

Receiving and Administering A Blood Component



NAME OF CANDIDATE:

JOB TITLE:

NAME OF SUPERVISOR:

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DATE COMPLETED:

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Introduction

In November 2006 the National Patient Safety Agency (NPSA) released Safer Practice Notice 14. This document charges all NHS and independent sector healthcare organisations “to implement an action plan for competency-based training and assessment for all staff involved in blood transfusions”. In addition to passing the competencies, practitioners need to be able to prove that they have undertaken some formal training in handling blood and transfusing blood components.

This workbook has been designed to guide you through the relevant information to enable you not only to pass your blood transfusion competencies, but also to have a more in-depth understanding as to the rationale behind these competencies. It is vital that you undertake your own research in order to be able to complete the workbook. Suggested learning resources can be found in the reference section at the end of the booklet. There are alternatives to demonstrate competency-based training; you will need to discuss the options available in your Trust with your Transfusion Practitioner, or other person for the responsibility for Blood Transfusion training.

All workbooks are to be marked; the results will be fed back and will also be held centrally. Candidates will not be eligible to undertake the competency assessments until the workbook has been completed and a pass rate of 90% or more achieved. Candidates who fail to achieve 90% will be shown where they have gone wrong, and will have to re-submit the workbook.



Although enormous effort is made to maximise the safety of blood components, they are however not 100% safe. Additionally blood donors are a limited resource. Avoiding blood transfusion if possible is the safest option; every effort to minimise the

risks associated with blood transfusion should be taken, even if this requires extra work and forward planning.

The British Committee for Standards in Haematology (BCSH) provide guidelines for the appropriate use of blood components in children and adults. These may be accessed via the website: www.bcshguidelines.com.

1) Legislation, Policy and Good Practice

Blood Safety and Quality Regulations 2005



Two European Union Blood Safety Directives have been transposed into UK law through the Blood Safety and Quality Regulations 2005.

The regulations set standards for quality and safety for the collection, testing, processing, storage, and distribution of human blood and blood components. They represent a more rigorous and formal approach to blood transfusion safety than any previous national initiatives. The regulations stipulate that all healthcare providers who handle blood components are monitored by a competent authority. For the first five years this is the Medicines and Healthcare Products Regulatory Agency (MHRA).

What do the regulations mean to clinical staff?

- Every unit of blood must be traced from donor to recipient, and records kept for 30 years.
- The responsibility for proving traceability (or final fate) lies with the person administering the blood.

- You must be aware that it is a legal requirement to report any adverse events or reactions to the competent authority. The reporting mechanism is known as Serious Adverse Blood Reactions and Events (SABRE)
- Ensure that you know the correct storage requirements for blood components and return any units that will not be transfused to the Blood Bank within 30 minutes.
- If you collect blood components you must have documented evidence of up-to-date training and competency assessment.
- It is a statutory requirement to ensure full documentation is recorded for every single blood component transfused, including: Blood Bank Register (or electronic equivalent), Observation Chart, Blood Prescription Chart, Nursing and Medical Notes.

There are other national drivers that are designed to promote safety in practice with blood transfusions. The Chief Medical Officer (CMO) has published two blood transfusion Health Service Circulars (HSCs 1998/224 & 2002/009), which stipulate safety initiatives, e.g. basing local policies on national guidance and ensuring training for all clinical staff involved with blood transfusion. The CMO also has a National Blood Transfusion Committee that constantly monitors and recommends changes to practice. Data on blood transfusion safety is also collected by SHOT (see page 8) and the National Patient Safety Agency. There may well be further HSCs issued by the CMO related to blood transfusion in response to new data.

Q1. *Where is the blood administration policy kept in your clinical area?*

A.

(1)

2) Preparing the patient

Consent

At present, there is no legal requirement in the UK to gain formal written consent for transfusion of blood components. However given that a blood transfusion is a treatment modality with potentially serious adverse patient outcomes, there is an ethical obligation to obtain patient consent to a blood transfusion wherever possible.

The indication for the blood transfusion should be discussed with the patient, and due attention given to the risk / benefit analysis and whether there are any alternatives. This discussion gives the patient a clear and contextual understanding of the risks of transfusion (the risks will vary depending upon the patient's condition). The only means of proving that verbal consent has been given is to record this discussion in the clinical notes.

