

Short Communication

Unique Model for Intraoperative Cell Salvage Staffing

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Submitted: 01 October 2018

Accepted: 31 October 2018

Published: 31 October 2018

ISSN: 2373-9282

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Abstract

Staffing intraoperative cell salvage (ICS) services can be challenging for the laboratory today. At our academic medical center, staffing levels made it difficult to use blood bank technologists to support ICS procedures. We therefore developed a flexible staffing model utilizing the Laboratory Support Services (LSS) personnel to provide 24/7 ICS service. In an era with a laboratory technologist shortage and when laboratories must continuously demonstrate value to the hospital, using this group of laboratory employees can be a way to deliver consistent and timely ICS service. When planning for staffing it is important to interact with surgical services on a regular basis as surgical practices change.

Keywords

- Intraoperative cell salvage
- Cell Saver
- Autotransfusion
- Staffing

ABBREVIATIONS

ICS: Intraoperative Cell Salvage; OR: operating room; LSS: Laboratory Support Services

INTRODUCTION

Intraoperative cell salvage (ICS), is a common procedure used to limit the need for allogeneic blood products that carries risk for infectious disease transmission, anaphylaxis and potentially life-threatening reactions to newly developed antibodies [1,2]. Although many studies have shown that routine use of ICS is not necessarily cost effective, and the cost of autologous blood products is often less than the cost of the instrument, kit, and staff to perform it [3], ICS is still a necessary service in some settings, especially for those unable or unwilling to do pre-operative autologous donation or receive allogeneic blood transfusions. At the University of Arkansas for Medical Sciences (UAMS), ICS is commonly utilized in a variety of surgeries, including trauma, vascular, organ transplant, orthopedic, and gynecologic. UAMS houses the city's only Level 1 trauma center and liver transplant center.

The ICS service was traditionally staffed by members of the blood bank and transfusion services. However, as staffing levels fell they did not consistently have staff available who could leave their duties in the blood bank to spend hours in the OR providing ICS services, leading to a decrease in the number of cases served and complaints by the surgical services. The clinical laboratory leaders therefore searched for an alternative in order to maintain ICS services as a benefit to surgeons and patients. Here we report this unique staffing model which we believe will be helpful to others in meeting the needs and expectations of a hospital ICS service [4].

MATERIALS AND METHODS

Laboratory Support Service (LSS) technicians at UAMS provide continuous coverage for specimen receiving and initial processing in the clinical laboratory. Qualifications for LSS include at least a high school diploma with two years of laboratory work experience. LSS staff covers all three shifts in the laboratory every day of the week and given the wide array of duties assigned, have the most perceived flexibility in scheduling. Review of accreditation standards showed that although ICS services are commonly provided by blood bank technologists, certified registered nurse anesthetists (CRNA) or certified transfusionists, well-trained LSS technicians met all requirements for performing ICS.

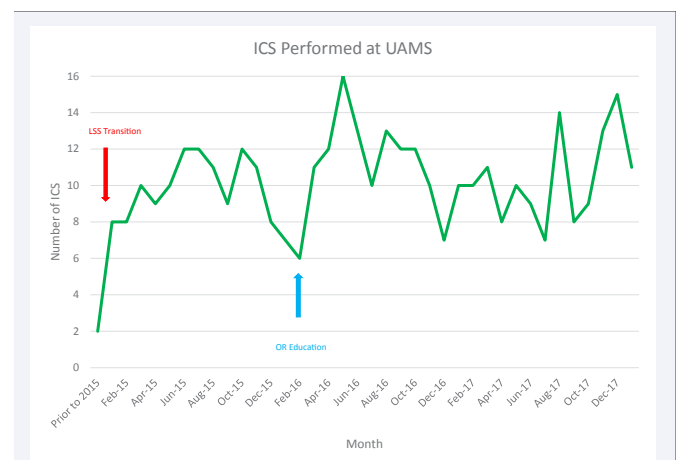


Figure 1 The monthly volumes of ICS performed. Prior to transition to LSS, there were an average of 2 or fewer ICS performed monthly. Most recent volumes range from 7 to 15 per month.

In January 2015, the UAMS Clinical Laboratory piloted a change in ICS service coverage with a limited number of LSS technicians. LSS technicians normally have little to no direct patient care experience, so robust training and oversight was called for by the blood bank technologist ICS team. The LSS technicians underwent a long OR observation trial period in order to assure that the technicians had the appropriate customer service and adaptive skills in a critical OR setting and that the technician was fully committed to providing ICS service. Technicians were evaluated on their ability to critically think and react quickly to sudden changes in patient needs and status, ability to remain poised under pressure, ability to properly hand off duties in the laboratory to quickly assume the role of ICS technician, and skills in clear communication. Extensive troubleshooting training with intermittent in-services by the manufacturer was provided.

Because they were not licensed individuals, LSS technicians strictly adhered to the protocol and consulted a pathologist for approval to accommodate any procedural variances. ICS was initially offered only during first shift and required advance scheduling through the clinical laboratory.

RESULTS AND DISCUSSION

After transferring the ICS service to LSS, there was an immediate increase in cases performed (8-12 per month), based purely on the availability of the technicians to run the cases (Figure 1). Initial communication to the OR consisted only of the change of contact information from Blood Bank to LSS. Based on anecdotal information cases served increased back to approximately the same volume of ICS procedures that had been requested in the past.

