

Theme of the week learning pack: Oncology

This learning pack can be used for local teaching and for individual reading and reflection. Several activities have been designed and they have been mapped to the RCPCH Progress curriculum.

Feel free to use any or all of this pack in your department. If you wish, you can reflect on the learning activity and upload to your e-portfolio linking to the relevant domains.

Comments/feedback to Mehrengise Cooper (TPD).

Title	Progress Domain	Target Level	Page
Prescribing/case: Febrile Neutropaenia	4. Patient management 7. Patient safety including safe prescribing	All	2
Communication Scenario: New Diagnosis of Leukaemia	2. Communication	Level 2 and 3	3 - 4
Simulation: Child with a CNS tumour and low GCS	4. Patient management 6. Leadership and team working	All	5 - 6
Simulation: Septic Shock	4. Patient management 6. Leadership and team working	All	7 - 9
Lightning Learning: Tumour Lysis Syndrome	4. Patient management 10. Education/training	Level 2 and 3	10
Case Discussion: Superior Vena Cava Obstruction	4. Patient management 7. Patient safety	All	11
Part task: Central Venous Access Devices	3. Procedures	All	12-13

Prescribing task: Febrile Neutropaenia

Task: ST1-3 to complete the prescribing task. ST4+ to facilitate discussion with completed drug charts.

Resources: [Supportive care guidelines](#)
[CCLG proposed new management pathway for febrile neutropaenia](#)

Tasneem is 6 and has ALL. She has been admitted to her local hospital with a fever of 38.2 at home. She last had chemotherapy 6 days ago. She has no other symptoms and her examination is normal. Her usual medications are co-trimoxazole prophylaxis. She has no allergies.

Write up Tasneem's drug chart.

Discussion points:

- *Febrile neutropenia antibiotics protocol*
- *Discuss who does not get pip-taz and gent*
- *Continue PJP prophylaxis*
- *Go through risk stratification and when to stop IV antibiotics/consider discharge N.B new CCLG guideline allows for some patients to be discharged home at 24 hours- find out what is happening in your centre.*

Overnight Tasneem spikes another fever and feels more unwell. She feels sick and has a sore mouth.

The nurse calls you to write up some supportive care medications to help Tasneem with her symptoms.

Discussion points:

- *It is ok to give paracetamol but ibuprofen should be avoided*
- *No PR medication*
- *Discuss different antiemetics*
- *Think about differentials for the mouth pain- mucositis, candidiasis, herpes simplex.*
- *Discuss WHO analgesic ladder - Tasneem may need regular oramorph and laxatives. Severe mucositis may require PCA/NCA.*

It is day 4 of admission. Tasneem continues to spike fevers and remains neutropenic. You have discussed with the paediatric tertiary centre who have asked you to prescribe antifungals.

Prescribe antifungals for Tasneem.

Discussion points:

- *The difference between conventional amphotericin and AmBisome*
- *The need for a test dose*
- *The need to monitor electrolytes, renal and liver function*

One of the ST4s, who has done an oncology job, thinks that Tasneem's central access needs to be removed as she is still febrile.

Should the central access be removed?

Discussion points:

- *Routine removal of CVAD is not usually recommended unless clinically or microbiologically indicated and discussed with the paediatric tertiary centre*
- *What might make you suspect line infection?*

Communication Scenario: A new diagnosis of acute lymphoblastic leukaemia (ALL)

Objectives:

- Understand the clinical implications of the diagnosis
- Think about different approaches to breaking bad news

Task: ST4+ to complete the communication task. Consultant to facilitate and provide feedback

Instructions for participant:

Scenario:

You are an ST4 in a DGH. You have seen Lucas in A&E who is a 3 year old boy with leg pain, recurrent infections and easy bruising. Mum reports he has not been himself over the last week and has been lethargic and miserable. On examination, he appears to be pale and thin with extensive bruising on his shins. He has no hepatomegaly or splenomegaly and examination is otherwise unremarkable. You are still concerned and you order initial blood tests which show the following: Hb 60 g/L, Plt $40 \times 10^9/L$, WCC $20 \times 10^9/L$ with 30% blast cells on peripheral blood film.

