

Adherence to Oral Therapies for Cancer: Barriers and Models for Change

SUSAN MOORE, RN, MSN, ANP, AOCN®

From MCG Oncology, Chicago, IL.

Disclosure: Ms. Moore is a member of the Genentech Xeloda promotional speakers bureau.

Correspondence to: Susan Moore, RN, MSN, ANP, AOCN®, 5437 W Warwick Ave, Chicago, IL 60641. E-mail: smoore46@yahoo.com

© 2010 Harborside Press

Abstract

Adherence to orally administered cancer therapy is far from optimal. Theory-driven interventions are needed for optimal management of patients on oral anticancer regimens. Few models for assessing motivation, models for change theory, or educational techniques have been validated in oncology; none have been validated for patients undergoing oral therapies. Peer-reviewed nursing, medical, education, and social science literature; published monographs; and websites are reviewed to synthesize the history of adherence to oral therapies for cancer; barriers to adherence; and models from education, social science, and health-care disciplines that may provide a theoretical framework for patient and care-partner counseling. The Health Belief Model, Self-Regulation Theory, Transtheoretical Model of Change, Freirian principles, and motivational interviewing, commonly used in other disciplines, can be used for patient assessment and counseling, but must be validated in oncology and specifically in regard to adherence to oral therapies. Advanced practice oncology nurses and nurse researchers can assume leadership roles to validate existing patient education and motivation models as tools for optimizing patient experiences and outcomes during oral therapy regimens for cancer.

J Adv Pract Oncol 2010;1:155-164

Oral chemotherapy and hormonal therapies have been available for decades and include many familiar agents such as cyclophosphamide, melphalan, and tamoxifen. The past decade has witnessed an expansion of oral anticancer drugs, including cytotoxic agents, small-molecule inhibitors, and agents targeted at receptors that regulate cellular differentiation, growth, and survival. Since 2000, more than 40 new anticancer

agents and cancer-related supportive care drugs have been approved for use by the U.S. Food and Drug Administration (FDA, 2010). An estimated 25% of anticancer agents in the research pipeline are designated for oral administration (Michaud & Choi, 2008). The infrastructure of chemotherapy administration is changing from episodic intravenous (IV) infusions to continuous oral daily dosing. Many inhibitor therapies are cytostatic and are most effective when given daily over pro-

longed periods of time, perhaps for the remainder of the patient's life (Weingart et al., 2008).

With the increase in oral therapies for cancer, concerns about adherence have also increased. Adherence is defined by the World Health Organization (WHO, 2003) as the extent to which a person's behavior in taking medication or executing lifestyle changes agrees with recommendations from a health-care provider. Oncology nurses have been in the forefront of patient education throughout the continuum of cancer care and have recently begun to identify and address the challenges of supporting an increasing number of patients treated with oral agents. Suboptimal adherence may be the greatest barrier to the effective use of new oral agents. Nonadherence can result in drug resistance and suboptimal response to therapy, disease progression, and death. Poor adherence to tamoxifen, for example, has been significantly associated with increased risk of death from breast cancer (Thompson, Dewar, Fahey, & McCowan, 2007).

History of Oral Therapy Adherence Issues

Primary care practitioners have been aware of adherence issues with prescribed therapies for many years. A search of medical and nursing literature yields numerous articles on HIV, diabetes, and heart failure management citing barriers to optimal adherence and nursing interventions to improve adherence. Patient nonadherence is a greater problem for chronic diseases, such as cancer, than for acute illnesses (Dunbar-Jacob, 2007; Osterberg & Blaschke, 2005) and often reflects the complexity of the regimen rather than willful nonadherence of the patient (Weingart et al., 2007). Partridge, Avorn, Wang, and Winer (2002) related adherence to sociodemographic characteristics, the regimen (side effects, duration of treatment) and the illness (symptoms, seriousness of diagnosis). Although oncology health-care providers generally assume that patients with cancer will adhere to treatment recommendations because of the gravity of a cancer diagnosis, that premise has not been proven and is reflected in reports of adherence as low as 20% (Partridge et al., 2002).

Published studies on adherence to oral regimens for cancer illustrate the pervasiveness of nonadherence. In a study of 2,816 Irish women

with early-stage breast cancer, nonadherence to adjuvant tamoxifen was reported to be 22% within the first year of treatment and 35% during the third year (Barron, Connolly, Bennett, Feely, & Kennedy, 2007). In a study of 2,378 U.S. patients prescribed adjuvant tamoxifen therapy for primary breast cancer, adherence during year 1 of treatment was assessed at 87% but declined to 50% after 4 years (Partridge, Wang, Winer, & Avorn, 2003). Tsang, Rudychev, and Pescatore (2006) analyzed pharmacy claims to determine adherence of 4,043 patients prescribed imatinib over 24 months. Overall adherence was 75%, and only 50% of patients were 100% adherent. In a small study of patients with breast cancer (N = 51), adherence to an oral cyclophosphamide regimen was only 57% (Lebovits et al., 1990). Adherence in patients with hematologic malignancies (N = 108) was reported as 27% with prednisone and 17% with allopurinol (Ruddy, Mayer & Partridge, 2009).

