



Blood Matters

June/July 2021

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.

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HOT TOPICS

The Blood Inventory – How Did it Get So Bad?

Laurie J Sutor, MD, MBA

In all of my 34 years of blood banking, I have never seen the red cell and platelet supply get as low as it did earlier this year. It was the worst in the days following our February snow storm and associated power and water outages. But there have been many other factors that contributed. How did we get to this point? And how do we get out of this shortage? Sadly, it is not just the local supply, but the national supply that is affected.

1) COVID-19. Of course, the pandemic played a big role, and continues to do so. The biggest contributors have been:

- Persons working or schooling at home and cancellation of mobile blood drives
- Fear for donors of going into public and risking getting COVID-19
- Mixed messages from public health authorities about the safety of going out to donate blood
- Lock down of businesses or health care facilities still open and difficulties getting access to do drives there
- Shortage of PPE

Remember during a normal school year up to 25% of our RBCs traditionally come from high school blood drives, which essentially disappeared overnight during the pandemic. Somewhere between 55-60% of our blood usually comes from mobile drives, including churches and businesses, and nearly all of this dried up in 2020. This has been slow to come back in 2021, as some businesses continue to work remotely, and churches are still doing virtual services in some cases.

2) Holiday periods. We always have difficulties drawing enough blood around Thanksgiving, Christmas, spring break, Memorial Day etc. Businesses and schools are closed or unable to host productive drives during these times. Donors have busy schedules and don't plan on donating during these periods, despite our efforts with incentives to bring them in. In the winter of 2020, we had a giveaway of a vehicle for the first time ever with some success at attracting more donors. Our normal plan is to build up a nice buffer of excess blood leading into a holiday period that we can rely on through the lean times, but this wasn't possible in 2020/2021.

3) Lack of new donors. We have data showing that the donor base is aging. We have essentially been drawing the same donors for years, and now they are becoming senior citizens. They are going to be dropping out of the donor pool and needing transfusions themselves.



We need to be replacing them with younger donors, but in general the younger donors aren't there. This is seen all across the country. We have tried various tactics to engage younger donors, besides targeting high schools and colleges. We had recruitment campaigns in 2019 and 2020 with international video game celebrities, and increasingly use social media platforms for engagement. We are also wearing out our current donor base. There are only so many times you can call your known O negative donors and plead with them to come in and donate before they tire of the calls. We need to engage new donors in the community, but how do we get them engaged?

4) The weather. The final blow to us in 2021 was the big weather event in late February. We have never experienced anything like this before (as many of you can attest, having lost power and water at your own business or home). We have contingency plans for bad weather, which usually consists of one or two days of ice with decreased collections. We will stock up the hospitals with extra blood so we don't have to do so many deliveries, and put staff up at local hotels near the blood center. But this year was disastrous on a whole new scale. It wasn't the day or two of bad weather per se that caused the problem, it was the 4 days afterward when we couldn't start up collections because our donor centers had no power and/or no water, or we had staff that had to be off dealing with their own issues of water damage or no power.

5) Increased demand. In Spring of 2021, we are seeing increased usage from our customers for both RBCs and platelets over 2019 baseline (not counting the decrease we saw for red cell usage during COVID in 2020).

I do not think the effort to recruit and collect convalescent COVID-19 plasma (CCP) had a negative impact on our ability to provide for our other components. The CCP donors recruited were not the same donors we would have gone after for regular transfusion products. In fact, our efforts for CCP ultimately probably helped our regular blood supply because donors who did not qualify for CCP (e.g. were too remote from their infection) were directed to regular apheresis, and COVID antibody testing which aided CCP donor identification also was an attraction to regular donors.

Because these inventory issues have not been confined to North Texas, blood could not be imported into our region to help our inventory. Most blood centers have been struggling for the past year or so with inventory. At a national level, discussions are ongoing about topics such as how to fix the problem with recruitment of new donors, and what to do when inventories get so low. This is a problem our whole industry must address in the coming months. We appreciate your cooperation as we work through these difficult times.

Use of Rh+ RBCs in Emergency Situations

Frances Compton, MD

The overall use of type O red blood cells (RBCs) has continued to increase over the last decade. This trend in usage, combined with the pandemic's consequent decline in blood collection, poses a significant RBC inventory dilemma.

AABB released a Choosing Wisely campaign in 2014 as an initiative to help promote patient blood management and avoid unnecessary blood transfusion. Part of this campaign included avoiding the overuse of type O Rh negative (O-) RBCs. The campaign states, "Don't transfuse O- blood except to O- patients and in emergencies for women of childbearing potential with unknown blood group."

O- blood is in increasingly short supply. In response to this inventory dilemma, it is crucial to reserve O- blood for those who need it most. Remember, anti-D alloantibodies are not naturally occurring (unlike ABO antibodies), so D+ RBCs are not inherently incompatible with a D- patient unless the patient was alloimmunized from previous exposure. The main reason we routinely match RBCs for Rh type is to avoid alloimmunization.



