Blood Administration
This module will demonstrate:

- How easily a mistake can occur.
- The Blood Product Pick-Up Request form.
- The Blood Administration Record.
- What actually occurs during a transfusion reaction.
- How following policy can prevent human error from turning into human tragedy.
A Nurse’s Story:

It was a busy trying night. The call bell was going off constantly. I was going back and forth trying to take care of everything, and I had a patient who was supposed to get blood. I was rushed and interrupted repeatedly.

I filled out the blood pick up slip, stamped it, and stuck in my pocket. About 2 hours later, I finally made it to the blood bank to pick up the blood.

I went back to the floor, got another nurse to verify the transfusion with me, and tried to hang the blood. We started over on the blood administration from four times and because of this we both missed checking the patient’s armband.

I monitored the patient for 15 minutes and he had begun complaining of numbness in his hands. I discontinued the blood and called the blood bank to report a possible reaction. The blood bank told me that they had not released blood for my patient. My heart stopped. I thought because of my mistake the patient could die.
Can you identify with any of these statements?

- I am interrupted repeatedly.
- We are short staffed.
- The call bell goes off nonstop.
- Something usually seems to be going on with all of my patients.
Blood administration is a high risk procedure... no matter how often you do it!
A Nurse’s Story (part 1):

I had probably given blood 100 times before without a problem. I had a post-surgical patient, Mr. Jones, who was supposed to get blood. The lab called with critical H&H. I notified the doctor and was told to transfuse the blood. I had seven patients that night and there was something wrong with all of them. I had one getting a potassium bolus who had a problem with his IV burning, so I had to stop it and flush it. Then I had one getting ready for surgery. He had pulled the IV out, so I had to take care of that as well. The call bells were going off constantly and most of them were for my patients. It took me a couple of hours to get to the point where I could do the transfusion. When I went to get the stamp plate for the pickup slip, I saw Mr. Jones’ card and the call bell rang again; that distracted me. I picked up what I thought it was his card and stamped it. There was something going on with my other patient so I just stuck the pickup slip in my pocket to take care of the problem.
Blood Administration Steps

• The process of Blood Administration begins with Phlebotomy.

**HOWEVER**

• A blood sample **CANNOT** be drawn without verification of the patient armband.
Blood Administration Steps

• Phlebotomist or nurse draws the patient sample after verifying:
  • Patient Name
  • Medical Record Number

• Verify this information by clicking on the appropriate areas of the patient armband label.
Blood Administration Steps

• Information on the Phlebotomy Label must also be verified.

• The label should be completed and affixed at the bedside, and include:
  • Patient name
  • MR# (Unique Identification #)
  • Date sample drawn
  • Time drawn
  • Initials of the person drawing the sample
Patient Stamp Plate:

Nurse must verify the Blood Pick-Up Request Form with the Physician Order PRIOR to blood pick-up.
Blood Administration Steps

The Medical Receptionist (or person entering the physician’s blood order) completes the Blood Product Pick-Up Request Form at the time the order to give blood is entered.
Blood Administration Steps

The Medical Receptionist signs the Blood Product Pick-Up Request Form and adds it to the patient chart in front of the physician’s blood order.
Blood Administration Steps

The nurse verifies the Blood Product Pick-Up Request Form with the physician’s blood order, prior to going to the Blood Bank, then signs the form.
Blood Administration Steps

The person picking up the blood signs the Blood Product Pick-Up Request Form at the Blood Bank.
Blood Administration Steps

Incomplete or incorrect Blood Product Pick-Up Request forms will not be accepted at the Blood Bank. Blood Will not be released, and the person who came for the blood will be asked to return to the unit to complete a new Blood Product Pick-Up Request form.
A Nurse’s Story (part 2):

Dealing with patient’s calls took about 20 minutes, but I finally managed to find some time to pick up the blood. I never looked at the pickup slip again. I just went down to the blood bank. Normally if you go down to the blood bank with the wrong pickup slip, they tell you, “we don’t have blood order for this patient.”

As luck will have it that night, both Mr. Jones and the patient’s name on the blood pickup slip I brought had blood ordered. When I got back to the floor, I asked another nurse to check off for the transfusion. Something was going on so we couldn’t start the transfusion right that minute. Both of us finally got free. I looked at the blood in Mr. Jones’ room. We started the check off to start over calling out the numbers several times. Half way through checking the form, the other nurse got a page that just said “help now” with a room number. We didn’t know the patient was coding or fallen out of bed. So we stopped and responded. We were interrupted this way about four times. Some of the calls were things that could have waited if the medical receptionist could have evaluated what was going on. By the time we got to the bottom of the administration form, we couldn’t remember what we’ve checked or what we hadn’t. We both missed checking the patient’s armband. Just as we were finishing, the other nurse told me she had a unit to hang when I finished, and she left. I stayed with my patient and hung the blood. I told Mr. Jones what signs and symptoms to look for and report.
The issues in this nurse’s story were highlighted for you. But, there is also a policy that cautions nurses to notify the medical receptionist that a high risk procedure (like hanging blood) is taking place in a patient’s room in order to avoid nonemergency calls.
Blood Administration Record

We will now examine each part of the form.
Blood Administration Record

Patient Data Section: Verify data contained here against the patient armband.
Blood Administration Record

Blood Product Section: Verify data contained here against the blood tag and bag.
Blood Administration Record

Section A: Record the vital signs taken **immediately** prior to picking up the blood.
Blood Administration Record

Section B: Nurse 1 is the one holding the blood product. Nurse 2 is the one with the form.

