MEDICATION ADHERENCE BEFORE AND AFTER A STAY IN CRITICAL CARE: WHAT NURSES NEED TO KNOW

The last time you admitted a patient into your unit and asked about the medications he was taking, did you inquire whether he took each of those medications in the manner in which they were prescribed, that is, that he took them every day, at the right time(s), with or without copious water, with or without food, with or without maintaining a particular body position for a certain time, with or without ingesting other potentially synergistic or antagonistic or incompatible medications or supplements? Or did you assume, as most of us likely would do, that the patient self-administered each of his prescribed medications as directed? Why might you pause to even consider these questions?

About 3% to 5% of all hospital admissions are due to medication-related factors.1 However, researchers also note that the reported prevalence of medication-related hospitalizations ranges from a low of 0.1% to a high of 54%, depending on patient acuity (only acutely ill or all admissions), the specific patient population (all hospital units, only specific units, patient populations or age groups), event outcome (adverse drug reaction vs an adverse drug event), the data collection method used, and the continent where the research is conducted.1

In the United States, medication-related problems were the cause of 4.7% of all hospital stays and 0.8% of treat-and-release visits to the emergency department in 2008. Antibiotics, benzodiazepines, chemotherapeutic agents, corticosteroids, insulin, anticoagulants, and other cardiovascular drugs were associated with more than 2.7 million hospital stays and emergency department visits, according to the Agency for Healthcare Research and Quality.2

Description of Medication Adherence

A number of terms are used to characterize whether patients take their medications as prescribed by their health care providers.7 In addition to medication adherence, these terms include medication persistence, therapy adherence, and compliance.4 The National Consumers League defines medication adherence as “taking medication as directed by a health care professional—whether taken in pill or liquid form, inhaled, injected, or applied topically.”7(p4) The NIH Adherence Research Network defines the term adherence within a research context as the extent to which the person’s behavior in taking prescribed medications coincides with current evidence-based health care advice.4

On the surface, medication adherence may appear to be relatively simple, but in reality, it represents a fairly complex series of behaviors that typically encompass most of the following7:

- making and keeping an appointment with one’s health care provider,
- delivering the prescription to a pharmacy,
- taking the medication in the manner and frequency prescribed,
- monitoring supply of the medication to avoid running out,
- securing any necessary renewals of the prescription from the health care provider,
- returning to the pharmacy for refills in sufficient time to avoid missing a dose,
making and keeping an appointment for the provider
to appraise the effectiveness of the medication.

Description of Medication Nonadherence
Medication nonadherence can be manifested in a
variety of forms including the following:
• **Primary nonadherence**, or medication nonfulfillment,
  refers to the patient’s failure to fill a new prescription.7
• **Medication nonpersistence** refers to filling a new pre-
scription but discontinuing to take it during the
first year it is prescribed.8
• **Medication nonadherence** encompasses medication-
related behaviors ranging from initially delaying to
have a prescription filled to reducing the dosage or
frequency of administration, taking a dose higher
or lower than that prescribed, taking the medication
at the wrong time of day, skipping or forgetting to
take the medication, or discontinuing the medica-
tion prematurely.5

Scope of the Problem

Nearly 30 years ago, only 1 of every 3 patients fully
complied with their medication regimen, one-third followed it only sometimes, and one-third never complied
with it.9 Over the past 15 years, more studies have
determined that patients with chronic health disorders adhere to only 50% to 60% of their medications.3,10-14 For nearly
that long, there has been evidence that between 12% and
20% of patients take medications that were prescribed for
other people.15 When researchers examined the degree to
which adult patients with diabetes completed all aspects
of self-care, as recommended by the American Diabetes
Association, including self-testing blood glucose, follow-
ing dietary restrictions, and taking diabetic medications,
they found that fewer than 2% of patients adhered to
those guidelines.16 Findings spanning a timeline longer
than the past decade reveal that the problem of low
adherence to prescribed medications has not improved
substantially.

2003: In developed countries such as the United States,
the World Health Organization found that overall adher-
ence among patients with chronic conditions averaged
only 50%, with lower rates for some conditions (asthma
43%) and higher rates for others (depression 70%).17

2005: Nearly 50% of the 3.2 billion prescriptions
dispensed annually in the United States are not taken
as prescribed.3

2006: Despite the many recognized cardiac, cardio-
vascular, and neurovascular risks associated with hyper-
tension, only 51% of patients with this disorder take the
medications prescribed for them. In a sample of 17 000
US patients who were prescribed β-blockers subsequent to
acute myocardial infarction, only 45% regularly took
these medications throughout the first year, with the
steepest decline in adherence arising in the first few
months after discharge.18

Late in 2006: The National Community Pharmacists
Association19 found that nearly 75% of American con-
sumers report not always taking their prescription medici-
ne as directed, 49% indicated they had forgotten to
take their medicine, 31% neglected to fill a prescription,
29% discontinued taking it before it ran out, and 24%
took less than the recommended dosage.4

2010: After meeting with 8 focus groups consisting
of health care professionals, family caregivers, and con-
sumers in 4 US cities to identify perceptions, opinions,
and attitudes about medication adherence, the National
Consumers League found the following5:
• Most patients do not understand the potentially
harmsful effects of not following a prescribed med-
ication regime.
• Patients define adherence differently from health
care staff.
• Patients may not recognize how their medications
can benefit them.