HOT TOPICS Continued

Those that are most impacted by the potential formation of an anti-D alloantibody are women of childbearing potential, as anti-D may result in severe hemolytic disease of the fetus and newborn. Therefore, it is important that this rare blood type is reserved for that population. All other D- patients who form an anti-D alloantibody will simply require D- transfusions in the future.

In fact, it has become standard of care to transfuse O+ RBCs to D- or unknown blood type female patients over 55 years and adult male patients in emergency situations and if O- inventory is low. The frequency of anti-D formation in D- patients is ~20%. Therefore, those women over 55 years and adult men who receive O+ RBCs will most likely NOT form an anti-D alloantibody.

In emergency situations and during times of low blood supply, it is best to plan for the worst-case scenario. If O- RBCs are in low supply, plan ahead and switch to O+ transfusions for all patients who will be least affected. Adult men and women without childbearing potential will have little impact to their future health even in the unlikely chance that they form an anti-D alloantibody. Furthermore, in times of severe blood shortage, even O- young female patients may require lifesaving transfusion with O+ RBCs.

References:

1. Callum JL, Waters JH, Shaz BH, et al. The AABB recommendations for the Choosing Wisely campaign of the American Board of Internal Medicine. *Transfusion* 2014; 54: 2344-52.
2. AABB Choosing Wisely list: <https://www.choosingwisely.org/societies/american-association-of-blood-banks/> Released April 24, 2014, Accessed April 22, 2021.
3. AABB Technical Manual, 19th ed. 2017. Edited by Fung M, Eder AF, Spitalnik SL and Westhoff CM.

MEDICAL MINDS

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

Click [here](#) to submit your choice.

PHYSICIAN RESOURCES

Download updates

- [AABB Association Bulletin #21-02](#)
- [Information for Blood Establishments Regarding FDA's Determination that Zika Virus is no Longer a Relevant Transfusion-Transmitted Infection, and Withdrawal of Guidance titled "Revised Recommendations for Reducing the Risk of Zika Virus Transmission by Blood and Blood Components"](#)



FDA Platelet Bacterial Detection Guidance Implementation Strategy **Geeta Paranjape, MD**

The FDA put out a guidance for industry “Bacterial Risk Control Strategies for Blood Collection Establishments and Transfusion Services to Enhance the Safety and Availability of Platelets for Transfusion” in September 2019 and updated it in December 2020. For ease of reference, we will call it the Guidance.

The Guidance described their thinking on bacterial testing of platelet products and how they expect blood establishments to meet the requirements. The expected date of implementation per the September 2019 Guidance was March 2021, but in the December updated Guidance, they allowed some additional time since most blood establishments had spent a major portion of the year 2020 on getting a convalescent plasma program in place. The new expected date of implementation is October 2021.

The Guidance, offers multiple options for bacterial testing including pathogen reduction which needs no bacterial detection testing but has an expiration of five days and much higher cost compared to large volume delayed sampling (LVDS) with an expiration of seven days and is less expensive and many options in between. Some of the other options require hospital customers to perform additional testing (secondary culture or testing at issue each day until expiration) or return products to the blood supplier for additional testing and are cumbersome to keep track of and perform consistently.

Carter BloodCare has chosen to go with the LVDS method. This will increase the work load on the blood center but hospital customers will get a product that has a longer expiration of seven days and will not need to perform any additional testing.

The additional work needed is because of aerobic and anaerobic (added per the Guidance) sampling from each platelet dose 48 hours after collection (different than current process where only the parent bag is being sampled for aerobic at the end of 24 hours after collection) and held for 12 hours to make sure there is no growth before being shipped to the hospitals. In essence apheresis platelets will be available at the end of 60 hours after collection in contrast to current 36 hours after collection. The need to sample each dose with two culture bottles means we lose 16ml out of each dose in contrast to losing 6-8 ml from the parent bag.

This has a great implication on the number of doses we can make from one donation. It is very likely we will see a significant number of fewer doses being made (instead of 8 ml from the parent bag we lose 16 ml from a single platelet, 32 ml from a double platelet and 48ml from a triple platelet) unless we make changes to the platelet targets in our collection methods (in process) and collect more donors (always in process). This is of course very challenging.

In order to get prepared, we purchased more equipment for the incubation of an increased number of bottles which will need to be held for 5 days (until seven days after collection) rather than 3½ days (until five days after collection per the current process), updated standard operating procedures/staff training, validated the use of anaerobic bottles, and completed computer modification to update labeling and hold time.

We successfully implemented the new platelet sampling process on June 22 with the support of our neighboring blood centers. Although platelet inventory was impacted slightly during the transition, this tremendous change in our procedure is now behind us and 7-day platelets are being provided.

