SHOT Bite No. 35
Learning from SHOT administration set errors

SHOT Serious Hazards of Transfusion

April 2026

Introduction

Intravenous (IV) fluid administration sets (known as giving sets) are used during fluid administration to deliver IV solutions safely and effectively. Blood administration sets are specifically designed to facilitate the safe delivery of blood components during transfusion.

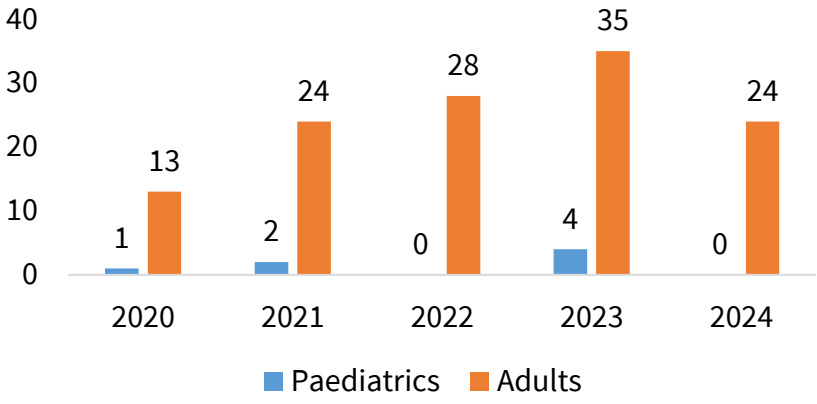
To ensure the safe administration of blood, the correct equipment must be used. Errors involving the use of incorrect administration sets during transfusion are considered serious adverse events and must be reported to SHOT.

Where there is no patient harm, such incidents are reported under the Handling and Storage Errors (HSE) category. When patient harm occurs due to the error, they are accepted under the relevant Avoidable, Delayed or Undertransfusion (ADU) category.

SHOT Data

- Data analysis of HSE errors from 2019-2024 shows a total of 131 reports where the incorrect administration set was used (Figure 1).
- These events mostly occurred in adults (n=124)
- The incorrect administration sets were mainly used for red cells (n=104), and platelets (n=23)
- There may be an element of under reporting where issues are resolved locally and not escalated to incident reporting systems

Figure 1: SHOT HSE errors classified as incorrect administration set 2020-2024



A further 2 cases were reported under the ADU categories

- One case was under transfusion of a neonate during exchange transfusion. The incorrect administration set impeded the flow of blood, resulting in hypovolaemic shock with cardiac arrest and required ventilation
- The second case resulted in delayed surgery for an elderly patient in their 90's. The blood had not transfused as expected prior to surgery due to the use of an incorrect administration set

Themes and contributory factors

Lack of blood transfusion administration set availability → Inadequate training or competency assessment in administering blood components → Incomplete training and knowledge cascade when administration set manufacturers change → Fluid and transfusion administration sets looking similar and having similar packaging

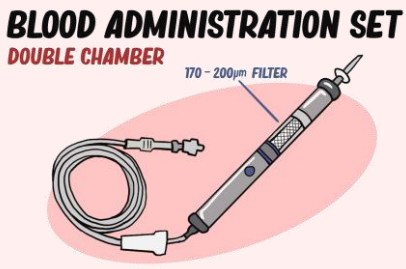
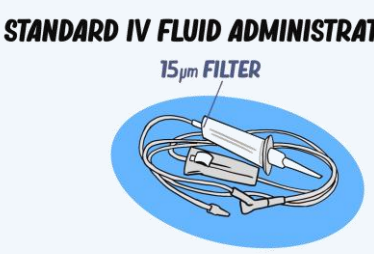
Information on blood administration set selection

- Blood components must be administered using a dedicated blood administration set
- Blood administration sets contain a 170–200µm (micron) filter which:
  - Removes clots and particulate matter
  - Allows red blood cells (RBCs) and other blood components to pass freely
- Standard IV fluid administration sets typically have a 15µm filter and are not suitable for blood component transfusion because:
  - The smaller pore size can cause mechanical damage to red cells, leading to haemolysis
  - Flow may be restricted, particularly during rapid transfusion
- Using inappropriate administration sets can compromise transfusion efficacy and patient safety
- Blood administration sets vary by manufacturer, so staff must understand the specific equipment used within their trust
- Standard IV administration sets may be appropriate for some blood products (see Table 1), but not for cellular components such as red cells
- All administration sets must be CE/UKCA marked and used within their expiry date

Actions for staff administering blood

- ✓ Always use a dedicated blood administration set when transfusing blood components
- ✓ Check the filter size (170–200 µm) before commencing transfusion
- ✓ Use a blood administration set for all cellular components. Standard IV administration sets may be used for certain blood products only (see Table 1)
- ✓ Familiarise yourself with locally used blood administration sets, including design and function
- ✓ Refer to local guidance to confirm which administration sets are appropriate for specific situations
- ✓ Check CE/UKCA marking and expiry date before use

Table 1: Guidance on administration set use for blood components in adults

Administration Set Type	Standard blood administration : 170–200µm filter	Standard intravenous fluid administration :15µm filter vented
Blood component or product	• Red cells • Platelets • Fresh frozen plasma (FFP) • Granulocytes • Cryoprecipitate	• Human albumin solution (HAS) • I/V Immunoglobulin
Special note	Platelet administration sets have a 170-200µm filter but have a smaller priming volume and narrower bore. Platelet administration sets can be used in line with your organisation policy.	Most standard administration sets have a 15µm filter. Please check local standard administration sets and filter presence.
Appearance	**Blood component administration set**	**IV fluid administration set**
 		 Scan or click here to view larger illustrations including platelet administration set

MHRA Yellow Card reporting

The MHRA would advise users to report adverse events and concerns around packaging or aspects of product design which could increase the chance errors. Report these at: https://yellowcard.mhra.gov.uk/

Further resources

- https://www.shotuk.org/resources/pre-administration-blood-component-checking-process/
- https://www.shotuk.org/resources/safe-transfusion-practice-transfusion-checklist/
- https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/36614/blood-essentials-v20-june-2025.pdf
- rtc-sw_news-jan_3 (11).pdf

We would like to acknowledge valuable input from the NHS Blood and Transplant Patient Blood Management team