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When Should You Take Your Medicines?

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Almost everyone has experience taking medicine—antibiotics for an infection or drugs to treat high cholesterol, high blood pressure, depression, or acid reflux. The label instructs us on how many to take and when to take them. We know not to take more than the label says to prevent an overdose. But does *when* we take medicine matter?

The simple answer is: yes! Our lives have rhythm—before we wake, our heart rate and blood pressure rise to prepare us to go from the sleep to the wake state. These changes happen because of the body’s internal (circadian) clock, which controls most bodily functions according to a 24-h day-night cycle. Because our bodies function differently in the morning than in the evening, taking medicines at a specific time can improve how they work and/or minimize side effects.

The more complicated answer is: it depends on how the drug works. Taking a drug in the morning or at night can help improve its therapeutic effect. Sleep aids are obvious; you take them before you want to go to sleep. Most drugs are less obvious. Short-acting statins used to treat high cholesterol should be taken prior to bedtime, as cholesterol levels increase during sleep. Short-acting statins are cleared from the body quickly; taking them before bed maximizes their efficacy. Long-acting insulin should be taken with the last meal of the day or at bedtime to provide better blood glucose control while sleeping. Some anticoagulants should be taken with an evening meal to aid with absorption so that the drug is effective in

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the morning when you are at the highest risk for a cardiovascular event. Drugs that treat acid reflux are most effective when taken before the first meal when the number of stomach pumps is highest; the drug blocks pumps in the stomach lining from secreting acid.

Some drugs lead to unwanted side effects. Taking a drug in the morning or at night could help control side effects. For example, drugs that treat attention-deficit hyperactivity disorder (ADHD) can cause insomnia and should be taken in the morning. Medicine used to treat hepatitis B makes some people dizzy and tired and should be taken at bedtime. Therefore, day-dependent dosing can improve how drugs work, improve how they are absorbed and metabolized, or help avoid undesirable side effects.

“Morning” can be at different times for different people. The time on a wall clock is the same for all of us, but our body’s clock can have wildly different timing. Some of us are “morning larks,” while others are “night owls.” Shift work, jet lag, or even staying out too late on the weekends (social jetlag) can cause our body clock to shift out of phase with the clock on the wall. Therefore, we can’t always rely on the clock on the wall or the standard definition of “morning” to tell us when to take medicine. We should take medicines according to our individual sleep-wake cycle. In fact, scientists are improving methods to precisely measure each person’s individualized internal body time, which will allow clinicians to provide better dosing instructions based on each patient’s body clock.

Knowing when to take medicine can be confusing. If you don’t know when to take your medicine, read the label and ask your pharmacist and doctor.

EXAMPLES OF DRUGS WITH FDA-LABELED TIME-OF-DAY DOSING

Ambien

Sanofi-Aventis US LLC (2008, February) Ambien. Official FDA label https://www.accessdata.fda.gov/drugsatfda_docs/label/2008/019908s027lbl.pdf.

This one is obvious, you take before you want to sleep.

Atripla

Bristol-Myers Squibb and Gilead Sciences, LLC (2015, November) Atripla. Bristol-Myers Squibb and Gilead Sciences, LLC. Official FDA label. https://www.accessdata.fda.gov/drugsatfda_docs/label/2015/021937s037lbl.pdf.

Atripla has a time-of-day (bedtime) recommendation, as it can make people dizzy and tired.

Levemir

Novo Nordisk Inc. (2012, January) Levemir. Official FDA label. https://www.accessdata.fda.gov/drug-satfda_docs/label/2012/021536s037lbl.pdf.

When taken once a day, Levemir, a long-acting insulin, is supposed to be taken with your last meal or at bedtime. This serves to provide better blood glucose control while sleeping.

Nexium

Astrazeneca Pharmaceuticals LP (2014, December) Nexium. Official FDA label. https://www.access-data.fda.gov/drugsatfda_docs/label/2014/022101s014021957s017021153s050lbl.pdf.

The best time for administration is before a meal after a period of fasting (once a day before your first meal) when the highest number of proton pumps are localized to the wall of the stomach.

Ritalin

Novartis Pharmaceuticals Corp. (2010) Ritalin. Official FDA label. https://www.accessdata.fda.gov/drugsatfda_docs/label/2010/021284s018lbl.pdf.

Drugs used to treat ADHD can cause insomnia. Consequently, once-a-day ADHD drugs such as Ritalin LA are supposed to be taken daily in the morning.

Xarelto

Janssen Pharmaceuticals Inc. (2011, December) Xarelto. Official FDA label. https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/202439s001lbl.pdf.

This drug should be taken with your last meal, as this aids in absorption and allows the drug to be on board when you wake up and are at highest risk for a cardiovascular event.

Zocor

Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. (2012, February) Zocor. Official FDA label. https://www.accessdata.fda.gov/drug-satfda_docs/label/2012/019766s085lbl.pdf.

Your body synthesizes cholesterol while you sleep. Zocor inhibits the rate-limiting enzyme in cholesterol biosynthesis. As Zocor is short acting, the FDA label recommends it be taken prior to bedtime in concert with the peak in cholesterol biosynthesis.

WHERE CAN I LEARN MORE?

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