Q2. What can you use to back up any verbal information given to the patient?

A.

(1)

3) Prescribing Blood Components

Responsibilities and Records

It is a medical responsibility to prescribe blood components.

Before any blood component is administered, the indication for transfusion, type of blood component, and the prescriber's signature must be documented in the patient's medical record. Where it has been possible to gain consent this must also be documented, as described in the previous section.

Accurate documentation is essential to safe patient care. It enables effective communication between healthcare professionals, audit of practice and assists with the investigation of adverse effects of transfusion.

You need to ensure that the prescription is appropriate, i.e. that the patient is not being unnecessarily transfused, or that there is no suitable alternative.

Check if the patient has been previously transfused and experienced any adverse reactions. Be certain to communicate any special transfusion requirements (e.g. irradiated, CMV negative or HbS negative) to the transfusion laboratory and to clinical staff. Transfusing the incorrect component may pose serious consequences for the patient.

The prescription should be completed in full, e.g. patient minimum dataset, full date, prescriber's name signed and printed, rate of transfusion, and additional medications. Medical staff are responsible for completing the prescription; nursing (midwives and ODP) staff are responsible for challenging incomplete prescriptions.

Q3. Give 2 examples of patients that require:	
a) Irradiated blood	(1)
	(1)
b) CMV negative blood	(1)
	(1)

Q3c. What is meant by the term “patient’s minimum data set” that should be on the prescription and wristband?
A.
(4)

4) Safe Practice

SHOT was set up in 1996 and can be seen as the first step in taking a national approach to monitoring safety in blood transfusion; in particular, errors and untoward effects of blood transfusion in the United Kingdom. It is a reporting scheme that has become highly valued by many Healthcare Professionals.



Cumulative data collected by SHOT shows that from 1996 to 2005, 46 patients have died as a direct result of receiving a

blood transfusion. Cause of death was also 'probably' attributable to blood transfusion in 13 patients, and 'possibly' attributable in another 46 patients. Additionally, major morbidity was attributable in a further 296 cases.

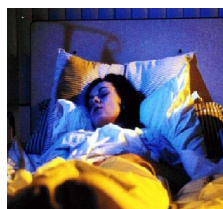
In 2005, 485/609 (79.6%) of reports were categorised under the umbrella heading of Incorrect Blood Component Transfused, all of these incidents happened as a direct result of human error.

Transfusing at Night

The 2005 SHOT (Serious Hazards of Transfusion) report states:

'Available data indicates that blood administration and pre-transfusion testing outside of core hours are less safe and should be avoided unless clinically essential'.

Safer care can be given to patients who are not acutely unwell or significantly symptomatic by avoiding overnight transfusion.



Risks arise from reduced staffing levels at night (medical, nursing and laboratory) to monitor patients and manage complications. Additionally, visual observation of the patient at night is considerably impaired due to lower light levels. Every effort should be made to promote patient's normal sleep pattern (night time for most people) and, patients just woken up from sleep cannot give you an accurate description of how they are feeling.

Patients who are acutely unwell exacerbated by anaemia or requirements for other blood components should be transfused without delay. The urgency of every patient's blood transfusion should be discussed with the clinical team.

Patients receiving a blood transfusion should be observed throughout the transfusion episode, therefore isolated side rooms should be avoided whenever possible.

Infection Control

The use of aseptic technique, observation of universal precautions, and product sterility are required in all infusion procedures (Standards for Infusion Therapy, RCN 2005). You must be familiar with your Trust's infection control policy.

Q4a. *How would a adverse blood transfusion event that occurred in your clinical area be reported to SHOT or SABRE if appropriate?*

A.

(2)

Q4b. *Give 2 examples of when is it appropriate to transfuse a patient overnight.*

A.

(2)

5) Blood Administration Equipment

Ensuring the necessary equipment is prepared before the blood component is collected is a vital part of transfusion safety. Some equipment is specifically required to prepare the patient; other equipment is more to do with the mechanism of transfusing blood components.

Q5a. *List 4 items of equipment required to transfuse a blood component from the bag into the patient's blood stream.*

A.

(4)

Q5b. *Describe the difference between an administration set designed for infusion of crystalloids and an administration set for blood components.*

A.

(1)

Q5c. *When should the blood component administration set be changed?*

A.

