

Patient Compliance: Measuring Intentional Non-Adherence for Solid Oral Medications

William J. Chekan
Director of Global Marketing, Capsugel



By William J. Chekan

Based on a Harris Interactive study entitled, "Survey of Intentional Non-Compliant Behaviors Among Adults Taking Oral Medications for Chronic Therapeutic Conditions" (Sept. 2006). Reprinted from the Pharmaceutical Executive article, "Ain't Misbehavin' – Missing Doses and Other Medication Meddling are Often No Accident" (Feb. 2007).

Introduction

One mystery of human nature is why so many patients can't seem to take their pills properly. What's not in question is the size or seriousness of the problem. Half of all folks in the developed world who have a chronic disease don't follow their medication's dosing, scheduling, or other requirements. On top of the estimated 500 million prescriptions a year that go unfilled, another 500 million are not taken correctly. A mountain of studies have confirmed non-compliance's negative effects on everything from drug effectiveness and patient mortality to healthcare costs and pharma revenues. The World Health Organization has stamped non-adherence "a worldwide problem of striking magnitude."

The drug industry has stepped in with a diverse genre of "take your medicine" messages, from mass-market TV spots for hypertension pills to personalized Vodaphone IMs to diabetic teens. With other direct-to-consumer advertising coming under increasing scrutiny, treatment-adherence marketing is a way to do well by doing good.

This research study approaches the challenge of breaking the stubborn 50 percent perfect-pill-popping barrier from a fresh angle: intentional non-compliance. The assumption that non-adherence is a result of forgetfulness and other human foibles tells only a small part of the whole story. While much research has focused on patients with high rates of poor drug adherence, little has looked at people who report that they non-comply on purpose, as a result of rational, if flawed, decision making. This online survey, conducted by Harris Interactive for Capsugel, a supplier of capsules for pharmaceutical and nutritional applications, not only measures intentional non-compliance rates but throws light on the logic driving them. The 1,012 US participants were a representative sample who take at least one pill at least once a day for at least one chronic condition. As such, they represent some of pharma's most highly motivated consumers.

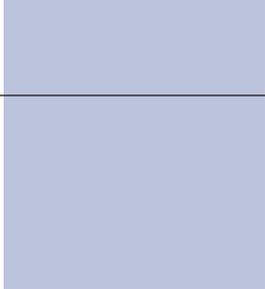
The results are provocative, providing clues for drug developers and marketers to better understand the health consequences, as well as the business ramifications, of intentional non-compliance. To take just one example: a large number of patients who alter their regimen suffer from two or more medical problems. One way for drug makers to decrease non-compliance rates might be to reformulate therapies for different health complaints in a single pill. A combo pill that treats two widespread chronic conditions could take advantage of the higher compliance that often comes with one disease and "apply" it to the other—a case of two birds with one stone. With at least one in six Americans taking three or more prescription medications, tailoring drug delivery to more specific patterns may prove a valuable innovation.

The Top Trends

Nearly half (43 percent) of survey participants on prescription medications for chronic conditions report being intentionally non-compliant at least once in the past three months (see "A Dose of Reality," page 4).

The five most common behaviors are: skipping doses or taking too-few pills (16 percent); taking other medications, such as vitamins or supplements, without telling a doctor (16 percent); double-dosage splitting, or getting a prescription that is twice the required dosage, then splitting the pills and taking half (11 percent); delaying a script refill (11 percent); and single-dosage splitting, which is splitting pills and taking half the required dose (5 percent).

Whether someone is likely to be non-adherent is, of course, influenced by numerous factors, including medical condition, income, and prescription-drug-coverage status. The survey suggests that intentional non-compliance is generally driven by two main needs: to save money or to limit side effects. For example, the results suggest that the lower a



person's income, the more likely he or she is to alter dosages or frequencies. However, there's a notable difference between those who take more medication than directed and those who take less: the underdosers are less likely to have prescription drug coverage—and many appear to be trying to make their monthly pill cache last as long as possible.

Compliance by Condition

The diagnosis for which participants were being treated run the gamut from constipation to cancer. But predictably, the most common problems were those that top American's chronic-care agenda: high cholesterol, allergies, cardiovascular concerns, arthritis, gastrointestinal issues, and psychological complaints (see "What Ails Them?" on page 4).

As for specific adherence patterns, the good news is that in general, people who had very serious medical conditions were less likely to be non-compliant—at least with medications for that particular problem. The highest rates of non-adherence were reported by folks with depression or another psychological condition (26 percent), who both raised and lowered daily doses apparently by a personal calculation of baseline emotion or mood—despite the fact that consistent drug levels need to be maintained for optimal effects. One possible solution would be to formulate extended-release versions of antidepressants to replace daily with weekly dosing.