2011: Despite almost 45% of the US population having
one or more chronic conditions that require medication,
nearly 75% indicate they do not always take their medica-
tions as directed and approximately 33% neglect to
have their prescriptions filled.5

Among critical care patient populations, rates of
medication nonadherence have fared no better. Albert20
highlighted that 31% to nearly 60% of patients in heart
failure are nonadherent in taking their medications. Even
among health care professionals, adherence to prescribed
medications is poor; one study21 reported average adher-
ence at only 79%. In the United States, the problem
manifests for Americans of all ages, races, income, edu-
cational, and socioeconomic levels.4

Beyond our national borders, medication nonadher-
ence represents “a problem of international importance
that knows no demographic, geographic, or political
boundaries”22(p187) and is characterized by the World
Health Organization as “a worldwide problem of striking
Consequences of Nonadherence

The consequences of low adherence to prescribed therapies for known and suspected health problems are 2 primary effects: diminished quality of health outcomes and increased costs of health care.17

Medication nonadherence is associated with increased rates of hospital readmission,7 higher unnecessary progression of disease, unnecessary development of preventable complications, diminished functional abilities, reduced quality of life, and premature death.4 An estimated 33% to 69% of medication-related hospital admissions6 and 125,000 deaths are annually attributable to medication nonadherence in the United States.3 Short of escalating mortality, adherence neglect may also be the source of negative patient outcomes such as misdiagnosis, misinterpretation of therapeutic efficacy, addition of unwarranted or additional therapies or the same therapy at a higher dose, and exacerbation of the disease process.5

In addition, low adherence to prescribed medications is associated with an abundance of avoidable health care costs. Estimates of the total direct and indirect costs for medication nonadherence in the United States range from $100 billion to $300 billion annually.4,5,23-25

Contributors to Medication Nonadherence

Before we can devise strategies to prevent these unwanted outcomes and to erase these unwarranted expenses, the factors that cause or contribute to this problem must first be isolated and understood. As the Table shows, the reasons identified for poor adherence to prescription medications can be summarized and sorted into a number of categories.

Over the past 50 years, research has focused on patient-related factors as the chief underlying causes of low adherence. Within this category, recent research22 has found that better adherence was associated with patients’ perceptions that their disease severity was high, that their need for a specific medication was greater, there were fewer concerns about side effects, and they had greater knowledge about the medication. A more recent study26 both supports the notion that patient beliefs regarding the value versus risks associated with each medication have a strong influence on medication-taking behavior and that the relative priority of patient beliefs that affect adherence to medications operates in the following order:

1. Whether there is a need for the medication
2. Side effects
3. Safety
4. Cost

These studies suggest that interventions to improve adherence need to be tailored to the individual patient’s beliefs about the value, importance, benefits, and safety to them.

Implications for Practice: What Works

Beyond knowing that strategies to improve adherence must be individualized, focused on the patient’s perceptions of his/her disorder and the benefits versus risks from each medication, and as simple and straightforward as possible, critical care nurses need to be cognizant of the existing evidence to provide optimal patient care and of current initiatives aimed at improving both outcomes and costs of care. Although medication nonadherence has been recognized for at least the past 50 years27 and despite considerable research in this area over that time, 2 recently completed meta-analyses of randomized controlled trials can be summarized in the following rather disheartening results28,29:

- For short-term prescription therapies, although written materials, individual telephone calls and counseling afforded some favorable results, fewer than half the studies demonstrated any benefits and the improvements that could be cited were inconsistent.
- For longer-term prescription medications, none of these relatively simple measures significantly improved adherence and only a few of the more complex approaches helped. The more complex approaches required multiple measures provided over an extended time and included combinations such as several sessions of education and counseling, feedback and reinforcements of information, reminders, mailed messages, telephone follow-up, self-monitoring strategies, supervision, counseling, as well as family and psychological therapy.

In response to this problem, the National Council on Patient Information and Education issued a national call to action in 2007.4 The following year, the National Consumers League answered that call by designing a national campaign called “Script Your Future,” a 3-year program heralded as “the first campaign of its kind to raise
Notable features of this campaign include the following:

- More than 80 public and private stakeholder organizations are participating in designing and implementing this public education effort.
- Targeted patient populations are those with diabetes mellitus, respiratory disease, and cardiovascular disease.
- An interactive consumer Web site to lend support in medication adherence to patients and caregivers is available at http://scriptyourfuture.org, with tools for managing, using, and taking medications.
- A Web site for health care professionals (www.scriptyourfuture.org/hcp) to assist patients and caregivers in taking medications, including a wallet card to list all medications and health supplements; worksheets for managing medications and disorders and for tracking medication adherence; videos on topics such as how to take medications; and questions to ask health care providers (“Build Your Questions List” available at www.ahrq.gov/conditionsissues/medication/questionsaretheanswer/questionBuilder.aspx).
Critical care nurses can learn more about this campaign by visiting www.ScriptYourFuture.org. A recent review article on this topic provides a good summary of several other online provider resources and patient education materials to support medication adherence. As of January 2011, the National Institutes of Health has also debuted a scientific interest group for this issue.

Two additional considerations that critical care nurses might add to their practice in this area are to solicit information related to the patient’s actual adherence to prescribed medications when the patient’s health history is being elicited at admission and to make every effort to provide that personalized instruction necessary to influence patient attitudes and behaviors related to medication adherence in preparation for discharge.

References