



**Serious Hazards  
of Transfusion**

## **TACO Video script**

### **Section 1**

Welcome to this short film which explores Transfusion Associated Circulatory Overload (or TACO). It will cover what TACO is, how to recognise it, how to reduce the risk of it occurring and how to evaluate practice following a case. TACO is a potentially preventable complication of transfusion. Whether making the decision to transfuse, authorising transfusion, issuing blood from the laboratory, or administering blood – everyone involved in the process has a responsibility and opportunity to reduce the risk of TACO.

### **Section 2**

TACO is defined as acute or worsening respiratory compromise or pulmonary oedema during or up to 12 hours after transfusion, along with evidence of fluid overload. SHOT also accepts cases that occur between 12 and 24 hours.

TACO is one of the pulmonary complications of transfusion along with Transfusion Related Acute Lung Injury (or TRALI) and Transfusion Associated Dyspnoea (or TAD). You can learn more about all of the pulmonary complications of transfusion by watching the specific SHOT video on this topic.

The pathogenesis of TACO is not completely understood, but it is likely to be more complex than simple volume overload. An inflammatory response, damage to the lung endothelium or even substances in the donor blood itself may contribute. There may be overlap between the different pulmonary complications of transfusion.

### **Section 3**

It is important to recognise the clinical signs of TACO so patients can be treated as soon as possible. If a patient has new breathing difficulties or an increased oxygen requirement during transfusion they must be assessed for a pulmonary complication of transfusion or an allergic reaction.

This flow chart explains how the potential types of reaction can be differentiated.

Allergic reactions might be associated with a rash or facial swelling, and improve with anti-allergy medications.

Pulmonary oedema can be a feature of TACO or TRALI. In TACO there are typically cardiovascular changes such as raised blood pressure or tachycardia. Improvement in respiratory status after giving a diuretic is most suggestive of TACO. A raised NT-Pro BNP can be a useful biomarker for TACO, though this may not be locally available.

### **Section 4**



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These are the criteria used to evaluate whether the reaction meets the haemovigilance surveillance definition of TACO. Acute or worsening respiratory compromise and/or acute or worsening pulmonary oedema must be present with additional evidence of cardiovascular system changes, fluid overload or a relevant biomarker such as raised NT-Pro BNP. A minimum of three criteria must be met. Cases not meeting these criteria are assessed for TAD, TRALI or respiratory symptoms associated with an allergic reaction.

### Section 5

TACO is the leading cause of death and serious harm in blood transfusion. There has been an upward trend of cases reported and this probably reflects improved awareness and reporting practices. TACO is still believed to be significantly under-reported.

### Section 6

The majority of TACO-related deaths are probably or possibly preventable with improved practice. Around 80% of cases reported to SHOT have at least one identifiable risk factor for TACO.

### Section 7

The TACO risk assessment is useful to use as a pre-transfusion checklist. This was developed through analysing data reported to SHOT which identified common themes in patients who developed TACO. When assessing a patient's risk of TACO think HEART, LUNGS, FLUID.

Does the patient have an existing diagnosis of heart failure or aortic stenosis?  
Are they on a regular diuretic?  
Do they have severe anaemia?

Is there pre-existing pulmonary oedema, or respiratory symptoms of undiagnosed cause?

Has the patient received intravenous fluids in the previous 24 hours, or is there a positive fluid balance?

Do they have peripheral oedema, low albumin, or significant renal impairment?

All of these factors increase the risk of TACO.

If risks for TACO are identified, the risk of continuing with transfusion must be balanced with not transfusing blood. Sometimes it is safer to wait if temporary risk factors can be resolved. At other times the risk of withholding blood is greater than the risk of TACO.

This assessment provides an opportunity to individualise blood transfusion so the patient's needs are met while reducing their risk of developing TACO. This should be embedded into the transfusion process.



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### Section 8

A number of simple steps can be taken to reduce TACO risk.

Ensure the patient receives an appropriate dose of red cells to meet their haemoglobin target. In non-bleeding patients this can be done using a manual calculation or an on-line calculator based on the patient's weight. In many cases reported to SHOT there is evidence of over-transfusion.

Transfuse a maximum of a single unit of red cells at a time and review the patient's symptoms and haemoglobin level before prescribing more.

The transfusion laboratory scientific staff can have a role in checking that there is an appropriate indication for transfusion and that the volume requested is appropriate.

Consider giving a prophylactic diuretic if there are no contraindications.

Nursing staff administering the transfusion have a key role in monitoring the fluid balance and vital signs, particularly oxygen saturation. A falling oxygen saturation is an early warning sign of pulmonary oedema. Nurses should be made aware if a patient has a high TACO risk so they can monitor more closely – and so act quickly if there is any deterioration.

### Section 9

Every case of TACO should be used as a learning opportunity, to improve practice and reduce risks for other patients.

This is a structured TACO review tool which should be used after any case of TACO. It helps to evaluate systems and identify opportunities for best practice. This will ensure the optimal safety measures are in place to help protect patients from TACO.

### Section 10

#### In summary:

- TACO is the leading cause of transfusion-related death and serious harm
- In many cases TACO is preventable
- Performing a pre-transfusion risk assessment in the form of a checklist helps identify patients at risk and provides an opportunity to put risk reduction measures in place
- Early recognition of TACO is essential, so know the symptoms and signs and suspect TACO in any patient with new or worsening respiratory symptoms during or after transfusion
- Every case should be evaluated with a root cause analysis and the learning points used to improve systems and practice
- All suspected cases should be reported to SHOT and SABRE

### Section 11



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Useful resources