(3)

Q5d. *For non urgent transfusions what size of cannula should be used?*

A.

(1)

Blood Warmers

Rapid infusion of cold fluids (> 100 ml/minute) has been reported to cause potentially lethal cardiac arrhythmias. Infusion through a central catheter terminating in or near the right atrium may increase the risk. Only CE-marked commercial blood warmers should be used and the manufacturer's instructions must be strictly followed. Blood must never be warmed in an uncontrolled way (e.g. in a microwave, in hot water, or on a radiator).

6) Infusion Times

Adult Patients

Most prescriptions for blood components for adults are written to be transfused over a stated period of time, but occasionally an infusion rate may be specified.

The infusion time (or rate) will depend on the individual patient's clinical parameters at the time of prescribing. It is vitally important that changes to the patient's clinical parameters are reported and documented promptly, and any necessary changes to the infusion time are made.



Use of a suitable infusion pump, for non-urgent red cell transfusions, is preferable to gravity feed systems because it ensures greater control of the flow of blood.

Q6a. *When a blood component is collected from controlled storage conditions, how soon should the transfusion commence?*

A.

(1)

Q6b. *If it has not been possible to commence the transfusion within the time stated above, state what action you should take and why?*

A.

(2)

Q6c. *For non-urgent transfusions, how many single blood components should be collected for a patient at any one time?*

A.

(1)

Adult Infusion Rates

Q6d. *Complete the following table:*

(4)

Component	Duration of infusion in hours
Red cells once they have been removed for storage?	
Platelets	
Fresh Frozen plasma (FFP) – usual duration	
FFP – maximum time	

Q6e. *Identify one risk with rapid transfusions to frail elderly patients.*

A.

(1)

Neonates (Questions 6f and 6g for RSCNs and paediatric ODPs and medical staff only).

Q6f. Complete the following table: (8)		
Component	Volume (mls/kg)	Infusion Rate
Red cells (for top up transfusion)		
Platelets		
FFP		
Cryoprecipitate		

Infusion rates and times are critically important. (Answers found at www.transfusionguidelines.org.uk).

Infants and Children

Q6g. Complete the following table: (8)		
Component	Volume	Infusion Rate
Red cells		
Platelets		
FFP		
Cryoprecipitate		



Notes: These figures are only for guidance, and will depend on the exact volume given and clinical status of the patient. For neonates and children, it is important that the exact volume is prescribed, as well as the time over which it should be given.

7) Checking the Blood Component Pre-transfusion



If your clinical area is able to utilise the portering services to collect blood components, check the components on arrival, in case the porter needs to return to the Transfusion Laboratory. If your Trust uses a collection slip, sign for receipt.

If the blood component has been collected by a member of staff from the clinical area, there is no need to check the component on arrival. The most important check is the final bedside check; despite the number of previous checks that may have been made.

Q7. *What patient details does the staff member collecting the blood component need to take with them to blood bank?*

A.

(4)

8) Final Bedside Check before Administration

The final check of a blood component before being administered to a patient **must always take place at the patient's side.**

The SHOT report for 2005 found that: *“There were 169 IBCT (Incorrect Blood Component Transfused) reports in which an incorrect blood component was transfused due to a bedside administration error”.*

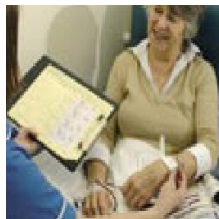
Blood transfusion policies between different healthcare organisations vary, but all require that at least one registered healthcare professional is involved with the final check and in putting up the blood transfusion.

The final bedside check consists of:

Step 1 – Right Patient

Step 2 – Right Blood Component

(This is clearly defined in table1).



If there are any mismatches or errors in any of the information **do not transfuse until fully resolved.**

In order to be thorough, it is recommended to adopt a routine for ensuring that all necessary information is checked before the blood is administered. It is also recommended that a clear and crisp style is adopted for this purpose, and that all the items are read out aloud.

Right Patient

The first step consists of correctly identifying the patient with the full minimum dataset and then ensuring that all sources of this information (as outlined in table 1, page 23) match.

