# Adherence in Patients On Dialysis: Strategies for Success

CNE Continuing Nursing Education

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***Adherence is a major problem in patients with chronic kidney disease. Patients can be nonadherent with different aspects of their treatment, which includes medications, treatment regimens, and dietary and fluid restrictions. Although many lessons have been learned from adherence research, the evidence of how to modify adherence is somewhat mixed. To minimize nonadherence, interventions need to focus on both patient factors and the extent to which relationships and system problems compromise the patient's ability to adhere to medication and treatment plans. There continues to be a tendency to focus on the patient as the reason for problems with adherence, ignoring other factors such as the patient-health care provider relationships and the health care system that surrounds the patient. These latter factors can have a considerable effect on adherence. The nurse can develop a strong relationship of support with the patient, identify barriers, and offer strategies to help patients improve adherence.***

**Goal**

To raise awareness of factors that may cause problems in patients' adherence to their treatment program.

**Objectives**

1. Compare and contrast compliance, adherence, and persistence as they relate to CKD.
2. Summarize the challenges to and results of poor adherence to treatment regimens
3. Describe strategies that may be used to improve adherence to their treatment regimen.

Patient adherence with the recommendations and treatments of healthcare providers is critical to the efficacy of those interventions. Unfortunately, poor patient adherence is a widespread problem in health care that carries with it substantial medical, social, and economic consequences, particularly among patients with chronic kidney disease (CKD). Much research has been devoted to understanding patient nonadherence, but has generally failed to demonstrate that any patient demographic or psychological characteristics are consistent predictors of adherence (Cvengros, Christiansen, & Lawton, 2004).

Patients undergoing chronic dialysis have many problems, including salt and water retention, phosphate retention, secondary hyperparathyroidism, hypertension, chronic anemia, hyperlipidemia, and heart disease. Almost half of patients on dialysis have diabetes, which leads to additional complications. To address all of these problems, patients may require fluid restrictions, phosphate binders, vitamin D preparations, calcimimetic agents, antihypertensive medications, hypoglycemic agents, erythropoietin, iron supplements, and a variety of other medications (Loghman-Adham, 2003; Saran et al., 2003).

Management of these health issues places multiple, complicated, and unavoidable demands on a patient's lifestyle (Saran et al., 2003). Nonadherence is a rampant problem among patients undergoing dialysis (Cvengros et al., 2004) and can impact multiple aspects of patient care, including medications, and treatment regimens as well as dietary and fluid restrictions Overall, it has been estimated that about 50% of

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patients on HD do not adhere to at least part of their dialysis regimen (Kutner, 2001).

## Understanding Compliance, Adherence, and Persistence

Health care providers (HCPs) need to understand the distinction between compliance, adherence, and persistence. *Compliance* is the extent to which patients follow medication or treatment advice given to them by providers. Some HCPs feel the term "compliance" suggests an obedience-based approach to patient care in which the HCP dictates behavior the patient is supposed to follow (Berger, Krueger, & Felkey, 2004).

The word *adherence* is preferred by many HCPs because compliance suggests that the patient is passively following the HCP's orders and that the treatment plan is not based on a therapeutic alliance or contract established between the patient and the provider (Osterberg & Blaschke, 2005). Adherence means more than just following instructions (Sabate, 2001). It indicates that goals of treatment are negotiated between patients and the HCP. The HCP may be an expert in diagnosing an illness or in pharmacotherapy, but patients are experts on their own issues and activities of daily living, including factors that enable them to carry out a treatment plan and barriers that may interfere with it (Berger et al., 2004). The level of adherence depends ultimately on the adoption and maintenance of a range of therapeutic behaviors by both the HCP and/or the patient that may include the patient's self-management of biological, behavioral, and social factors that influence health and illness. The World Health Organization's (WHO) Adherence Project has adopted the following definition of adherence to long-term therapy: *the extent to which a person's behavior in taking medications, following a diet, and-or executing lifestyle changes, corresponds with agreed-upon recommendations from a HCP* (Sabate, 2003). Inherent in this statement is an agreement between the patient and the HCP.

The WHO definition of adherence can easily be adapted to CKD, where patients are confronted with multiple life-style changes. How well patients on dialysis are managing their care can be assessed using many parameters. In addition to adherence to prescribed medications and regular attendance at hemodialysis sessions, most researchers define nonadherence using the objective parameters of interdialytic weight gain (IDWG), serum phosphorus and potassium levels. Of course, before nonadherence can be determined to be the cause, patients with elevated serum phosphorus and potassium levels must first be assessed for other causes of these imbalances such as adverse interactions between medications, an inappropriate prescription of vitamin D, and sources of bleeding.

