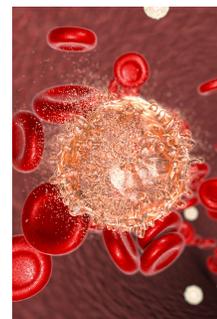


Haematology and Oncology Emergencies (part 1)



If patients have the potential to require regional transfer, to a tertiary centre, please call KIDSNTS for advice and assistance. The on-call consultant haematologist or oncologist should be involved in any discussions regarding management and requirement for transfer.

Upper Airway and Superior Vena Cava Obstruction

Anterior Mediastinal Masses can cause compression of the airway or great vessels with consequent effects on ventilation and preload to the heart with reduced cardiac output.

Highest Risk Patients:

- Non-Hodgkins Lymphoma; T- cell Acute Lymphoblastic Leukaemia; Thymoma; Teratoma.

Presentation: (Clinical status **DOES NOT** reflect degree of obstruction)

- Respiratory distress with orthopnoea - monitor RR, O₂ sats, work of breathing, stridor, wheeze.
- Cardiovascular compromise - monitor HR, BP, CRT, pulses.
- Facial swelling/oedema (**signs of SVC obstruction indicate increased risk of cardiovascular collapse**).
- Neurological - headaches, dizziness, syncope, signs of raised intracranial pressure.

Management:

- Minimise distress to the child.
- **Immediate consultant anaesthetic review.**
- Avoid or use minimal sedation to prevent worsening airway tone and obstruction.
- Keep patient sat up or in the most comfortable position for the child (Lateral position can help).
- Facemask O₂ if required, erect CXR.
- Avoid CT – if essential, must be prone/lateral + without sedation.
- Obtain IV access (consider femoral if SVC obstruction) + take bloods (minimal handling).
- High-Flow Nasal Cannula Oxygen (2L/kg) or Non-invasive ventilation (CPAP/BiPAP) may be indicated.

INTUBATION IS HIGH RISK!

Intubation Guidance:

- **Mandatory involvement and planning by Anaesthetics and KIDSNTS team.**
- Preference is to keep children self ventilating to maintain airway tone. (inhalational anaesthesia)
- Decide on timing, induction method and optimal clinical environment (likely theatres).
- May need discussion with ENT and/or Cardiothoracic teams.

Considerations:

- Consider using reinforced endotracheal tubes.
- Dexamethasone or hydrocortisone before histology in severe cases (may interfere with histology + risk of tumour lysis syndrome).
- Maintain normal pCO₂ and consider 3% saline if concerns about raised intracranial pressure.
- Consider CVS support requirements - i.e fluid bolus available (for patient decompensation potential).
- Haematology/Oncology team involvement in all conference calls.



Febrile Neutropenia +/- Sepsis:

Discuss with KIDSNTS early if CVS instability (+ see KIDSNTS sepsis guideline)

Definition: Pyrexia > 38.0C AND Neutrophil count of <0.5; mortality increases with a neutrophil count of <0.1.

High Risk Patients: Leukaemia/Lymphoma; Aplastic Anaemia; Chemo/Radiotherapy; Severe Bacterial Infections ; Indwelling CVC.

Presentation:

- Typically warm shock – Bounding pulses, wide pulse pressures and hypotension (consider chemotherapy induced cardiomyopathy).
- Examination for focus of infection (including mucositis), especially CVC site inspection.
- Take infection screen – Blood cultures (central and peripheral - if indwelling CVC); Urine; stool; Bloods - FBC/Coag/CRP/LFT/UE. CXR if respiratory concerns.
- See KIDSNTS sepsis guideline for further management.

Antibiotics: **MUST BE ADMINISTERED WITHIN ONE HOUR.**

- If CVS stable - Piperacillin Tazobactam 90mg/kg QDS (max 4.5g) + Vancomycin 15mg/kg QDS (targeting levels 10-15 mg/L).
- If CVS unstable or suspected meningitis – Meropenem 20mg/kg/dose TDS (max 1g) + Vancomycin 15mg/kg QDS (targeting levels 10-15 mg/L). Meropenem dose can be 40mg/kg/dose for suspected Meningitis patients.

Tumour Lysis Syndrome:

Rapid cell death post chemotherapy; Results in Hyperuricaemia, hyperkalaemia, hyperphosphataemia and hypocalcaemia; If untreated, will result in Acute Kidney Injury.

High Risk patients: Lymphoid malignancies; Neuroblastoma; children with pre-existing pre renal Acute Kidney Injury and dehydration; WBC > 100; major hepatosplenomegaly; serum urate > 0.45mmol/l.

Presentation: Oliguria; weakness and muscle cramping; Diarrhoea and Vomiting; potential cardiac arrhythmias and seizures (electrolyte imbalance).

Management: Access BWCH guideline to assess level of risk and further management strategy.

<https://intranet.bwc.nhs.uk/EasysiteWeb/getresource.axd?AssetID=8152&type=Full&servicetype=Attachment>

For High Risk Patients:

- Rasburicase 0.2mg/kg. IV once daily. Infuse in 50ml Sodium chloride 0.9% over 30 min. Caution: Risk of anaphylaxis, draw up adrenaline prior to first dose, administer with doctor present. Risk of haemolysis in G6PD deficiency - check ethnicity of patient and rule out.
- Dextrose Saline (usually 0.45 Sodium chloride/5% Dextrose) by IV infusion at not less than 3,000 – 4,000ml/m²/24 hours. No added potassium unless specifically indicated. If urine output falls, give furosemide. Re-assess if there is no response within 1 hour. Fluid challenge and/or higher dose may be required. Aim for U/O >3mls/kg/hr (caution if renal/ cardiac failure).
- Monitor U&Es, creatinine, Ca & PO₄ 6 hourly for at least 48 hours. Reduce to 8 hourly, then 12 hourly and then daily in consultation with the consultant in charge. A rising creatinine, potassium and phosphate together with a falling calcium and urine output are indications that dialysis or haemofiltration may be required.

Hyperleucocytosis:

Patients: Acute/Chronic Myeloid Leukaemia; Acute/Chronic Lymphoblastic Leukaemia

Presentation:

- Elevated WCC > 50; Pyrexia; Signs of decreased tissue perfusion, e.g. oliguria; Dyspnoea and Hypoxia (pulmonary signs); Visual changes, headache, nausea or low GCS (neurological signs); Tumour Lysis Syndrome; Coagulopathy.

Planning:

- WBC > 100 or rapidly rising with neurological/respiratory symptoms – Urgent KIDSNTS referral for PICU.
- WBC > 100 without neurological/respiratory symptoms – Urgent KIDSNTS referral for support.
- WBC 50- 100 – Discuss with KIDSNTS for arrangement of transfer to tertiary centre.

Management:

- Urgent investigations – Blood film, FBC, Clotting, Fibrinogen (monitor for DIC), X-match, U+E's, urate, LFT's, Serology (VZV, CMV, Hepatitis), LDH, immunophenotyping. Radiology - CXR and non contrast CT brain (if stable but neuro signs).
- Avoid Blood transfusion if possible (Maximum 5mls/kg over 4 hours; Platelets >30 unless bleeding).
- No Potassium in maintenance fluid.