Although advancing age is often regarded as a barrier to optimal adherence, studies have shown that young adults can be nonadherent as well. Nonadherence to prophylactic antibiotic medications among adolescents following bone marrow transplant was studied by Kennard et al. (2004). Serum assays found that 27% of the patients (n = 44) had no detectable antibiotic drug level, and survival rates measured 6 years later were lower in the group of patients categorized as nonadherent.

Another challenge encountered during cancer therapy is "overadherence," which may involve taking more medication than prescribed or continuing on medication despite a recommendation to interrupt dosing. Patients who are fearful of disease progression or death if they do not take their medicine may push themselves to endure debilitating side effects rather than call the clinic for assistance with dose interruption or modification (Palmieri & Barton, 2007). A long-held belief that cancer treatment necessarily involves suffering also may keep patients from contacting the nurse for help. When a patient expects to feel poorly during therapy, there is little reason to report side effects.

Many methods to evaluate adherence have been developed and reported in the literature, including direct questioning, pill counts, electronic pill containers, diaries, and telephone dose records (Birner, Bedell, Avery, & Ernstoff, 2006;

Moore, 2007; Winkeljohn, 2007). Despite ongoing reports of adherence issues with oral medications, no “gold standard” method to measure adherence has been established (WHO, 2003).

Barriers to Adherence

Adherence is a multifaceted phenomenon determined by the interplay of a number of internal and external factors (WHO, 2003). Adherence to an oral anticancer regimen can be a challenging commitment for patients and their care partners. Highly motivated, capable patients who want an active role in their care are best suited to manage home oral administration of chemotherapy, but with good teaching and support, less motivated patients can also be successful. However, even when patients are motivated to succeed, a number of barriers—many beyond the control of the patient or health-care provider—may negatively affect adherence (see Table 1).

When an agent is available in both oral and IV formulations and the efficacy is essentially equivalent, the choice may depend on physician and patient preference, comparative side-effect profiles, insurance coverage, and patient commitment to adhering to the oral regimen. Many clinicians believe that oral drugs have a broader therapeutic index than IV drugs and, therefore, are safer and less toxic. This is not true: the therapeutic index is based on the class of drug and its mechanism of action, not on the route of administration. Therefore, the therapeutic index of oral agents and the IV equivalent is the same (Weingart et al., 2008). What may be different are specific side effects, and these side effects may alter a patient's preference for a particular drug. An example is IV fluorouracil (5-FU) versus the oral 5-FU prodrug capecitabine (Xeloda). The gastrointestinal side-effect profile of the two drugs is similar, although less severe for the oral form. However, a dermatologic

Table 1. Barriers to adherence to oral therapies

Socioeconomic

- Low health or language literacy
- Lack of family or social support network
- Unstable living conditions; homelessness
- Busy work or social lifestyle
- Limited access to health-care facilities and/or pharmacy
- Lack of health-care insurance
- Medication cost
- Cultural and lay beliefs about illness and treatment

Health-care system

- Poor provider-patient relationship
- Poor provider communication skills
- Disparity between the health beliefs of the health-care provider and patient
- Lack of positive reinforcement from the health-care provider
- Lack of knowledge about adherence and of effective interventions for improving it
- Patient information materials written at too high a literacy level
- Missed or infrequent appointments
- Lack of continuity of care

Disease

- Chronic conditions
- Asymptomatic disease
- Severity of symptoms

Treatment-related

- Complexity of medication regimen
- Number of daily doses
- Number of concurrent medications
- Duration of therapy
- Frequent changes in medication regimen
- Lack of immediate benefit of therapy
- Actual or perceived unpleasant side effects
- Treatment interferes with lifestyle or requires significant behavioral changes

Patient-related

- Physical factors
 - Visual impairment
 - Hearing impairment
 - Cognitive impairment
 - Impaired mobility or dexterity
 - Swallowing problems
- Psychological/behavioral factors
 - Knowledge about disease
 - Understanding reason medication is needed
 - Expectations or attitudes toward treatment
 - Perceived benefit of treatment
 - Confidence in ability to follow treatment regimen
 - Motivation
 - Fear of possible adverse effects
 - Psychosocial stress, anxiety, anger
 - Depression
 - Alcohol or substance abuse
 - Psychotic disorders
 - Developmental disability

Note: Based on information from American Society on Aging & American Society of Consultant Pharmacists Foundation, 2006; Atkins & Fallowfield, 2006; Haynes, McDonald, & Garg, 2002; Lebovits et al., 1990; Madden et al., 2008; Michaud & Choi, 2008; Osterberg & Blaschke, 2005; Weingart et al., 2008; WHO, 2003.

side effect, hand-foot syndrome, is more likely to occur with capecitabine than with bolus IV 5-FU (Twelves et al., 2005).