I’m nurse 1 because I’m the one holding the blood product.

I’m nurse 2 because I’m the one with the form.
Blood Administration Record

Section B: The following section is a clinical simulator. Check the appropriate information as nurse 1 calls it out.

Hi, I’m Deanna Smith. I will be working with you on the administration record. I’m nurse 1 because I’m the one holding the blood product. You are nurse 2 because you are the one with the form. The patient name from the armband is David Jones.
A Nurse’s Story (part 3):

I stayed with Mr. Jones for 15 minutes. After several minutes, he said *his hands were cold and feeling numb*. I wondered if I was running the blood too fast, so I decreased the rate and stayed there with him. He said, “I don’t know what’s happening, but my hands are really numb and don’t know why it’s doing that.” At that point, I *stopped the transfusion because I wondered if he had some sort of reaction* to the blood. *I called his doctor* and he told me to get Mr. Jones some Benadryl and Decadron so I gave it to him as ordered and *called the blood bank.*
There are four basic human blood types or ABO blood groupings. These types are: A, B, AB, and O. There are two things that determine an individual’s blood type: the red blood cells and the blood plasma.
Blood Type or ABO Groupings

A person with Blood Type A has red blood cells with A antigens on the surface. And type A plasma contains antibodies against type B antigens.
Blood Type or ABO Groupings

A person with Blood Type B has red blood cells with B antigens on the surface. And type B plasma contains antibodies against type A antigens.
Blood Type or ABO Groupings

A person with Blood Type AB has red blood cells with A & B antigens on the surface.

And type AB plasma contains NO antibodies against type A or B antigens.
Blood Type or ABO Groupings

A person with Blood Type O has red blood cells with **NO** A or B antigens on the surface.

And type O plasma contains antibodies against type A and B antigens.
## Blood Type or ABO Groupings

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group AB</th>
<th>Group O</th>
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<td><img src="image" alt="B" /></td>
<td><img src="image" alt="AB" /></td>
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<td>Anti-A</td>
<td>None</td>
<td>Anti-A and Anti-B</td>
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<tr>
<td><strong>Antigens in red blood cell</strong></td>
<td>A antigen</td>
<td>B antigen</td>
<td>A and B antigens</td>
<td>None</td>
</tr>
</tbody>
</table>
Blood Type or ABO Groupings

Hemolysis or cell rupture occurs when incompatible blood types mix.

In example B below, type B blood is given to a patient with blood type A. This ABO incompatible blood combination can cause the patient to have an acute hemolytic transfusion reaction. In acute hemolytic transfusion reactions, incompatible blood types react against each other. Donated antibodies react with antigens on the patient’s red blood cells. The same reaction occurs between donor red cells and the patient’s antibodies. The red blood cells swell and hemolysis, red blood cell rupture, occurs.
Blood Type or ABO Groupings

The antibody red blood cell complexes come together, or agglutinate, in emboli form and result in hemolysis. The agglutinate and emboli formation causes damage to the body as it occurs.
Blood Administration Precaution

The type of hemolytic transfusion that is the most severe is ABO.

ABO reactions are serious, rapid (usually within 24 hours), and often fatal.

• Reactions may occur with as little as 10 to 15 cc of incompatible blood transfused.

• National statistics indicate that these reactions are most commonly caused (46%) by mistakes during blood administration.

• Failure to properly verify patient identification is often the problem. Patient armbands must always be checked before hanging blood.
Correct Blood Types

• An Rh+ patient can receive Rh- blood.
• Rh- means that there is no Rh antigen present on the red blood cells. However, Rh- patients cannot receive Rh+ blood.
• Exposure to Rh+ blood can cause Rh- patients to create anti Rh+ antibodies. The initial reaction would be a delayed hemolytic transfusion reaction and is generally not life threatening. But, a second exposure to Rh+ blood might cause a serious transfusion reaction.
• Appropriate cross-matches are very important as a single mismatch can be fatal.
Correct Blood Types

• O recipients have antibodies against A, B, and AB blood and exposure to Rh+ blood can cause Rh- patients to create anti Rh+ antibodies.

