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Oral Chemotherapy: Safe Handling in the Home

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Abstract

Background: According to the National Institute for Occupational Safety and Health (2016), oral anticancer agents (OAC) are hazardous drugs (HD) and require the same safe handling interventions in the home setting as in controlled health care environments. The use of a safe handling checklist for OAC administration is a way nurses can provide safe handling education to patients and caregivers and assess for understanding and competency for critical tasks. Effective home management strategies outlining caregiver protections, proper storage, administration of OACs, spill clean-up, and waste disposal could reduce exposure risks to toxic agents.

Objective: To present a safe-handling checklist and TIP sheet for health care providers to use when teaching patients and caregivers oral chemotherapy administration to prevent HD contamination.

Methods: The author conducted a literature search in the CINAHL, Cochrane Library, and PubMed databases for research on the risks associated with OAC handling by patients and caregivers and to discover practical ways to address steps in the safe-handling process in a home environment.

Findings: There is a need to develop standard work to ensure comprehensive patient and caregiver education with OAC handling. A checklist for patient education is a useful reference for nurses when teaching patients.

Keywords: hazardous drugs, safety standards, oral chemotherapy

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Following an outpatient percutaneous endoscopic gastrostomy procedure for feeding tube placement, a patient's wife asked the nurse if a chemotherapy pill could be administered via the G-tube. The well-meaning procedure nurse advised crushing and dissolving the tablet in warm water, pouring the liquefied contents into a feeding syringe, and using the plunger to push the liquid out of the tube and into the stomach. Two days later, a home care nurse visited to assess the patient and provide tube-feeding instructions. The patient's wife alerted the nurse that crushing and dissolving the chemotherapy pill had been difficult. An undissolved pill might clog the tube, and she worried that her spouse was not receiving the full chemotherapy dose.

Upon further investigation, the nurse observed that the wife was unaware of safety measures to prevent toxic residues from spreading into the home environment. Hazardous drug (HD) contaminated feeding syringes were soaking in the kitchen sink, chemotherapy medication was placed inside the weekly pill reminder box, and gloves were not worn when handling the medication or contaminated supplies. In addition, oral anticancer agents (OAC) should not be manipulated from its original form and administering these medications in a G-tube requires special equipment and caregiver training. Even nurses in departments outside of oncology services need reminders regarding safe handling of chemotherapy agents. An incident such as this is not uncommon and often goes unnoticed because patients and caregivers are generally left on their own to manage these toxic agents. In this case, the nurse contacted the physician who discontinued the OAC and arranged for the patient to receive intravenous (IV) chemotherapy at an outpatient facility instead of at home.

Hazardous drug administration is shifting rapidly from controlled health care settings to the home environment as more OACs are becoming available for patients with cancer (Polovich

& Olsen, 2018). The HD oral route carries the same adverse health risks with exposure; however, the most common exposure route is through the skin from HD-contaminated surfaces and could easily be managed with the use of personal protective equipment [PPE] (Connor, Zock, & Snow, 2016). While HD exposure is known to cause adverse health issues for health care workers, less is known about the harmful consequences to family members exposed to OACs. Most concerning is the absence of a safe-handling checklist for health care providers to reference as a guide to specifically address OAC administration in the home setting.

Widespread HD residues in private homes have been documented in scientific studies involving patients and family members who were exposed to IV chemotherapy (Bohlandt, Sverdel, & Schierl, 2017; Rudnitzki & McMahon, 2015; Yuki, Sekine, Takase, Ishida, & Sessink, 2013). Because there are no safe levels of HD exposure, patients must understand and be prepared to store, administer, and dispose of waste as safely as possible. Houlihan (2015) wrote about reducing secondary exposure to chemotherapy and caregiver safety concerns. The author emphasized the need to broaden exposure precautions to this population because studies have shown both environmental and biological residue contamination in homes through excreta from chemotherapy-treated patients. Furthermore, nurses must become diligent with providing HD handling instructions and consistently reinforce protective measures.

Trovato and Tuttle (2016) conducted a single-center observational study at a Veterans Affairs (VA) oncology clinic from January to August 2012 to determine how patients were handling, storing, and disposing of OACs inside their homes. Results from a patient survey of mostly men (95%) revealed that handwashing before and after HD administration was inconsistent among patients and caregivers, waste disposal varied, and personal protection use was less than six percent in caregivers. Inconsistent handwashing, improper disposal of unused

medication into toilets and sinks, and the re-use of PPE for excreta and clean-up of spills increase the risk of residue exposure to persons residing in the homes. After reviewing the results of the study, the VA's education programs were modified in clinical practice to address gaps in patient knowledge, processes, and waste management habits.

Bohlandt et al. (2017) conducted an environmental and biological study in 13 homes of treated cancer patients to confirm HD contamination on common home surfaces. The purpose was to understand if predetermined HD levels could be measured in the untreated person's urine. Wipe samples were taken from household surfaces that included toilets, bathroom floors and sinks, and kitchen surfaces, and all samples met the threshold set by the study for drug residue contamination. No detectable HD levels were noted in the residing family members' urine samples (Bohlandt et al., 2017).

Rudnitzki and McMahon (2015) performed a systematic review of literature from 2003 to 2014 to identify how HDs are managed by patients and caregivers and the safety challenges and strategies to address HD exposure concerns in uncontrolled environments. Evidence revealed that patients and families do not fully comprehend the seriousness of exposure and ignore tasks such as handwashing pre-and-post administration of HDs, clean-up of spills, and disposing of contaminated waste.