Prescriptions for oral anticancer agents can be filled in a variety of ways, contributing to safety concerns about access, refills, drug-drug interactions, and management of dose-limiting side effects (see Table 2). Patients may be hesitant about using a specialty pharmacy, preferring to continue using a familiar local retail pharmacy. However, certain cancer medications with stringent dispensing rules, such as thalidomide (Thalomid) or lenalidomide (Revlimid), must be filled through pharmaceutical access programs, which generally use specialty pharmacies.

Compared with generic IV chemotherapy agents and oral agents available in the early 1990s, newer cancer drugs are considerably more expensive. The estimated annual cost of imatinib for patients with chronic myelogenous leukemia ranges from \$29,000 to \$57,000 (Weingart et al., 2008). Unfortunately, not every patient with cancer has comprehensive pharmaceutical insurance benefits.

Since cancer is primarily a disease of aging, many patients have coverage through Medicare, the federal entitlement program. Historically, Medicare only paid for treatments that were administered parenterally in a medical facility. However, in 1993, Medicare expanded coverage to include oral chemotherapy agents that have an IV equivalent, such as cyclophosphamide or etoposide. In 1999, Medicare expanded coverage to include prodrugs, such as capecitabine and temozolomide, because these drugs are metabolized into an active agent that has an IV equivalent (Bedell, 2003). Medicare Part D (oral drug benefit) was enacted as part of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 and went into effect on January 1, 2006. Participation is voluntary through approved Part D providers; premiums, deductibles, and copays are adjusted annually prior to the open enrollment period (Centers for Medicare & Medicaid Services, 2003, 2008).

A major health-care reform bill, the Reconciliation Act of 2010, was signed into law in March 2010. This act gradually reduces the amount that Medicare Part D beneficiaries will pay out-of-pocket for prescription medications. At this writing, the exact amounts remain unclear because

amendments to the bill are anticipated. Information on the status of the provisions of the Reconciliation Act of 2010 can be found at <http://www.healthreform.gov/>

Models for Patient Motivation

Counseling patients to optimize adherence to oral therapies for cancer is not a new nursing intervention. Oncology nurses have been supporting patients on oral hormonal therapies for breast cancer and oral myelosuppressive agents for control of hematologic malignancies for many years. What have been lacking are models and theories of how individuals decide on and maintain beliefs about their health care and implement changes to improve health-care behaviors. Models that may be applicable to the investigation of adherence to cancer therapies include the Health Belief Model (HBM), Self-Regulation Theory (SRT), and the principles of educator Paulo Freire. None of these models has been validated in studies of adherence to oral anticancer therapies.

HEALTH BELIEF MODEL

The HBM has been used in preventive medicine to evaluate the likelihood that an individual will alter his or her lifestyle to effect a positive change in health. The HBM relates patients' perceptions of the seriousness of illness and efficacy of treatment with adherence to the prescribed therapy. A particular health behavior is adopted only if individuals regard themselves as susceptible to a condition they perceive to be serious; if they believe that their actions will either reduce the susceptibility to or severity of the condition; and if the perceived benefits of their actions outweigh the perceived barriers to performing the action (Becker, 1985).

Both prospective and retrospective studies support the predictive value of the HBM, although some studies have found no association between health beliefs and adherence behavior (Janz, Champion, & Strecher, 2002; Poss, 2001). Lifestyle demands of employment and family as well as lack of family and friend support systems can interfere with even the best plans for adherence. Patients with metastatic disease who realize that they will continue some type of treatment for the remainder of their lives may perceive the risks of nonadherence as less serious compared with a patient on adjuvant treatment who views the regimen as a cure.

