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# **Medication Adherence**

# ABSTRACT

Although most patients will derive some benefit from appropriately prescribed medication for various mental disorders, many patients do not always take medication reliably. Therefore, medication adherence is a practically important issue in pharmacotherapy practice. In this article, I discuss the importance of medication adherence, the factors associated with poor adherence, and some approaches for improving adherence.

The modern era of psychopharmacology began in the 1950s with the discovery of the antipsychotic drug chlorpromazine (Thora-

zine<sup>®</sup>). Since then, a plethora of drugs have been discovered, investigated, and marketed for the treatment of all forms of mental illness. Although medications are not completely effective for all patients, most individuals will generally derive some satisfactory benefit from appropriately prescribed an medication. However, even the best medications do not work in patients who do not take them. Although not taking medication reliably is well recognized as a common problem (Osterberg & Blaschke, 2005), surprisingly, patients and their prescribers can grossly overestimate medication adherence (Byerly et al., 2007). For this reason, the con-

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cept of medication adherence is a more practically important pharmacotherapy issue than is expert knowledge in clinical psychopharmacology. In this article, I discuss the importance of medication adherence, the factors associated with poor adherence, and some approaches for improving adherence.

## WHY MEDICATION ADHERENCE IS IMPORTANT

The most obvious reason is that patients' symptoms may not improve as quickly or as completely, or patients may be prone to relapse. As such, patients and their families may suffer needlessly. When problems with medication adherence are not fully appreciated, patients, families, or clinicians might mistakenly think a poor treatment response or an illness relapse means that the medication "isn't working" or "isn't working anymore." This phenomenon may lead to

unnecessary changes in treatment (e.g., switching medications, adding medications) to help patients "get better." This may also foster a demoralizing belief that perhaps medication in general does not work and that the patient will never get better or stay better.

Medication adherence leading to symptomatic improvement can facilitate the process of functional recovery, thereby reducing disability, and can help prevent possible complications related to the illness, such as substance abuse and suicide (Koplan et al., 2007). Complications related to mental disorders also affect various medical conditions. For example, depression worsens

the health outcome and functioning of patients with a variety of medical disorders (Baune, Adrian, & Jacobi, 2007). Hence, the effects of conditions such as heart disease (Rivelli & Jiang, 2007), diabetes (Carnethon et al., 2007), and osteoporosis (Diem et al., 2007) are significantly worse in patients with depression than those without depression. Having depression also contributes to poor treatment adherence for other medical conditions (Kilbourne et al., 2005; Spernak, Moore, & Hamm, 2007). Treating depression can improve medical adherence (Mohr et al., 1997; Safren et al., 2004).

Depression not only affects existing medical disorders but can be associated with an increased risk of later development of some conditions. Compared with people without depression, patients with depression are more likely to later develop heart disease (Rivelli & Jiang, 2007), diabetes (Knol et al.,

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Although some patients and families believe psychotropic drugs damage the brain, there is little evidence to validate this belief. Indeed, medication adherence might prevent or at least minimize the damaging physiological effects of mental illness on the brain. Stress-response systems are abnormally activated in mental disorders, and the chemical effects of stress have damaging effects on nerve cells (Duman & Monteggia, 2006). In particular, persistent

> or excessive levels of the glucocorticoid hormone cortisol (Sapolsky, 2000) or the excitatory amino acid glutamate (Wenk, Parsons, & Danysz, 2006), each of which has normal physiological functions in the brain, can result in neurotoxicity (nerve cell atrophy or death). Chronic stress can also result in decreased neurogenesis (nerve cell growth) (Heine, Maslam, Zareno, Joels, & Lucassen, 2004). Brain imaging studies show structural brain changes (e.g., atrophy, enlarged ventricles) in patients with mood disorders and schizophrenia, and this may partly reflect stressinduced neurotoxicity or inhibition of neurogenesis

(Duman & Monteggia, 2006; Einat & Manji, 2006). A growing body of research is demonstrating that many antidepressant (Duman & Monteggia, 2006), antipsychotic (Toro & Deakin, 2007), and mood-stabilizing (Gray, Zhou, Du, Moore, & Manji, 2003) psychotropic drugs reduce neurotoxicity or enhance neurogenesis. Consequently, medication adherence may be neurobiologically important for brain health.

