Introducing Prothrombin Complex Concentrate (PCC) into the Emergency Department (ED) to reduce administration delay

Aneurin Bevan University Health Board Transfusion Team

Introduction

Prothrombin Complex Concentrate (PCC) is a human blood product recommended for use as first line treatment for reversal of Warfarin in patients presenting with major bleeding. Once the decision for reversal of anticoagulation has been made, PCC should be administered within an hour.

Recent data from Serious Hazards of Transfusion (SHOT) showed delays or omissions in administration can result in serious morbidity or death (Narayan S *et al* 2021).

In January 2022, SHOT published a clinical alert through the NHS National Reporting and Learning System (NHS England, 2022) which identified delays in the administration of PCC due to poor communication and the prolonged process of authorisation and ordering. The alert required action by local organisations to agree criteria where rapid release of PCC is acceptable without the initial approval of a Haematologist.

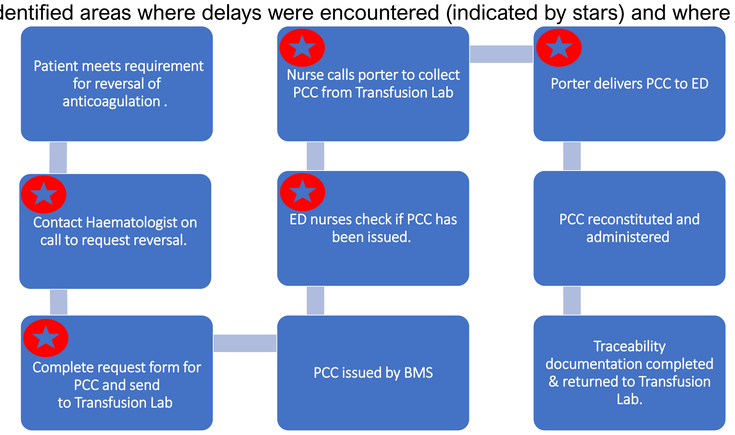
A quality improvement project (QIP) was facilitated by the transfusion team in response to the alert and a multidisciplinary team was established to ensure a collaborative approach was used to reduce delays.

Aim

- To review the current method for requesting PCC
- To highlight delays in the current process from authorisation to administration of PCC
- To streamline the process allowing rapid release of PCC in ED without the initial approval of a Haematologist
- To reduce the time from authorisation to administration of PCC
- To review mortality rates post-implementation

Method

Process mapping identified areas where delays were encountered (indicated by stars) and where improvements were necessary.

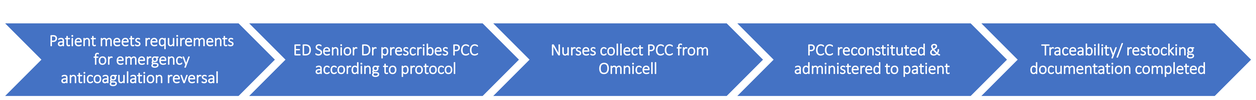


The team consisting of a Consultant Haematologist, Consultant in Emergency Medicine, Emergency Department (ED) Senior Nurses, Transfusion Practitioners (TPs) and Transfusion Laboratory Managers (TLMs) was established to streamline the process and reduce delays.

Initial discussions highlighted challenges around inappropriate use or overdosing of PCC.

A specific protocol was developed to reduce the risk and further discussions including pharmacy leads identified the Omnicell electronic drug storage cabinet as a solution to store PCC in ED. Upon use, patient details are written in the Controlled Drug (CD) book with date, time and dose administered.

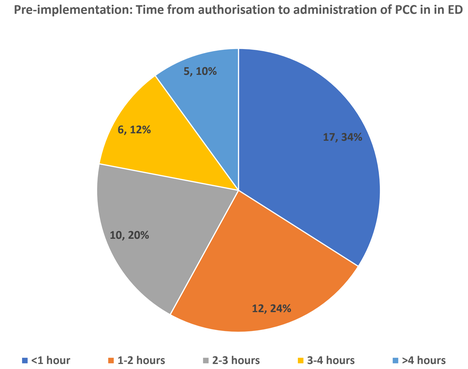
The PDSA cycle removed steps from the process which ensured a timelier administration of PCC to the patient.

