Carter BloodCare
SPECIALTY SERVICES

Blood Matters

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News for Blood Bank Medical Directors, Physicians and the Lab

Blood Matters is a quarterly news *outlet with important medical information for you, our customers and colleagues, from Carter BloodCare. We hope you will share it with others interested in the work we do together.*

IN THIS ISSUE

HOT TOPICS

Are Adverse Transfusion Events Being Accurately Reported at Your Hospital?

William Crews, MD

Blood transfusions are among the most common procedures for patients in the hospital. Transfusion reactions are the most frequent adverse event associated with administration of blood products. Transfusion reactions may be seen in up to 1% of transfusions, and can range from mild to life-threatening. Any suspected reaction should be reported to the transfusion service for investigation to verify if the correct product was transfused to the intended patient. An investigation typically includes reviewing the label of the transfused product(s), the label of any blood specimen(s) used in pre-transfusion testing, along with the accuracy of test results, and repeating the ABO/Rh and crossmatch. The transfusion service medical director should perform a final review of the investigation, along with a review of the signs and symptoms reported by the clinical team, or documented in the medical record of the patient to interpret the reaction.

In 2017, the CAP added Transfusion Reaction Monitoring to the Transfusion Medicine Checklist, which requires the transfusion service to track the incidence of transfusion reactions and monitor the rate of transfusion reactions by each reaction type. As part of their Patient Blood Management certification, the Joint Commission requires that adverse events be captured, investigated and reported. The Joint Commission also considers hemolytic transfusion reactions involving major blood group incompatibility a sentinel event.

In 2010, the CDC launched the National Healthcare Safety Network (NHSN) Hemovigilance Module which classifies adverse reactions into the following 13 definitions:

- Transfusion-associated circulatory overload (TACO)
- Transfusion-related acute lung injury (TRALI)
- Transfusion-associated dyspnea (TAD)
- Allergic reaction (where severity is severe, life threatening, or death)
- Hypotensive transfusion reaction
- Febrile non-hemolytic transfusion reaction (FNHTR)
- Acute hemolytic transfusion reaction (AHTR)
- Delayed hemolytic transfusion reaction (DHTR)
- Delayed serologic transfusion reaction (DSTR)
- Transfusion-associated graft vs. host disease (TAGVHD)
- Post-transfusion purpura (PTP)
- Transfusion-transmitted infection (TTI)
- Other or Unknown

These definitions are designed to capture data consistently and reliably, which allows for identification of trends and quality improvement practices. But, reporting adverse events to the NHSN is voluntary, so determining accurate incidence rates for each classification is challenging due to underreporting, variation in hospital reporting policies, and by the patient's underlying disease.

Multiple retrospective studies of transfusion reactions have found approximately 1% of transfused products result in serious adverse reactions. If the number of reported reactions are less than 1% of all blood components transfused at your hospital, it is very likely transfusion reactions are not being accurately reported.

The Biomedical Excellence for Safer Transfusion (BEST) Collaborative published the following adverse reaction prevalence rates in a 2016 Review:

Reaction Definition	Prevalence (per 100 000 units transfused)
Acute Hemolytic	2.5-7.9
Anaphylactic	8
Allergic	112.2
Delayed Hemolytic	40
Delayed Serological	48.9-75.7
Febrile Non-Hemolytic	1000-3000
Hyperhemolytic	Unknown
Hypotensive	1.8-9.0
Massive Transfusion associated	Unknown
Post-Transfusion Purpura	Unknown
Septic	0.03-3.3
TACO	10.9
Transfusion-associated Graft vs Host Disease	Extremely rare (near 0%)
Transfusion-related Acute Lung Injury	0.4-1.0

Hospitals should review their transfusion policies to ensure they have clear and effective policies in place for reporting transfusion reactions. These may include review of reactions by the hospital transfusion committee to identify and monitor trends; continuing education on recognizing and reporting adverse events for nurses and physicians; and surveying providers on when they would report a reaction.

Another resource to help improve reporting of adverse events is the use of a transfusion safety officer (TSO). Similar to an infection prevention officer, a TSO serves to improve the safety of transfusion processes by overseeing compliance to policies and maintaining hemovigilance programs.