That said, the HBM may be an applicable

Table 2. Access to oral therapies for cancer

Dispensing site	Benefits	Deficiencies
Community retail pharmacy	Decreased travel burden (usually located near residence) May be better positioned to monitor for drug-drug interactions if all prescriptions are filled at pharmacy chain	Community pharmacist may not have adequate experience to provide counseling May not stock less frequently used medications, resulting in delayed treatment start Billing concerns (may not bill correctly when medication is covered under Medicare Part B) Limited resources for patients without insurance or with high copays
Specialty pharmacy	Highly experienced and knowledgeable oncology pharmacy staff Provides additional patient education by phone or mail Delivers medication to patient's home or business at no additional cost May be able to custom pack multi-strength doses to avoid multiple copayments Works closely with insurance plans and Medicare Access to patient assistance programs	Not local (patient may have concerns about working with pharmacy by phone) May not interact with prescribing office when side effects are reported by patient
Mail order	Usually decreased patient copay when medication is ordered in 90-day amounts May have nurse case managers on staff to assist patients on medications for "catastrophic diseases"	Unlikely that patient will speak directly with an oncology pharmacist Nurse case manager may not be an oncology nurse Most require minimum of 90-day supply Dose may change during cycle Medication may be discontinued during cycle
Practice dispensing pharmacy	Convenient (inside oncology office) Physician or nurse available for questions All personnel available so that double-check of prescription can be performed for safety Patient medical record readily available for questions	Practice must be licensed as a dispensing pharmacy Varying levels of physician supervision may be required, depending on regulations Practice must either work with a distributor or with individual pharmaceutical companies to acquire, stock, and maintain in-office pharmacy HFAP-, JCAHO-, OSHA-, and public health-mandated drug safety rules require additional documentation and record-keeping
Hospital pharmacy	Patient may have access to an oncology pharmacist Close communication with practice physician or nurse Generally follows double-check of prescription if given patient data May be connected to practice through electronic ordering system	Travel burden (hospital pharmacy may not be located on same campus as office) May not have access to patient assistance program information May limit to 30-day supply (burden for patients who may be able to extend office visits to 2-3 cycles)
Pharmaceutical dispensing program	Assures safety in high-risk cancer medications Access to patient assistance programs Highly experienced and knowledgeable oncology staff Can provide additional patient education by phone or mail	Requires telephone or online contact with prescriber Requires faxed prescription Delay in receipt of medication by patient Additional paperwork and phone work by office staff

Note: HFAP = Healthcare Facilities Accreditation Program [American Osteopathic Association]; JCAHO = Joint Commission on Accreditation of Healthcare Organizations; OSHA = Occupational and Safety Health Administration. Based on information from Committee on Identifying & Preventing Medication Errors, Aspden, Wolcott, Bootman, & Cronenwett, 2007; Schulmeister, 2006; Weingart et al., 2008.

model for predicting adherence in patients with cancer (Moore, 2007).

SELF-REGULATION THEORY

Self-Regulation Theory (SRT) addresses patient coping with health-care experiences. Patients are responsible for coping with the experience, including making decisions about the type of treatment, complying with treatment regimens, providing self-care, and dealing with all aspects of the experience. SRT is based on the assumption that care providers accept patients as active participants in the health-care process. Effective use of SRT in clinical practice requires that health-care providers value patients' participation and practice in a way that fosters the participation in a beneficial manner (Johnson, Fieler, Jones, Wlasowicz, & Mitchell, 1997).

SRT consists of three stages: (1) the patient deliberately monitors his or her behavior and evaluates how this behavior is affecting the current health situation; (2) if the desired result is not realized, the patient must decide upon an action plan for resolving the health issue and make changes to personal behavior; and (3) if the desired effect is realized, the patient reinforces the effect by continuing the behavior (Baumeister & Vohs, 2004; Hall & Fong, 2007; Johnson, Fieler, Jones, et al., 1997). Patient education following the SRT model will help the patient modify behavior through internal motivation as opposed to external motivation from the health-care provider (Baumeister & Vohs, 2004).

SRT has been widely used in mental health settings and, in oncology, for patients undergoing radiation therapy and coping with chronic illness (Johnson, 1999; Johnson, Fieler, Wlasowicz, et al., 1997). Johnson, Fieler, Wlasowicz, and colleagues tested the hypothesis that preparatory informational interventions based on SRT delivered to patients receiving radiation therapy (N = 226) by staff nurses would reduce disruption in patients' usual life activities and have a positive effect on the moods of patients who tended to have pessimistic expectations about outcomes. The patients who received the theory-based nursing care had a 31% to 60% decrease in disruption in their usual life activities during and following radiation therapy (Johnson, Fieler, Wlasowicz, et al., 1997).

FREIRIAN PRINCIPLES

Most interventions to promote medication ad-

herence are based on psychological theories of individual behavior. A socially based adherence intervention that is guided by the educational principles of Paulo Freire (1986) asserts that adherence is influenced by the patient's social context and attempts to improve adherence through the identification of social constraints on adherence behavior (Williams et al., 2005). Using a process of dialogue and problem-solving and working with a nurse educator, patients are encouraged to change their social environment to support their desire to achieve high levels of medication adherence. The goal of the intervention is to facilitate a self-directed process by which patients identify individual and social factors that influence their success in adherence to medication regimens and that, when recognized, can lead to more effective self-management of medication.

The Freirian educational process involves three stages: listening, participatory dialogue, and action (Freire, 1986). Nurses who acknowledge the Freirian principle that learning is mutual and occurs through dialogue will establish the foundation for a positive and productive patient-nurse relationship (Williams et al., 2005). Used most commonly in the HIV setting, the Freirian approach may be most useful in oncology when social barriers are keeping cancer patients from achieving optimal adherence.

