

Table 9: Potentially life threatening reactions

Acute Haemolytic Reactions Intravascular Haemolysis	Signs/Symptoms	Management
<p>Caused by exposure of patient to incompatible donor red cells (usually ABO mismatched blood)</p> <p>Apparently similar reactions can result from incorrectly heated/stored red cell products</p> <p>NOTE: In the case of an acute haemolytic reaction, the transfusion service's medical officer on-call will be informed and will immediately communicate with the patient's physician.</p>	<p>Usually abrupt in onset and within 15-20 minutes after initiation of any red cell containing blood product.</p> <p>Fever, chills, nausea, vomiting, pain-flank, back, chest, dyspnoea, hypotension, tachycardia, unexpected degree of anaemia, renal failure, DIC.</p> <p>Abnormal bleeding and hypotension may be the only signs in the unconscious patient.</p> <p>Further signs: Haemoglobinuria Haemoglobinaemia</p>	<p>Stop the transfusion, change the transfusion set and filter. Maintain venous access with crystalloid.</p> <p>Notify the blood bank for (a) clerical check i.e. patient/donor ID numbers (b) send unit/tubing to laboratory with the urine specimen, blood samples and reaction report. Monitor vital signs, including in some instances the pulmonary arterial pressure or CVP. Measure urinary output, observe for abnormal bleeding, especially if the patient is in post operative stage.</p> <p>Maintain intravascular volume and urinary output with crystalloid/colloid solutions. Prevent/treat renal failure with furosemide i.v. 120mg (and mannitol 1 gram). Vasopressors (e.g. dopamine) may be required.</p> <p>Monitor patient closely Consult Renal physician with a view to starting haemodialysis to reduce plasma haemoglobin and prevent acute renal failure.</p> <p>Consult Haematological/Renal Dept for further assessment of coagulation profile and renal functions.</p>
Bacterial Contamination	Signs/Symptoms	Management
<p>Caused by any contaminated blood product</p>	<p>Usually rapid onset, about one hour post transfusion.</p> <p>Chills, fever, abdominal cramps, vomiting or diarrhoea.</p> <p>Renal failure, flushed dry skin, hypotension and shock.</p>	<p>Stop the transfusion. Change filter and tubing. Maintain venous access with crystalloid or colloid solution.</p> <p>Notify blood bank, send blood samples, unit and tubing/filter to the blood bank for gram stain and culture.</p>

		Monitor vital signs and administer broad spectrum antibiotics, vasopressors, steroids, fluids and electrolytes.
Anaphylactic Reactions	Signs/Symptoms	Management
Severe, usually due to antibodies to IgA immunoglobulin or severe reactions to other plasma proteins.	Sudden onset. Symptoms include dyspnoea, hypotension/shock, facial and/or glottal oedema plus explosive gastro-intestinal symptoms. May lead to cardiac arrest/death.	<p>Stop the transfusion.</p> <p>Maintain venous access, maintain IV volume and BP with crystalloid or colloid solutions.</p> <p>Give adrenaline, dopamine, steroids and oxygen.</p> <p>Monitor vital signs.</p> <p>Prevention:</p> <p>Patients may be IgA deficient and require assessment of immunoglobulin profile. Further therapy must be with washed red cells that are plasma free.</p>
Transfusion Related Acute Lung Injury	Signs/Symptoms	Management
Severe, usually caused by leucoagglutinins in the plasma of the donor. Generally under-recognised and under-reported.	Dyspnoea, hypotension, fever, bilateral pulmonary oedema usually occurring within 4 hours of a transfusion.	<p>Should be initiated as soon as possible and consists of fluid support to maintain blood pressure and cardiac output.</p> <p>Ventilation support may be required.</p> <p>Diuretics should not be used as they may have a deleterious effect.</p>
Delayed transfusion reaction Extravascular haemolytic reaction	Signs/Symptoms	Management
Caused by exposure to incompatible red cells in the presence of an atypical IgG antibody such as anti Kell, anti Duffy etc. Severity variable ranging from mild to severe.	<p>Signs and symptoms may appear within hours in a severe reaction (often anti Kell) and is characterized by a drop in haemoglobin and jaundice.</p> <p>In some cases there may be additional complications such as renal failure and DIC.</p> <p>However most cases are mild and are only noticed some 2-10 days after the transfusion with mild jaundice and</p>	<p>The severe reactions should be managed with supportive measures appropriate to the patient's condition.</p> <p>In cases with renal failure measures such as haemodialysis should be implemented and most cases resolve completely.</p> <p>If there is a bleeding diathesis then appropriate transfusion therapy should be given.</p> <p>In most cases the reaction is mild and no particular</p>

	anaemia. Often the "reaction" goes unnoticed.	interventions are required.
Transfusion associated Graft vs Host Disease (TA-GvHD)	Signs/Symptoms	Management
This extremely rare condition results from the transfusion of lymphocytes that share an HLA haplotype with the recipient. Characteristically the donor lymphocytes are homozygous for a particular HLA haplotype whereas the recipient is a heterozygote. The condition is more likely to occur in situations where blood relatives of the patient are the donors and can be prevented by irradiation of the blood at 25-30 Gy. Leucodepletion is not considered to be adequate to prevent TA-GvHD.	The reaction is often florid and occurs 10 - 14 days after the transfusion. The patient presents with severe jaundice, a maculopapular rash, pancytopenia and diarrhoea.	This condition carries an extremely high mortality rate. Therapy is directed at eliminating the clone of engrafted lymphocytes by chemotherapy. This should be done by a specialist oncology unit.
Post Transfusion Purpura	Signs/Symptoms	Management
This rare condition results from recipient alloantibodies directed against donor platelet antigens. The antibodies are usually directed against HPA1a or HPA5a and since most individuals have these antigens, antibodies are rare. In most cases the recipient is female.	This condition is characterized by a florid thrombocytopenia occurring some 9 - 10 days after transfusion. The recipient's own platelets appear also to be destroyed in this reaction by unknown mechanisms.	This potentially lethal reaction is treated ideally with intravenous Gammaglobulin (2g/kg over 2 to 5 days). Platelet support (if possible HPA compatible) may be necessary but this often requires high doses in the presence of appropriate immunosuppressive therapy (e.g. Steroids). In some cases plasma exchange may be successful.
Febrile Non Haemolytic Transfusion Reactions	Signs/Symptoms	Management
Cause: Usually recipient leucocyte or platelet antibodies to transfused donor cells.	Onset usually within 1 - 2 hours after start of transfusion. Headache, myalgia, malaise, fever, chills, tachycardia and hypertension. Commonly found in multiparous or multi-transfused patients.	Stop the transfusion. Maintain venous access with crystalloid/colloid solution. Notify blood bank and send urine, post transfusion samples and pack to blood bank. Must be differentiated from early acute haemolytic transfusion reaction.

		<p>Administer antipyretics.</p> <p>Further management: If it recurs on further transfusion, then transfuse with leucocyte depleted blood. If latter not available, then give antipyretics and filter red cell products with a bedside leucocyte depletion filter.</p>
Allergic	Signs/Symptoms	Management
<p>Cause: Allergens to plasma proteins.</p>	<p>Usually mild. NO FEVER. Itching, hives, urticaria, erythema. Limited to skin only.</p>	<p>Stop the transfusion. Keep IV open. Notify blood bank and send post transfusion samples, urine and packs. Administer antihistamines. Commence transfusion with a new unit once blood bank has ascertained that this is not a haemolytictransfusion reaction.</p>