

Nursing strategies to minimize blood loss associated with phlebotomy

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PURPOSE

Many strategies may be deployed under nursing's direct control to decrease blood loss associated with phlebotomy. This article reviewed research to define the extent of blood loss associated with phlebotomy in acute care and critically ill patients. Also, the article outlined nursing strategies for conserving blood. Incorporation of these strategies into daily practice—along with the development of blood conservation programs—represents imminent challenges for nursing.

BACKGROUND

Research defined large daily blood losses associated with diagnostic phlebotomy and revealed insight into associated risk factors.

Blood is often drawn in excess of what is needed for laboratory analysis, and overutilization of certain tests occurs. A significant proportion of blood loss (30%) results from the discard of blood-crystalloid mixtures to prevent hemodiluted and heparinized blood samples.

MATERIALS AND METHODS

[Recycling Discard Volumes](#)

Blood loss can be prevented by eliminating discard volumes associated with “clearing” arterial and central venous lines.

A blood conservatory (BC) system is a device that allows undiluted, heparin-free blood to be sampled while storing the discard volume in a reservoir line placed in the line's circuit (see Figure 1). The benefit of such a device is that it enables the full return of discard volume to the patient while maintaining a closed system.¹

Compiled research provides initial data as to the blood savings that BC devices can provide. Blood conservatory devices provide undiluted and heparin-free blood samples. Blood conservatory devices have not been shown to alter waveform characteristics of arterial pressures nor provide a medium for bacterial or fungal infection.

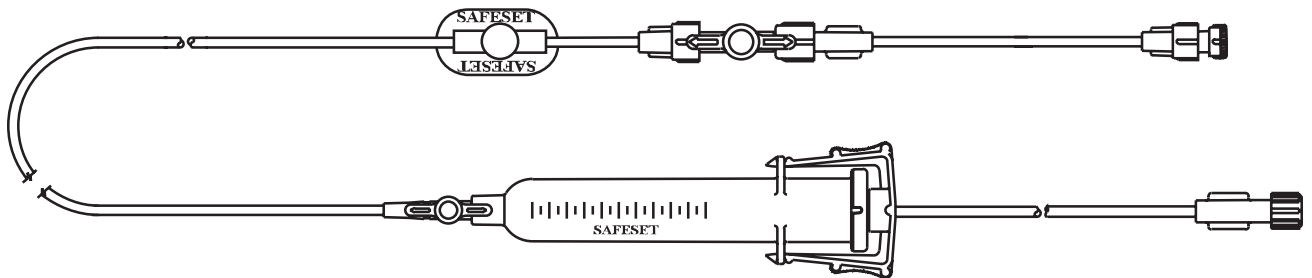


Figure 1. Example of a commercial blood conservation device, SafeSet™ by ICU Medical, Inc.

[Decreasing Phlebotomized Blood](#)

Blood loss can be minimized through conscious efforts to decrease the volume of blood drawn for diagnostic laboratory tests. Specific strategies include the use of pediatric laboratory tubes in adults, the use of point-of-care technology, and the monitoring of laboratory-ordering practices.

Heightening Awareness of Blood Loss

More visibility of the actual blood loss associated with phlebotomy among caregivers can reduce occurrence of the problem. Studies provide evidence that the recording of blood loss associated with phlebotomy on intensive care unit flow sheets can lead to heightened awareness among caregivers. Caregivers aware of the issue can significantly decrease blood loss in the future by assessing whether routine tests are ordered too frequently and whether some tests can be combined with other laboratory tests.

Some of the strategies involve little or no changes in the cost of care. Increasing the level of awareness of the overall problem is essential in introducing the changes associated with any specific strategies.

RECOMMENDATION

In order to monitor the effectiveness of the outlined strategies, the development of a multidisciplinary blood conservation program deserves serious consideration. Creating a unit-based, high-quality indicator for blood loss can help continuously monitor the problem. This indicator may initially be narrowly scoped to monitor only the effect of strategies to decrease blood loss associated with diagnostic testing.

CONCLUSION

The problem of phlebotomy-related blood loss is real and significant in critically ill patients, because it may lead to anemia, which imposes unnecessary stress on the cardiovascular and respiratory systems and may require allogeneic blood transfusions. Nursing can directly control many strategies to decrease blood loss associated with phlebotomy. The role that nursing can assume in advocating for critically ill patients is significant and evolving.

Summarized from the study originally published in the journal American Association of Critical-Care Nurses (AACN) Clinical Issues in November 1996.

References

1. Silver M, Jubran H, Stein S, McSweeney T, Jubran F. Evaluation of a new blood-conserving arterial line system for patients in intensive care units. *Crit Care Med* 1993;21:507-511.