*Persistence* is a measure of whether a patient is continuing to use the prescribed therapy or medication (Berger et al., 2004). It is most often used regarding medication prescriptions and is defined as the continued use of medication as indicated over time. A patient is nonpersistent if he or she never fills a prescription or stops taking it prematurely (Krueger, Felkey, & Berger, 2003). Studies have examined medication persistence among patients with a newly diagnosed disease, such as hypertension, demonstrating that persistence rates decrease over time (Caro, Salas, Speckman, Raggio, & Jackson, 1999). Adherence and persistence are not mutually exclusive. It is possible for a patient to be persistent with his or her medication, that is to continue to take it over time, but to also be nonadherent by not taking the medication as directed (Krueger et al., 2003).

## Chronic Care Model Lends Itself to Successful Adherence Behaviors

Acute care models of health service delivery present barriers to adherence when applied to chronic disease, while the characteristics of chronic care delivery systems are aligned with the ability to achieve successful adherence behaviors.

Acute care models tend to support interventions that are symptom-focused and intent on "cure," while chronic care focuses on controlling the progression of the condition, increasing survival and enhancing quality of life (Sabate, 2001). In acute care, knowledge is in the hands of the HCPs. The chronic care model requires that health care professionals, patients, and families share complementary knowledge to deal effectively with chronic conditions (Sabate, 2001).

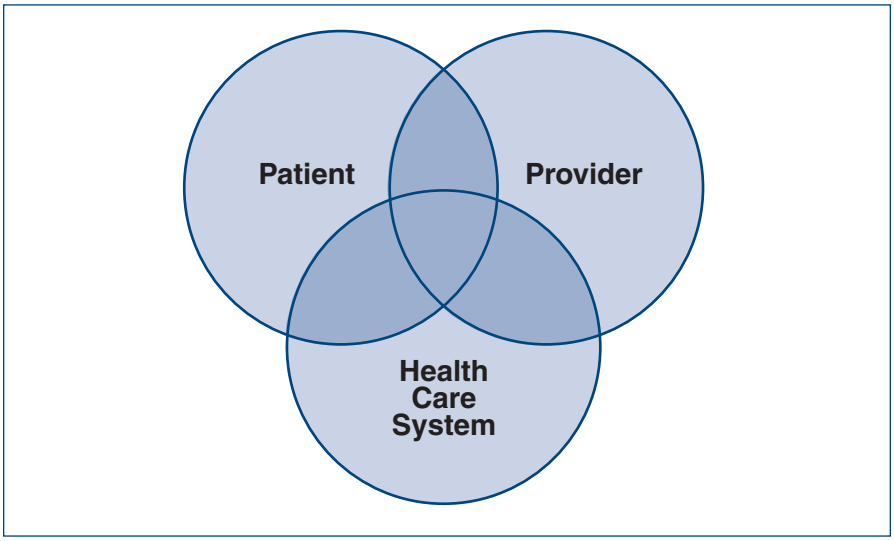
The WHO adherence project adopted the following definition of chronic disease: *Diseases which have one or more of the following characteristics: they are permanent, leave residual disability, are caused by nonreversible pathological alteration, require special training of the patient for rehabilitation, or may be expected to require a long period of supervision, observation, or care* (Sabate,2001).

For many with chronic illness, adherence to medical advice plays a vital role in survival. To manage chronic illness successfully, individuals must take responsibility for many aspects of their own treatment on a regular and long-term basis. For adherence to occur, the patient needs to incorporate lifestyle changes and other behavior changes into their daily routines. Nowhere is this more evident than in the area of CKD, where adherence to dietary, fluid, and medication instructions are a critically significant factor in the continued health and wellness of the patient undergoing chronic dialysis (Rushe & McGee, 1998) (Curtin & Mapes, 2001).

### A Complex Interaction of Factors Affects Adherence

The evidence supporting the impact of the factors that affect adherence is somewhat mixed (Krueger, Berger, & Felkey, 2005). Most studies agree that to improve a patient's ability to follow medication and treatment regimens, all potential barriers to adherence need to be considered. An expanded view takes into account factors under the patient's control as well as interactions between the

**Figure 1**
**Interacting Factors Affecting Adherence**




**Note:** Adapted from Osterberg & Blaschke (2005).

patient and the HCP and between the patient and the health care system (see Figure 1). Interventions need to focus on both patient factors and the extent to which relationships and system problems compromise the patient's ability to adhere to medication and treatment plans.