Facilitating Change

TRANSTHEORETICAL MODEL OF CHANGE

The Transtheoretical Model of Change (TMC) is a model of intentional change that focuses on the patient's decision-making. Other approaches to health promotion have focused primarily on external social or biologic influences on behavior. In smoking cessation education, for example, a social factor with an impact on smoking behavior is peer influence, and a biologic influence is nicotine receptor activity. Within the context of the TMC, these are viewed as external influences affecting the individual. The model involves emotions, cognition, and behavior, relying heavily on self-report (Velicer, Prochaska, Fava, Norman, & Redding, 1998).

The TMC breaks down the concept of readiness to change into discrete stages that range from lack of personal awareness for the need for change to maintaining change once it is made and stabilized. One implication of this model is that for each stage, certain helping behaviors are par-

Table 3. Stages of change, according to the Transtheoretical Model of Change

Stage	Construct of stage	Patient tasks	Health-care provider tasks
Precontemplation	Does not intend to take action in the foreseeable future Patient may be in this stage because he/she is uninformed or underinformed about the consequences of his/her behavior	Increase perception of risks and problems with current behavior	Raise doubts about current behavior
Contemplation	Intends to change Aware of risks and benefits of changing Risk/benefit balance can produce profound ambivalence	Begin to formulate early plan Still ambivalent	Listen to patient concerns Support benefits, address concerns about risks
Preparation	Intending to take action in the immediate future Has taken some significant action already Has a plan of action	Increase self-efficacy for change	Raise reasons for change, risks of not changing
Action	Has made specific changes Action is observable Relapse is common	Implement the plan Problem-solving	Help patient use skills for problem-solving Support self-efficacy
Maintenance	Working to prevent relapse Increasingly more confident that they can continue the change	Resolve associated problems as they occur	Help patient identify and use strategies to prevent relapse
Regression	Individuals revert to an earlier stage of change Relapse is one form of regression Can regress from any stage to any earlier stage The majority regress from maintenance to contemplation or preparation	Recycle through prior stages	Support patient's efforts to return to appropriate behavior Support positive attitude

Note: Based on data from Prochaska et al., 2002; Prochaska & Velicer, 1997; Velicer et al., 1998; Zimmerman et al., 2000.

ticularly constructive (see Table 3). Change implies phenomena occurring over time; the stage concept is the key organizing construct of TMC and is important because it represents a temporal dimension (Prochaska & Velicer, 1997; Prochaska, Redding & Evers, 2002; Velicer et al., 1998).

MOTIVATIONAL INTERVIEWING

Motivation is a fundamental aspect of change. An individual must be ready, willing, and able to change. Motivational interviewing (MI) is differentiated from traditional nurse counseling by encouraging patients and health-care providers to examine health-care events together. Traditional patient education approaches have focused on the professional's assessment and resolution of the problem. MI offers a shift in focus to the patient's perception of the problem, encouraging the patient to find the solution. This method is di-

rective and client-centered, and it helps patients explore and resolve their ambivalence about making changes in their behavior.

MI encourages health-care providers to explore a patient's understanding and concerns and to determine his or her readiness for change. It is a process that is useful for people who are in the early stages of change (Calhoun & Admire, 2005; Levensky, Forcehimes, O'Donohue, & Beitz, 2007; Possidente, Bucci, & McClain, 2005). The fundamental premise of MI is that a patient's ambivalence about change can negatively affect motivation and readiness to alter behavior (Miller & Rollnick, 1991; Rollnick, Miller, & Butler, 2008). Helping patients recognize a dissonance between their goals and behaviors can be a springboard for change (Prochaska, Redding, & Evers, 2002; Zimmerman, Olsen, & Bosworth, 2000).

MI was developed to help counsel patients

Table 4. Motivational interviewing techniques

Technique	Comments	Sample dialogue
Ask open-ended questions	Avoid questions that ask for a “yes” or “no” answer	Nurse: Please tell me about the problems you’ve had in taking your hormonal therapy every day since your last visit.
Use reflective listening	Paraphrase clients’ comments Phrase reflections as statements, not as questions	<i>Patient: It’s quite a challenge to try to deal with diarrhea while we’re traveling on vacation, but I know it’s a side effect of the medicine.</i> Nurse: So, even though the diarrhea interferes with your vacation, you expect it to happen, so you’re not caught off guard. <i>Patient: I couldn’t stop taking this medicine. What would my family think?</i> Nurse: It sounds like there would be a lot of pressure from your family if you decided to stop.
Elicit self-motivated statements	Encourage patients to verbalize how they are changing Point out any changes you have observed and ask them how they did this	Nurse: It sounds like you have made real progress in taking your medicine every day. How do you feel about that?
Affirm	Support, encourage, and recognize the patient’s difficulties	Nurse: It sounds like you are still struggling with remembering to take your medicine on an empty stomach, but you have made some changes. How do you think you might be able to do this every day instead of a few days a week?
Summarize	Summarize the comments made Transition to the next topic or conclude the session	Nurse: You said you feel strongly that the medicine is helping to keep your cancer from coming back. You want to find ways to remember to take it every day. What things do you think you could do to help you remember your medicine every day?

