Appendix VI: Transfusion Reaction Management & Investigation Algorithm

Signs & Symptoms of Acute Transfusion Reactions (ATRs)
Fever, chills, tachycardia, hyper or hypotension, collapse, rigors, flushing, rash, urticaria, angiodema, pain (chest, loin, muscle, bone, abdominal, cannula site/vein), dyspnoea, respiratory distress, hypoxia, nausea, general malaise, severe apprehension, pink/red/black urine, abnormal bleeding

STOP the Transfusion Temporarily and Call a Doctor
Undertake Rapid Clinical Assessment. Check temperature, pulse, BP, respiration rate & oxygen saturations.
Confirm patient identity, wristband and the compatibility label on the unit match. Visually check unit for turbidity, clots or abnormal appearance.

Wrong unit/ABO incompatibility?

Yes →

Wrong unit/ABO incompatibility
- Alert blood bank immediately, as other patients may be at risk (Ext. 22537 or bleep 199).
- Refer to advice on 'Acute haemolysis /bacterial contamination'.

No ↓

Symptoms consistent with underlying condition?

Yes →

Consistent with Underlying Condition
Consider symptomatic management and continuation of transfusion at slower rate. Document events in the patient's notes. If the symptoms do not improve or worsen, discontinue transfusion and initiate a transfusion reaction investigation based on the patient's symptoms.

No ↓

Urticaria, rash and/or pruritus **only**?

Yes → **Mild Allergic Reaction**
No blood tests required. Inform blood bank staff. Administer chlorphenamine, restart transfusion at slower rate. Observe more frequently. If symptoms worsen, manage as moderate/severe allergic reaction. Document events in the patient's medical notes.

No ↓

Mild fever (**<39°C and <2°C increase** from baseline) with **NO other symptoms**?

Yes →

Febrile Non-Haemolytic Reaction
Give antipyrexial. No blood tests required. If patient is otherwise well and obs stable, restart transfusion at slower rate. Observe more frequently. If fever does not improve/worsens, stop transfusion and investigate as per acute haemolysis/bacterial contamination.

No ↓

Moderate / severe allergic reaction / anaphylaxis?

Yes → **Moderate/Severe Allergic Reaction**
Tachycardia, dyspnoea, cough, wheezing, malaise, angiodema (often lips, eyes or tongue)
- Discontinue transfusion
- Call for medical assistance
- Give oxygen
- Give chlorphenamine PO or IV +/- hydrocortisone
- Commence IV 0.9% NaCl infusion
- If respiratory symptoms/history of asthma give inhaled B-2-agonist (e.g. salbutamol nebuliser).
- Take samples for FBC, LFTs, renal function tests, IgA levels, serial serum tryptase levels *(immediately, 3 and 24 hours after onset of symptoms)*.
- Test 1st urine voided for Hb & urobilinogen on ward.
- Alert blood bank (Ext. 22537 or bleep 199)

Anaphylactic shock:
Hypotension, sub-sternal or abdominal pain, laryngeal oedema, respiratory obstruction, collapse
Manage as per moderate/severe allergic reactions and also:
- Give IM epinephrine as per anaphylaxis guideline PPG-CUH-NUR-21.
- Call anaesthetics team

No ↓

Symptoms mainly respiratory / dyspnoea / hypoxia / cough?

Yes →

- Discontinue transfusion and give oxygen.
- Measure CVP/JVP
- Perform chest x-ray and ECG
- Monitor Blood Gasses
- Take FBC, LFTs, renal function tests, troponin, BNP (within 2 hours of onset – send to biochemistry **immediately**).

↓ Raised CVP/JVP

Circulatory Overload
Pulmonary oedema on X-ray, creps on chest asculation, positive fluid balance, usually hypertensive, raised BNP
- Consider diuretic
- Alert blood bank (22537 or bleep 199)

↑ Normal CVP/JVP

TRALI
Acute non-cardiogenic pulmonary oedema, bilateral infiltrates on frontal chest x-ray, **no** evidence of circulatory overload, may be hypotensive.
- Contact anaesthetics team.
- Ventilate if required.
- Alert blood bank (22537 or bleep 199)
- HLA typing and HLA antibodies test

No ↓

Fever ≥39°C **or** increased ≥2°C from baseline and/or rigors, hypotension, back pain and/or other symptoms?

Yes → **Acute haemolysis/bacterial contamination**
One or more symptoms of ATR listed above.
- Call for medical assistance
- Leaving cannula in place, disconnect IV infusion set/unit – do **NOT** discard/restart
- Maintain venous access with 0.9% saline via NEW infusion set.
- Give IV fluids/oxygen, if clinically indicated.
- Treat based on clinical status/symptoms.
- If patient has fever and/or chills, rigors, myalgia, nausea/vomiting, loin/lower back pain and/or other symptoms of sepsis take blood cultures and any other clinically relevant cultures (e.g. urine etc.).
- Take 1 x 6 ml EDTA and 2 x serum samples (red cap) for DAT and repeat group and XM.
- Return sealed blood pack (with giving set attached) to blood bank.
- Take FBC, coag., LFTs, renal function tests, CRP, LDH *(take sample immediately and 24 - 48 hours after onset)* and haptoglobins.
- Test 1st urine voided for Hb & urobilinogen on ward.
- If transfusion associated sepsis suspected, start broad spectrum IV antibiotics – manage as per PPG-CUH-CUH-218.
- Monitor urine output – aim for >100 ml/hr
- Alert blood bank (Ext. 22537 or bleep 199)