot syndrome • Hypertension • Rash
Tamoxifen	Nolvadex®	Breast cancer	<ul style="list-style-type: none"> • Bone pain • Hot flashes • Thromboembolism • Vaginal discharge
Temozolomide	Temodar®	Brain cancer	<ul style="list-style-type: none"> • Leukopenia • Nausea and vomiting • Thrombocytopenia