Based on information from Levensky, Forcehimes, O’Donohue, & Beitz, 2007; Possidente, Bucci, & McClain, 2005.

with addictive behaviors such as alcohol abuse (Miller & Rollnick, 1991) and has not been validated in oncology patient care. However, the underlying principles of this patient-centered approach to minimize resistance to change (Miller & Rollnick, 1991; Rollnick, Miller, & Butler, 2008)

lend themselves to counseling patients with cancer who seem unable to maintain optimal adherence to therapy.

MI relies heavily on empathy and listening in a supportive, reflective manner, demonstrating that the health-care provider understands the patient’s

Table 5. Comparison of traditional nurse counseling and motivational interviewing

Traditional nurse counseling	Motivational interviewing
Nurse is the health-care expert Assumes patient lacks knowledge Tells patient what to do Hopes patient follows instructions	Nurse develops partnership with patient Exchanges information to facilitate an informed decision Patient has the right to decide his/her own care
Nurse provides definitive information Directives are presumed to be nonnegotiable	Nurse provides information to patient for the purpose of developing discrepancy between present behavior and goal
Nurse dictates health-care behavior	Nurse and patient negotiate behavior and reach agreement
Goal is to motivate the patient	Goal is to access motivation and elicit patient commitment to change behavior
Nurse persuades patient to change behavior	Nurse understands and accepts patient’s action
Nurse expects respect from patient	Nurse must earn respect from patient

Based on information from Calhoun & Admire, 2005; Levensky et al., 2007; Miller & Rollnick, 1991; Possidente et al., 2005; Rollnick, Miller, & Butler, 2008.

concerns and feelings. Questions such as, “How can I help you?”; “What do you need to know about _____?”; and “What does this choice mean for your future?” can encourage nonadherent patients to think about the processes that are interfering with adherence to therapy. Table 4 lists five basic MI techniques, and Table 5 provides a comparison between traditional nurse counseling and MI.

Implications for Nursing Practice

As oral therapies for cancer increase in availability and utilization, nurses in clinical practice are addressing patient education and safety issues by forming task force groups to develop policies, procedures, and patient information (Kelby, 2008). Although policies and procedures for IV chemotherapy and biologic therapy administration are in place in most cancer centers, policies and procedures for oral therapy education, support, and patient management seem to be lagging behind.

Advanced practice oncology nurses can assume leadership roles on institutional committees to research and develop policies and procedures, and work with pharmacists, oncologists, and institutional administrators to provide evidence-based guidelines for practice. Oncology nurse researchers need to validate existing patient education and motivation models such as the HBM, SRT, TMC, Freirian principles, and MI as tools for optimizing patient experiences and outcomes with the use of oral therapy for cancer.

