

# 2011

THE 2011 NATIONAL BLOOD  
COLLECTION AND UTILIZATION  
SURVEY REPORT

***PBM STATISTICS***



The United States Department of Health and Human Services 2011 National Blood Collection and Utilization Survey was conducted under contract HHSP23320110008TC with AABB, and using OMB Number 0990-0313.

**Project Directors**

Barbee I. Whitaker, PhD  
Project Director for AABB  
8101 Glenbrook Road  
Bethesda, Maryland 20814  
bwhitaker@aabb.org

Richard A. Henry, MPH  
Project Director for HHS  
US Department of Health and Human Services  
1101 Wootton Parkway  
Tower Building, Suite 250  
Rockville, Maryland 20852  
Richard.Henry@hhs.gov

**Report Authors**

AABB: Barbee I. Whitaker, PhD  
Appendix: Susan Hinkins, PhD (NORC)

For the full report of the 2011 National Blood Collection  
and Utilization Survey [click here](#).

## 5. Patient Blood Management

In 2011, a new section on patient blood management (PBM) was added to the National Blood Collection and Utilization Survey (NBCUS) questionnaire. PBM is an evidence-based, multidisciplinary approach to optimizing the care of patients who might need a blood transfusion. It encompasses all aspects of patient evaluation and clinical management surrounding the transfusion decision-making process, including the application of appropriate indications, the minimization of blood loss, and the optimization of patient red cell mass. The questions, designed by a team of experts in the field of PBM, were intended to assess the degree to which this evidence-based, patient-oriented initiative has gained traction in United States (US) hospitals and blood centers.

Of the facilities that responded to the PBM section entry question, 30% responded that they have a PBM program. Of these, 98% were hospitals. Of all

respondents, 31% of hospitals and 11% of responding blood centers reported providing some elements of a PBM program. These programs were coordinated by many different combinations of medical professionals. Fifty-one percent of hospital PBM programs were coordinated by a combination of medical and other staff, while 34% were coordinated by a medical director only. Other hospital staff who were reported to coordinate or share coordination of PBM programs included nurses, blood bank staff, anesthesiologists, cardiologists, hematologists/oncologists, risk management staff, healthcare improvement staff, transfusion committees, blood utilization committees, and patient safety officers.

There were 201 hospitals (15%) that reported having Transfusion Safety Officers (TSOs). Of the hospitals reporting established programs for patients who refuse blood, 19% had a TSO. Of the hospitals

reporting that they did not have such a program, 10% reported having a TSO. Of those with a TSO, 25% reported having part-time TSOs, and 61% reported full-time TSOs. In the hospitals having a TSO, 81% of the TSOs were hospital employees, and 14% were blood center employees. Approximately 43% of the blood center employees were reported to be full-time, and 80% of the hospital employees were full-time.

Forty-one percent of hospitals participated in performance benchmarking programs relating to transfusion medicine. Sixty-four percent of facilities (805/1250) provide formal transfusion training to their staff. Hospitals were most likely to provide formal transfusion training to nurses (94.6%; **Table 5-1**). While hospitals did not report whether they have residents on staff, only approximately one in four facilities offer formal transfusion training to pathology residents (24%), to hematology/

**Table 5-1. Formal Provider Training**

|   | Transfusion Training (%) | PBM Training in Facilities with PBM Programs (%) |
|---|--------------------------|--|
| Physicians and mid-level providers new to medical staff | 23.6                     | 57.5   |
| Nurses  | 94.6                     | 73.0   |
| Internal Medicine Residents                             | 18.0                     | 35.6   |
| Family Practice Residents                               | 15.1                     | 25.8   |
| Surgical Residents                                      | 16.5                     | 30.3   |
| Anesthesia Residents                                    | 17.4                     | 28.8   |
| Ob-Gyn Residents  | 12.7                     | 27.1   |
| Pediatrics Residents                                    | 13.6                     | 14.7   |
| Hematology/Oncology Residents                           | 22.3                     | 32.2   |
| Pathology Residents                                     | 24.0                     | 34.5   |
| Other   | 13.7                     | 18.3   |

oncology residents (22%), and to physicians and mid-level providers new to the medical staff (24%). Hospitals were least likely to provide formal transfusion training to obstetrics-gynecology residents (13%), pediatric residents (14%), and family practice residents (15%). Even fewer facilities reported providing formal PBM training (9%). Of these, they were most likely to offer PBM training to nurses (73%) and to new physicians and mid-level providers (58%). Hospitals that did offer formal PBM training were least likely to offer that training to pediatric residents (15%).