• O is “theoretically” the universal donor. Other antibodies/antigens can cause transfusion problems.
Correct Blood Types

- **AB+** patients have no antibodies against A or B blood and a Rh+ patient can receive Rh- blood.
- **AB+** is “theoretically” the universal recipient. This means they can, in theory, receive any blood type in an emergency situation.
- They possess no antibodies against the ABO blood groups, but other antibodies/antigens can cause transfusion problems.
Formation of Emboli

The widespread formation of emboli during acute hemolytic transfusion reactions causes life-threatening systemic complications. Highly vascular areas, such as the kidneys and brain, are particularly vulnerable.
Formation of Emboli

• Kidney damage is almost always seen in cases of acute hemolytic transfusion reaction.

• The kidneys function as the filtering apparatus for blood, thus they are abundantly supplied with blood.

• The emboli generated in a hemolytic reaction quickly lodge in the millions of tiny blood vessels.

• Blood supply to the kidney is gradually cut off.

• Healthy kidneys can quickly be severely, and in many cases irreversibly, damaged resulting in kidney failure and death.
Hemolysis & Emboli Migration

Hemolysis and emboli migration also cause similar damage in the brain and the respiratory system.
Hemolysis & Emboli Migration

There are 8 common signs and symptoms you can expect in a hemolytic transfusion reaction:

1. Chills and fever
2. Hemoglobinuria (blood in urine)
3. Back/flank pain
4. Shock (hypotension)
5. Decreased urine output.
6. Patient uneasiness
7. Excess bleeding at surgical site
8. Death
Correct Blood Types

• A small percentage of hemolytic reactions occur even when ABO matching is properly done.

• These reactions can occur because of bacterial contamination of blood product, hemolytic anemia, or infection.
Correct Blood Types

• Anaphylactic reactions can also occur during blood administration. These reactions are not due to blood incompatibility, but to patient hypersensitivity to some component of the blood product (preservative, chemical, etc).

• Itching and respiratory symptoms are common in these types of reactions.

• Hemoglobinuria is not usually seen in anaphylactic reactions.
TRALI

• Transfusion-Related Acute Lung Injury (TRALI) is an under-recognized and under-reported complication of transfusion of blood products.
• It is the third leading cause of transfusion-related deaths.
TRALI

• TRALI is characterized by the rapid onset of respiratory distress, pulmonary edema, hypoxia, and hypotension.

• Symptoms typically begin 1-2 hours after transfusion, are fully manifest within 1-6 hours, and are often indistinguishable from those of adult respiratory distress syndrome.

• Severity of symptoms can range from mild to severe. If treated properly, most patients with TRALI recover within 96 hours.
TRALI - Management

• Stop the transfusion and provide supportive measures, similar to those for acute respiratory distress syndrome, up to and including intubation and mechanical ventilation.

• Maintain hemodynamic status (e.g., saline infusion).

• Diuretics are usually contraindicated since the pulmonary edema in TRALI is not related to fluid overload or cardiac dysfunction, but to altered vascular permeability in the lungs.

• Notify blood bank and initiate the transfusion reaction procedure.
A Nurse’s Story (part 4):
I told the blood bank technician that I thought I had a transfusion reaction. She asked who was the patient. I told her it was Mr. Jones. She said I didn’t give out any blood for Mr. Jones. Well, who did you give it for? The technician said, “I gave it to Mr. Smith.” It hit me then, “Oh my!” I realized it was the wrong blood. We left out the one step that should have prevented the whole thing. We didn’t look at the patient’s armband. I told the nurse who had helped me hang the blood what was going on. We both felt awful. Our blood pressure went sky high. I went to sit down for a minute. I could’ve killed this man! I thought to myself, “you’ve got to deal with it. You’ve got to go check on this patient. Do whatever you can for it. You’ll have to deal with the rest later.” So that’s what I did.
Managing Transfusion Reactions

If your patient has a transfusion reaction:

1. Stop the transfusion immediately
2. Detach IV at hub, flush with 5-10 cc of NS, and infuse NS at KVO to maintain IV patency.
4. Initiate Transfusion Reaction Consultation Request Form N1486.
5. Check labels and orders to verify product given.
7. Phlebotomist (or nurse if instructed by Blood Bank) will draw post reaction sample.
8. Remain with patient; monitor vitals and I&O and administer meds or other supports as indicated.
A Nurse’s Story (conclusion):

It’s probably the worst feeling I ever had. As a nurse, you take care of that patient to make sure he gets better. If you do something that will harm the patient, well, I can’t even explain the feeling. It was a wakeup call for me and for my department. We’ve been working for so long at a crazy pace. I know we’ve said “there’s no way to follow every detailed step when there’s so many things to do.” But now we know how important following procedures is no matter what is going on. Just take the time. Now, when I transfuse blood, I asked the medical receptionist to hold all non-emergency calls. I am very thorough with the check list and I can’t check the armbands too many times.
TEST

http://w3.mccg.org/IOTA/test-blood-admin.asp