We realized that there were cases in the afternoons, evenings, and on weekends that might also benefit from ICS coverage. We contacted our main customers (surgeons in Orthopedics, Liver Transplant, and Obstetrics/Gynecology) for feedback, and they responded uniformly with the need for ICS services 24 hours a day, 7 days a week to account for emergent surgeries with massive blood loss. The few currently trained LSS technicians

developed a call schedule and pay incentives were provided for those performing ICS. Additional motivated ICS technicians were identified from the pool of LSS staff and underwent an intensive training protocol [Figure 2]. This included an initial procedure observation and interview, followed by more observations and study of the protocols, and then finally performing at least 6 ICS procedures on various surgical protocols. Close one-on-one training for these procedures was provided by the Lead ICS Technician. Additional LSS staff on second and third shifts were trained as set-up personnel so that the instrument could be set up in the OR while the on-call ICS technician made his or her way to the hospital, saving over 10 minutes of precious set-up time. On-call ICS technicians arrived to the hospital within 30 minutes of the call.

Next we provided OR staff education on proper utilization of ICS, contraindications [5], ordering protocols, and required documentation. The same information was provided to the physician staff through a physician leader. Additionally, some of the highest users were contacted individually to introduce new available hours, review the documentation needs, and solicit feedback. Over the next several months, ICS procedures increased significantly (Figure 1). However, we have not been able to attain our original goal of supporting 15 procedures a month, and has turned out to be an overestimate of need as some surgeons have opted to use minimally invasive approaches, limiting the use and necessity of ICS.

CONCLUSION

One of the ways the UAMS Clinical Laboratory demonstrates value to the hospital, patients, and staff is through laboratory-provided patient care services like ICS. In a time where there is a shortage of medical technologists, and our current lean staff may already be stretched to complete daily tasks and are unavailable to perform ICS, we identified a way to keep a large accessible team to staff ICS 24 hours a day, 7 days a week, 365 days a year.

Another major challenge with utilizing LSS staff to perform ICS is that the majority of this staff do not stay with the laboratory

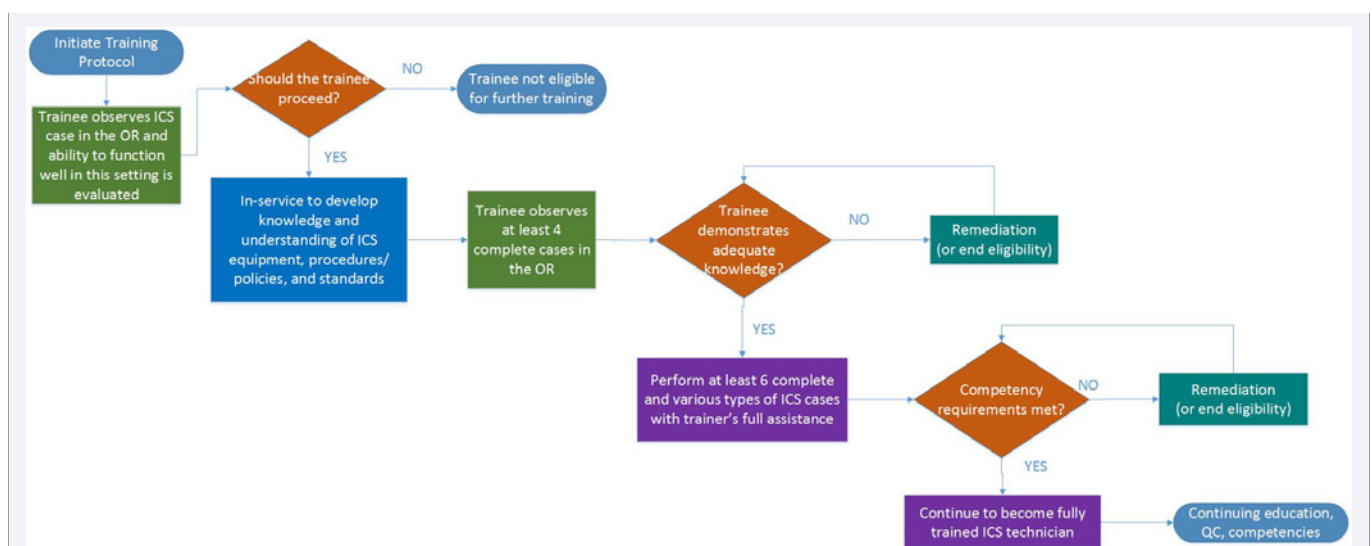


Figure 2 ICS training protocol for Laboratory Support Technicians.

for more than a few years; this position is often a stepping stone for those who go on to medical technology school, nursing school, and medical school. This means that the ICS team is constantly turning over staff and training must occur at the same pace.

Although we have developed a reliable 24/7 ICS service, it remains a challenge. While we aim to increase utilization of ICS in order to take advantage of the available instruments and staff, as well as mitigate patients' risk of development of antibodies and associated adverse events, it is necessary to prospectively estimate need as new minimally invasive procedures are developed.

ACKNOWLEDGEMENTS

Thank you to retired Section Manager Albert Johnson MT (ASCP) for his assistance in pulling data. Thank you to current Section Director Dr. Rodolfo Heinrich Lobo for his oversight of the ICS program. Thank you to Dr. Michele Cottler-Fox for her guidance.

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Cite this article

Rjoop A, Sanderson K, Booker V, Hopper D, Olgaard E (2018) Unique Model for Intraoperative Cell Salvage Staffing. *Ann Clin Pathol* 6(4): 1146.