**Patient.** Patient-related factors represent the resources, knowledge, attitudes, beliefs, perceptions and expectations of the patient. Patients' knowledge and beliefs about the illness, motivation to manage it, confidence (self-efficacy) concerning the ability to engage in illness-management behaviors, and expectancies regarding the outcome of treatment and the consequences of nonadherence interact to influence adherence in ways not yet fully understood (Sabate, 2001).

Although studies do not show clear relationships between patient demographics and adherence, a few factors do seem to be associated with adherence to dialysis therapy. In a study by Kutner, Zhang, McClellan, and Cole (2002), patients who had skipped treatments were younger ($P = 0.0007$). In the Dialysis Outcomes and Practice Patterns Study (DOPPS), predictors of higher odds of nonadherence included younger age (for skipping, shortening, excessive IDWG, and hyperphosphatemia), African American race (for skipping and shortening), female gender (for excessive IDWG), employed status (for hyperphosphatemia), living alone (for hyperphosphatemia), smoking (for skipping and excessive IDWG), depression (for skipping and shortening), marital status (for hypephosphatemia), and time on dialysis (for shortening, IDWG, and hyperkalemia) (Saran et al., 2003). Leggat et al. (1998) were the first to consider smoking as a potential predictor of nonadherence, suggesting that smoking is a marker of a patient's lower priority on health. Kutner et al. (2002) also showed current smoking was significantly associated with skipping treatments ($P = 0.04$). Some evidence suggests that a patient's educational level plays a role in adherence, but understanding the treatment instructions and the importance of the treatment is probably more important than the patient's level of education (Krueger et al., 2005). Studies have shown that an increase in knowledge does not necessarily increase a patient's adherence to the prescribed treatment. Most importantly, a patient must possess the resources and the motivation to adhere to the treatment protocol (Morgan, 2000).

Individuals with chronic illness who experience a diminished sense of control often seek alternative methods to re-establish control. These behaviors may manifest in positive or negative ways. Many theories suggest that a perceived lack of control over the disease process and/or the dialysis procedure may help to explain nonadherence (Cvengros et al., 2004). Patients who shortened treatments were more likely to be bothered by the effects of kidney disease on their daily lives and more likely to report perceived lack of control over their future health (Kutner et al., 2002). Perhaps some patients on dialysis feel a sense of futility as well as a lack of control over their health care outcomes.

**Health care system.** Dialysis facility size may be associated with nonadherence. Larger facility size (10 or more patients on HD) was associated with an increased likelihood of skipping treatments, shortening dialysis treatment time, and excess IDWG. When looking for an optimum facility size, it was found that in facilities with more than 60 patients, the risk of skipping treatments increased 77% ($P = 0.0001$). In facilities with greater than 75 patients, the odds of shortening treatments increased 57% ($P = 0.0006$). Facility size greater than 125 patients was associated with greater odds for excessive IDWG ($P = 0.03$) (Saran et al., 2003).

Time pressure in the clinical setting is a major barrier to understanding or improving nonadherence. If we believe that communication with patients is a crucial component of care, HCPs must lobby for sufficient time to use "language" in our practices and must invest the time we do share with patients in discussion of their behavior and motivations for self-care (Steiner & Earnest, 2000). Behavioral and educational research indicates that adherence is best enhanced when the patient receives individual attention (Morgan, 2000). Large dialysis facilities with multiple shifts and rapid turnover of patients may make it more difficult to provide personalized care aimed at

reducing the barriers that interfere with each patient's ability to adhere to or cooperate with a health care plan.

Although patient participation in health care is presumed to be supported by the health care system at large, it is difficult to assess to what degree such encouragement actually occurs in practice. It seems that often the health care system itself is the most formidable challenge to a patient's ability to effectively participate in their own care and treatment. Many care providers tend to emphasize strict compliance and may believe self-management to be a luxury that patients on dialysis can ill afford. Moreover, the atmosphere of dependency and passivity engendered in many dialysis delivery settings itself may contribute to providers' preference for and patients' complicity with non-participation (Curtin & Mapes, 2001).