Your task is to explain:

1. The most likely diagnosis
2. Next steps in management (including liaising with the paediatric tertiary centre)
3. What further investigations are required including a lumbar puncture and a bone marrow aspirate (briefly explain why and how this is done)

Instructions for facilitator:

Information for Lucas's mother:

- Lucas was born at term, no previous hospital admissions and has no regular medications or past medical history
- You are very anxious as you have a feeling 'something is wrong' and want to know what is going on
- You are worried that you did not bring Lucas to A&E sooner
- You have heard of leukaemia in adults but not in children
- You are a single mother with a full time job and have good support network from friends and family

Points to consider:

- Acknowledge this is a difficult conversation for both the clinician and parent
- Find a private room to have the conversation in and handover your bleep beforehand (if possible)
- Establish their prior knowledge on leukaemia
- Discuss the implications of the new information
- Allow time and space for parent to respond
- Talk about what is going to happen next clearly (if unsure, say you will discuss with your senior and let them know as soon as possible)
- Acknowledge and answer concerns honestly and sincerely

Feedback:

- Allow participant to reflect on their performance - i.e. what went well, what could be improved and how this can be achieved
- Include feedback from mum - how did she feel the conversation went?
- Encourage feedback from observers in the group - each person has to mention a learning point

Further resources:

- ❑ [CCLG](#) - has a lot of useful information on ALL for both clinicians and parents (membership not required)
- ❑ [RCPCH](#) - has practical tips on difficult communication scenarios and breaking bad news
- ❑ [BMJ](#) - has an online module on how to break bad news

Simulation: Reduced GCS

Facilitator: Consultant or level 3 trainee

Participants: Medical staff and other members of the MDT if available

- Level 1 trainee: first responder
- Level 2/3 trainee: senior help
- Nurse if available
- Someone to play mum, if available
- Level 2/3 trainee: consultant advice and to lead debrief

Task: You are called to assess Susie, age 6, by the triage nurse. Susie has a metastatic pineoblastoma and has been operated on last month under the neurosurgeons. Her mum has brought her in as she has been vomiting and seems more drowsy.

Initial assessment:

A: patent

B: RR 22, SATS 98%, equal AE, normal breath sounds

C: HR 110, CRT<2, BP 118/75, warm and well perfused, moist mucous membranes

D: responds to voice but mum reports is not herself. Seems more slow and drowsy. GCS 12 (E3V4M5). She is moving all 4 limbs equally, and pupils are 4mm bilaterally and responsive to light. Glucose = 5.6

E: No obvious rashes or marks. Temperature 37.2

Further history from mum:

Susie has a brain tumour which was recently operated on. She has a discharge letter which says she has had debulking surgery and a 3rd ventriculostomy is in place. She is due to start chemotherapy next week. Today she has vomited 4 times and not been herself (more slow and drowsy). She has no diarrhoea or fever.

Expected management discussion at this point:

- CT brain
- Discuss with consultant/neurosurgeons
- Early anaesthetic support- be aware

Reassessment:

A: not responding to voice

B: RR 18 SATS 92%, equal AE, normal breath sounds

C: HR 108, CRT<2, BP 120/72, warm well perfused

D: GCS 8 (E2V2M4), goes on to have a 2 minute tonic-clonic seizure. Glucose = 5.2

E: if they ask, they can feel a shunt reservoir behind Susie's ear

Expected management discussion:

- Oxygen, IV access x2, move to resus if not already there
- Anaesthetic support, I+V prior to CT
 - Target normocarbica, pCO₂ 4-5kpa
 - Check pupils prior to sedation and regularly (every 15 minutes) thereafter
 - CXR to check ETT position
- Mannitol 0.5-1gm/kg IVI over 20-30 mins or hypertonic saline 2.7% 3-5ml/kg over 5 minutes +/- dexamethasone 0.5mg/kg IV QDS
- Load with phenytoin or levetiracetam, depending on local policy
- Keep midline/elevate to 30 degrees
- Maintain: SATS>98%, MAPs to maintain CPP (may need inotropes), normothermia, normal blood sugar, aim for Na>140
- Sedation with morphine/midazolam and muscle relax
- Urgent discussion with neurosurgeons following scan