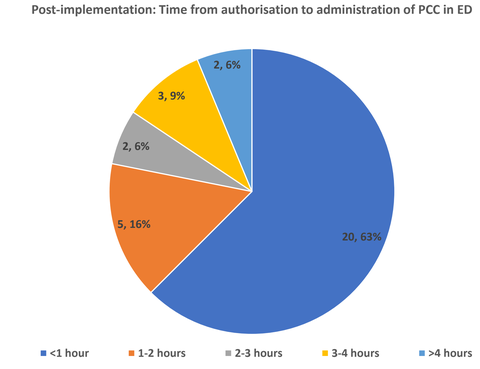


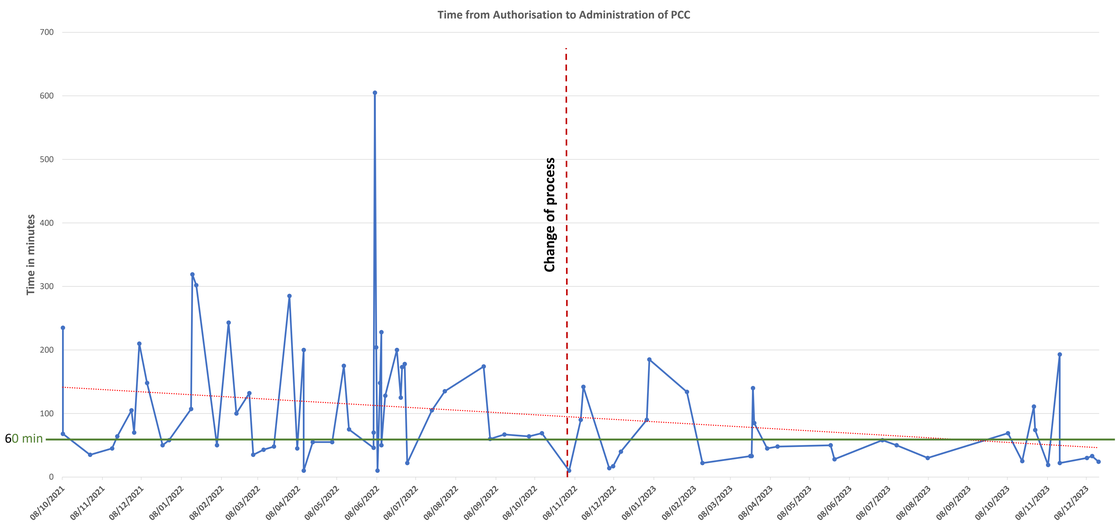
Challenges were highlighted by TLMs regarding loss of traceability of PCC and ensuring stock was replenished upon use. A process was developed to facilitate traceability and stock reordering whereby, a request form for PCC containing the recipient's details allows the BMS to retrospectively issue the used PCC to the patient. . This, along with the completed traceability labels and a PCC reorder form are then sent to the Transfusion Laboratory. The Porter collects the PCC and immediately delivers it to ED for staff to replenish the Omnicell. Pharmacy leads enabled email notification to the TPs and TLMs upon removal of PCC from the Omnicell allowing real-time audit and follow up to ensure stock has been replenished.

The change in practice required training and awareness to Biomedical Scientists (BMS), ED Doctors, ED Nurses and Porters. The TP team facilitated training with the ED Practice Development Nurse who disseminated the training throughout the department. The TLMs provided procedure-based training for BMS staff and the TPs facilitated training with the Porters.

Results







Discussion

The post-implementation pie chart identifies a significant increase with 63% of patients receiving PCC within an hour of authorisation compared with 34% pre-implementation. The 4 events where patients received PCC >3 hours after authorisation were due to extreme pressures in the ED department.

Authorisation of 1000iu PCC allows for an initial dose to be administered whilst providing time to discuss further dose requirements with Consultant Haematologist.

There has been no loss of traceability or PCC-related incidents since implementation and no inappropriate use or overdosing of PCC has been documented.

The rapid release of PCC from the Omnicell has shown a significant reduction in delays in administration once the decision has been made to reverse anticoagulation for patients with life threatening bleeding.

In 37.5% of patients the initial dose of 1000iu of PCC was sufficient to reverse anticoagulation with no further PCC indicated. Since implementation, 5/32 patients have received the full dose of 3000iu.

Further work identified

- Continue with audit of practice to highlight areas for improvement
- Streamline reordering process
- Identify other areas across the Health Board which could benefit from storage of PCC in the clinical area

Acknowledgements: Sarah Lewis, Consultant Haematologist; Ed Valentine, Consultant in Emergency Medicine; ED Senior Nurse Team; ED Practice Development Nurses; Pharmacy Leads; Facilities Supervisors; Cheryl Davies, Ali Sullivan, Jen Summers, TLMs: Susan Puttock, Lorraine Lewis-Prosser, Jess Scurr, Sarah Beuschel, Transfusion Practitioners.