**Provider.** One of the most important factors affecting adherence is the relationships that dialysis staff members establish with patients (Krueger et al., 2005). DOPPS demonstrated an association between the presence of a dietitian in the facility and a lower likelihood of nonadherence in terms of excess IDWG (Odds Ratio [OR] = 0.75, $P = 0.08$). The results of the study point to the potential importance of the percentage of direct patient care staff that is highly trained. For a 10% increase in highly trained staff hours (defined as hours worked by staff with 2 or more years of formal nursing training), there was a decrease in the likelihood of skipping (OR = 0.84, $P = 0.02$). Odds of skipping were 11% lower for every 10% increase in highly trained staff in the unit (OR = 0.89, $P = 0.06$) (Saran et al., 2003).

Both the percentage of highly trained staff hours and of the number of highly trained staff members in a facility seem to have an effect on patient adherence. Dedicated nursing time spent counseling patients to improve adherence is beneficial. Furthermore, the presence of a registered dietitian seemed to lower the odds of excess IDWG (Saran et al., 2003).

**Table 1**
**The Relative Risk of Mortality by Nonadherence Measures**

| Nonadherence measure | Relative Risk (RR) of mortality* |
|---|---|
| Skipped 1 or more hemodialysis sessions/month | 1.30 |
| Shortened session by 10 minutes or more | 1.11 |
| IDWG greater than 5.7 % of dry weight | 1.12 |
| $PO_4$ greater than 6.5 mg/dL | 1.27 |

*Multivariate adjusted

**Note:** Adapted with permission from Macmillan Publishers, Ltd.: Saran et al. (2003); Block et al. (1998).

## The Consequence of Poor Adherence to CKD Therapies Is Poor Health Care Outcomes

Nonadherence to the treatment regimen may affect both patient morbidity and mortality (Bander & Walters, 1998). Although there is much contradictory literature, it is logical to assume that improvement in adherence would decrease mortality. Studies have shown that the delivered dose of hemodialysis is an important predictor of mortality. Held et al. (1996) showed that a 5% increase in urea reduction ratio (URR) was associated with an 11% lower risk of mortality. And when using Kt/V as a measure of dialysis dose, each 0.1 higher level of Kt/V delivered was associated with a 7% lower mortality risk. One skipped treatment in a month of 13 treatments yielded an 8% reduction in the monthly Kt/V and accounted for a 14% higher mortality risk. In a study of 6,251 patients by Leggat et al. (1998), 8.5% of patients skipped one or more hemodialysis sessions within a month and 20.3% of patients shortened one or more hemodialysis sessions by 10 or more minutes. Overall, shortening one or more dialysis sessions was not associated with higher mortality, however, shortening three or more sessions in 1 month was associated with 20% higher mortality. The DOPPS also supports the association between alterations in the dialysis prescription and mortality. In this study published by Saran et al. (2003), patients were considered nonadherent if they skipped one or more sessions per month, shortened one or more sessions by more than 10 minutes per month, had a serum potassium level of greater than 6.0 mEq/L, a serum phosphate level of greater than 7.5 mg/dL, or an IDWG greater than 5.7% of body weight.

Skipping one or more dialysis sessions in a month was associated with a 30% increased mortality risk compared with not skipping, and shortening dialysis time was associated with an 11% higher Relative Risk (RR) of mortality. Skipping dialysis decreased the total delivered dose and may affect mortality by that mechanism. The high mortality risk is perhaps secondary to excessive cardiovascular burden related to expanded extracellular volume (Saran et al., 2003). Bleyer et al.(1999) found that even an occasional missed treatment places the patient at a much higher risk of life-threatening conditions such as volume overload and hyperkalemia .

Excessive IDWG was associated with 12% ($P = 0.05$) increased risk of mortality. Increased phosphorus levels were also associated with an increase in mortality. (Saran et al., 2003) This finding is further supported by the Block study, which showed that patients with a serum phosphorus of greater than 6.5 mg/dL had a 27% higher mortality risk (RR = 1.27, see Table 1) than patients with a phosphorus of 2.4 to 6.5 mg/dL (Block, Hulbert-Shearon, Levin, & Port, 1998). The risk of hospitalization also increases when the patient fails to adhere to treatment prescriptions (see Table 2).

**Table 2**
**The Relative Risk of Hospitalization by Nonadherence Measures**

| Nonadherence measure | Relative risk (RR) of hospitalization* |
|---|---|
| Skipped 1 or more hemodialysis sessions/month | 1.13 |
| Shortened session by 10 minutes or more | 1.09 |
| IDWG greater than 5.7 % of dry weight | 1.00 |
| $PO_4$ greater than 7.5 g/dL | 1.07 |

*Multivariate adjusted

**Note:** Adapted with permission from Macmillan Publishers, Ltd.: Saran et al. (2003).

## Adherence to the Medication Prescription Has Additional Challenges

It is not difficult to understand why medication nonadherence among patients on dialysis occurs. Both the complexity of the regimen and its need to be "life-long" contribute to nonadherence. Patients on dialysis take multiple medications every day.