Safe Handling Checklist for Oral Chemotherapy

Implementing a safe handling checklist is an essential first step in empowering patients to create a safe space at home for chemotherapy administration. Identifying potential hazard risks and introducing processes to minimize those risks shows commitment from the health care team that even simple efforts can protect others from unintended exposure. Elements of the *Oral*

Chemotherapy Home Safety Education (Table 1.0) and teach-back tool *TIPS for Administering Oral Chemotherapy at Home* (Table 2.0) will be described below.

The *Oral Chemotherapy Home Safety Education* tool is an excellent method for nurses to offer consistent patient information regarding safety precautions with hazardous drug handling. This simple tool can easily be explained during a provider visit by trained oncology nurses and practitioners in a few minutes using the 12 featured talking points. Home care nurses can also reinforce teaching and assess for understanding with family members during a home visit. Below are some of the talking points:

Purpose of prescribed oral chemotherapy. Indicate the purpose and desired effects of the prescribed therapy. Provide a calendar with the administration schedule to use as a reminder since some OACs are prescribed intermittently, or in cycles.

“No Touch Rule” for caregivers. Caregivers should always wear gloves during the preparation, administration, and waste disposal steps to ensure OAC safe-handling.

Potential adverse health risks to caregivers. The most common route of exposure is through the skin, which can be minimized with safe handling and wearing nitrile gloves. Adverse health symptoms may include dermatitis and skin irritations from direct contact with the OAC, among others.

Controlling the environment to prevent residue exposure. Limit the area in which OACs are administered in the home. Avoid the kitchen table and other areas shared by family members. Supplies that come into contact with the OAC should be discarded immediately and not saved for later use.

Personal protective equipment. Exposure can occur at various steps of drug handling. Patients should self-administer the OAC, if able. Otherwise, caregivers need to wear nitrile

gloves for protection and not reuse them. Whenever possible, contaminated gloves should be placed in a Ziploc bag, sealed, and discarded in the trash.

Safe storage of medication. Hazardous oral medications must be stored in the original container for safety and not with other routine medications in a weekly pill box. Residues can remain in the container long after the OAC has been discontinued.

Spill management. It is possible for HDs to spill out of the container. If a spill occurs, immediately use a moist paper towel to wipe down the area. Remember to wear gloves with any potential HD exposure risk.

Disposal of hazardous waste. Disposing of the bottle and contents into an HD container is preferable. Most communities have HD waste pick-up or drop-off stations on certain days and times of the month. If not, place the bottle and contents into a Ziploc bag and discard into the trash.

What to do with unused medication. All OACs should be taken according to physician orders; however, if there is unused medication, it should not be saved for future use.

Wash your hands. It is important to wash your hands immediately before and after oral chemotherapy administration to avoid spreading harmful residues to household surfaces.

Teach-back tool. Utilize the teach-back tool “*TIPS for Administering Oral Chemotherapy at Home*” to review the actual process of OAC administration with families to document competency and understanding of the process.

Important phone numbers. Keep important phone numbers readily available when managing OACs in the home in case of adverse reactions and unintended HD exposure.

Implications for Nursing

Nurses have a responsibility to present safe-handling information that does not cause alarm but empowers patients and caregivers to grasp the urgency of compliance to protect others. As regulations tighten on HD safe-handling in health care settings through the implementation of the U.S. Pharmacopeia (2016) Chapter 800 [USP <800>], patients and caregivers will observe nurses adhering to PPE requirements in hospital and outpatient units. Nurses should be ready to discuss the purpose of PPE with HD handling from a personal perspective and encourage patients to ask questions about home safety measures with OAC administration.

Conclusion

As science advances its' ability to develop new ways to provide more convenient methods for cancer treatment, the implementation of safer handling processes with HDs should be standardized. Similar to interventions used for proper handwashing to prevent the spread of disease, hands-on teaching sessions should be mandatory for patients and families to evaluate understanding and competency with OAC administration. The knowledge gained from recent studies regarding the need for better HD controls has now expanded to the home setting.

Table 1.0

Oral Chemotherapy Home Safety Education	Comprehends		Competent	
	Yes	No	Yes	No
1. Purpose of prescribed oral chemotherapy				
2. "No Touch" rules for caregivers				
3. Potential adverse health risks to caregivers				
4. Controlling the home environment to prevent residue exposure				
5. Personal protective equipment				
6. Safe storage of medication				
7. Spill management				
8. Disposal of hazardous waste				
9. What to do with unused medication				
10. Wash your hands with soap and water				
11. Teach-back tool "TIPS for Administering Oral Chemotherapy at Home"				
12. Important phone numbers <ul style="list-style-type: none"> • Physician • Hospital • Hazardous waste disposal 				

Table 2.0

TIPS for Administering Oral Chemotherapy at Home	
1	Gather supplies: <ul style="list-style-type: none"> • Absorbent paper towel • Disposable medicine cup • One pair of nitrile gloves • Small Ziploc bag • Medication • Small, washable tray (if available)
2	Place the absorbent paper towel on the tray.
3	Set the disposable medicine cup and medication on the paper towel.
4	Place the small Ziploc bag next to the small, washable tray.
5	Wash hands with soap and water.
6	Put on one pair of nitrile gloves.
7	Open the medicine bottle and place the tablet/capsule in the disposable medicine cup.
8	Close the medicine bottle and set aside.
9	Hand medicine cup to the patient. (The patient should return the cup to the tray. Do not touch the medication, if possible.)
10	Wrap the paper towel around the medicine cup and place all contents into the Ziploc bag.
11	Remove nitrile gloves and place in Ziploc bag and seal it.
12	Discard Ziploc bag into household trash.
13	Store chemotherapy in the original container and consider placing it in another Ziploc bag.
14	Wash hands with soap and water when finished.

Remember to SLOW DOWN! It is not “just another pill”!

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