

PDSA Cycle 1**Aim:** what are you trying to accomplish?

Our primary aim was to reduce the number of adverse outcomes associated with warfarin prescription and administration. We targeted two system measures:

1. The proportion of warfarin administrations occurring within an hour of the 14:00 prescription (aim to increase)
2. The proportion of INR results outside patient-specific target range (aim to reduce).

Plan: what will your test be?

We will provide education on warfarin prescribing and administering to all staff involved: junior doctors for prescription, nursing staff for administration.
We will aim to engage junior doctors at Trust based teaching sessions.
We will aim to engage nursing staff on each of our test wards.
We will put up posters highlighting the key safety points involved in prescription and administration of warfarin.

Prediction: what do you think will happen as a result of your test?

We hope the proportion of patients administered warfarin within one hour of 14:00 will increase.
We hope the proportion of INR results outside of patient-specific target range will decrease.

Do: what happened when you carried out your test?

Medical and nursing staff were grateful of clarification of the 14:00 dosing.
Staff seemed engaged in pursuing this safety initiative.

Study: how did the results of your test compare with predictions?

There was no increase in the proportion of the patients receiving warfarin within one hour of the 14:00 prescription.
Percentage of INR results above patient-specific target range reduced from 23% to 19%.

Act: how will you change your previous test in light of what you have learned?

We will aim to intervene at a system level to improve timely prescription and administration.
We will talk to medical and nursing staff to discover their perceived delays in this process.

PDSA Cycle 2

Aim: what are you trying to accomplish?

Our primary aim was to reduce the number of adverse outcomes associated with warfarin prescription and administration. We targeted two system measures:

3. The proportion of warfarin administrations occurring within an hour of the 14:00 prescription (aim to increase)
4. The proportion of INR results outside patient-specific target range (aim to reduce).

Plan: what will your test be?

We will produce a Warfarin Box to be placed on each ward in a prominent location (to be decided by the ward team).

The idea is that warfarin charts will be placed in the box after the 12:00 nursing drug round, as a visual prompt for doctors to prescribe in advance of 14:00. Nursing staff can then retrieve all the charts from one clearly identified location.

Prediction: what do you think will happen as a result of your test?

We hope the proportion of patients administered warfarin within one hour of 14:00 will increase. We hope the proportion of INR results outside of patient-specific target range will decrease.

Do: what happened when you carried out your test?

We visited the test wards as a group of three or four (two or three doctors, one lead anticoagulation pharmacist). We discussed with each Ward team (nursing staff and junior doctors) the rationale behind the Warfarin Box, and its intended benefits.

The enthusiasm for the Warfarin Box trial varied; some wards were extremely keen and believed it would 'solve the problem'. Others believed it would be another box taking up space on a busy desk.

Study: how did the results of your test compare with predictions?

Increase in proportion of patients receiving warfarin within one hour of 14:00 (49% vs 24% at baseline).

The run chart demonstrated an improvement in average administration time from 16:56 at baseline to 15:50 after this intervention.

Reduction in proportion of INR results above patient-specific target range (9% vs 23%).

Act: how will you change your previous test in light of what you have learned?

We will go back to the test wards to discuss with nursing staff and junior doctors about the factors they considered key to the improvement demonstrated. Dependent on their views regarding the usefulness of the Warfarin Box, we will consider rolling out this intervention onto other wards.