Often the term medication adherence does not distinguish between different patient behaviors. The definition for each patient needs to differentiate those who do not fill their prescriptions from patients who miss an occasional pill, take a consistent but reduced dose of their medication, consume medication sporadically, or completely discontinue medication use (Steiner & Earnest, 2000). In a Medication Event Monitoring System (MEMS) study using microelectronic medication bottle caps to record dates and times of all bottle openings over a specified time, almost 93% of the patients monitored for their antihypertensive medications did not adhere and 97% of the patients monitored for their phosphate binders failed to adhere (Curtin, Svarstad, & Keller, 1999).

For patients to adhere to a medication regimen, they must be certain that the benefits of taking the medicine outweigh the real or perceived barriers. Setting clear goals with the patient is essential to improving adherence. The goals must be personally important to the patient. Patients are more likely to adhere if they believe the medication will work and that they really need the medication to cure or control their illness. If the cost of the medication is more than the patient expected or more than the patient can afford, this presents an additional barrier to adherence. The patient may not feel the cost is worth the benefit (Berger et al, 2004).

Inadequate prescription coverage, lack of transportation, and medication cost are primary contributors to medication adherence among patients on chronic dialysis (Holley & DeVore, 2006). In one survey, patients undergoing chronic dialysis were asked about their social and financial situations, medication coverage, and reasons for not obtaining all prescribed medications. Most patients (69%) took 11 or more medications daily. Although 70% of these patients had some medication coverage, 67% reported not filling prescriptions because they had no money. Seventeen percent had no transportation to get to the pharmacy. When asked if they ever chose not to take a specific medication, 21% said yes because of side effects (36%), cost (27%), or because they already took too many medications (18%). Despite having a local pharmacy plan that significantly reduced patient cost and prescription co-pays, many patients failed to enroll because of the information required on plan applications and the required reporting of all financial income (Holley & DeVore, 2006).

## Elements of Successful Intervention to Improve Adherence

A collaborative approach to care augments adherence (Osterberg & Blaschke, 2005). An expanded view will take into account factors under the patient's control as well as interactions between the patient and the health care system and the patient and the HCP. We must assess what our patients are doing and understand why they do it if we wish to help them change. In this effort, communication is as powerful a tool as the treatment or medication that is prescribed (Steiner & Earnest, 2000).

The relationship between the patient and the HCP (be it physician, nurse, or other health practitioner) must be a partnership that draws on the competencies of each. The literature identifies the quality of the treatment relationship to be an important determinant of adherence. Effective treatment relationships are characterized by an atmosphere in which alternative therapeutic means are discussed, the regimen negotiated, adherence discussed, and follow-up planned (Sabate, 2001). The nurse has more face-to-face interactive time with the patient than any other HCP. During this time, it is the role of the nurse to engage in communication with the patient and use active listening and talking skills to help increase adherence.

**Adherence requires the patient's agreement to the recommendations.** Patients should be active partners with health professionals in their own care, and good communication between patient and HCP is a must for effective clinical practice (Sabate, 2003). Strategies to improve adherence are of little value unless the patient agrees that the prescribed regimen is personally worthwhile. This approach attempts to involve patients in their own care by helping them regain a measure of control and achieve an understanding of how their behaviors affect their

**Table 3**
**Strategies for Improving Adherence**

- Identify poor adherence
- Look for markers of poor adherence, both biochemical and behavioral, such as missed treatments, lack of response to medication, excess IDWG, missed refills, etc.
- Emphasize the value of the treatment and medication regimens and the positive effect of adherence.
- Listen to the patient, and as much as possible, customize the treatment and medication plan in accordance with the patient's preferences and needs. Individualize patient care.
- Elicit patient's feelings about his or her ability to follow the regimen and work with the patient to establish support systems, i.e., family and friends, retail pharmacies, financial supports.
- Encourage use of community support systems such as retail pharmacy and/or pharmaceutical manufacturer-sponsored persistency or patient assistance programs.
- Provide instruction and instructional materials which are patient-appropriate. Use education materials provided by pharmacies or pharmaceutical companies when available. Use written materials to reinforce oral counseling, not as a substitute for it.
- When possible, decrease the complexity of the medication regimen by using once-a-day dosing and extended release medications.
- Establish cues within the patient's daily routine to help with adherence to medication doses.
- Continually give the patient feedback on his or her actions and how they are influencing the benefits they are receiving (or not receiving) from the medication regimen.
- Reinforce desirable behaviors and results. When asking questions, use a nonjudgmental approach.

own health (White, 2004). Communicate to patients that the HCP wants them to be active and manage their own health care regimens.

