

JUST WHAT THE DOCTOR ORDERED:

Taking Medicines as Prescribed Can Improve Health and Lower Costs



Successful treatment of disease depends on the patient both receiving appropriate medical advice and following it. However, nearly 75 percent of patients do not take their medicines as prescribed, indicating the importance of devising strategies to help improve adherence. “Non-adherence” to medicines is a major health care cost and quality problem. Numerous studies have shown that high rates of patient non-adherence are directly related to poor clinical outcomes, high health care costs, and lost productivity. The cost of non-adherence has been estimated at \$100 billion to \$300 billion annually, including costs from avoidable hospitalizations, nursing home admissions, and premature deaths.¹

Many of the human and economic costs associated with non-adherence can be avoided, making improving patient adherence one of the best opportunities to get better results and greater value from our health care system. Better adherence to medicines among patients with diabetes, high cholesterol, and high blood pressure has been shown to reduce total health care costs by \$4 to \$7 for every additional dollar spent on medicines.² To be successful, initiatives intended to improve the quality of health care, encourage better chronic care management, and promote better health outcomes must support tools and incentives designed to improve adherence rates. Forward-looking employers, health plans, and other stakeholders have begun implementing programs to encourage better adherence to medicines, but additional opportunities remain.

Three out of four adults acknowledge not always taking their medicines as directed.

■ Poor adherence to medicines takes many forms, and nearly 75 percent of adults report engaging in one or more non-adherent behaviors.³ While the most common form of non-adherence is simply forgetting to take a prescribed medicine, almost 30 percent of patients stop taking their

Medication adherence is the extent to which the patient follows the doctor’s instructions about the timing, dosage and frequency of prescribed medicines. **Medication persistence** refers whether or not the patient continues the treatment for the prescribed duration.

medicine before it runs out⁴ and another third of patients report not taking a prescription to the pharmacy to be filled in the first place.⁵

- Among patients who fill their prescriptions, 70-75 percent do not take their medicines as prescribed, meaning they skip doses, take less than the recommended amount, or stop taking the medicine earlier than they are instructed to do so.⁶
- Chronic disease affects nearly one in two Americans and treating chronically ill patients accounts for \$3 out of every \$4 spent on medical care in America.⁷ Treatment often involves following medication regimens over long periods of time to slow disease progression and prevent costly complications. Electronic monitoring studies indicate that among chronically ill patients who fill their prescriptions, only about half actually take their medicines as directed by their physicians.⁸
- Unfortunately, doctors are unable to predict which of their patients will likely be non-adherent to treatment. As former CBO Director Peter Orszag recently noted, “Doctors are no more accurate than relying on a coin flip in determining who will adhere to treatment and who won’t (even among patients they know well).”⁹

Patients' reasons for non-adherence are varied and complex, though researchers have identified some common predictors of poor adherence.¹⁰

- Non-adherence is especially common when the patient is prescribed a medication to treat a disease for which the patient does not exhibit symptoms, such as high blood pressure or high cholesterol.
- Adherence is inversely proportional to the number of times a patient must take their medicine each day. The average adherence rate for treatments taken only once daily is nearly 80 percent, compared to about 50 percent for treatments that must be taken 4 times a day.¹¹
- Patients commonly improve their medication-taking behavior in the days just before and after an appointment with a physician.¹²

Not taking medicines as prescribed increases health care costs and exacts a significant human toll. Poor adherence is associated with increased hospitalizations, nursing home admissions, physician visits, and avoidable healthcare costs.

- Relative to patients with high levels of adherence, the risk of poor clinical outcomes—including hospitalization, rehospitalization, and premature death—among non-adherent patients is 5.4 times higher among those with hypertension, 2.8 times higher among those with dyslipidemia, and 1.5 times higher among those with heart disease.¹³
- People with diabetes who took their diabetes medicines less than 60 percent of the time were 3.6 times more likely to be hospitalized than those who followed their prescribed treatment.¹⁴