Ninety-two percent of survey respondents reported the use of transfusion guidelines. While many institutions have institution-specific guidelines, 85% of the guidelines used were predominantly based on one of the national guidelines (**Figure 5-1**). Other hospitals indicated that they based their transfusion guidelines on recommendations from The Joint Commission, the New York State Department of Health, the American Society of Hematology, the hospital's own internal transfusion committee, and/or multiple sources of evidence-based practices.

In 2011, 57% percent of transfusing hospitals reported having an established program to treat patients who refuse any or all blood components for religious, cultural, or personal reasons, compared to only 15% in 2008. In 35.2% of all hospitals, patients facing elective surgical procedures associated with a high likelihood of blood loss were evaluated for factors predictive of preoperative and postoperative anemia. This evaluation was reported in 54.0% of hospitals reporting PBM programs. Only 259/1363 hospitals (19.0%) reported having a formal program in place to manage a patient's anemia before surgery. In hospitals reporting PBM programs, 33.0% reported the presence of these programs.

Many hospitals have put in place interventions to reduce the likelihood of allogeneic transfusions. Among preoperative interventions, reporting hospitals were more likely to use parenteral iron supplementation (82%) and clinical and laboratory assessments for anemia (44% and 47%, respectively) or potential bleeding risk (42%), than erythropoietin (22%) or preoperative autologous donation (37%; **Figure 5-2**). Among intraoperative inter-

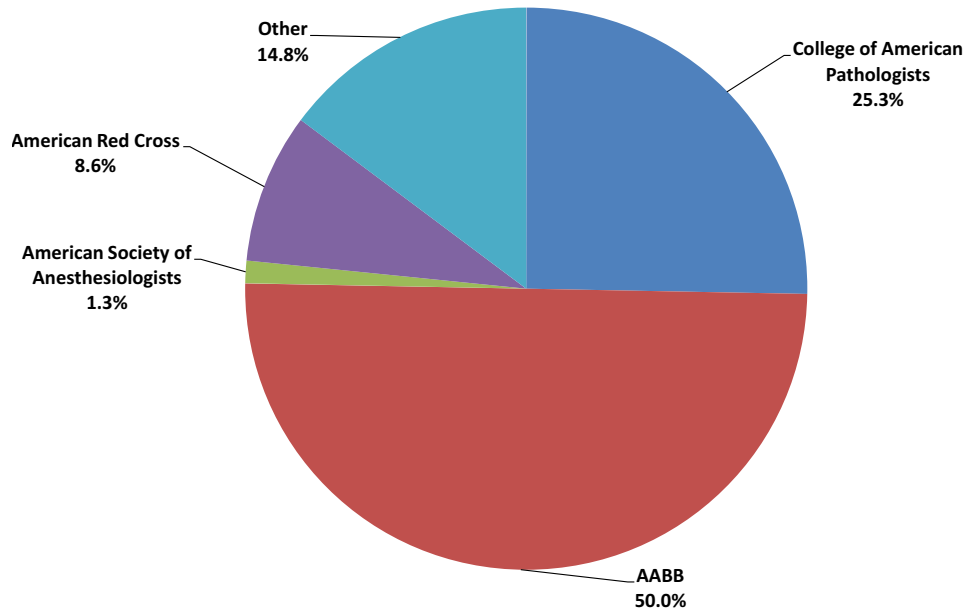
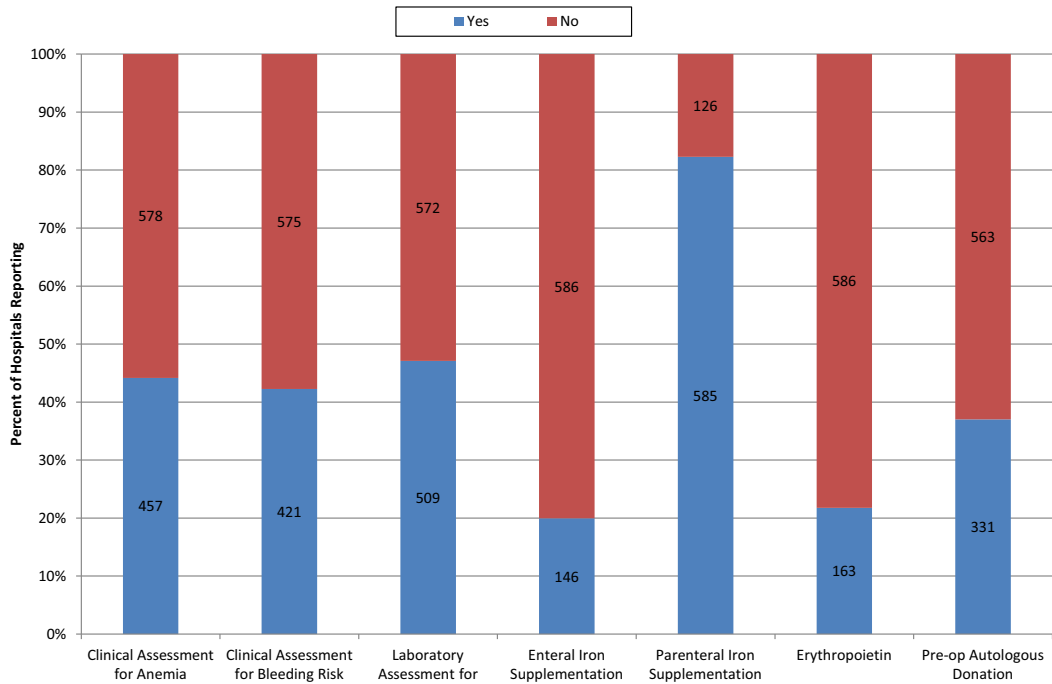