Strategies for improving patient adherence (see Table 3) should include assessing the patient's preferences for control and improving the perception of control in those patients who want control and involvement in decision-making (Cvengros et al., 2005). As dialysis health care providers, we cannot condone chronic shortening of dialysis treatments. However, perhaps we should be less critical of the occasional need to request "coming off" dialysis early. Leggett et al. (1998) suggest that occasionally shortening sessions (less than three per month) may give patients a sense of control over hemodialysis. This may be the patients' way of gaining control and having a better sense of well-being. This "small amount" of nonadherence may help them carry out other aspects of the treatment regimen, dietary, or medication prescription.

Since research has failed to pinpoint any one factor influencing adherence, it is important to determine what barriers are keeping each patient from getting medications and to eliminate barriers to patient access. This is best achieved by asking patients non-judgmentally about medication-taking behavior (Osterberg & Blaschke, 2005). By giving patients permission to discuss their nonadherent behavior, HCPs can help them reach set goals.

Increasing adherence with long-term medication therapies will require the combination of many interventions consistently and without judgment. First, the patient must understand why the medication is being prescribed and believe in the importance of following the prescribed medications. When instructing the patient, emphasize the positive effects and benefits of taking the medication rather than the negative consequences of not taking it. If you know the patient is going to change the regimen, spend time with the patient brainstorming ideas that might help improve adherence.

Steiner and Earnest (2000) recommend inquiring about the specific circumstances under which patients miss pills, distinguishing between unintentional and intentional lapses, and asking patients in a nonjudgmental way about the motivation for their behaviors. Careful attention must be given how the patients are approached with questions about adherence to help them understand that they are not being judged and that honest answers are sought (Turner & Hecht, 2001).

Adherence decreases as the complexity and duration of the regimen increases (McDonald, Garg, & Haynes, 2002). The more often the patients need to take a medication, the more likely they are to forget. Whenever possible, simplify the medication regimen. Is less frequent dosing a possibility or can an alternate medication be prescribed in a long-acting form? Are there daily cues or activities that can be associated with taking of medications? Are there other social support individuals willing to help them remember? What do the patients think would help them remember to take the medication?

The effect of missing medications on the patient's health care outcomes should be emphasized. For example with antihypertensive medications, acknowledge that an occasional missed dose is probably safe, but emphasize the risk for frequently missed doses. Also, encourage patients to take blood pressure measurements at home to illustrate the effect of missing prescribed medications, thus giving them feedback. This also keeps the patients involved in

their own care and confers a sense of control in the decision-making process.

Resources outside of the dialysis facility should be explored. Many retail pharmacies and pharmaceutical companies provide comprehensive programs to help patients with adherence and persistence issues. Patients may not be aware that these programs exist or how to enroll. It may be necessary for the dialysis unit to contact the patient's local pharmacy to determine what type of support is available to the patient and help the patient access these programs. Long-term follow-up and reminder programs may be an invaluable adjunct to education programs within the dialysis unit. It is the role of the nurse and the social worker to link patients with assistance programs. Nurses do not need to provide all education and support for patients, but they must know other resources available to the patient and make them aware of such programs.

## Conclusions

Many lessons have been learned from adherence research. Patients need to be supported, not blamed. Despite evidence to the contrary, there continues to be a tendency to focus on patient-related factors as the reason for problems with adherence, to the relative neglect of provider and health system-related causes. These latter factors make up the health care environment in which patients receive care and have a considerable effect on adherence (Sabate, 2003).

The consequences of poor adherence to long-term therapies include poor health outcomes and increased health care costs. Poor adherence to long-term therapies severely compromises treatment effectiveness making it a critical issue in population health from both quality of life and health economic perspectives (Sabate, 2001). In addition to their positive impact on the health status of patients with chronic illness, higher rates of adherence confer economic benefits. When self-management programs are offered to patients and combined with regular treatment and disease-specific education, in the result is a reduction in the numbers of patients being hospitalized and total days in hospital (Sabate, 2003).