Right Blood Component

The second step consists of checking the information that relates directly to the blood component with the Patient Label attached to the blood and the label applied directly to the blood product bag by the National Blood Service.

a. Positive Verbal identification

As far as possible, the patient should always be asked to “positively” identify themselves; this is required at all stages of the blood transfusion process and is vital to the final checking procedure. For orientated patients the minimum is first name, surname, and Date of Birth (DOB), some patients may be able to supply more information that may be relevant to the transfusion process.

b. Wristbands

All patients receiving a blood transfusion must have an accurate and clearly legible wristband; the only exceptions will be listed in your Trust’s Patient Identification Policy where the extra precautions required will be stated.

(For regularly transfused patients, your Trust may have introduced patient photo identification cards; these may replace the wristband, but do not replace positive verbal identification).

c. Compatibility

The healthcare professional responsible for administering the blood transfusion must satisfy themselves that an ABO & Rh D status compatible blood component has been issued by the Blood Transfusion Laboratory before commencing the transfusion.

d. Blood Component

The blood component itself should be inspected, to make sure that there are no signs of damage to the bag, no evidence of infection in the product (turbidity, colour, gaseous bubbles, or large clots).

Donor no

Component Type

ABO and RhD

Expiry Date

Label details:

- Donor no: G052 505 176 004
- Component Type: PL1
- ABO and RhD: A Rh D POSITIVE
- Expiry Date: 27 Apr 2005
- Volume: 275.0 ml
- Additional Information: D +, C +, E -, c -, e +
- REF: R8477
- Date Bled: 23 Mar 2005

e. Blood Prescription Chart

Check the prescription contains the patient's minimum data set and is clearly and accurately completed; including the Dr's signature and that all special requirements are stated. It is also important to check whether the patient has been prescribed a pre-medication before commencing the transfusion.

NB. Medication should never be added to a blood component

Q8a. <i>Identify the greatest risk of: -</i>	
<i>Not performing the Final Check at the patient's side</i>	(1)
<i>State the worst potential outcome of this risk</i>	(1)

Q8b. <i>Why has the NPSA stipulated that the compatibility form and patient notes must not be used as part of the final check by the patient's side?</i>	
A.	(1)

Q8c. <i>Describe which members of staff are permitted to perform the Final Check of blood products within your Trust in accordance with local policy.</i>	
A.	(1)

Q8d. What does 'Positive Verbal Identification' mean and what 3 items of information would you expect to verify with the patient?	
A.	(4)

Q8e. Some Trusts no longer issue the blood compatibility form to avoid the risk that it is still used as part of the final bedside check. Can you name one advantage to clinical staff of the compatibility form still being issued, how could the form be filed to avoid it being used as part of the final bedside check?	
A.	(2)

Q8f. Refer to your Trust's policy and explain how you would identify the following groups of patients:	
• Unconscious patients	
• Patients unable to verbally identify themselves	
• Unknown patients	(6)

Q8g. *List the actions you would take if only one piece of information, e.g. a single letter or number was found to be different between any of the items listed in table 1.*

A.

(2)

Final Bedside Check before Administration

Table1

	Verbal response	Wristband	Blood prescription chart	Patient label attached to component	NBS label stuck directly to component
Step 1 Right Patient	First name	First name	First name	First name	N/A
	Surname	Surname	Surname	Surname	
	DOB	DOB	DOB	DOB	
		Unique ID no.	Unique ID no.	Unique ID no.	
			Special requirements Pre-medications	ABO &Rh D Ward	
Step 2 Right Blood	N/A	N/A	N/A	ABO & Rh D	ABO & Rh D
				Unique donor no. Special requirements	Unique donor no. Special requirements
					Expiry date

9) Observation Schedule

The BCSH released comprehensive guidelines in 1999 called, *'The administration of blood and blood components and the management of transfused patients'*.

The observation schedule applies to every single component transfused.

It is recommended that all blood transfusion observations be recorded on one single patient observation chart, in order to detect a change in the trend. The blood transfusion observations should be clearly identified, dated, and timed as with any entry in the patient's documentation.



Patient's who are unconscious or confused require more frequent observations - at least hourly.

a. Early Warning Score

If your Trust uses an Early Warning Score (EWS) system, this should also be completed in full.