## FACTORS ASSOCIATED WITH POOR MEDICATION ADHERENCE

Hopelessness, poor insight, denial, delusional thinking, or cognitive impairment may be aspects of the illness, especially in severe mental disorders, that affect patients' ability or willingness to take medication reliably (Cooper, Moisan, & Gregoire, 2007; Cotrell, Wild, & Bader, 2006; Pampallona, Bollini, Tibaldi, Kupelnick, & Munizza, 2002; Sajatovic, Valenstein, Blow, Ganoczy, & Ignacio, 2007). On the other hand, when patients are feeling better, especially if they are fully recovered, they may stop taking medication or not take it reliably because they do not think it is necessary anymore.

Insufficient efficacy or intolerable side effects are common reasons for poor medication adherence, especially early in treatment. Some patients may tolerate side effects better when they are sick and want to feel better. However, previously tolerable side effects may become intolerable when patients are actually feeling better. They might then simply stop taking medication altogether. Alternatively, they might continue to take medication but will experiment on their own (e.g., lowering the dosage,

skipping dosages) to see whether this helps with side effects.

The complexity of the medication regimen and drug cost can also affect adherence. Patients taking multiple medications or taking medications multiple times during the day are less likely to take medication reliably (Agostini, 2007). If any or all of the medications are costly, patients may decide to not take one or more of them (Goldman, Joyce, & Zheng, 2007). To save on costs, they may not take the most expensive medication of their regimen or may take less of it. This can also happen if patients are budgeting their medication resources as a household with other family members who have considerable health care costs.

In general, patients' beliefs, opinions, and preferences may be the strongest factors associated with medication adherence (Byrne, Regan, & Livingston, 2006; Helbling et al., 2006; Hunot, Horne, Leese, & Churchill, 2007). Regardless of whether patients' beliefs are clinically or scientifically justified, their beliefs are very likely to influence whether they take medications. If patients have a favorable impression of a drug, based on the experiences of friends or family or on information they have heard or read about, they will be more likely to accept and adhere to it. On the other hand, if patients have an unfavorable perception about a particular medication, they are less likely to accept it or adhere to it. For this reason, popular media attention, especially adverse publicity, can also strongly influence medication adherence (Donohue, Berndt, Rosenthal, Epstein, & Frank, 2004; Libby et al., 2007).

#### APPROACHES TO IMPROVING MEDICATION ADHERENCE

Clinicians need to understand that medication adherence is a potential problem for any patient during any phase of treatment. At the beginning of treatment, the initial selection of medication should be individualized by taking into account the patient's and family's expectations, perceptions, preferences, expected efficacy and tolerability profiles, existing treatment regimen (including medications for other conditions), and cost. Thereafter, monitoring and facilitating adherence should be an ongoing, interactive, and collaborative process with the patient and family throughout the course of treatment.

From a practical standpoint, medication adherence can be assessed by having patients bring in their medications, asking how they take each medication, doing pill counts, monitoring requests for refills, keeping track of missed appointments, and obtaining blood levels. In addition, it is a good idea to specifically ask patients how they keep track of what they take, as this can reinforce their efforts and success with adherence. Information from actual patients' experiences can also be shared with other patients as a way to provide useful tips for their own medication use.

Electronically monitored medication vials are a potentially useful technology for monitoring and prompting medication usage (Byerly et al., 2007). However, it is more important to proactively elicit and solicit questions or concerns from patients about their medications at each and every contact, including clinic visits, telephone calls, and e-mail correspondence. Such monitoring should assess how well the medication is helping, any ongoing or new tolerability concerns, real or potential problems in taking medication (e.g., inconvenient dosing schedule, other medical treatment regimens), and cost considerations (e.g., changes in insurance companies or plans, copayments, or formulary coverage). Whenever necessary and possible, changes in the treatment regimen should be made to address these issues.

Monitoring medication adherence should include asking about any concerns that arise from family, friends, or the media that might influence patients' beliefs about medication. Ongoing education about why it is important to take medications, what might happen without the medication, new information about the illness and medications, and other related issues should be provided in the context of psychological support to the patient and family. Clinicians should be aware of where patients and families get their information about medications and be willing to read and evaluate this information. Clinicians should also be aware of new or heightened media attention that might affect medication adherence.

#### CONCLUSION

Nurses can facilitate medication adherence by taking a proactive, yet nonjudgmental and nonpunitive approach to monitoring medication use, having and conveying a positive attitude about the role of medication for promoting patients' overall health and well-being, supporting and encouraging medication use, and being open to addressing questions and concerns from patients and families about taking medication.

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