Major Predictors of Poor Adherence to Medicines

Patient-Related Limitations

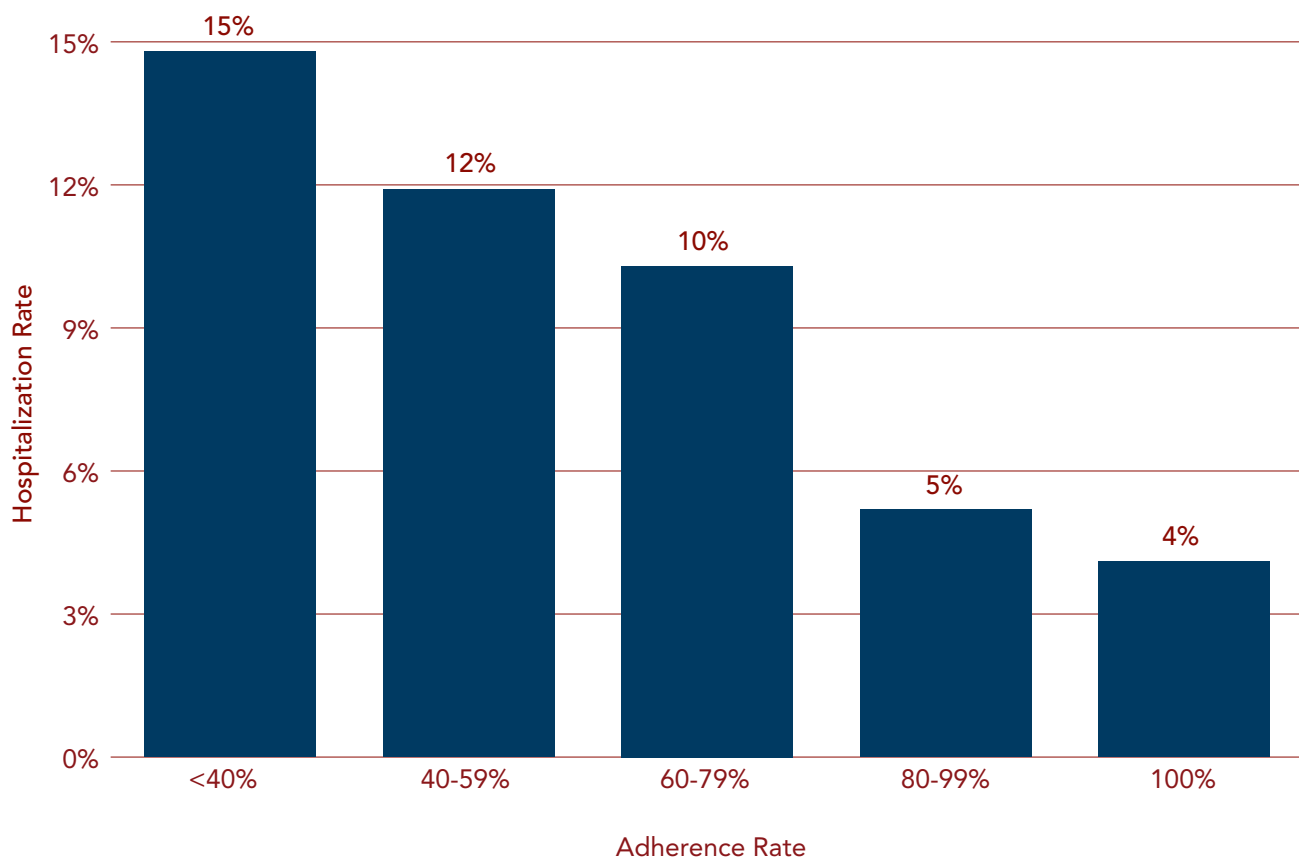
- Psychological problems, particularly depression
- Cognitive impairment
- Asymptomatic disease
- Inadequate follow-up or discharge planning
- Side effects of medicine
- Patient lacks belief in benefit of treatment
- Patient lacks insight into the illness

Barriers to Care or Medicine

- Poor relationship between patient and provider
- Missed appointments
- Lack of health insurance
- Cost of required copayment or coinsurance
- Complexity of treatment
- Access restrictions (e.g., formularies, utilization management)

Source: Adapted from L Osterberg and T Blaschke, "Adherence to Medicine," *N Engl J Med* 2005;353:487-97.

