



**North East
& Yorkshire**

Clinical Scenarios

Presented by the North East & Yorkshire
Non-Medical Authorisation working group

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Surgery

- KM 45-year-old female
- Admitted for gynae surgery pre op Hb 136g/L MCV 85
- Had Total abdominal hysterectomy and bilateral salpingoophrectomy, cystoscopy and bilateral uretic stents
- Found massive fibroid uterus – bleeding encountered as stuck to side of vessels- estimated blood loss 1700mL.
- BP 80/40mmHg
- Pulse rate 90

What would be your actions?



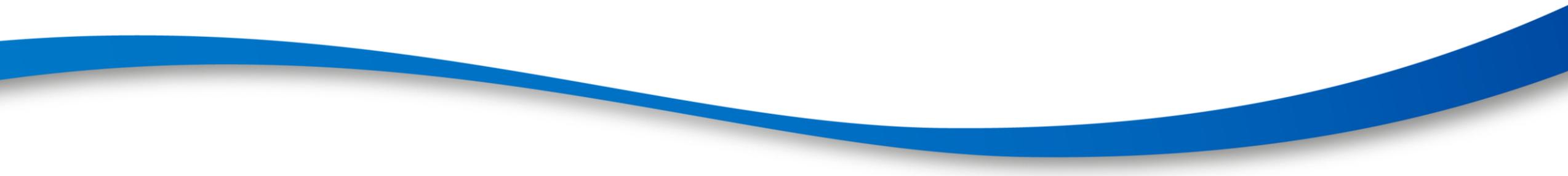
Acute Medicine

- EA 77 year old lady attending ED directly from home.

Presentation:

- shortness of breath, leg swelling and poor mobility. No cough or fever.

Past medical history:

- CVA 2016,
 - Early Stage dementia,
 - Diet controlled diabetic,
 - Chronic Kidney Disease
- 

Medications:

- Bisoprolol, Diazepam, Lactulose, Thiamine, Doxazosin, Atorvastatin, Aspirin, Allergy to penicillin
- Has a DNRCPR – signed and dated. Daughter has lasting power of attorney for health and wellbeing
- On examination she has raised JVP,
- Chest Xray shows congestion and bilateral effusions

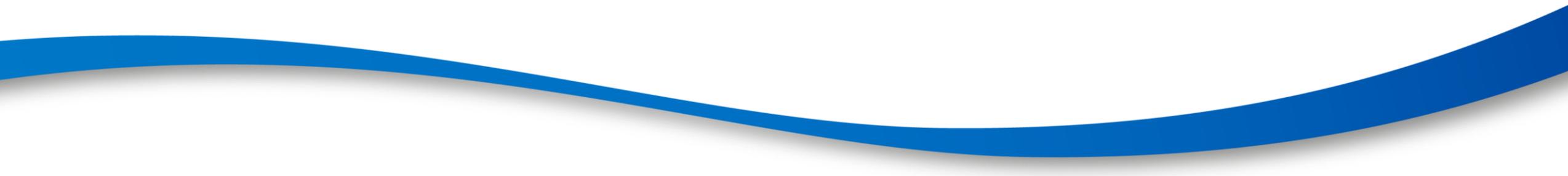
Venous blood gas

- pH 7.4, PCO₂ 4.86, PO₂ 3.09, HCO₃ 22.4, BE -2.02, Na 135, K 4.03, Ca²⁺ 1.1, Hct 0.27, Glu 7.5, Lac 1.7, tHb 91.6g/L

Formal Lab results

- Hb 90g/L
- WCC 11.9
- MCV 76
- CRP 80
- Creatine 171
- eGFR 24

What would you do??



