

Removing the clot: leveraging quality improvement and the EPR to manage patients with suspected DVT

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Background

The diagnosis of deep vein thrombosis (DVT) typically relies upon a two-tier Wells' score and D-dimer testing. At the Homerton Hospital Emergency Department (ED), patients considered 'likely' to have a DVT receive therapeutic enoxaparin and a Doppler Ultrasound Scan in the following days. The problems with this approach include a low diagnostic yield on doppler ultrasound (7.7%) and an overemphasis of ruling out DVT. Diagnostic momentum, indirectly caused by this pathway, has been implicated in two recent root cause analyses.

Aims

We aimed in this quality improvement project (QIP) to improve the diagnosis and management of patients with lower limb pain and swelling as evidenced by;

100% of patients having a Well's score performed, pedal pulse documented and correct enoxaparin prescribed by September 2019.

An additional objective was to increase the diagnostic yield of patients sent for lower limb ultrasound to 20%.

Methods

The Model for Improvement was used for this project. We assembled a multidisciplinary team including representatives from ED nursing, haematology, radiology and emergency medicine. Data was collected weekly and tracked on run charts using the following metrics:

- Weekly measurement of number of scans ordered (outcome)
- Correct Enoxaparin prescribing (outcome)
- Wells' Score and pulse documentation (outcome)
- Proportion of patients diagnosed with DVT divided by the number of scans performed (process)

PDSA 1

An electronic patient record (EPR) template with in-built decision support. A comprehensive venous thromboembolism (VTE) guide uploaded to departmental app.

PDSA 2

Introduction of a comprehensive, easily navigable and accessible local VTE guide in PDF format covering diagnosis, treatment and further follow up

PDSA 3

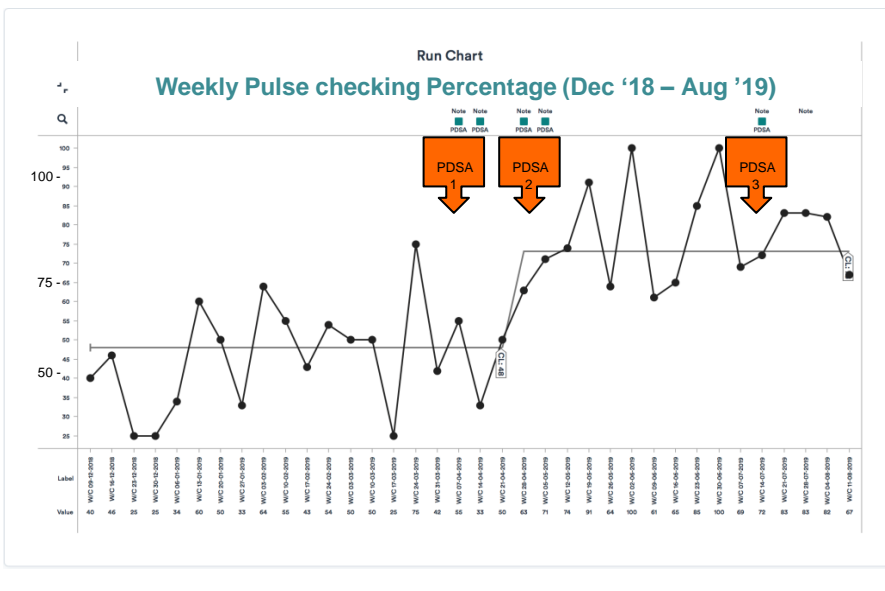
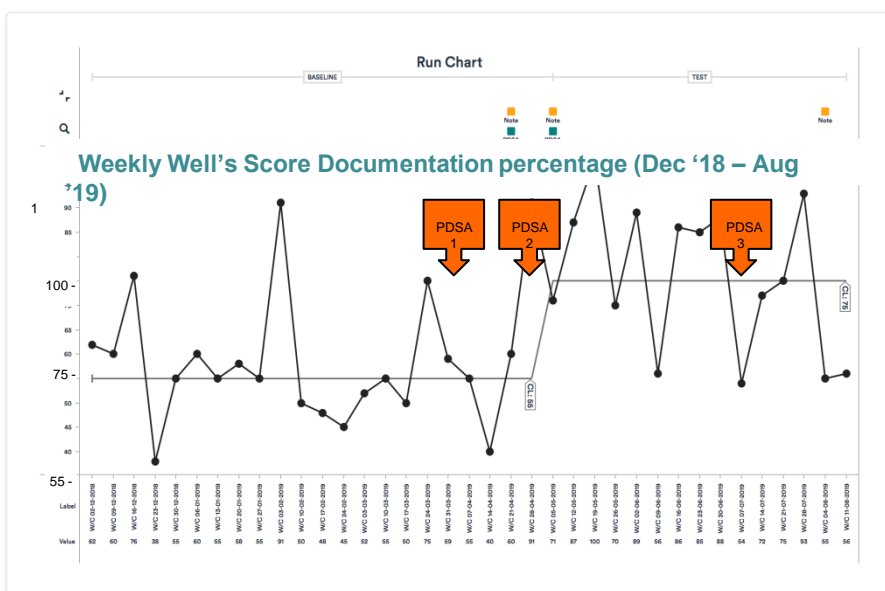
A departmental education programme with blended learning materials to complement the VTE guide. VTE management to be included at doctors' induction

PDSA 4

We are currently training health care professionals in lower limb compression ultrasound

Results

The hit rate for doppler ultrasound has risen from 7.7% to 14%, Correct enoxaparin prescribing has risen from a baseline of 90% to 98%, there has been a marked improvement in Well's Score (56% to 73%) and pulse checking (48% to 74%) documentation as can be seen in the following graphs.



Conclusion and Reflections

The graphs above demonstrate considerable improvement despite the fact that we have not yet accomplished our originally stated aim. The constant turnover of staff and inability to change the electronic patient record remain the biggest challenges to embedding the changes of this quality improvement project. A current intervention is the implementation of a nurse practitioner-led compression ultrasound protocol. As this cohort of clinicians is relatively stable compared to the medical staff, we hope that this and the other novel EPR interventions could have a major, positive impact on patient experience. The interventions from this QIP are generalizable to other emergency department within the United Kingdom.

