The Joint Commission

Sentinel Event Alert

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Blood Transfusion Errors: Preventing Future Occurrences

Since the Joint Commission began tracking sentinel events more than three years ago, the Accreditation Committee of the Joint Commission's Board of Commissioners has reviewed 12 cases related to transfusion errors. For each of the events reviewed, a root cause analysis was completed.

> "There should be blue ribbon panels set up to find optimal ways to develop a system for patient identification."
>
> James B. Battles, Ph.D., co-principal investigator, a medical event reporting system for transfusion medicine

Ten of the cases resulted in patient deaths while in two of the cases the patients recovered. Also, 11 of the cases were hemolytic reactions, while one was an infectious reaction. Eleven of the transfusion reactions took place in a general hospital with eight occurring in high-risk areas: the operating room, emergency room or intensive care unit, or during resuscitation. One of the 12 cases was in a long term care organization.

Incomplete patient/blood verifications were identified as at least one of the causes of eight of the 12 cases. Three of the 12 cases involved the handling or processing of blood samples or blood units for more than one patient at the same time in the same location. In all but one case (contaminated platelets), there were multiple failures to follow established procedures, usually involving the verification of patient identity and correct blood unit for that patient.

The Joint Commission learned of eight of the 12 cases through self-reporting. Three events were reported by state or federal regulatory agencies, and the Joint Commission learned about one case through media coverage.

Risk Factors

The processes involved in blood transfusion exhibit virtually all of the factors recognized to increase the risk of an adverse outcome:

- Variable input (The patients have different blood types.)
- Complexity (This includes the technical aspects of crossmatching as well as administering and monitoring the effects of blood.)
- Inconsistency (Despite efforts to clearly define procedures within a hospital, there is no standardization across all hospitals.)
- Tight coupling (When steps in a process happen so closely together, if there is a failure in one step there is little opportunity for intervention. It is difficult to interrupt the sequence of the process, especially in an emergency room, operating room or intensive care unit.)
- Human intervention (This is in processes that require a higher level of consistency than is reasonably achievable by health care workers without computer support.)
- Tight time constraints (This occurs especially in an emergency room, operating room or intensive care unit.)

Root Causes Identified

Root causes fell into six general areas:

- Patient assessment such as incomplete patient/blood verification.
  Patient assessment such as the signs and symptoms of a transfusion reaction not being recognized.
- Care planning such as no informed consent for a transfusion.
  Laboratory procedures such as multiple samples crossmatched at the same time or a crossmatch being started before the order was received.
- Staff-related factors such as insufficient orientation and training or

> "When an order for a transfusion occurs, a dedicated team should manage the entire process."

insufficient staffing levels.

- Equipment-related factors such as blood for multiple operating room patients being stored together in the same refrigerator.
  Information-related factors such as incomplete communication among caregivers or patient identification band, specimen label or blood label errors.

> Kathleen Sazama, M.D., J.D., chair of accreditation program committee, American Association of Blood Banks

Suggested Strategies for Reducing Risk

The organizations that experienced the sentinel events offered the following risk reduction strategies:

- People-focused actions that included in-service training on transfusion-related procedures and revising the staffing model.
- Process redesign issues such as revising the patient identification band procedures; revising patient/blood verification procedures; revising and implementing new informed consent procedures; discontinuing processing of multiple samples; or discontinuing the use of the room number as the patient identifier.
- Technical system redesign efforts such as enhanced computer support or new patient identification band system.
- Environmental redesign issue such as discontinuing use of an operating room refrigerator for multiple blood units or adding laboratory workstations.

In addition, the Joint Commission suggests the following actions:

- Prohibiting simultaneous crossmatching of multiple patients by the same technologist.
- Not using the patient's room number to identify blood samples or transfusion units.
- Considering the use of "unique" identification bands for patients receiving blood transfusions.
- Introducing a computerized verification step into the process.

Experts' Recommendations

Experts as well as Joint Commission standards emphasize that health care organizations should have unique patient identifier processes in place. This would be a way to take human fallibility out of the equation, says Kathleen Sazama, M.D., J.D., a professor of pathology and laboratory medicine at MCP Hahnemann University in Philadelphia.

Sazama says organizations should use a hand-held bar code reader to read both bar coded wristbands on every patient and a bar code identifier on the tag of the components. If the bar code reader fails to confirm the identity between the wristband and the tag, then the health care worker cannot proceed with the transfusion.

James B. Battles, Ph.D., a professor of medical education for the University of Texas Southwestern Medical Center, Dallas, says bar coding can help but he believes there still is not a good patient identification system in place. He says a major effort needs to be made to study the problem and find the best method.