The eighth edition[4] recommended taking vital signs before initiation and that the transfusionist should stay with the patient for the first 5 to 15 minutes. After the first 15 minutes, the vital signs should be recorded and, if there was no evidence of impending reaction, the rate of infusion could be increased to that specified in the clinical order. Patient care personnel should "observe the patient frequently throughout the transfusion, recording clinical observations and vital signs according to policy."

The 9th, 11th, and 12th editions[5-7] stated that transfusing personnel should "observe and record vital signs before administration, and post." The transfusionist was also instructed to "observe the patient frequently throughout the transfusion."

The 17th edition[8] recommended performing a baseline assessment of vital signs, then vital signs 5 to 15 minutes after start (according to institutional policy), and at the end of the transfusion. It added that the patient should be periodically monitored for 4 to 6 hours after the end of transfusion.

Frequency of Monitoring Transfusions

There is no consensus as to the frequency recommended for monitoring patients or obtaining and recording vital signs. Intervals other than before, in the first 15 minutes, and after the transfusion are not required by accrediting and regulatory agencies. AABB *Standards for Blood Banks and Transfusion Services*[9] recommends checking vital signs before and after transfusion. Other publications promote different frequencies. As noted above from early AABB *Technical Manuals*, when vital signs were recommended, they were to be checked before, 5 to 15 minutes after starting, and at the end of transfusion.

Sullivan et al[10] performed a literature review of vital sign monitoring during blood transfusion. They concluded that monitoring at three time intervals (baseline, 15 minutes, and completion) may be effective in identifying signs and symptoms of transfusion reactions. They also reported that vital sign monitoring and thorough assessment by nurse and patient aids in early identification of reactions. Other publications have similar frequencies. In the United Kingdom, national guidelines require that vital signs be taken before the start, at 15 minutes, and at the end of transfusion.[11] The New York State Council on Human Blood and Transfusion Services and the New York State Board for Nursing guidelines recommend vitals shortly before transfusion, after the first 15 minutes, and then at completion.[12,13]

Menendez[14] recommends baseline pretransfusion vital signs, at 15 minutes, and then hourly. The primary nurse would remain with the patient for the first 15 minutes; then a charge nurse would join the primary nurse, together conducting an assessment for vital sign changes.

Bradbury[15] states that while there is little research evidence concerning optimum vital sign assessments, the pulse is readily accessible and can reflect a change in the patient's condition. He suggests that it may be useful to check the pulse every 15 minutes during the first hour of each transfusion, take additional observations if there is a significant change in pulse rate (or when other symptoms occur), and check after the completion of each unit.

Castledine[16] suggests a more frequent assessment: taking vital signs at 15 minutes, every 15 minutes during the first hour, and every 30 minutes for the second hour.

Cortez-Gann et al[17] in 2017 examined the relationship of vital signs to signs and symptoms of blood component transfusion through a retrospective review of over 77,800 transfusions. They found, contrary to the popular belief that the first 15 minutes were the most volatile and most likely to produce a severe reaction in a patient,[8,11] that the actual mean time to reaction was 92.2 minutes. The authors concluded that their findings do not support assessment of three sets of vital signs.

Audit Methods

Hospital policy will dictate the frequency of vital sign assessments. An audit is helpful to determine how well nursing staff are following hospital policy. There are pros and cons to manual audits, including those related to resources needed to perform the audit and the development of an audit tool. At large institutions, auditing 100% of nursing documentation for transfusions is impractical, but this may be achievable at smaller hospitals with fewer transfusions. At one of the author's institutions, a hospital quality staff member conducts weekly audits and reports to all department managers, hospital administration, and the laboratory. When errors (eg, wrong unit number) or omissions (eg, vital sign assessment is missing) occur, an incident report is submitted to the manager of the unit where the error occurred. Consents may lag, as they must be scanned into the medical record. Figure 14-1 is a chart developed from this audit.

As seen in Fig 14-1, posttransfusion vital sign documentation continues to be low.

