

Point Of Care INR testing in the age of Direct Oral Anticoagulants

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Introduction: Why POC INR should be on the decline (and why we should worry if it isn't)

- Point of Care (POC) INR testing uses handheld meters to provide a quick and convenient assessment of drug activity in patients prescribed Warfarin, ensuring safe and effective anticoagulation.
- It is contraindicated in patients on direct oral anticoagulant drugs (DOACs) as drug interference can cause falsely normal INR results, risking patient safety^(1,2).
- The widespread adoption of DOACs over the past decade has led to a sustained decline in Warfarin prescribing.^(3,4) Although this might reasonably be expected to have reduced the number of POC INR tests being done within our Trust, the POC INR workload has been steadily increasing
- This audit set out to identify whether POC INR testing was being confined to patients prescribed Warfarin, or whether tests were being undertaken in additional, inappropriate patient groups (e.g. patients on DOACs).

Methodology

POC INR results from the Roche CoaguChek Pro II (including PID, time of test and meter location) were downloaded from the Cobas Infinity software for 01/10/23 – 18/01/24.

Using NHS number and name as primary and secondary identifiers, medications at the time of INR testing were taken from primary care records, recorded and assessed against the following standards:

- 1. 100% samples should have valid patient ID**
- 2. 100% of patients receiving POC INR tests should be prescribed warfarin**
- 3. INR should not be performed in patients on DOACs**

Findings: 62% of tests are done in non-warfarinised patients

As shown in figure 1, just 38% of tested patients receiving POC INR tests were on warfarin (standard 2). Concerningly, 7% of patients were on DOAC, risking inaccurate test results (93% compliance with standard 3).

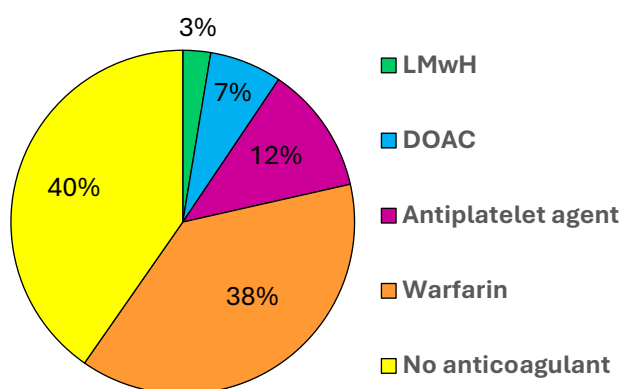


Figure 1 – Antithrombotic prescriptions in patients having POC INR tests

Outcomes: Over 70% reduction in POC INRs!

Since the majority (83%) of tests were performed under the endoscopy service, findings were presented at the endoscopy operations meeting (May 2024) and the following actions proposed:

- No antithrombotic prescribed → Formal pre-operative coagulation testing instead of POC INR
- DOAC prescribed → Stop drug in line with published guidance,⁵ do not routinely recheck INR
- Remove or refine fields on pre-operative paperwork that prompt for 'today's INR' value

The table below summarises the findings of a reaudit carried out using the same methodology and timeframe (01/08/24 – 18/11/24) to assess the effectiveness of these actions.

Area Investigated	Original audit (01/10/23 – 18/01/24)	Reaudit (01/08/24 – 18/11/24)
Total number of INR tests undertaken	220	63 (29% of original audit)
Estimated annual cost of test strips	£1,951.20	£585.36
Standard 1. 100% valid patient ID	94% compliance	87% compliance
Standard 2. 100% on warfarin	38% compliance	81% compliance
Standard 3. No testing on DOAC	13 DOACs (93% compliant)	3 DOACs (95% compliant)

By promoting POC testing in appropriate patients, our audit has reduced the number of POC INRs undertaken in the Trust by 71%. This is likely to be associated with a small cost saving (though partially offset by increased lab testing) and improved patient safety, since the risk of obtaining a falsely normal result in a therapeutically anticoagulated patient is lower when fewer patients that routinely take DOAC are tested.

References:

- Roche diagnostics CoaguChek PT Test, Method Information Sheet v. 6.1
- <https://www.captodayonline.com/direct-oral-anticoagulants-aptt-pt-results-risk-normal-results-patients-therapy/>
- Ho, K.H. et al Trends in anticoagulant prescribing: a review of local policies in English primary care. *BMC Health Serv Res* 20, 279 (2020)
- NHS England » Community pharmacy oral anticoagulant safety audit 2021/22
- Chen et. Al Direct Oral Anticoagulant Use: A Practical Guide to Common Clinical Challenges *J AHA*. 9:13 (2020)