During the past three decades, accurate reporting of adverse events helped drive interventions to improve transfusion safety. The adverse events below have seen significant decreases in incidence due to implementation of the following technologies:

1. **Febrile reactions**–Pre-storage leukocyte filtration
2. **TRALI**–collecting platelets and plasma from male donors or female donors negative for antibodies to HLA
3. **Bacterial contamination of blood components**--diverting the first 10-50mL of blood from a donation into a diversion pouch, and culture of pooled platelets and plateletpheresis products.
4. **Transfusion-transmitted Infections**–Nucleic Acid Testing for HBV, HCV, and HIV

Continuous improvements of transfusion safety and practice must be an ongoing goal and activity for everyone involved in transfusion therapy to minimize the risk while improving the benefit of transfusions.

Reference:

1. Delaney M., Wendel S., Bercovitz R.S. Transfusion reactions: prevention, diagnosis, and treatment. Lancet. 2016;388(10061):2825–2836
2. Hendrickson JE, Roubinian NH, Chowdhury D, Brambilla D, Murphy EL, Wu Y, et al. Incidence of transfusion reactions: a multicenter study utilizing systematic active surveillance and expert adjudication. Transfusion. 2016;56:2587–2596.
3. Centers for Disease Control and Prevention (CDC). National Healthcare Safety Network (NHSN) Biovigilance Component: Hemovigilance Module Surveillance Protocol v2.5.2. Bethesda (MD): NHSN; 2018 Available from: www.cdc.gov/nhsn

What the Lab Director Needs to Know About CLIA

Laurie J. Sutor, MD

We have found our accrediting agencies paying more attention in recent years to CLIA (Clinical Laboratory Improvement Act of 1988) issues, including what the lab director is doing. The following points are some of the areas that have come up in recent inspections for which you may want to be aware:

1. **Definition of all the proper CLIA personnel in your lab.** Be aware of the levels of CLIA personnel below the lab director (Clinical Consultant, Technical Supervisor, Technical Consultant, General Supervisor, Testing Personnel) and determine who qualifies for each position. The qualifications for each level are in 42 CFR 493. Technical Supervisor and General Supervisor only exist for High Complexity testing, while Technical Consultant exists only for Moderate Complexity testing. For a larger lab, you may find it helpful to make a table to list each CLIA number, location, the lab director, Clinical Consultant, level of testing, tests performed, and Technical Supervisor/General Supervisor and/or Technical Consultant for each site. This table is helpful to provide to inspectors when they arrive (and helpful to the lab director to keep everything straight).

2. **Documentation of lab director delegation of duties.** The lab director responsibilities are defined in the Code of Federal Regulations at 42 CFR 493.1407 for moderate complexity testing and 42 CFR 493.1445 for high complexity testing. You can read these online by Googling them. The lab director may delegate some of these responsibilities to the technical consultant for moderate complexity tests, or the general supervisor for high complexity tests. But, you must have documented this delegation in writing. And, you can only delegate those tasks allowed under CLIA.

3. **Competency assessment for the staff to whom you delegated the above duties.** Competency assessment of testing personnel is obviously done and we won't cover that here, but you as the lab director must also annually assess the competency of the management staff to whom you delegated the director duties. These oversight duties need some type of review by you. CMS does not specify exactly how you do this, but it must be documented annually. You can find information on what to cover on pages 6-7 within a brochure on CLIA competency assessment at: https://www.cms.gov/Regulations-and-Guidance/Legislation/CLIA/Downloads/CLIA_CompBrochure_508.pdf

4. **Signature of the attestation page of the proficiency testing document.** The laboratory director, who is the CLIA director of the lab, must sign the attestation page of the proficiency testing paperwork, along with the testing personnel, stating the specimen has been handled as a normal patient sample.

5. **Proficiency testing rules.** Don't forget to check and make sure you are following all the rules for correct proficiency testing under CLIA. Examples are: make sure you are enrolled in PT testing for each CLIA site; do PT testing for each regulated analyte; do not share results or testing among CLIA sites; do not send out specimens to a reference lab for testing and report them on your PT results; and rotate sequential samples between testing personnel. Make sure you know what to do in the event of PT failure. Another helpful CMS brochure to address these issues can be found at: https://www.cms.gov/Regulations-and-Guidance/Legislation/CLIA/downloads/CLIAbrochure8.pdf

6. **CLIA certificate up to date.** Make sure the testing listed on your CLIA certificate reflects what is actually being done in your lab. As you add or drop tests from your lab, you may forget to notify CLIA to update your CLIA certificate accordingly.

There has been some discussion in professional circles about maintaining formal lab director competency of some sort, but the author has not encountered this request from inspectors. Some laboratorians are of the opinion that the whole external inspection process is a validation of the competency of the lab director. I would be interested in feedback if others have had inspector requests for evidence of lab director competency.

