

# Monitoring and management of patients on therapeutic anticoagulation: A quality improvement initiative

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## Background

Clear national and trust guidelines are available regarding the management of patients receiving anticoagulation therapy (warfarin and low molecular weight heparin (LMWH)). Lack of available evidence for LMWH in renal impairment makes anti-factor Xa monitoring crucial in this population. Two separate significant bleeding incidents resulted in high-level incidents which found that both management of high international normalised ratio (INR) and monitoring of anti-factor Xa levels were not compliant with the trust guidelines. A rolling audit of the management of high INR ( $\geq 5$ ) had also demonstrated that the compliance to trust guidelines had dropped from a mean of 70 to  $<50\%$  between July 2016 to July 2017.

## Aims

- > To improve the compliance in the management of patients with raised INR  $\geq 5$ .
- > To introduce a new monitoring process for patients with LMWH administration.

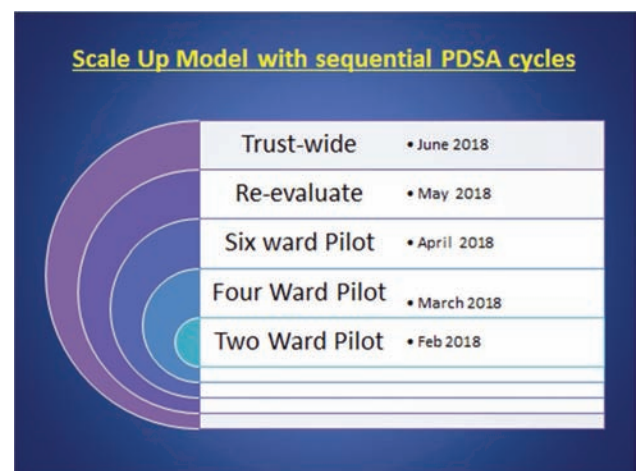
## Methods/interventions

Two new anticoagulation prescription and monitoring charts were designed:

- > Warfarin prescription chart for patients with estimated glomerular filtration rate (eGFR)  $\geq 50$  mL/min/1.73 m<sup>2</sup> to include information to facilitate the prescriber in assessing and managing patients with INR  $>5$ .
- > A therapeutic anticoagulation prescription chart (warfarin and LMWH) for patients with renal impairment (eGFR  $\leq 50$  mL/min/1.73 m<sup>2</sup>) that included an area for prescribing LMWH and monitoring of anti-factor Xa levels.

Sequential Plan, Do, Study, Act cycles (Fig 1) were used to test the charts in one area/ward to assess the impact, building upon the learning from previous cycles in a structured way before implementation in other areas.

Targeted education sessions were carried out for various healthcare professionals to improve the knowledge in monitoring and management of patients on therapeutic anticoagulation.



**Fig 1.** Scale up model for implementation of warfarin and low molecular weight heparin prescription charts. PDSA = Plan, Do, Study, Act..

## Results

The new charts are in the pilot phase of implementation with a re-audit of INR management and Xa-level monitoring carried out alongside the introduction to review the effectiveness of the intervention. Also, usage of the various aspects of the chart such as choice of algorithm for warfarin loading and management of high INR are under review as a part of the audit. Initial feedback has suggested the chart is beneficial in supporting the medical team in selecting appropriate warfarin and LMWH doses, and in prompting when LMWH monitoring is needed.

## Conclusion

The plan is to continue to roll the chart out across Manchester Royal Infirmary and use the audit data to guide future trust anticoagulation guidelines. ■

## Conflict of interest statement

None declared.

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