Further discussion:

- Neurosurgeons confirm increased ventricular dilatation and ventricular haemorrhage. The SpR tells you she has an Ommaya reservoir in situ. Could we drain it prior to transfer?
- Expectations for time critical neurosurgical transfer:
 - Consultant should be present
 - CT should be done within 30 minutes of suspicion of time critical lesion
 - Referral to neurosurgery- 'Is this a time critical lesion?'
 - Refer to CATS/STRS- they will not transfer but will advise and find PICU bed
 - Anaesthetic team should mobilise team and decide who will transfer
 - Contact emergency ambulance service for transfer via 999 stating 'Paediatric neurosurgical critical care transfer'
 - Departure for neurosurgical centre should be within 60 minutes of completion of scan

Additional reading:

[Endoscopic third ventriculostomy](#)

[Child presenting with possible shunt problems](#)

Simulation: Neutropenic sepsis

Objectives:

- Early recognition of 'red flags' in an unwell child using ABCDE approach
- Know when to call for senior help

Facilitator: Consultant or level 3 trainee

Participants: Medical staff and other members of the MDT if available

- Level 1 trainee: first responder
- Level 2/3 trainee: senior help
- Nurse if available
- Someone to play dad, if available
- Level 2/3 trainee: consultant advice and to lead debrief

Scenario:

You are the night paediatric SHO in a DGH. You have been informed about Lily who is a four year old with AML presenting with fever up to 40 degrees since this afternoon. Your registrar is currently dealing with a resus call therefore you have been called to review Lily.

Initial assessment:

A: patent

B: RR 42, SaO₂ 92%, normal work of breathing, reduced AE right base with inspiratory and expiratory crackles

C: HR 146, CRT < 2 secs, BP 95/60, warm and well perfused

D: GCS 15/15, PEARLA, glucose 5.0

E: Temperature 39.5 degrees. No visible rash. Central venous access site is clean with no signs of infection (only if they ask)

On further questioning:

Dad reports Lily had chemotherapy two days ago following which she has been vomiting and not being able to tolerate fluids well. She also has cough and coryzal symptoms. Today she developed a fever and has not been herself. Dad mentions her neutrophil count from two days ago was $0.5 \times 10^9/L$