Figure 5-1. Use of national transfusion guidelines.



\*Numbers of hospitals reporting Yes or No listed within each bar; totals will differ due to "don't know" and "not applicable" options.

Figure 5-2. Pre-operative PBM interventions implemented.

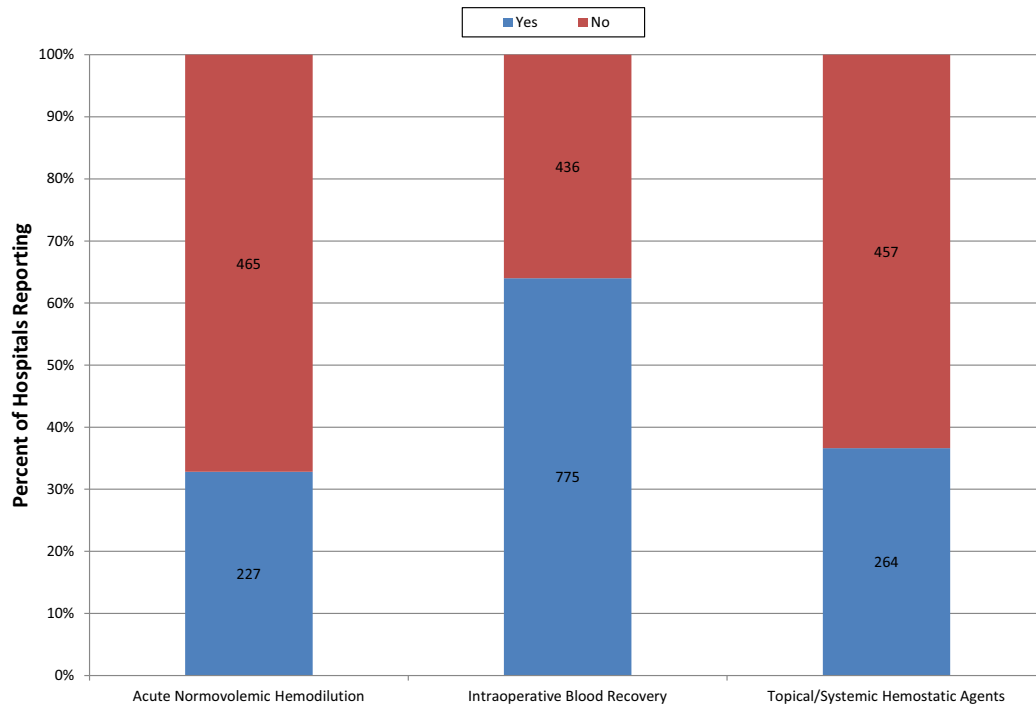
ventions, the most common intervention reported was intraoperative blood recovery, performed by 64% of reporting hospitals (**Figure 5-3**). Hospitals were less likely to engage in acute normovolemic hemodilution (33%) or the use of topical or systemic hemostatic agents (37%) and were least likely to have implemented postoperative PBM interventions (**Figure 5-4**). The most common intervention in place was the restrictive use of postoperative transfusion in 27% of reporting hospitals.