REFERENCES

- American Society on Aging & American Society of Consultant Pharmacists Foundation. (2006). *Adult medication: Improving medication adherence in older adults*. Retrieved from http://www.adultmedication.com/downloads/Adult_Medication.pdf
- Atkins, L., & Fallowfield, L. (2006). Intentional and non-intentional non-adherence to medication amongst breast cancer patients. *European Journal of Cancer*, *42*, 2271–2276. doi:10.1016/j.ejca.2006.03.004
- Barron, T. I., Connolly, R. M., Bennett, K., Feely, J., & Kennedy, M. J. (2007). Early discontinuation of tamoxifen: A lesson for oncologists. *Cancer*, *109*, 832–839. doi:10.1002/cncr.22485
- Baumeister, R. R., & Vohs, K. D. (2004). Understanding self-regulation. In R. R. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 1–10). New York, NY: Guilford Press.
- Becker, M. H. (1985). Patient adherence to prescribed therapies. *Medical Care*, *23*, 539–555.
- Bedell, C. H. (2003). A changing paradigm for cancer treatment: The advent of new oral chemotherapy agents. *Clinical Journal of Oncology Nursing*, *7*(suppl 6), 5–9. doi:10.1188/03.CJON.S6.5-9
- Birner, A. M., Bedell, M. K., Avery, J. T., & Ernstoff, M. S. (2006). Program to support safe administration of oral chemotherapy. *Journal of Oncology Practice*, *2*, 5–6. doi:10.1200/JOP.2.1.5
- Calhoun, J., & Admire, K. S. (2005). Implementing a predictive modeling program, Part II: Use of motivational interviewing in a predictive modeling program. *Lippincott's Case Management*, *10*, 240–245.
- Centers for Medicare & Medicaid Services (CMS). (2003). *Medicare modernization update*. Retrieved from <http://www.cms.hhs.gov/mmaupdate/>
- Centers for Medicare & Medicaid Services (CMS). (2008). *Medicare & You 2009*. Baltimore, MD: U.S. Department of Health and Human Services.
- Committee on Identifying and Preventing Medication Errors, Aspden, P., Wolcott, J., Bootman, J. L., & Cronenwett, L. R. (Eds.). (2007). *Preventing medication errors*. Washington, DC: National Academies Press.
- Dunbar-Jacob, J. (2007). Models for changing patient behavior: Creating successful self-care plans. *American Journal of Nursing*, *107*(suppl 6), 20–25.
- Freire, P. (1986). *Pedagogy of the oppressed*. New York, NY: Continuum.
- Hall, P. A., & Fong, G. T. (2007). Temporal self-regulation theory: A model for individual health behavior *Health Psychology Review*, *1*, 6–52.
- Haynes, R. B., McDonald, H. P., & Garg, A. X. (2002). Helping patients follow prescribed treatment: Clinical applications. *JAMA*, *288*, 2880–2883. doi:10.1001/jama.288.22.2880
- Janz, N. K., Champion, V. L., & Strecher, V. J. (2002). The health belief model. In K. Glanz, F. M. Lewis & B. K. Rimer (Eds.), *Health behavior and health education: Theory, research and practice* (pp. 41–66). San Francisco, CA: Jossey-Bass Publishers.
- Johnson, J. E. (1999). Self-regulation theory and coping with physical illness. *Research in Nursing & Health*, *22*, 435–448.
- Johnson, J. E., Fieler, V. K., Jones, L. S., Wlasowicz, G. S., & Mitchell, M. L. (1997). *Self-regulation theory: Applying theory to your practice*. Pittsburgh, PA: Oncology Nursing Society.
- Johnson, J. E., Fieler, V. K., Wlasowicz, G. S., Mitchell, M. L., & Jones, L. S. (1997). The effects of nursing care guided by self-regulation theory on coping with radiation therapy. *Oncology Nursing Forum*, *24*, 1041–1050.
- Kelby, S. (2008). Oral Chemotherapy Task Force Project. *Targeted and Biologic Therapies Special Interest Group Newsletter*. Retrieved from <http://onsopcontent.ons.org/Publications/SigNewsletters/tbt/tbt19.2.html#story3>
- Kennard, B. D., Stewart, S. M., Olvera, R., Bawdon, R. E., Hailin, A. O., Lewis, C. P., & Winick, N. J. (2004). Non-adherence in adolescent oncology patients: Preliminary data on psychological risk factors and relationships to outcome. *Journal of Psychology in Medical Settings*, *11*, 31–39. doi:10.1023/B:JOCS.0000016267.21912.74
- Lebovits, A. H., Strain, J. J., Schleifer, S. J., Tanaka, J. S., Bhardwaj, S., & Messe, M. R. (1990). Patient noncompliance with self-administered chemotherapy. *Cancer*, *65*, 17–22. doi:10.1002/1097-0142(19900101)65:1<17::AID-CNCR2820650106>3.0.CO;2-I
- Levensky, E. R., Forcehimes, A., O'Donohue, W. T., & Beitz, K. (2007). Motivational interviewing: An evidence-based approach to counseling helps patients follow treatment recommendations. *American Journal of Nursing*, *107*, 50–58.