RELATIONSHIP BETWEEN ADHERENCE AND HOSPITALIZATION IN PATIENTS WITH DIABETES



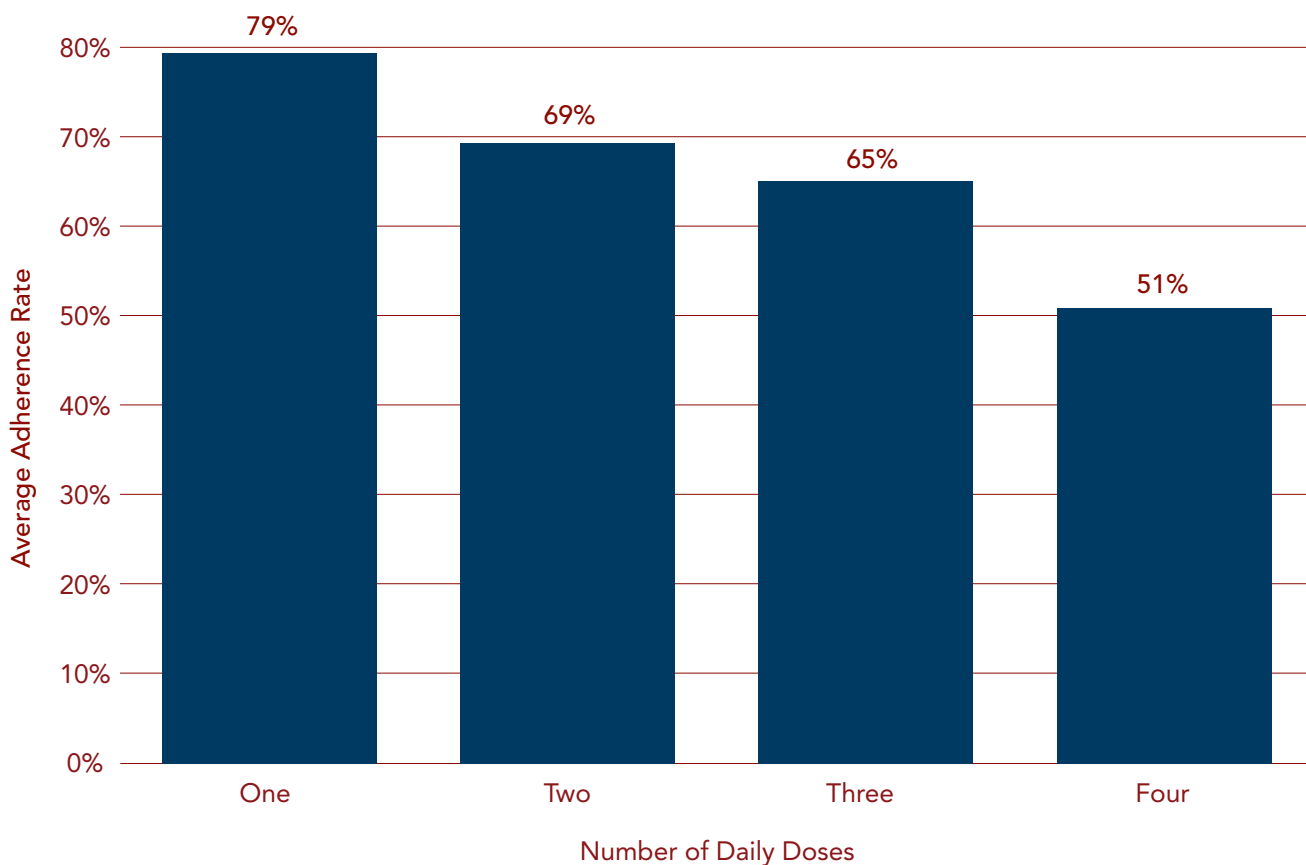
Source: D.T. Lau and D. P. Nau, "Oral Antihyperglycemic Medication Nonadherence and Subsequent Hospitalization Among Individuals with Type 2 Diabetes." *Diabetes Care*, September 2004.

- In 1994, the economic impact of non-adherence was estimated at \$100 billion annually, including costs from nursing home admissions and avoidable hospitalizations.¹⁵ A more recent estimate, based on a 2004 synthesis of the literature, puts the cost of non-adherence closer to \$300 billion per year.¹⁶ Other research indicates that 33 to 69 percent of medicine-related hospital admissions are caused by poor adherence, with a resulting estimated cost as high as \$100 billion a year.¹⁷
- Non-adherence has also been associated with as many as 40 percent of nursing home admissions and with an additional \$2,000 a year per patient in medical costs for physician visits.¹⁸
- Poor adherence to medicines has been linked to 125,000 deaths each year.¹⁹

Thirty-two million Americans are taking three or more medicines daily.²⁰ The average 75-year old has three chronic conditions and takes five medicines.²¹ Medicines that reduce the adherence burden on patients by combining individual medicines, reducing side effects, and lowering the number of pills per day needed to achieve the desired therapeutic effect help to eliminate several of the known barriers to adherence.