Reference:

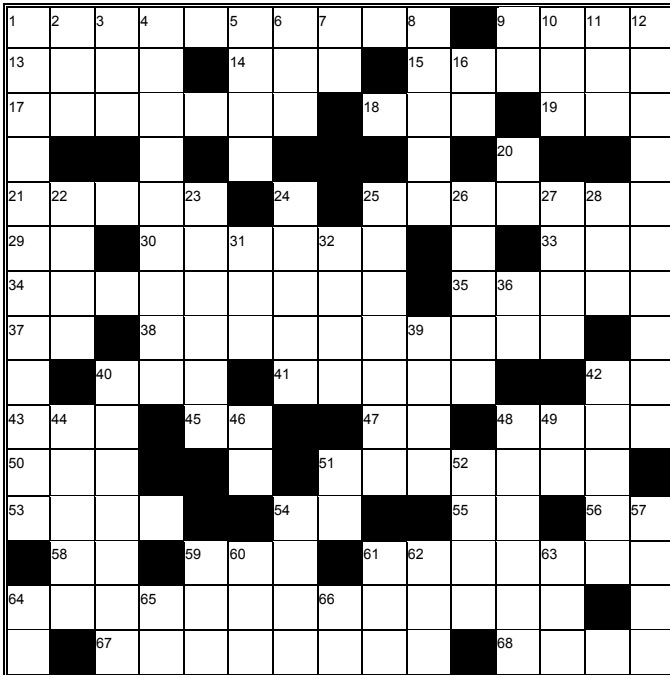
1. Bacterial Risk Control Strategies for Blood Collection Establishments and Transfusion Services to Enhance the Safety and Availability of Platelets for Transfusion <https://www.fda.gov/media/123448/download>



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CROSSWORD PUZZLE



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- Click [here](#) to download the answer key.

Across

- Agglutination type classically seen in A₃ individuals (2 wds)
- Anticoagulant in purple top tubes (abbr)
- It could be scanned in a biometric reader
- Common hospital locale for transfusion use (abbr)
- _____ antiglobulin test
- Time spent in rest or relaxation
- ___-T cells: cancer treatment by Kymriah or Yescarta
- Another name for the GI tract
- Sentinel _____ reporting
- _____ Optia apheresis machine
- State where FACT has been headquartered for many years (abbr)
- Extreme complication of citrate toxicity
- Root beer brand
- Cause of kernicterus
- Urinary _____ infection
- ___^a, high incidence antigen in MNS system
- Blood donated for own use
- "A Nightmare on ___ Street", 1984 film
- Pertaining to the kidney
- In the direction of
- Alternative to tube testing for the blood bank

- Surgical suite (abbr)
- Blood group system established in 1964; ISBT011
- Most numerous chess piece on the board
- Australian big bird
- Poisonous mushroom genus
- _____ limiting step in an enzymatic reaction
- Part of the heart that often prolapses (abbr)
- Indefinite article
- Neonate, for short
- Clotting cascade numeral for prothrombin
- Erythroid culture colony count (abbr)
- U.S. city with the first blood bank (1937)
- Lab instrument using a laser to count or qualify cells suspended in a fluid column
- Rh _____ phenotype is lack of D expression
- _____ management

Down

- Old eponym for blood group antigen MNS7
- Anger
- First factor in the intrinsic path of the clotting cascade
- _____ workers: those first in line for COVID-19 vaccines
- Terminate an employee
- Treatment for a hematoma in the first 24 hours
- Authority regulating recovered plasma sent to France (abbr)
- Desmopressin (abbr)
- Triage area of hospital (abbr)
- RBCs must be stored between 1 and 6 of these units C, for short
- Fort Worth school with Horned Frog mascot (abbr)
- A magnet's effect on iron shavings
- Result of first EIA run that causes you to repeat it in duplicate (abbr)
- Not an iMac (abbr)
- Target of phlebotomist
- Company that makes 25 *across*
- _____ and Delivery area of hospital
- Physician is one for medical doctor, or erythrocyte for RBC
- Praise enthusiastically
- "Mini" strokes (abbr)
- It carries hemoglobin (abbr)
- The Egyptian boy king
- West _____ Virus
- Symbol for platinum-related element with atomic number 44
- Duffy system gene mutation
- Lab procedure for stripping antibody off RBCs
- Dolly Parton might be said to have one
- The bane of our office existence
- Doctor's abbreviation for a prescription
- Lobster or crab claw
- Plasma inhibitor of factor IIa and Xa (abbr)
- ___ fistula – vascular access device (abbr)
- Platelet destroying disease of newborns (abbr)
- A mixed breed dog, disparagingly
- The classic 1998 reference ___ by Peter Issitt was made available again by AABB in 2019
- TB vaccine (abbr)
- Duffy antigen
- Infection that can be prevented by leukoreduction of RBCs (abbr)
- ___-Haw, old TV variety show
- ___ Shapiro, NPR journalist
- Chemical symbol for iron
- You and I
- Term for bugs acquired in immunosuppressed persons (abbr)