EWS Systems have been devised to assist in the recognition of the deteriorating patient. They assign a numerical value to an abnormal vital sign. When the total score of all the key vital signs are added together; this gives an indication of the severity of the patient's condition. The EWS also triggers appropriate medical assistance to be sought. The higher the score, the more senior review indicated, and within a shorter time period. The systems used can vary from hospital to hospital, but the fundamentals remain the same. The EWS can give an early indication of change and allow you to track patients' progress.

b. The first five minutes

It is good practice to spend the first five minutes with the patient at the start of the transfusion to identify early signs of an anaphylactic, allergic, or an Acute Haemolytic Transfusion Reaction.

This time can also be used to remind the patient to inform the ward staff if they feel in any way unwell or different throughout the transfusion. Also ensure that all documentation relating to the transfusion has been clearly completed (Blood Prescription Chart, Observation Chart, and mechanism for blood traceability).

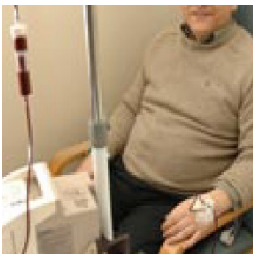
c. Patients with a fever

There is misunderstanding around patients who present with a fever prior to receiving a blood transfusion.

Having a fever is not a contra-indication to a patient receiving a blood transfusion; however, if the fever is new, it is advised that medical advice should be sought before the transfusion commences in case treating the fever is deemed to be a higher priority than the transfusion.



d. Care during transfusion



Observe the patient throughout the transfusion, regularly asking the patient if they feel well. Trust not only the patient's response, but also your instincts as to how the patient appears and whether they are changed from how they are normally. Even greater care is required for patients

who are unconscious or confused because they cannot reliably inform you of any untoward symptoms. These patients should have a more frequent observation schedule.

If there is any cause for concern the transfusion **should be stopped** and the patient's signs and symptoms investigated, calling on medical help if necessary.

e. Completing a Blood Transfusion

A full set of observations including EWS is required on completion of every single component.

For acutely unwell patients, it is particularly important to be able to re-establish a baseline after a transfusion, so that further untoward symptoms can be more likely attributed to the possible cause, e.g. would a fever be due to the blood transfusion or a new infection, could an allergic reaction be due to the blood transfusion or a new drug. Dispose of all equipment safely in accordance with your Trust's sharps and infection control policy. Dispose of empty blood component bags in accordance with your Trust's transfusion policy.

f. Documentation

It is vitally important to record the start and end time of each blood component on the blood prescription chart. This is the proof that the transfusion was given in the correct time. The duration of the transfusion is helpful for monitoring fluid balance (essential for patients with renal impairment).



The transfusion should be fully described in the evaluation, including any reported or observed symptoms and what action

was taken. The patient's future safety depends on accurate documentation of blood transfusion episodes.

Q9a. *Briefly state the correct observation schedule for every blood component transfused to patients in your Trust.*

A.

(4)

Q9b. *What does your Trust's blood transfusion policy state about the observations required for unconscious or confused patients?*

A.

(1)

Q9c. *What action would you take if the baseline observations showed that the patient had a new fever?*

A.

(2)

Q9d. *How would you describe the symptoms of a transfusion reaction to your patient and give one example?*

A.

(2)

Q9e. *Why is it important that a full set of observations is completed at the end of every transfused blood component?*

A.

(1)

Q9f. *Describe the recommended practice in your Trust for disposing of empty blood component bags and giving sets.*

A.

(2)

Q9g. *Why it is vitally important to ensure continued patient safety by keeping all the documentation relating to the blood transfusion accurate and completely filled in?*

A.

(2)

10) Traceability

All staff who are deemed competent to administer blood components must be aware of their responsibilities under the Blood Safety and Quality Regulations 2005, including assisting the transfusion laboratory in proving the final fate of the blood components issued (Traceability).

At the end of the transfusion the appropriate action for informing the laboratory of the final fate of the blood component must be completed.

Q10a. *Describe the traceability system in place in your Trust. Who takes the responsibility in the clinical area to ensure that traceability (final fate) has been proven?*

A.

(2)

Q10b. *How long does your Trust legally need to keep traceability records for?*

A.

(1)

11) Management of Transfusion Reactions

As with all areas of practice in healthcare, confidence grows with continued learning from experience. Management of transfusion reactions is one such area, especially as they are not seen every day. This is more significant for clinical settings that transfuse blood components infrequently.

However, safe patient care can be delivered as long as the staff involved take a sensible approach. When a reaction is suspected, the transfusion should be stopped. Take a full set of observations and seek medical advice.