Patients with high blood pressure and other heart-related issues, although less likely to underdose, were among those most likely to practice double-dosage splitting. Of the prescriptions being double-dosage split, 38 percent were cardiovascular drugs.

The form of the medication (tablet, capsule, or softgel) did not show a significant relationship to intentional non-compliance. The only exception, understandably, was that double-dose splitting of pills was done exclusively with tablets, as capsules cannot be split.

Two-Way Split

Double-dosage splitters tend to be cutting costs, while single-dosage splitters tend to be saving money. It's a subtle but significant difference.

The double-dosage splitters, who get a prescription for twice the required dosage amount and then split the pills to take half each time, do so in the spirit of a savvy consumer: with flat pricing for prescriptions becoming more commonplace, fifty 300-mg tablets can often

require the same co-pay as fifty 150-mg tablets. It's worth noting that most people were informed of this money-saving method by their doctors. And this group scores average or better on income and insurance coverage—these folks are less likely to need to save on medications and yet more likely to do so.

By contrast, single-dosage splitters are at the other end of the economic spectrum—poorer and with less access to insurance or drug coverage. Their reasons for slicing their pills and underdosing are evenly divided between, on the one hand, saving money and, on the other, reducing side effects and long-term safety risks. Most say they came up with the idea on their own, do so only some of the time (as opposed to the regimented approach of double-dosage splitters), and do not use a special splitting device.

Industry Insights

The study's findings should serve up plenty of food for thought. For starters, one very practical application is in the calculation of "compliance-adjusted days of therapy" used by pharmaceutical companies in forecasting market potential for a new drug. Because these multipliers typically account for only the frequency of unintentional improper dosing, the new variables exposed by this survey may help make these calculations more relevant.

The study also reveals surprising data with respect to how little it takes to turn a previously compliant patient into an ardent pill splitter: 77 percent said they would split if their doctor recommended it, and 59 percent would if their health plan advised it. Of the nonsplitters who said they would split to save money, 40 percent would do so to pocket a mere \$15 more per monthly prescription. Clearly policies such as flat pricing by insurers and payers can significantly influence intentional non-compliance.

As for the most important issues—drug efficacy and patient health—the study's focus on intentional non-compliance raises new questions. What if the pill splitting is not done accurately? And for people taking more than one medication, does it add regimen complexity and thus raise the overall potential for error? Is it creating a slippery slope—further encouraging patients to skip dosing to save money?

And while reformulating medications as extended-release versions or two-diagnoses-in-one-pill combos may put the brakes on non-compliance, such innovations will not address the underlying issues—like increasing access to health insurance and drug coverage. Treatments for those chronic conditions of course, lie outside the laboratory.

A Dose of Reality

Of the 1,012 consumers surveyed, 43 percent reported being intentionally non-compliant at least once over the past three months, with underdosing—whether by skipping (16 percent), delaying refills (11 percent) or single-pill splitting (5 percent)—as the most commonly cited behavior. 45 percent of all non-adherers engaged in two or more behaviors.

Non-compliance Behaviors and Rates	
Low dosage or frequency	16%
Taking other medications	16%
Double-dosage splitting	11%
Delaying refills	11%
Other behaviors	6%
Single-dosage splitting	5%
High dosage or frequency	3%
Using other prescription	2%
Crushing pills	1%

What Ails Them?

Among consumers who skipped doses, split pills, or stretched scripts, the most common diagnosis by far is depression or another psychological condition (26 percent), followed by arthritis (17 percent) and cardiovascular condition (14 percent). Compare these with the column on right, which shows the rates of the same 17 diagnoses among all patients surveyed, with high cholesterol (44 percent) and allergies (40 percent) at the top. Many patients were taking medications for more than one condition.

Diagnoses	Underdosers	All Consumers
Psychological condition	26%	28%
Arthritis	17%	36%
Cardiovascular condition	14%	37%
Constipation	11%	15%
Allergies	11%	40%
Insomnia	8%	21%
Diabetes	8%	20%
Migraine	6%	16%
High cholesterol	6%	44%
Gastrointestinal condition	6%	28%
Asthma	5%	16%
Urinary incontinence	3%	8%
Gynecological condition	1%	7%
Erectile dysfunction	1%	9%
Dermatological condition	1%	15%
Obesity	1%	24%
Cancer	0%	8%