

Cholesterol-lowering statins prescribed less later in day

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Furthering efforts to understand why potentially life-saving statins are so under-prescribed among American patients with heart disease, a new study shows that clinicians are more likely to sign a script for them

earlier in the day. The new study by researchers in Penn Medicine's Nudge Unit found that patients with the very first appointments of the day were most likely to have statins prescribed, and the odds progressively fell through the morning and remained low throughout the afternoon. The study was published today in *JAMA Network Open*.

In recent years, researchers in the Nudge Unit and the Perelman School of Medicine at the University of Pennsylvania have examined the effect that appointment times have on the care received. By and large, the later an appointment falls, the less likely a patient is to get the highest standard of care. This holds true for whether a patient gets flu shots, or is screened for breast or colorectal cancer. This latest study on statins—which are prescribed to less than half of the patients in the United States who might benefit—falls in line.

"Our findings were concerning but unsurprising. Clinicians are faced with multiple cognitive demands that compete for their attention while providing care, especially later in the day," said lead author Allison Hare, a clinical informatics fellow in the Nudge Unit. "Paired with an ever-growing list of evidence-backed treatment guidelines, our findings reveal that care quality can deteriorate as clinicians grapple with the cognitive fatigue and appointment lateness that is more likely to occur at the end of the day."

Data from March 2019 to February 2020 was pulled from more than 10,000 patients who visited 28 different Penn Medicine primary care practices. They were included if they'd made a visit to the doctor and had a condition that would qualify them for statins, a medication that lowers LDL cholesterol levels and can help with conditions like atherosclerotic cardiovascular disease (hardened or thickened arteries) or high cholesterol levels.

"Statin therapy is a foundational part of guideline-directed care in the

primary and secondary prevention of cardiovascular disease. It is critical to ensure our clinical choice environment encourages appropriate patients are prescribed this therapy at all times of day," said Srinath Adusumalli, MD, an assistant professor of clinical Medicine and assistant chief medical information officer for Connected Health Strategy and Applications.

The appointment times for each patient were broken down into hour blocks ranging from the 8 a.m. hour to the 4 p.m. hour, which typically bookend most practices' open times.

Overall, 36 percent of the visits resulted in statin prescriptions. But there was a clear breakdown between morning and afternoon visits, with 38 percent of those occurring in the morning resulting in prescriptions compared to roughly 33 percent in the afternoon.

But when the exact hours were examined, there was a clear descent. From just the 8 a.m. visits to the 9 a.m. visits, patients were 12 percent less likely to get a prescription. When appointments began at 12 p.m., patients were the least likely, all day, to get a prescription (37 percent less so). After the 12 p.m. visits, there was a slight increase, but the likelihood of a statin prescription remained 27 percent less likely or worse for the rest of the day.

While the data showed a significant challenge for statin prescribing, Hare said having this knowledge is important to devising a solution.

"As we learn more about the factors that contribute to suboptimal care delivery, it's essential to design interventions that take these factors into account," Hare said. "For example, electronic alerts for statin-eligible patients sent to clinicians specifically at the end of the clinic day could increase rates of guideline-appropriate prescribing while minimizing the risk of clinician alert fatigue."

There are a variety of solutions that could present themselves to improve these behaviors. In a previous Nudge Unit study on [statin](#) prescription, a significantly higher percentage of patients received scripts when their doctors were asked to make a "Yes" or "No" choice on prescription as opposed to initiating an order of their own volition.

"The environment in which clinicians and patients interact plays an important role on medical decision-making, as illustrated by the findings of this study," said Mitesh Patel, MD, an associate professor of Medicine and director of the Penn Medicine Nudge Unit. "Nudges to clinicians and patients just before or during the visit show promise for changing these patterns but need to be well tested to optimize their design."

More information: Allison J. Hare et al. Assessment of Primary Care Appointment Times and Appropriate Prescribing of Statins for At-Risk Patients. *JAMA Netw Open*. (2021) [DOI: 10.1001/jamanetworkopen.2021.9050](#)

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