- Madden, J. M., Graves, A. J., Zhang, F., Adams, A. S., Briesacher, B. A., Ross-Degnan, D., ... Soumerai, S. B. (2008). Cost-related medication nonadherence and spending on basic needs following implementation of Medicare Part D. *JAMA*, *299*, 1922–1928. doi:10.1001/jama.299.16.1922
- Michaud, L. B., & Choi, S. (2008). Oral chemotherapy: a shifting paradigm affecting patient safety. *HemOnc Today*. Retrieved from <http://www.hemonctoday.com/article.aspx?rid=33070>
- Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. New York, NY: The Guilford Press.
- Moore, S. (2007). Facilitating oral chemotherapy treatment and compliance through patient/family-focused education. *Cancer Nursing*, *30*, 112–122. doi:10.1097/01.NCC.0000265008.94934.c7
- Osterberg, L., & Blaschke, T. (2005). Adherence to medication. *New England Journal of Medicine*, *353*, 487–497.
- Palmieri, F. M., & Barton, D. L. (2007). Challenges of oral medications in patients with advanced breast cancer. *Seminars in Oncology Nursing*, *23*, S17–S22. doi:10.1016/j.soncn.2007.10.004
- Partridge, A. H., Avorn, J., Wang, P. S., & Winer, E. P. (2002). Adherence to therapy with oral antineoplastic agents. *Journal of the National Cancer Institute*, *94*, 652–661.
- Partridge, A. H., Wang, P. S., Winer, E. P., & Avorn, J. (2003). Nonadherence to adjuvant tamoxifen therapy in women with primary breast cancer. *Journal of Clinical Oncology*, *21*, 602–606. doi:10.1200/JCO.2003.07.071
- Poss, J. E. (2001). Developing a new model for cross-cultural research: synthesizing the Health Belief Model and the Theory of Reasoned Action. *Advances in Nursing Science*, *23*, 1–15.
- Possidente, C. J., Bucci, K. K., & McClain, W. J. (2005). Motivational interviewing: A tool to improve medication adherence? *American Journal of Health-System Pharmacy*, *62*, 1311–1314. doi:10.79-2082/05/0602-1311
- Prochaska, J. O., Redding, C., & Evers, K. (2002). The transtheoretical model and stages of change. In K. Glanz, F. M. Lewis & B. K. Rimer (Eds.), *Health behavior and health education: Theory, research, and practice* (pp. 99–120). San Francisco, CA: Jossey-Bass.
- Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion*, *12*, 38–48.
- Rollnick, S., Miller, W. R., & Butler, C. C. (2008). *Motivational interviewing in health care: Helping patients change behavior*. New York, NY: Guilford Press.
- Ruddy, K., Mayer, E., & Partridge, A. (2009). Patient adherence and persistence with oral anticancer treatment. *CA: A Cancer Journal for Clinicians*, *59*, 56–66. doi:10.3322/caac.20004
- Schulmeister, L. (2006). Preventing chemotherapy errors. *Oncologist*, *11*, 463–468. doi:10.1634/theoncologist.11-5-463
- Thompson, A. M., Dewar, J., Fahey, T., & McCowan, C. (2007). Association of poor adherence to prescribed tamoxifen with risk of death from breast cancer (abstract). *2007 Breast Cancer Symposium*. Retrieved from http://www.asco.org/ASCO/Abstracts+&+Virtual+Meeting/Abstracts?&vmview=abst_detail_view&confID=52&abstractID=40326
- Tsang, J., Rudychev, I., & Pescatore, S. L. (2006). Prescription compliance and persistency in chronic myelogenous leukemia (CML) and gastrointestinal stromal tumor (GIST) patients (pts) on imatinib (IM) (abstract). *Journal of Clinical Oncology*, *24*(18S), 619. Retrieved from http://www.asco.org/ASCOv2/Meetings/Abstracts?&vmview=abst_detail_view&confID=40&abstractID=34689
- Twelves, C., Wong, A., Nowacki, M. P., Abt, M., Burris, H. III, ...Scheithauer, W. (2005). Capecitabine as adjuvant treatment for stage III colon cancer. *New England Journal of Medicine*, *352*, 2696–2704.
- U.S. Food & Drug Administration (FDA). (2010). List of approved oncology drugs and approved indications. Retrieved from <http://www.centerwatch.com/drug-information/fda-approvals/>
- Velicer, W. F., Prochaska, J. O., Fava, J. L., Norman, G. J., & Redding, C. A. (1998). Smoking cessation and stress management: Applications of the transtheoretical model of behavior change. *Homeostasis*, *38*, 216–233.
- Weingart, S. N., Brown, E., Bach, P. B., Eng, K., Johnson, S. A., Kuzel, T. M., ...Walters, R. S. (2008). NCCN task force report: Oral chemotherapy. *Journal of the National Comprehensive Cancer Network*, *6*(suppl 3), S1–S14.
- Weingart, S. N., Flug, J., Brouillard, D., Morway, L., Partridge, A. H., Bartel, S. B., ...Connor, M. (2007). Oral chemotherapy safety practices at US cancer centres: Questionnaire survey. *British Medical Journal*, *334*, 407–409. doi:10.1136/bmj.39069.489757.55
- Williams, A. B., Burgess, J. D., Danvers, K., Malone, J., Winfield, S. D., & Saunders, L. (2005). Kitchen table wisdom: A Freirian approach to medication adherence. *Journal of the Association of Nurses in AIDS Care*, *16*, 3–12.
- Winkeljohn, D. L. (2007). Oral chemotherapy medications: The need for a nurse's touch. *Clinical Journal of Oncology Nursing*, *11*, 793–796. doi:10.1188/07.CJON.793–796
- World Health Organization (WHO). (2003). *Adherence to long-term therapies: Evidence for action*. Geneva, Switzerland: WHO.
- Zimmerman, G. L., Olsen, C. G., & Bosworth, M. E. (2000). A 'stages of change' approach to helping patients change behavior. *American Family Physician*, *61*, 1409–1416. Retrieved from <http://www.aafp.org/afp/20000301/1409.html>