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GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Aneurin Bevan University Health Board

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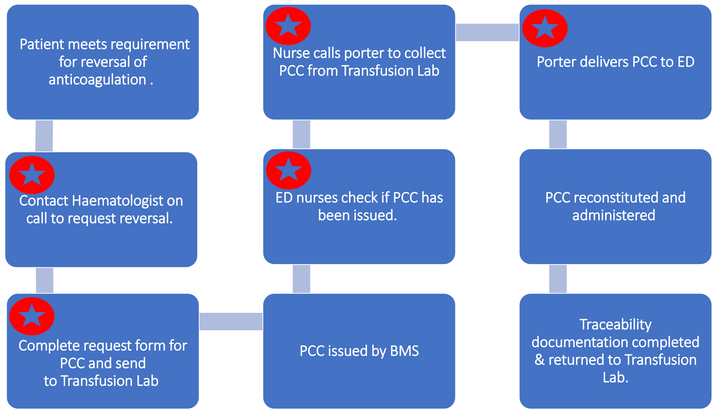

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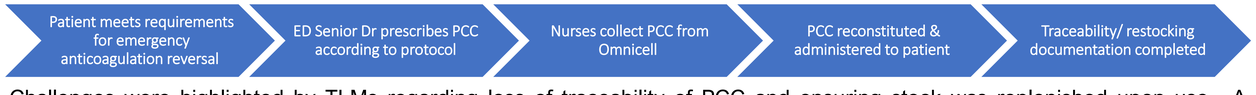

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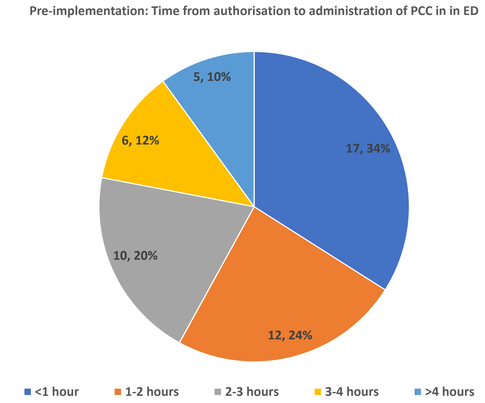

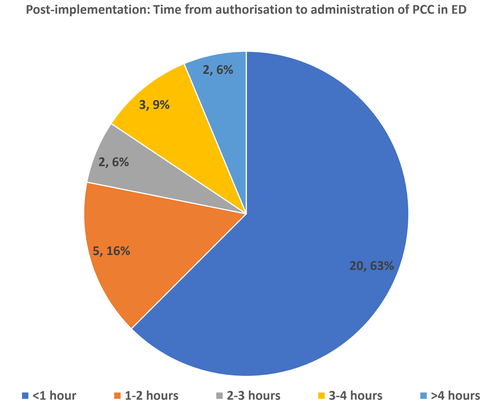

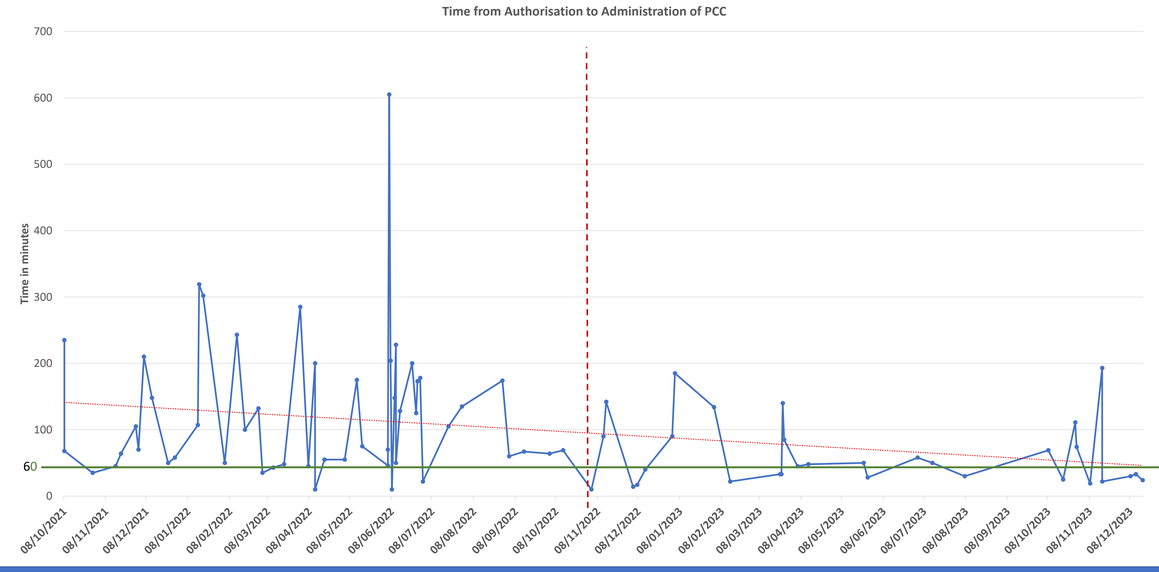

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