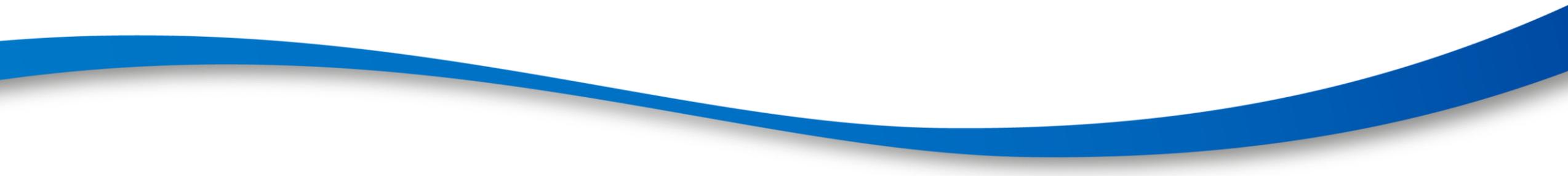
ED admission

- AM 29 year old male. Admitted with Abdo pain, feeling weak and chest pain.
 - On examination appears pale, looks unwell but talking in full sentences
 - Feeling unwell for 2-3 weeks- initially noted breathlessness, walking in town and felt lightheaded, continued as he thought he was unfit, then collapsed.
 - Denies illicit drugs, sexual activity, no travel, no bleeding.
 - No Fever, but bilateral oedema and abdominal distention. Sinus tachy at 115 B/P 147/60, Resp rate 14. SaO₂ 100% on room air.
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ED admission

- No grossly enlarged cervical, axillae or groin lymphadenopathy but splenomegaly noted
- Allergy to latex and wool.
- Formal Hb 21g/L

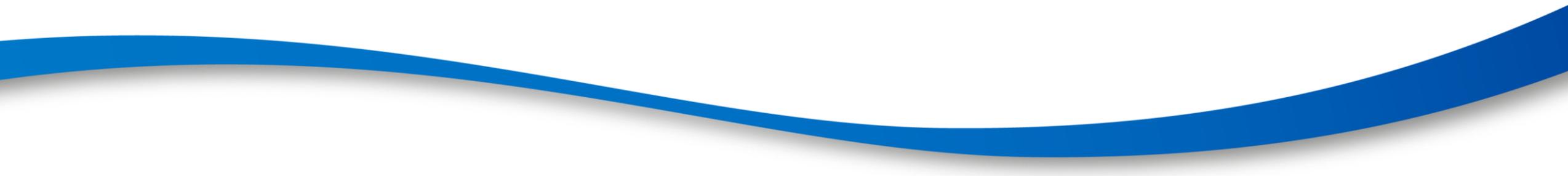
What would you do?



Oncology

- SW presented via referral from oncology nurse with two falls
- 1 fall with head injury, on aspirin
- Hb = 64g/L, platelet count 58, neutrophils 0.4. No pyrexia

What would you do?





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Pulmonary Issues with Transfusion

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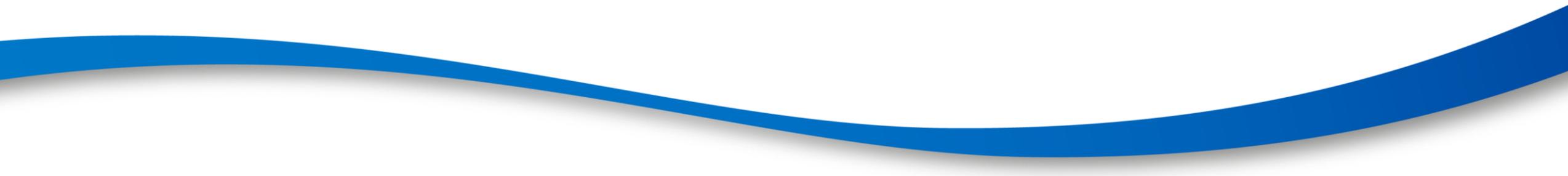
A female patient in her 80s

