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# THROMBOPROPHYLAXIS – CHILDREN WITH COVID-19 INFECTION AND MULTI-INFLAMMATORY SYNDROME (MIS-C)

## COVID-19 STANDARD OPERATING PROCEDURE<sup>®</sup>

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1. All children admitted to hospital DUE TO symptomatic COVID-19 infection should have a Haematology consult requested within 24 hours. The Haematology Team will then be available to have a daily conversation with the Admitting Team regarding the child's progress.
2. An assessment of the child's risk factors for VTE is to be undertaken:
  - a. Personal history of DVT
  - b. Personal history of thrombophilia (e.g. protein S, protein C or antithrombin deficiency; factor V Leiden; factor II G20210A; persistent antiphospholipid antibodies)
  - c. First degree relative with VTE (before age 40 years or unprovoked)
  - d. Presence of a central line
  - e. Prolonged length of stay is predicted e.g.  $\geq 3$  days
  - f. Immobility that is not longstanding
  - g. Recent surgery or trauma
  - h. Non-mechanical and mechanical ventilation
  - i. Obesity
  - j. Pubertal, post-pubertal, or age  $\geq 12$  years
  - k. Receiving oestrogen-containing oral contraceptive pill
  - l. Active malignancy
  - m. Bone marrow transplant or solid organ transplant recipient
  - n. Chronic underlying disease e.g. nephrotic syndrome, cystic fibrosis, Sickle cell disease, cardiac disease, post splenectomy, flare of underlying inflammatory disease e.g. SLE, JRA, IBD
  - o. Severe dehydration

**It is to be noted that the greatest risk factors for thrombosis in children and adolescents with COVID-19 or MIS-C appear to be age over 12 years, cancer and the presence of a central venous catheter.**

3. The following assessments, based on history and examination, are to be made by the admitting team:
  - a. Does the child have symptoms or signs to suggest presence of VTE?
  - b. Is the child bleeding and/or do they have a bleeding disorder?
  - c. Is the child already on anticoagulation for an underlying disorder?
  - d. Is there a history of renal dysfunction?
  - e. Weight, height and BMI calculation

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| 4. | Blood tests to be performed on admission | <u>Typical findings</u>                      |
| a. | FBC                                      | <i>Mildly reduced platelets; lymphopenia</i> |
| b. | Fibrinogen                               | <i>Increased</i>                             |
| c. | APTT & PT                                | <i>Slightly increased</i>                    |
| d. | D dimer                                  | <i>Increased and trend may be important</i>  |
| e. | UEC to assess renal function             |  |
5. Determination of the need for thromboprophylaxis medication:
- a. A child under 12 years of age, not in ICU, non-obese with no major underlying illness, generally speaking will not require thromboprophylaxis
  - b. Patients above 12 who are obese, and/or have cancer, and/or have a central line likely will require thromboprophylaxis
  - c. Other patients may require therapy, subject to case-by-case consideration
  - d. If the D dimer is > 5 times the upper limit of normal for age, then, independent of any other risk factors, this child may require thromboprophylaxis
  - e. Any child diagnosed with MIS-C will require some form of thromboprophylaxis, which is age dependent (aspirin or low molecular weight heparin [LMWH])
  - f. The decision as to whether to start thromboprophylaxis must take into account
    - i. The thrombotic risk (based on item 2 above)
    - ii. the risk of bleeding
      1. Is there bleeding occurring from any site?
      2. Does the child have a history of a bleeding disorder e.g. VWD, haemophilia?
      3. Are the platelets < 50 and/or INR > 1.8?
    - iii. Renal function
6. All children of suitable size should have calf compressors applied
7. **Recommended drug for thromboprophylaxis for children who are NOT bleeding: LMWH (enoxaparin, “Clexane”).** In some circumstances unfractionated heparin (UFH) may be more appropriate and the choice should be discussed with the on-call haematologist
- a. **Dose: for most children Clexane 0.5 mg/kg SC 12 hourly for prophylaxis, to a maximum of 40 mg SC BD, regardless of weight**
  - b. For children with renal dysfunction/failure/transplant: the Clexane dose may require individualisation e.g. once daily, but definitely requires monitoring (anti-Xa level) or use of UFH could be considered
  - c. For children who are bleeding anticoagulants should be withheld but the situation assessed daily
8. If the child was on therapeutic anticoagulation prior to admission, consider giving therapeutic Clexane

9. Direct oral anticoagulants are not recommended in children with acute COVID infection
10. CT/PA should be considered in the child with symptoms and/or signs of pulmonary embolism but the stability of the patient and the COVID risk to staff needs to be taken into account. PE in children with COVID is a relatively rare event.
11. If the child sustains a DVT/PE, it should be treated in the usual manner with therapeutic Clexane or UFH initially.
12. The need for post-discharge thromboprophylaxis needs to be considered on an individualised basis.
13. Frequency of blood test monitoring depends on the clinical condition of the patient and requires daily assessment. A sick unstable child may require more frequent blood tests than a stable child. Factors to take into consideration are trends, risks to care givers, ease of venous access and clinical utility. Ideally, all teams should decide what is required, a list compiled, and all tests collected at the one time.

## Revision History

Version (date)	Approved by	Amendment notes (summary of what was changed)
7/2/22	K McLeod	N/A – new SOP