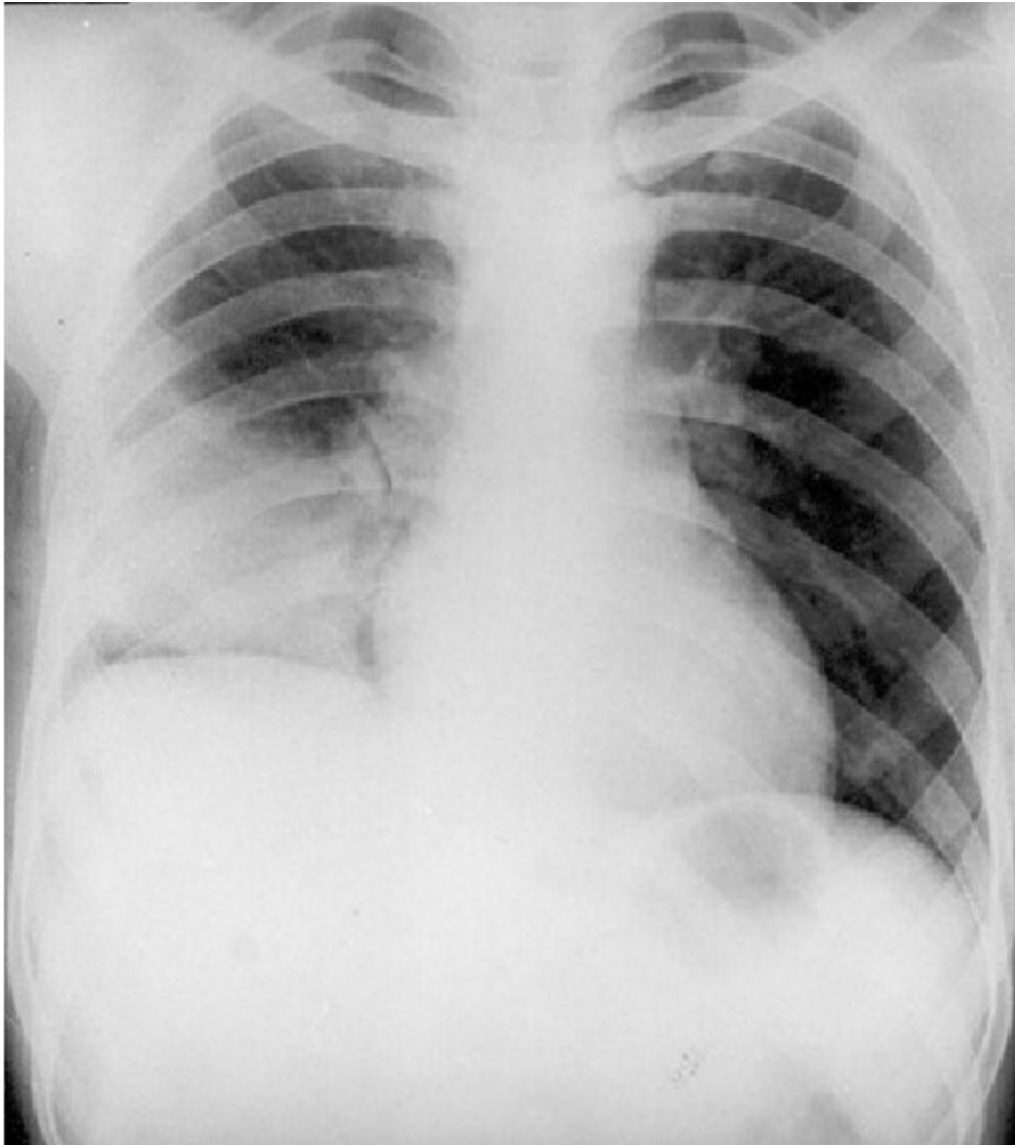
Expected management plan:

- Oxygen (to maintain saturation > 94%)
- Urgent portable CXR
- Insert a peripheral cannula and take bloods including FBC, U&Es, LFTs, CRP, lactate and blood culture. Also take blood culture from central access. Consider urinalysis for <5 years of age, particularly if no focus.
- IV antibiotics - treat as neutropenic sepsis (IV tazocin 90 mg/kg QDS - max 4.5g and gentamicin 7 mg/kg)
- IV paracetamol and recheck temperature in 30 minutes
- Commence intravenous fluids
- Call for senior help
- Update parents

Reassessment:

A: patent

B: RR 40, SaO₂ 100% (15L oxygen via face mask), normal work of breathing, reduced AE right base with crackles. **CXR shows right sided consolidation but no pleural effusion (show below x-ray)**



C: HR 156, CRT 3-4 secs, BP 85/60, cool peripheries

D: GCS 15/15

E: Temperature 37.8 degrees

SpR (ST3+) has arrived on ward - ask SHO for a quick SBAR handover

Expected management discussion:

- Should mention 'Septic shock'
- Insert another peripheral cannula

- Early aggressive fluid resuscitation. STAT IV fluid bolus of 0.9% normal saline - initially 20 ml/kg and reassess 15-20 minutes later (prepare another 20 ml/kg fluid bolus whilst waiting)
- Consider line sepsis
- Call for senior help including anaesthetic SpR on-call early as may need to consider inotropic support (if vasodilated consider noradrenaline)
- Consider STRS and discuss with consultant early as may need PICU admission

Feedback:

- Allow participant to reflect on their performance - i.e. what went well and what could be improved
- Include feedback from observers in the group
- Involve dad - was he aware of what was happening?