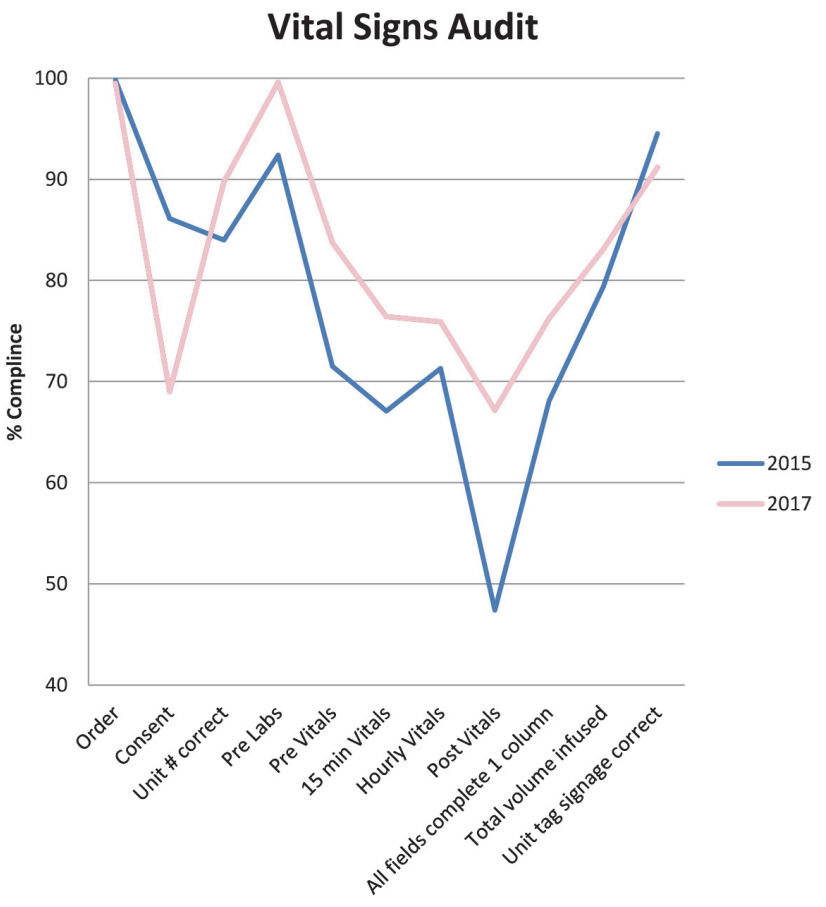

Figure 14-1. Example of results from a weekly audit. The items audited are listed on the x-axis, and the percent compliance is shown on the y-axis. (The item "All fields complete 1 column" indicated that all items were in the same column in the hospital information system.)

Further investigation has shown that when patients were transferred to another unit or to the operating room, posttransfusion vital signs were not documented. Overall, there has been an improvement in the documentation as a result of regular sharing of this data, but further improvements, especially in posttransfusion vital sign documentation, are needed.

While the above is an example of a posttransfusion review, there are more effective audits. Yeh et al[18] reported on their Web-based transfusion reaction reporting system. In the first 6 months, transfusion reaction reporting increased from 0.21% to 0.61% per unit. Vitals were documented before transfusion, 15 minutes after starting, and at completion. They included other important data points such as transfusion start and stop time, time of reaction, and medications given to treat the patient.

Similarly, St. Bernard et al[19] described an electronic reporting system for transfusion reactions. This also resulted in a sustained increase in transfusion reaction reporting.

Patients in the intensive care unit (ICU) are continuously monitored, but this stops once outside of the ICU. A continuous wireless remote monitoring of non-ICU patients was described, in which the device monitors vital signs and can send alerts to direct-care nurses. The use of these monitors can provide information to the nurses to raise awareness of potential instability and help them react accordingly. The researchers concluded that remote monitors may not be helpful if knowledge, role, and process issues are not addressed as they relate to device use.[20]

Summary

Vital sign monitoring provides an important metric for detecting changes in patient condition during transfusion. Although consensus on frequency is lacking, following institutional policy and completing auditing trails according to policy will benefit the transfusion recipients if the audits drive improvements. The minimum frequency is before transfusion, 15 minutes after starting, and again at the end of the transfusion. Auditing vital sign documentation measures compliance to hospital policy. This data can drive awareness and improvements to the early recognition and treatment of transfusion reactions.

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