Hospitals were queried on how the success of inter-

ventions intended to improve PBM was measured. The responses varied between hospitals: success was commonly measured by transfusion per medical/surgical admission in 28% of reporting hospitals, by total components transfused in 55% of reporting hospitals, and by other measures in 17% of reporting hospitals. These other measures included the crossmatch-to-transfusion ratio, reviews of clinical waste, blood utilization, and other audits, the percentage of patients transfused per selected International Classification of Diseases, Ninth Edition

(ICD-9) codes [ie, coronary artery bypass graph (CABG) only or knee/hip replacements), average blood component per case (CABG only), and percentage of inappropriate transfusions.

Most reporting hospitals require the ordering provider to obtain and document informed consent for transfusion (95%). Seventy-five percent of all reporting hospitals require the physician to document the reason or clinical justification for transfusion in the medical record according to transfusion guidelines, regardless of whether the hospitals have PBM pro-



\*Numbers of hospitals reporting Yes or No listed within each bar; totals will differ due to "don't know" and "not applicable" options.

Figure 5-3. Intra-operative PBM interventions implemented.

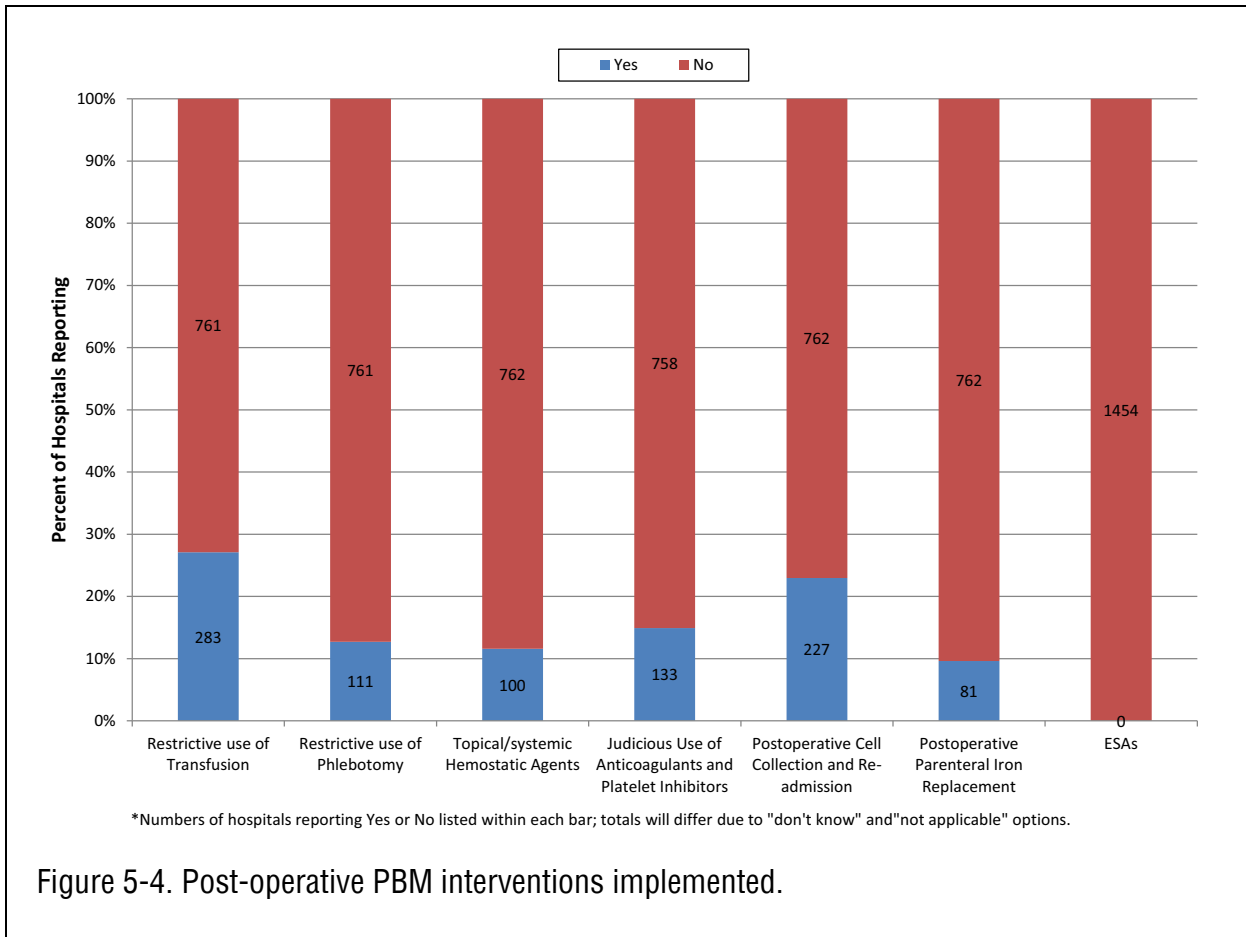


Figure 5-4. Post-operative PBM interventions implemented.

grams in place. Most reporting hospitals (74%) also require that relevant pre-transfusion laboratory results are documented in nonemergent transfusions. The percentage of patients undergoing high-blood-loss surgical procedures that had a type-and-screen completed before the start of the surgical procedure averaged 93.6%, with a median of 98% and a range from 5% to 100% of patients.

Average pretransfusion laboratory results were