What topics would you like to see in a future issue of Blood Matters?

Click **here** to submit your choice.

HOT TOPICS Continued

An Update on COVID-19 Convalescent Plasma

Frances Compton, MD, and Geeta Paranjape, MD

Since March 2020, our country has been significantly affected by the COVID-19 pandemic. Donors who become ill with COVID-19 have to wait at least 14 days after being symptom free to be able to donate blood for community patients. While regular blood donation is still needed (surgeries, cancer, accidents), there is now a need to collect convalescent plasma from recovered COVID-19 patients in order to treat currently affected patients. No randomized controlled trials have yet been published showing significant benefit for the use of COVID-19 convalescent plasma (CCP). However, historical evidence for the use of convalescent plasma exists, and preliminary data has been presented which shows patients who receive CCP under certain conditions may have better clinical outcomes. Early (pre-publication) efficacy studies show there may be a benefit in transfusing CCP within 72 hours of admission for COVID-19.[1]

As of August 23, 2020, the FDA has approved CCP for Emergency Use Authorization (EUA) as preliminary data shows the benefits outweigh the risks.[2] Before this, CCP was used as an Investigational New Drug (IND) and in Mayo Clinic's Expanded Access Program (EAP). On September 2, 2020, the FDA released the most recent Guidance for Industry relating to the use of CCP. [3] Under the EUA, the FDA has stated that units, which are tested by the Ortho VITROS® SARS-CoV-2 IgG test and have a signal-to-cutoff value of 12 or greater, qualify as high titer CCP.[3] All other units are considered low titer CCP. During the transition period, the IND CCP units can continue to be used even though the Mayo study is now closed.

Reference:

1. Joyner MJ, Senefeld JW, Klassen SA, et al. Effect of Convalescent Plasma on Mortality among Hospitalized Patients with COVID-19: Initial Three-Month Experience. Preprint posted electronically on August 12, 2020. https://doi.org/10.1101/2020.08.12.20169359 Accessed on September 2, 2020.

2. Food and Drug Administration. Convalescent plasma letter of authorization. Issued August 23, 2020. Available at: https://www.fda.gov/media/141477/download Accessed on September 2, 2020.

3. Food and Drug Administration. Investigational COVID-19 Convalescent Plasma: Guidance for Industry. Issued September 2, 2020. Available at https://www.fda.gov/media/136798/download Accessed September 3, 2020.

Download update

- August 2020 - Blood Bulletin Vol. 20, No. 3: An Overview of Approved CAR-T Cell Therapeutics

HOT TOPICS Continued

Donor COVID-19 Antibody Testing at Carter BloodCare

Geeta Paranjape, MD, and Frances Compton, MD

Since June 22, 2020, Carter BloodCare has offered COVID-19 antibody testing to all donors who completed the donation successfully. The COVID-19 antibody test is the Roche Elecsys® Anti-Sars-Cov-2 virus immunoassay, which is currently under an Emergency Use Authorization (EUA) as a qualitative antibody test. This test detects antibodies to the SARS CoV-2 viral nucleocapsid antigen, with a specificity of 99.8% and sensitivity of 99.5%.[1] Donors can view the results of their COVID-19 antibody test once they are available online in the donor portal. The results are not to be used by themselves as a diagnostic test. Carter BloodCare follows up with donors with positive test results to ask if they had recent illnesses consistent with COVID-19, and, if so, they are asked if they would they be interested in donating convalescent plasma (CCP).

So far, we have tested 51,454 donors and 1,606 have been positive, with a total positivity rate of 3.1% since our COVID-19 antibody testing began in June. These data exclude persons donating convalescent plasma. The first week of testing had a positivity rate of 1%, and the most recent positivity rate from the week of August 17, 2020 was 4.7%. The highest positivity rate of 5.1% occurred during the week of August 10, 2020. Our increased antibody positivity rates appear to correspond, expectedly, with the increased prevalence of COVID-19 in our community.

When positivity rates are separated by age, the data shows COVID-19 antibody positivity rates are higher in younger donors. Donors born after 2000 have the highest rate of positivity at 6.7%. Generally, donor positivity rates decrease with increasing age, with the antibody positivity rate of those donors born before 1960 being <2%.

Reference:

1. Food and Drug Administration. Roche Elecsys® Anti-Sars-Cov-2 Reference Guide. 2020-07, 09203095501 V3.6. Available at: https://www.fda.gov/media/137605/download Accessed on September 2, 2020.