The epidemiologic shift in disease burden from acute to chronic disease over the past 50 years has rendered acute care models of health service delivery inadequate to address the health needs of the population (Sabate, 2001). Acute care models tend to support interventions that are symptom-focused and intent on "cure," while chronic care controls the progression of the condition, increases survival, and enhances quality of life. In acute care, knowledge is in the hands of the HCPs. In chronic care, health professionals, patients, and families share complementary knowledge.

For outcomes to be improved, health policy and health system changes are essential. Effective treatment for chronic conditions requires a transformation of health care, away from a system that is focused on episodic care in response to acute illness, towards a system that is proactive and emphasizes health across a lifetime (Sabate, 2001).

With the estimate that about 50% of patients on HD are nonadherent to at least part of their dialysis regimen, it is easy for the HCP to become discouraged. Helping patients adhere to fluid restrictions and dialysis regimens and take multiple medications may seem overwhelming. It is important to remember that a good patient-HCP relationship and the use of active listening and talking skills are vital to getting patients involved in their own health care. Investing the time to discuss patient behaviors and motivations for self-care will improve adherence and patient outcomes.

## References


Bander, S.J., & Walters, B.A. (1998). Hemodialysis morbidity and mortality: Links to patient non-compliance. *Current Opinion in Nephrology and Hypertension, 7*(6), 649-653.

Berger, B.A., Krueger, K.P., & Felkey, B.G. (2004). The pharmacist's role in treatment adherence. Part 1: Extent of the problem. *US Pharmacist, 29*(11), 50-54. Retrieved August 21, 2007 from http://www.uspharmacist.com/index.asp?show=article&page=8_1378.htm.

Bleyer, A.J., Hylander, B., Sudo, H., Nomoto, Y., de la Torre, E., Chen, R.A., & Burkart, J.M. (1999). An international study of patient compliance with hemodialysis. *Journal of the American Medical Association, 281*(13), 1211-1213.

Block, G.A., Hulbert-Shearon, T.E., Levin, N. W., & Port, F.K. (1998). Association of serum phosphorus and calcium x phosphate product with mortality risk in chronic hemodialysis patients: A national study. *American Journal of Kidney Diseases, 31*(4), 607-617.

Caro, J.J., Salas, M., Speckman, J.L., Raggio, G., & Jackson, J.D. (1999). Persistence with treatment for hypertension in actual practice. *Canadian Medical Association Journal, 160*(1), 31-37.

Curtin, R.B., Svarstad, B.L., & Keller, T.H. (1999) Hemodialysis patients' noncompliance with oral medications. *ANNA Journal, 26*(3), 307-316.

Curtin, R.B., & Mapes, D.L. (2001). Health care management strategies of long-term dialysis survivors. *Nephrology Nursing Journal, 28*(4), 385-394.

Cvengros, J.A,, Christensen, A.J., & Lawton, W.J. (2004) The role of perceived control and preferences for control in adherence to a chronic medical regimen. *Annals of Behavioral Medicine, 27*(3), 155-161.

Held, P.J., Port, F.K., Wolfe, R.A., Stannard, D.C., Carroll, C.E., & Daugirdas, J.T. (1996). The dose of hemodialysis and patient mortality. *Kidney International, 50*(2), 550-556.

Holley, J.L., & DeVore, C.C. (2006). Why all prescribed medications are not taken: Results from a survey of chronic dialysis patients. *Advances in Peritoneal Dialysis, 22,* 162-166.

Krueger, K.P., Felkey, B.G., & Berger, B.A. (2003). Improving adherence and persistence: A review and assessment of interventions and description of steps toward a national adherence initiative. *Journal of the American Pharmacists Association, 43*(6), 668-79.

Krueger, K.P., Berger, B.A., & Felkey, B. (2005) Medication adherence and persistence: A comprehensive review. *Advances in Therapy,* 22(4), 313-356.

Kutner, N.G. (2001). Improving compliance in dialysis patients: Does anything work? *Seminars in Dialysis, 14*(5), 324-327.

Kutner, N.G., Zhang, R., McClellan, W.M., & Cole, S.A. (2002). Psychosocial predictors of non-compliance in haemodialysis and peritoneal dialysis patients. *Nephrology Dialysis and Transplantation, 17*(1), 93-99.

Leggat, J.E., Orzol, S.M., Hulbert-Shearon, T.E., Golper, T.A., Jones, C.A., Held, P.J., & Port, F.K. (1998). Noncompliance in hemodialysis: Predictors and survival analysis. *American Journal of Kidney Diseases, 32*(1), 139-145.