reported for blood products transfused (**Table 5-2**). For red cells, the average pre-transfusion hemoglobin was 7.9, and the median was 8.0 (n=506 hospitals). The average pretransfusion platelet count was 32,055, and the median was 20,000 (n=480 hospitals). For plasma, 203 hospitals reported the average pre-transfusion internal normalized ratio was 2.5, and the median was 2.0. The average pretransfusion partial thromboplastin time (PTT) reported was 53.1, and the median was 50 (n=154 hos-

pitals). For cryoprecipitate, the average pre-transfusion fibrinogen reported was 106.7, and the median was 100 (n=196 hospitals).

The standard red cell order for nonbleeding patients in 246 (23.5%) hospitals was one unit and two units in 763 (72.8%) of hospitals. The remaining 39 reporting hospitals reported other standard red cell orders. Fifty-two percent of reporting hospitals (705 hospitals) have implemented Computerized Physician Order

**Table 5-2. Average Pre-transfusion Laboratory Results**

|  | <b>Average</b> | <b>Median</b> | <b>Min</b> | <b>Max</b> | <b>n</b> |
|--|----------------|---------------|------------|------------|----------|
| Average Pre-transfusion Hemoglobin     | 7.9            | 8.0           | 6.0        | 12         | 506      |
| Average Pre-transfusion Platelet Count | 32,055         | 20,000        | 2000       | 250,000    | 480      |
| Average Pre-transfusion INR            | 2.5            | 2.0           | 1.0        | 8.7        | 203      |
| Average Pre-transfusion PTT            | 53.1           | 50            | 17         | 110        | 154      |
| Average Pre-transfusion Fibrinogen     | 106.7          | 100           | 45.0       | 202        | 196      |

Entry (CPOE), and 327 of these facilities (46.4%) have CPOE systems that include

transfusion guidelines or an algorithm to assist with

proper transfusion ordering.