49kg

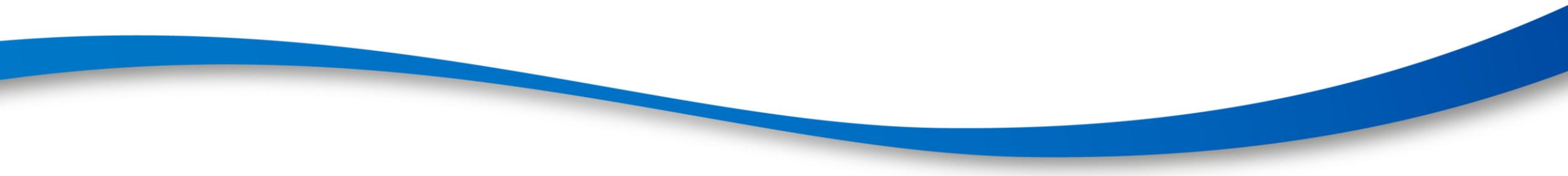
Asymptomatic and haemodynamically stable with severe microcytic hypochromic anaemia (Hb 44g/L)

No clinical signs of pulmonary oedema on the chest X-ray or clinical examination.

What would be your plan?



What happened

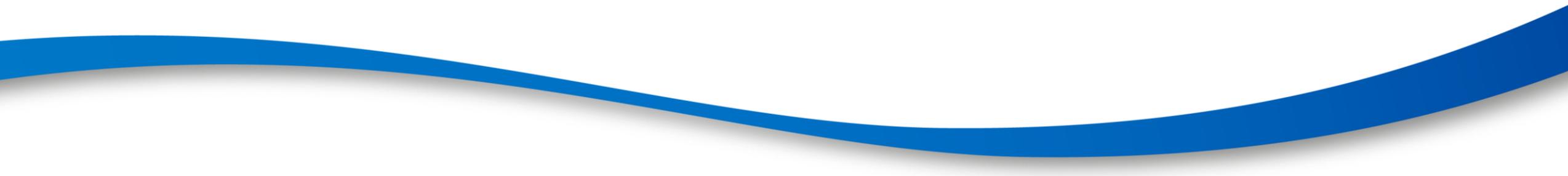
- Three units of red cells were transfused over a period of 15 hours because the attending doctor was aiming for a post-transfusion Hb of 70-90g/L.
 - The patient developed respiratory compromise (desaturation from 100% on room air to 71%, with dyspnoea, wheeze, and tachypnoea).
 - There were new cardiovascular changes: tachycardia (heart rate 131bpm) and hypertension (blood pressure 204/96mmHg).
 - Fluid balance was not clearly documented.
 - Additional fluid was not involved
 - A diuretic was given but the patient deteriorated and died, therefore a diuretic response could not be evaluated.
- 

Conclusion

- There was clear evidence of overtransfusion as the post-transfusion Hb was 111g/L.
- The patient did not otherwise have comorbidities predisposing circulatory overload. The post-transfusion chest X-ray showed pulmonary oedema. This was a complex case which was referred to the coroner. The post-mortem examination report described pulmonary oedema and congestion of the lungs.
- The patient was at risk of TACO due to her low body weight and severe anaemia. A TACO risk assessment would have identified this and should have prompted single unit/weight-adjusted red cell dosing, prophylactic diuretic etc.
- Despite this, the attending doctor was aiming for a significantly higher target Hb as would have been appropriate if the patient had stable acute anaemia.
- The patient had asymptomatic severe chronic iron deficiency and therefore a small volume red cell transfusion (to improve any symptoms of anaemia and minimise risk of cardiac ischaemia), followed by intravenous iron replacement was indicated

- A female patient in her 50s with multiple sclerosis attended for an outpatient red cell transfusion.
- The reason for the Hb of 68g/L was not recorded
- During the second unit of red cells, she developed severe respiratory distress, with systolic blood pressure 196mmHg, flushing, wheeze and crepitations.
- There was no improvement with diuretics and adrenaline.
- Care was not escalated because of a preexisting resuscitation order.