Loghman-Adham, M. (2003). Medication noncompliance in patients with chronic disease: Issues in dialysis and renal transplantation. *American Journal of Managed Care, 9*(2), 155-171.

McDonald, H.P., Garg, A.X. & Haynes, R.B. (2002). Interventions to enhance patient adherence to medication prescriptions. *Journal of the American Medical Association, 288*(22), 2868-2879.

Morgan, L. (2000). A decade review: Methods to improve adherence to the treatment regimen among hemodialysis patients. *Nephrology Nursing Journal, 27*(3), 299-304.

Osterberg, M.D., & Blaschke, T. (2005). Adherence to medication. *New England Journal of Medicine, 353*(5), 487-497.

Rushe, H., & McGee, H.M. (1998). Assessing adherence to dietary recommendations for hemodialysis patients: The renal adherence attitudes questionnaire (RAAQ) and the renal adherence behavior questionnaire (RABQ). *Journal of Psychosomatic Research, 45*(2), 149-157.

Sabate, E, (2001). World Health Organization Meeting Report. *Adherence to long-term therapies: Policy for action.* Retrieved March 29, 2007 from http://www.who.int.chp/knowledge/publications/adherencerep.pdf

Sabate, E., (2003). World Health Organization. *Adherence to long-term therapies: Evidence for action.* Retrieved March 29, 2007 from http://www.emro.who.int/ncd/Publications/adherence_report.pdf.

Saran, R., Bragg-Gresham, J.L., Rayner H.C., Goodkin, D.A., Keen, M.L., van Dijk, P.C. et al. (2003). Nonadherence in hemodialysis: Associations with mortality, hospitalization, and practice patterns in the DOPPS. *Kidney International, 64*(1), 254-262.

Steiner, J.F., & Earnest, M.A. (2000). The language of medication-taking. *Annals of Internal Medicine, 132*(11), 926-930.

Turner, B.J., & Hecht, F.M. (2001). Improving on a coin toss to predict patient adherence to medications. *Annals of Internal Medicine, 134*(10), 1004-1006.

White, R.B, (2004). Adherence to the dialysis prescription: Partnering with patients for improved outcomes. *Nephrology Nursing Journal, 31*(4), 432-435.

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# ANSWER/EVALUATION FORM

## Adherence in Patients On Dialysis: Strategies for Success

*Jean Kammerer, BSN, RN, CNN, Glenn Garry, BS, Marguerite Hartigan, MSN, RN, Barbara Carter, MEd, BSN, RN, CNN, and Linda Erlich, MS, RN*

**1.5 Contact Hours**
**Expires: October 20, 2009**
**ANNA Member: $15**
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### Posttest Instructions

- Select the best answer and circle the appropriate letter on the answer grid below.
- Complete the evaluation.
- Send only the answer form to the ANNA National Office; East Holly Avenue Box 56; Pitman, NJ 08071-0056; or fax this form to (856) 589-7463.
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- If you receive a passing score of 70% or better, a certificate for the contact hours will be awarded by ANNA.
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**Note:** If you wish to keep the journal intact, you may photocopy the answer sheet or access this posttest at www.annanurse.org/journal

1. What would be different in your practice if you applied what you have learned from this activity?

_____

_____

_____

_____

_____

_____

_____

**GOAL** To raise awareness of factors that may cause problems in patients' adherence to their treatment program.

**New Posttest Format**
Please note that this continuing education activity does not contain multiple-choice questions. We have introduced a new type of posttest that substitutes the multiple-choice questions with an open-ended question. Simply answer the open-ended question(s) directly above the evaluation portion of the Answer/Evaluation Form and return the form, with payment, to the National Office as usual.

| Evaluation | Strongly disagree | | | | Strongly agree |
|---|---|---|---|---|---|
| 2. By completing this offering, I was able to meet the stated objectives | | | | | |
| a. Compare and contrast impliance, adherence, and persistence as they relate to CKD. | 1 | 2 | 3 | 4 | 5 |
| b. Summarize the challenges to and results of poor adherence to treatment regimens. | 1 | 2 | 3 | 4 | 5 |
| c. Describe strategies that may be used to improve adherence to their treatment regimen. | 1 | 2 | 3 | 4 | 5 |
| 3. The content was current and relevant. | 1 | 2 | 3 | 4 | 5 |
| 4. This was an effective method to learn this content. | 1 | 2 | 3 | 4 | 5 |

5. Time required to complete reading assignment: _____ minutes.

I verify that I have completed this activity _____
(Signature)