Further resources:

- ☐ [Emergency drug calculator](#)
- ☐ [London Supportive care guidelines](#)

Lightning Learning: Tumour Lysis Syndrome

Objectives:

- Learn how to manage tumour lysis syndrome
- Practice teaching skills for a lightning learning session

Task: ST4+ to prepare a 10 minute session on tumour lysis syndrome (TLS)

Instructions for individual/group:

- SHOs, nursing staff and other healthcare professionals as audience
- Consultant to facilitate the session
- Observers in the group to provide written feedback
- ST4+ to reflect on their performance in portfolio

Points to consider:

- What is TLS?
- Why is it important to manage TLS?
- What is the prevention of TLS prior to starting treatment?
- Discuss the prevention and treatment of TLS after starting treatment. Include a discussion of low, intermediate and high risk (if rasburicase is indicated, don't forget to check G6PD before starting treatment)
- Describe the complications of TLS
- When should you transfer to paediatric tertiary centre for further management?

Information for facilitator:

- Facilitator to provide verbal feedback and to complete a supervised learning event in portfolio
- Observers in the group to complete a written feedback form

Feedback forms:

- Learner [feedback form](#)
- Audience [feedback form](#)

(ensure completed forms are uploaded into portfolio)

Useful resources for planning the session:

- ❑ [BMJ Best Practice](#)
- ❑ [London Supportive Care Guidelines](#)

Group Discussion: Mediastinal Mass/Superior Vena Cava (SVC) Obstruction

Objectives:

- Understand common features of mediastinal mass/SVC obstruction
- Outline immediate management of mediastinal mass/SVC obstruction
- Recognise other causes of SVC obstruction

Task: Consultant to lead and facilitate the group discussion with trainees of all levels. Please consider listed questions below to facilitate the discussion

Scenario:

You have accepted a GP referral for a 5 year old with chest pain and breathlessness, particularly when lying flat. He also complains of headaches and dizziness on standing. On examination, he is tachypneic with facial oedema and distended chest wall veins. He also has reduced breath sounds bilaterally. His chest x-ray shows significantly widened mediastinal mass.

Questions to consider:

1. What **symptoms** from above history are suggestive of a mediastinal mass/SVC obstruction - divide into respiratory and neurological
2. What **signs** from above history are suggestive of a mediastinal mass/SVC obstruction - divide into respiratory and cardiovascular
3. What other radiological features can be associated with a mediastinal mass/SVC obstruction
4. Apart from CXR, what further investigations are required
5. Outline immediate management including liaising with PTC consultant

Expected management discussion:

- Clinical status does not reflect degree of obstruction
- Sit patient up, oxygen via face mask if SaO₂ < 94%
- IV access (cannulate via lower limb if evidence of SVC obstruction) and baseline bloods with minimal handling - FBC, blood film, U&Es, LFTs, Bone profile, Urate, LDH, AFP and HCG
- Avoid CT chest/sedation if significant mass on CXR or significant respiratory distress, particularly when lying supine as this may cause respiratory failure - liaise urgently with PTC consultant
- Consider USS chest to assess mediastinal mass if unable to perform CT chest
- Immediate senior anaesthetic review
- Consider urgent transfer to paediatric tertiary centre with PICU support if significant mediastinal mass or significant respiratory/cardiovascular features
- Emergency chemotherapy or radiotherapy may be required
- Avoid steroids as this may precipitate tumour lysis syndrome
- Avoid hyperhydration via upper limb as this could exacerbate facial swelling or cerebral oedema in SVC obstruction
- Consider non-oncological causes of mediastinal mass/SVC obstruction

Further reading:

- ❑ [Multi-Case Study](#) - superior vena cava syndrome in children

Central Venous Access Devices in Paediatric Oncology

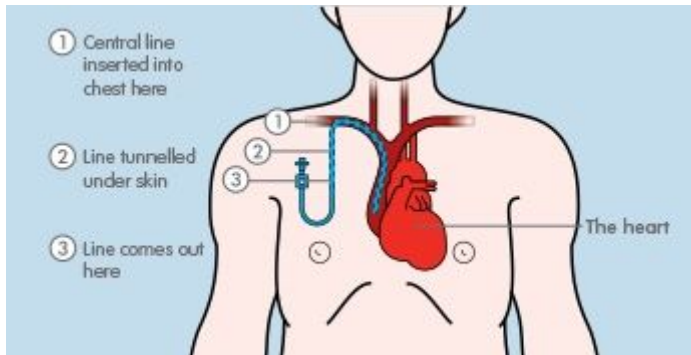
Read these references about CVAD care and then discuss in small groups how you would manage the following scenarios:

[CCLG Central Lines](#)

[Supportive Care Guidelines Section 7: Care of Central Access Venous Devices](#)

[DFTB: CVADs- A survival guide](#)

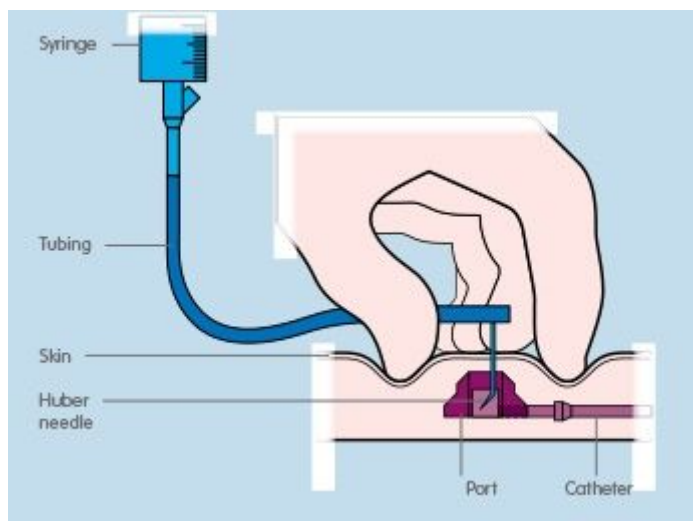
Hickman Line



Scenarios for discussion:

- A hickman Line is not bleeding back - what should you do?
- What are the important action points when a hickman line is blocked? (I.e. not bleeding and not flushing.)
- You get a call from your community nurse at 5pm saying that she is at a patient's house for routine line care and there is pain and swelling at his neck when she flushes the line. What should she do?

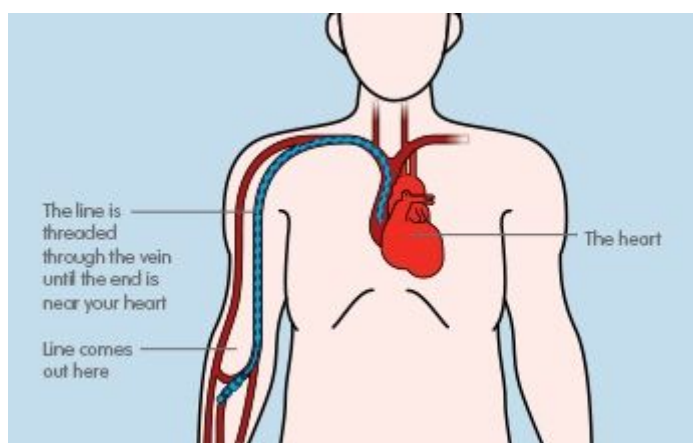
Portacath



Scenarios for discussion:

- The port is accessed but there seems to be evidence of infection on the skin overlying the port reservoir. What should you do?
- What are the differences in management if the port is not accessed but there seems to be evidence of infection on the skin overlying the port reservoir?

PICC line



Scenarios for discussion:

- The nurse thinks the line might be broken. Saline is leaking from the exposed portion of the line as she flushes. What should you do?
- Your patient has some redness around the PICC insertion site under the dressing. What differentials should you consider? How often should the dressing be changed? What is the correct dressing?
- The nurse was changing a PICC line dressing and thinks some of the line might have come out and that it now could be in the wrong position. What should you do?