What would be your plan?

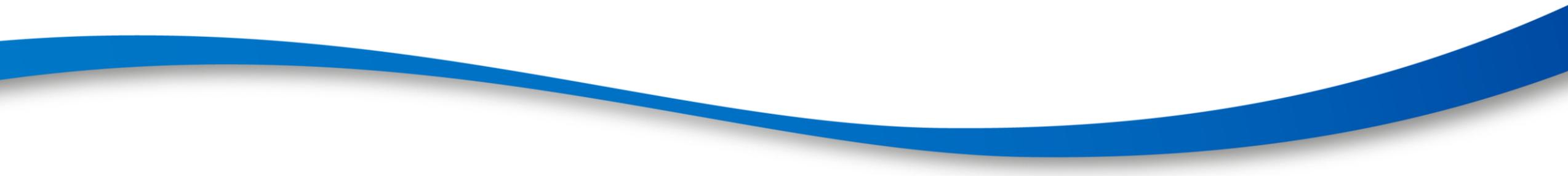


Conclusion

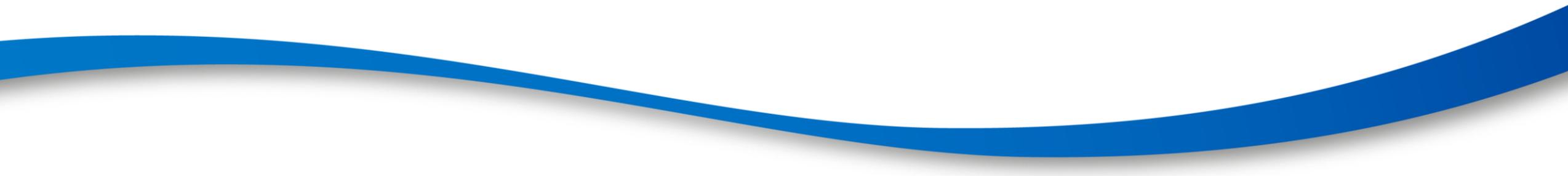
- The case was reported as TACO, with ‘death directly and solely caused by transfusion’
 - The case remains strongly suggestive of fluid overload but there was insufficient clinical information to meet ISBT TACO or TRALI criteria.
 - The reporters recognised that a TACO checklist was not part of their transfusion policy and awareness of TACO was poor.
 - These issues were addressed following an investigation. Low albumin and low Hb were identifiable risk factors for fluid overload, but the severity of the reaction was unexpected given the pre-transfusion risks.
 - It was not clear whether the preventative actions were commensurate with the identifiable risks and would have prevented the reaction.
- 

A female in her 30s was admitted with megaloblastic anaemia and Hb 31g/L
Undetectable folate levels and low B12 levels.

What would be your plan?



What happened

- She was transfused three units of red cells, the second unit over 20 minutes.
 - Desaturation was noted during the second unit and the transfusion was stopped during the third unit.
 - The CXR showed features of fluid overload, but the case did not meet TACO criteria
 - The patient was admitted to ICU but made a full recovery
- 

Conclusion

- This case was classified as TAD as there were insufficient features to meet TACO criteria but appears to be the classical picture of overtransfusion in megaloblastic anaemia.
 - Patients with B12 or folate deficiency can have impaired myocardial function and may not tolerate transfusion well.
 - Transfusion can often be avoided since the haemoglobin typically responds rapidly to haematinic replacement.
 - There were 2 similar cases in this year's Annual SHOT Report.
 - Patients with megaloblastic anaemia are at risk of fluid overload and transfusion should be avoided if possible.
 - If transfusion is necessary because of severe features of anaemia, a single unit or weight-adjusted red cell dosing should be given with close monitoring
- 