For cases of suspected Febrile Non-Haemolytic Transfusion Reaction and Mild Allergic Reactions, the transfusion should be restarted and completed after the appropriate intervention.

For cases of suspected Acute Haemolytic Transfusion Reaction, Anaphylaxis or severe allergic reaction, the transfusion should:

- **Not** be restarted.
- Managed by senior medical team.
- Transfusion laboratory informed immediately.

When preparing to administer a blood transfusion it is good practice to remind yourself of the different signs and symptoms of a transfusion reaction. These must be discussed with the patient at the start of the transfusion, making sure you use words to describe potential symptoms that your patient will understand.

Q11a. Which department in the hospital must be informed of suspected blood transfusion reactions and why?

A.

(2)

Q11b. What symptoms may a patient experience if they are having a transfusion reaction?

A.

(10)

Q11c. Describe where you can find information in your clinical area that you could access quickly which will guide you through the correct management of a transfusion reaction.

A.

(1)

Febrile Non-Haemolytic Transfusion Reaction

<i>Symptoms</i>	<i>Action</i>
<ul style="list-style-type: none"> ▪ <i>Fever, generally < 1.5°C from baseline.</i> ▪ <i>May have slight increase in pulse and respirations.</i> ▪ <i>Generally, the patient feels well despite the fever.</i> 	<ul style="list-style-type: none"> ▪ Stop Transfusion ▪ Get Medical Assistance ▪ Administer Paracetamol ▪ Re-start transfusion within 30 minutes of stopping at a slower rate ▪ Monitor patient more frequently to record response to medication

Mild allergic reaction

<i>Symptoms</i>	<i>Action</i>
<ul style="list-style-type: none"> ▪ <i>May be red/ flushed</i> ▪ <i>Reports itching</i> ▪ <i>May show urticaria or hives</i> 	<ul style="list-style-type: none"> ▪ Stop the transfusion ▪ Get Medical Assistance ▪ Administer IV Chlorphenamine 10mg ▪ Re-start within 30 minutes of stopping at a slower rate ▪ Observe more frequently

Anaphylaxis/Severe Allergic Reactions

<i>Symptoms</i>	<i>Action</i>
<ul style="list-style-type: none"> ▪ <i>Hypotension</i> ▪ <i>Bronchospasm</i> ▪ <i>Angiodema</i> ▪ <i>Periorbital and Laryngeal Oedema</i> ▪ <i>Nausea and Vomiting</i> ▪ <i>Erythema</i> ▪ <i>Urticaria</i> ▪ <i>Conjunctivitis</i> ▪ <i>Dyspnoea</i> ▪ <i>Chest Pain. Abdominal Pain</i> 	<ul style="list-style-type: none"> ▪ Stop transfusion ▪ Get Medical Assistance, pull crash buzzer, treat as Medical Emergency ▪ Take down blood unit and giving set, return intact to transfusion laboratory ▪ Inform transfusion laboratory, send any patient blood samples as requested ▪ Slowly administer IV Chlorphenamine 10mg ▪ Commence O₂ ▪ Give Salbutamol nebuliser ▪ If severe hypotension, give adrenaline 0.5ml of 1:1000 (i.e. 0.5mg) IM

Acute Haemolytic Transfusion Reaction

<i>Symptoms</i>	<i>Action</i>
<ul style="list-style-type: none"> ▪ <i>Pain at cannula site</i> ▪ <i>Feeling of something wrong, or apprehensive</i> ▪ <i>Flushed red</i> ▪ <i>Agitated</i> ▪ <i>Pain in abdomen, flank, or chest</i> ▪ <i>Haemoglobinuria</i> ▪ <i>Oozing from wounds or puncture sites</i> ▪ <i>Fever normally > 1.5°C above baseline</i> ▪ <i>Hypotension/hypertension</i> ▪ <i>Increased pulse and respiration rate</i> 	<ul style="list-style-type: none"> ▪ Stop Transfusion ▪ Get Medical Assistance ▪ Take down blood unit and giving set, return intact to blood transfusion lab ▪ Inform blood transfusion laboratory of patient's symptoms; send any patient blood samples as requested ▪ Commence IV Saline infusion ▪ Maintain urine output >100ml/hr ▪ Give furosemide if urine output falls/absent

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