Document Control

Title			
Prothrombin Complex Concentrate (PCC) Guidelines			
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1.0	May 2007	Final	Approved by the Drugs, Therapeutics and Transfusion Group. The Beriplex Guidelines were revised into the new format.
1.1	Mar 2008	Revision	Octaplex replaced Beriplex as the only licensed PCC at the time, this dosing has now been reviewed to provide clarity
1.2	Aug 2008	Revision	Amends to ensure corporate identify requirements
1.3	Feb 2009	Revision	Minor amendment regarding hospital contact.
1.4	Dec 2010	Revision	Minor amendments by Corporate Affairs, prior to re-approval: dropped into latest template for document map navigation, hyperlink to procedural document.
2.0	Dec 2010	Final	Additions to abbreviations, contact numbers and contra-indications. Clarification on prescribing documentation. Approved by Hospital Transfusion Committee on 14th December 2010.
2.1	March 2011	Revision	Addition to section 5.4 agreed at Hospital Transfusion Team meeting 1st March 2011. Minor amendments to document control report and footer by Corporate Affairs.
2.2	Dec 2011	Revision	Amendment to section 5.1 agreed at Hospital Transfusion Team meeting 29th November 2011.
2.3	May 2012	Revision	Minor amendments by Corporate Governance Manager to headers and footers, document control report, formatting for document map navigation and table of contents. Applicable staff refined.
2.4	Jan 2014	Revision	Reviewed by HTT 21st Jan 2014. References updated. Requesting Octaplex® clarified.
2.5	Feb 2017	Revision	Updated to new Trust Template. References updated. Approved by HTT 23.02.17.
2.6	May 2019	Revision	3.5 Standard dose of Octaplex added 3.6 Example of prescription 5 Reference to RD&E policy
3.0	June 2019	Final	Approved at Patient Blood Management Group 13th June 2019

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Superseded Documents Guidelines for the use of Prothrombin Complex Concentrate (PCC)		
Issue Date June 2019	**Review Date** June 2022	**Review Cycle** Three years
Consulted with the following stakeholders: (list all) • Hospital Transfusion Team • The Lead for the Emergency Department • Drugs, Therapeutics and Transfusion Group (DTTG) now DTG.		
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CONTENTS

1. Purpose

1.1. The purpose of this document is to ensure compliance with best practice when managing warfarin reversal therapy in the presence of serious bleeding based on the British Committee for Standards in Haematology (BCSH) guidelines.

1.2. The following general principles can be applied in order to ensure:

- Octaplex® is used appropriately for patients meeting the criteria.
- Staff involved with requesting and administering Octaplex® have clear guidance to follow in accordance with British Committee for Standards in Haematology (BCSH) guidelines.

1.3. This guideline applies to all Trust clinical staff at Northern Devon Healthcare Trust (NDHT) and must be adhered to. Non compliance with this guideline may be for valid clinical reasons only. The reason for non-compliance must be documented clearly in the patient's notes.

2. Definitions

2.1. Prothrombin Complex Concentrate (PCCs)

PCCs are used for the rapid reversal of oral anti-coagulation in the presence of life-, limb- or sight- threatening haemorrhage.

PCCs are a human blood product and both pasteurisation and nanofiltration are used for viral inactivation.

PCCs contain the clotting factors II, VII, IX, X, Protein C, Protein S and heparin.

2.2. International Normalized Ratio (INR)

An International Normalized Ratio (INR) test measures coagulation and is used to determine the clotting tendency of blood.

3. General Principles of Prothrombin Complex Concentrate use

3.1. Background

Warfarin and other coumarin derivatives exert their anticoagulant affect by preventing the production of biologically active Vitamin K dependent co-factors (II, VII IX and X). These effects can be reversed by the administration of Vitamin K but the onset of action is delayed by 4-6 hours.

In situations where more rapid reversal of anticoagulation is required and where the thrombotic risks of complete reversal are less than the risks of continued bleeding, the use of a Prothrombin Complex Concentrate (PCC) (e.g. Octaplex®) should be considered.

PCCs have been demonstrated to reliably reverse anticoagulation due to coumarins within 15 minutes.

PCCs should not be used in situations where reduction or omission of warfarin doses or vitamin K administration alone would suffice.

3.2. Indications for use of PCCs

- Prothrombin Complex Concentrate PCCs should be considered in all cases of life-, limb- or sight- threatening haemorrhage in patients on coumarin derivatives where the risk of continued bleeding outweighs the thrombotic risk of anticoagulant reversal.
- For all other requests and when the INR level is less than 2.0 contact the on-call Consultant Haematologist.
- PCCs can be requested from the Transfusion Laboratory by contacting ext 2327 or bleep 045/through Switchboard outside routine working hours.
- PCCs are issued following authorisation from a Consultant who is familiar with the indications and contra-indications for its use.

3.3. Contra-indications for use of PCCs

- Hypersensitivity to the active substance, excipients or heparin
- History of heparin induced thrombocytopenia
- PCCs should not be used to enable elective or non-urgent surgery

3.4. Cautions in the use of PCCs

- All decisions for using Prothrombin Complex Concentrate PCCs should be made on an individual basis balancing the risks of continued bleeding against the prothombotic effects of prothrombin concentrates.