Table 17b.1
International
classification
of pulmonary
complications

Table 7 Comparison table to assist with pulmonary reaction classification						
	TRALI Type I	TRALI Type II	ARDS	TRALI/TACO	TACO	TAD
Hypoxemia	Present	Present	Present	Present	May be present but not required	May be present but not required
Imaging evidence of pulmonary edema	Documented	Documented	Documented	Documented	May be present but not required	May be present but not required
Onset within 6 hr	Yes	Yes	Yes	Yes	Yes*	No*
ARDS risk factors	None	Yes—with stable or improving respiratory function in prior 12 hr	Yes—with worsening respiratory function in prior 12 hr	None, or if present, with stable or improving respiratory function in prior 12 hr	Not applicable	Not applicable
LAH [†]	None/mild	None/mild	None/mild	Present or not evaluable	Present	May be present but not required

*Some definitions of TACO allow onset up to 12 hours posttransfusion. However, our current recommendation is that 6 hours be used. If pulmonary edema occurs greater than 6 hours following the transfusion and is clinically suspicious for a temporal association with transfusion, the case should be classified as TAD as is currently done in many hemovigilance systems.

[†]LAH is difficult to assess. When LAH is suspected, we recommend using objective evaluation to determine if it is present. Objective criteria include imaging (e.g., echocardiography) or invasive measurement (e.g., pulmonary artery catheter pressure measurement). However, clinical judgment is often required and, if this is needed, should be used for case classification as follows: TRALI and/or TACO = respiratory insufficiency at least partially explained by hydrostatic lung edema resulting from cardiac failure or fluid overload or unable to fully assess the contribution of hydrostatic lung edema resulting from cardiac failure or fluid overload; TACO = respiratory insufficiency explained by hydrostatic lung edema resulting from cardiac failure or fluid overload.



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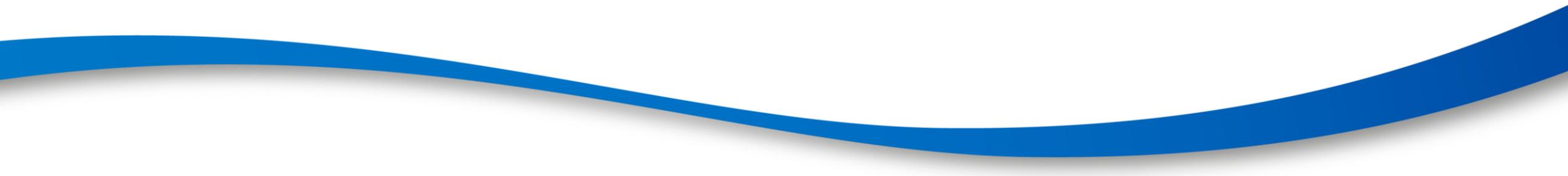
Paediatric

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Baby

- Two hours after commencing transfusion for a baby it was noted that 2mL had been administered via the pump instead of the expected 14mL.
- The pump was replaced and the transfusion was recommenced
- The transfusion finally finished after a total of 6.25 hours

What would you do?
What went wrong and why?



6 week old preterm infant

- Clinically stable non-ventilated 6 week old preterm infant, born at 26 week gestation, was given red cell transfusion for symptomatic anaemia of prematurity (Hb 93g/L)
- No adverse events during transfusion, post Hb was 167g/L
- 4.5 hours post transfusion baby developed tachycardia and over the next 12 hours deteriorated and developed a distended abdomen.
- X ray consistent with NEC, baby continued to deteriorate and died approximately 36 hours post transfusion

What would you do?

What went wrong and why?



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Next Steps Guide

- Ensure you have a consultant mentor organised – we would advise arranging a meeting with them as soon as possible and suggest having pre-arranged catch ups put into diaries.
 - Start work on your portfolio as soon as possible - if you delay too long, months can pass before rethinking about it.
 - Contact TP's for support
 - Ensure sign off documentation returned to TP team for Trust
 - Ensure job description updated to include extended scope of practice
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