

Most blood thinner dosing problems happen after initial prescription

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Millions of Americans take anticoagulants, commonly known as blood thinners. These medications work to prevent blood clots that cause heart attack and stroke.

More than two-thirds of those people take a type of blood thinner called a direct oral anticoagulant. DOACs, such as rivaroxaban (brand name Xarelto) and apixaban (brand name Eliquis), are under- or over-prescribed in up to one in eight patients.

These prescribing issues can have life threatening consequences, and they most often occur after a provider writes the initial prescription, according to a study led by Michigan Medicine.

"Direct oral anticoagulants may be viewed as simpler to manage than traditional [blood thinners](#), like warfarin, but our results highlight why providers need to be consistently monitoring anticoagulant medications before a patient experiences thrombotic or bleeding harms," said Geoffrey Barnes, M.D., M.Sc., senior author and associate professor of cardiology-internal medicine at U-M Medical School.

At hospitals across Michigan, off-label dosing of DOACs was relatively common among patients being treated for [atrial fibrillation](#) and [venous thromboembolism](#), when [blood clots](#) form in the veins.

Researchers evaluated five years of prescribing data from 2018–2022 through the Michigan Anticoagulant Improvement Initiative, a statewide quality improvement collaborative funded by Blue Cross Blue Shield and Blue Care Network of Michigan.

Nearly 70% of the alerts to off-label dosing occurred during a follow-up visit compared to the time of the initial prescription, according to results [published](#) in *Thrombosis and Haemostasis*.

When prescribers were contacted about the dosing issue, they made changes three-quarters of the time.

However, only 18% of dosing alerts resulted in contact with a prescriber.

"While many clinical decision support tools are designed to ensure accurate medication dosing at the time of an initial prescription, few address the need for ongoing monitoring," said first author Grace C. Herron, a fourth-year student at U-M Medical School.

"Any health system that aims to improve safe and effective DOAC prescribing must address the ongoing prescribing period which can last months to years."

Direct oral [anticoagulants](#) became available in 2010 and quickly gained popularity because, unlike conventional blood thinners, they do not require routine monitoring to test their effectiveness.

However, these medications have their own complicated dosing schemes that can vary based on factors such as kidney function and select interactions between drugs.

"The hospital systems in the Michigan Anticoagulation Quality Improvement Initiative are leading national efforts to develop, implement and test anticoagulation stewardship teams that ensure patients are always receiving the safest and most appropriate blood thinner possible," Barnes said.

"The nurses and pharmacists on these teams play a critical role in helping to monitor for any prescription issue that might develop, even months or years after a patient starts on a blood thinner medication."

More information: Grace C. Herron et al, Timing of Off-Label Dosing of Direct Oral Anticoagulants in Three Large Health Systems, *Thrombosis and Haemostasis* (2024). [DOI: 10.1055/a-2365-8681](https://doi.org/10.1055/a-2365-8681)

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