- Particular caution should be exercised in the following patients:

    - o metallic heart valves

    - o history of coronary heart disease or myocardial infarction

    - o significant liver disease/impairment

    - o significant sepsis / Disseminated Intravascular Coagulation (DIC)

- As PPCs are a blood derivative, infectious diseases due to the transmission of infective agents cannot be totally excluded.

3.5. Dose of PCC

- Dosing has historically been variable, based on body weight and INR, however, evidence is available supporting fixed dose PCC as an equally effective method for rapid reversal of warfarin. (RD&E Policy)
- There is no optimum fixed dose agreed in the literature but the evidence suggests that a dose of 1000iu to 1500iu is effective for the majority of patients to reduce the INR to less than 1.5. Larger doses may be appropriate for patients with an INR greater than 5. (RD&E Policy)
- At RD&E a fixed dose PCC of 1000 units is recommended for reversal of warfarin due to life-, limb- or sight- threatening haemorrhage where the INR is greater than two. Where the INR post treatment remains above 2.0 a further 500 units of Octaplex may be indicated.
- To ensure a consistent approach as the Consultant Haematologists cover both NDHT and RD&E it has been decided to change to the standard fixed dose of 1000 units of Octaplex for NDHT patients.
- INR should be repeated 15 minutes after completing the infusion to check the response. If INR 2 or over consider giving a further 500units of Octaplex. If INR still 2 or over after this dose contact Consultant Haematologist on call (appendix 1).

3.6. Prescribing PCC

- A full coagulation screen should be taken prior to prescribing PCC (RD&E Policy)

- 1mg Vitamin K (phytomenadione) should be given by slow IV infusion as soon as possible. (RD&E Policy)
- Octaplex must be prescribed on the Once Only section of the prescription chart in accordance with NDHT Medicines Policy.

  EXAMPLE

ONCE ONLY AND PREMEDICATION DRUGS

	Date	Time	Drug	Dose	Route	Other directions	Print name + GMC Number	Time Given	Given By / Checked By
1	02.05.19	11:00	OCTAPLEX	1000 UNITS	IV	AS PER SOP	A. DOCTOR 3456789		
2									
3									

3.7. Administration of PCCs

- For emergency admissions the PCC (Octaplex®) infusion should be commenced in the Emergency Department.
- PCCs are available in powder form for re-constitution with diluent supplied (water for injection).
- Dissolve the dried solution with the diluent completely, using an aseptic non-touch technique. Refer to the SOP for the preparation and administration of Octaplex.
- PCCs should not be mixed with other medications and should be administered by a separate infusion line.
- Administer the reconstituted product, without delay, intravenously at an initial rate of 1ml/minute. Increase the rate to 3mls/minute as tolerated and as recommended by the manufacturer. A faster rate of administration may be considered if clinical urgency demands.
- Care must be taken that no blood enters the syringe filled with the product, as there is the risk that the blood coagulates in the syringe and fibrin clots are thus administered to the patient.
- Any unused solution must be disposed of as clinical waste.
- If allergic-anaphylactic reactions occur, the infusion must be discontinued immediately and appropriate treatment initiated.

4. Process for Implementation and Monitoring Compliance and Effectiveness

Monitoring of implementation, effectiveness and compliance with these guidelines will be the responsibility of the Hospital Transfusion Team. Where non-compliance is found, it must have been documented in the patient's medical notes. If appropriate, a member of the Hospital Transfusion Team will provide support and advice to improve practice.

5. References

- Keeling D, Baglin T, Tait C, Watson H, Perry D, Baglin C, Kitchen S and Makris M (2011) British Committee for Standards in Haematology Guidelines on oral anticoagulation with Warfarin: 4th edition British Journal of Haematology 154: 311-324 Available at www.bcshguidelines.com
- Octapharma (2016) Octaplex® Product Characteristics
- Royal Devon & Exeter (RD&E) Use of Emergency Prothrombin Complex Concentrate (Octaplex) in life, limb or sight threatening haemorrhage with INR 2 or above HTT/042 version 1 active 19/07/2017

6. Associated Documentation

- NDHT Oral Anti-Coagulation Policy
- NDHT Medicines Policy
- NDHT Octaplex Infusion for the Rapid Reversal of Oral Anticoagulation in the presence of Serious Bleeding (Standard Operating Procedure)

Appendix 1 Use of Emergency Prothrombin Complex Concentrate (Octaplex) in life, limb or sight threatening haemorrhage with INR 2 or above

Clinical area

- Send coagulation screen prior to prescribing Octaplex
- Give 1mg Vitamin K (phytomenadione) by slow intravenous injection as soon as possible
- Prescribe 1000 units Octaplex on prescription chart

Laboratory staff

- Issue Octaplex as per SOP
- For DOAC reversal, check clinican has discussed the patient with Consultant Haematologist

Nursing staff

- Reconstitute Octaplex as per SOP
- Administer Octaplex as per SOP
- Return traceability record to transfusion laboratory

After administration

- Repeat INR after 15 minutes
- If INR 2 or over consider giving a further 500 units Octaplex
- If INR still 2 or over after this additional dose contact Consultant Haematologist on call