- Simple dosing (one pill, once daily) helps to maximize adherence, particularly when combined with provider reinforcement.²² For example, a fixed-dose combination of two diabetes medicines increased adherence by almost 13 percent compared with taking two separate medicines.²³ Similarly, almost 80 percent of hypertensive patients taking a fixed-dose combination adhered to therapy, compared with less than 70 percent of patients taking two separate medicines.²⁴

IMPACT OF DAILY DOSING SCHEDULE ON ADHERENCE



Source: A.J. Claxton et al. "A Systematic Review of the Associations Between Dose Regimens and Medication Compliance." *Clinical Therapeutics*, August 2001.



- Patients who report side effects from their medicines are 3.5 times more likely to not take their medicines as prescribed. In an analysis of patients' persistence in taking prescribed treatment for hypertension, patients taking medicines with fewer side effects had significantly better adherence over the four-year time period studied than patients on other medicines.²⁵
- A study of a large group of commercially insured patients being treated for hypertension found significantly better adherence among patients taking angiotensin receptor blockers (ARBs) than among those taking several other types of antihypertensive medicines, despite a higher patient out-of-pocket payment for ARBs.²⁶
- When there are multiple medicines within a therapeutic class, prescribing one that is "more forgiving," or less rapidly absorbed by the body, may help the patient retain clinical benefits, despite imperfect adherence. For example, prescribing an antihypertensive medicine that is processed slowly in the body may help the patient maintain a healthier blood pressure, even if the patient delays or misses an occasional dose.²⁷

Pharmacy benefit design has an important, direct influence on adherence to medicines. Higher copays and restrictive benefits lead to a reduction in use of medicines and can increase total medical costs in the long run.

- A synthesis of the literature by researchers at RAND Health found a 2-6 percent decrease in prescription drug spending for every 10 percent increase in cost sharing (depending on the therapeutic class and patient outcomes). Researchers also found an unambiguous association between higher medication copays or cost-sharing and increased use of hospitalizations and emergency medical services for patients with congestive heart failure, lipid disorders, diabetes, and schizophrenia.²⁸
- Compared to seniors with uncapped prescription coverage, seniors with a \$1,000 annual benefit cap under a Medicare+Choice plan were less likely to use medicines appropriately and experienced unfavorable clinical outcomes. Use of medicines to treat hypertension, high cholesterol, and diabetes was 15 percent, 27 percent, and 21 percent lower, respectively for patients subject to the cap relative to those with full coverage. The cap was also associated with poorer control of blood pressure, lipid levels, and glucose levels, and savings from reduced use of medicines were offset by increases in the costs of hospitalizations and emergency care.²⁹

- A 2004 RAND study found that doubling copays for medicines reduced adherence by 25-45 percent. As patients' use of medicines declined due to increased copays, emergency room visits increased 17 percent and hospital stays rose 10 percent among patients with diabetes, asthma, or gastric acid disorder.³⁰

Employers working to increase the value of their healthcare spending are investing in incentives to improve adherence. Designing their benefit packages to drive value, employers are offering incentives to improve adherence and are generating positive returns on the investments through productivity gains and lower overall healthcare spending.

- Pitney Bowes reduced employee costs for all diabetes medicines and supplies prescribed to provide an economic incentive for improved adherence by employees. The investment resulted in a 6 percent decrease in direct healthcare costs per participant with diabetes.³¹
- According to Michael Chernew and colleagues, an employer implementing a disease management program in two groups of employees found that when the disease management program was combined with economic incentives for four classes of chronic disease medications, it reduced non-adherence by 7-14 percent.³²
- Researchers estimate that eliminating copayments for patients at medium to high risk of heart disease would improve adherence sufficiently to avoid 90,000 hospitalizations and generate savings exceeding \$1 billion.³³
- An examination of the relation between adherence to medicines and medical care utilization showed that hospitalization rates were significantly lower for patients with high adherence. Overall, improving adherence to prescribed medicines for diabetes, cholesterol, and blood pressure control resulted in \$4 to \$7 reductions in total health costs for every additional dollar spent on medicines.³⁴

Conclusion

In a recent commentary, researchers reported that patients with chronic conditions only adhere to 50-60 percent of medicines as prescribed "despite conclusive evidence that medication therapy can substantially improve life expectancy and quality of life."³⁵ They note that, "Efforts to stimulate better prescribing of and adherence to essential medications will increase value by improving population health, averting costly emergency department visits and hospitalizations, and improving quality of life and productivity."³⁶ Recognition of the importance of better adherence can be built into strategies to improve quality of care. Initiatives to improve adherence hold great potential to contribute to better health outcomes and more effective chronic care management.

ENDNOTES

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