

Connection

A Newsletter of CCH Laboratory Services

September 2016

What impacts blood shortages?

By Rachelle Hoeft, CCLS Transfusion Services Specialist

According to the American Red Cross, every 2 seconds someone in the U.S. needs blood. Although an estimated 38 percent of the U.S. population is eligible to donate blood at any given time, less than 10 percent actually do.

The American Association of Blood Banks (AABB) released a notification July 11 that outlined a significant shortage impacting the U.S. blood supply implicating summer months as a challenging season for donations. Summer break reduces the number of healthy teens donating. An increase in vacations also cuts into blood donations. At the same time there is an increase in activity of the general population. The summer months therefore are known as "Trauma Season" for hospital emergency rooms.

There are many other factors also impacting the current blood supply.

Recent limitations have increased potential deferrals of donors. In 2014 AABB standards introduced TRALI mitigation focusing on collecting AB plasma from male donors, females who have not been pregnant, or females who have been tested since their most recent pregnancy and results interpreted as negative for HLA antibodies. This decreased eligibility for collection of AB plasma.

The collection centers testing menu also increased. In 2014, the FDA cleared investigational testing of donated red cell products in tick endemic areas for Babesiosis. This testing increases in the summer months for those few health care institutions that have a patient population requiring babesia negative product. The products that test positive are unable to be released and are destroyed. The donors also are indefinitely deferred with no current protocol for reentry into the donor pool.

The most recent FDA-approved investigational test of donor blood is for the Zika virus. Positive results also result in destruction of blood products. Additional items have been added to the donor history questionnaire regarding Zika for screening purposes.

Those who meet specific criteria on the questionnaire are deferred for a 4-week period.

In addition, donor centers increased the hemoglobin requirements for male donors. The acceptable hemoglobin level for both male and female donors was 12.5g/dL. Effective May 2016, male donors now are required to have a minimum hemoglobin level of 13.0g/dL. This will result in an increase in donor deferrals.

On the hospital side of the issue there are added factors exacerbating the blood shortage. There has been increased demand of blood/blood products due to an increase in number of complex therapies such as chemotherapy, organ transplants and heart surgeries.

To combat the shortages in product availability, Patient Blood Management programs have become a staple in the transfusion services and hospital settings. These programs focus on lowering the hemoglobin level trigger for transfusion or limiting product use at the onset of transfusion (Why use 2 when 1 will do!).

In addition to requiring less product, decreasing unnecessary transfusions for patients have a multi-fold benefit. This includes decreased cost to hospitals, decreased cost to patients, and decreased exposure leading to transfusion reactions or alloimmunization. For the donor centers, Patient Blood Management programs help to allow blood/blood components to be available for patients in their time of need.

**For more information
on blood management
programs:**

Please feel free to email
hoeftr@centracare.com



American Red Cross

The need is constant.
The gratification is instant.
Give blood."

1-800-GIVE-LIFE | RedCrossBlood.org

Life-cycle of the tick and tick-borne illness

By Dorothy Lindquist, Monticello Laboratory Manager



Summertime is passing in the great Midwest. As Minnesotans we take advantage of the warmer weather and spend more time outdoors throughout the fall. If you are like me, you realize it is a great time to exercise with your favorite family members. In my case, it is Molly the dog. We recently learned that Molly has come into contact with a tick-borne illness called Anaplasmosis. Following her recent check-up, I received a call from the vet informing me that Molly has developed an antibody to the bacteria.

Molly appears to be past the potential illness stage of her Anaplasmosis. In her case the disease does not seem to be very severe; unless she develops symptoms, she will not even require treatment. She regularly goes for walks along the roadsides where we live. We keep her on schedule with her tick medicine but sometimes those preventive measures are not enough.

This situation brings to mind the need for tick awareness and information that may be helpful in avoiding tick-borne illnesses and goes beyond repellants when out and enjoying the landscapes where ticks reside.

The most common ticks to prey on pets in the Midwest are hard-bodied ticks (soft-bodied ticks are more common in the Southwest). The four stages of hard-body ticks are: egg, larvae, nymph and adult. Generally, adult female ticks breed while on their host then drop off to lay their eggs on the ground. There may be several thousand eggs laid at one time.

When a tick egg hatches the larval stage emerges, this is the only 6-legged stage in the tick life-cycle. These 6-legged ticks are very small and difficult to see with the naked eye. They will attach to a host to obtain their first blood meal. Larvae often attach to smaller animal hosts near to the ground. Deer tick larvae frequently find their first host relationship with the white footed mouse, who among other rodents, acts as a reservoir for *Borrelia burgdorferi* which is the bacteria responsible for Lyme Disease. Interestingly, adult female ticks do not pass *Borrelia* type bacteria to their eggs therefore larvae are uninfected.

After this initial feeding, larvae drop off to process the meal, grow and shed or molt their outer skin, maturing to their next stage — the nymph. The nymph develops an additional set of legs; this is the first stage with eight legs which is hallmark to the arachnid classification to which ticks belong. Nymph stage ticks are larger than their larval predecessor but still somewhat difficult to see with the naked eye making this stage the most menacing for humans. A tick must be attached for 36-48 hours to transmit

bacteria to their host. At this stage, this attachment time is more readily accomplished as they are not easily seen. Once again, the nymph requires a full meal to develop into adulthood and may already be carrying disease-causing bacteria or viruses acquired from their larval-stage host.



Fig 1

Once the nymph tick has completed their meal, it will detach from the host, drop off and continue to grow and force the shedding of its outer layer to finally become an adult. Up until this point the distinction between male and

female ticks is minor. However, once reaching adulthood, male and female ticks play significantly different roles in disease transmission.

Adult male ticks, even though they may attach to a host for breeding purposes, do not take an additional blood meal and therefore do not transmit disease. The adult female, however, does take an additional meal to nourish the eggs she eventually will lay. The adult female is capable of expanding her body size by several times with this final meal.

Understanding this phenomenon will help in identifying between the adult male and adult female tick. As no further abdominal distending blood meals are taken, adult male ticks have a hard outer casing, called a carapace, that extends the entire length of their body. This is seen as an unremarkable symmetric pattern covering their back. Adult female ticks require the ability to expand well beyond their normal size; therefore, their carapace covers a portion of the back nearest to the head. Adult females are easily identified by the distinct “collar-like” or “cape-like” design on their back. It is especially important to be able to identify females and remove them as soon as possible as they will attach long enough to cause potential harm, see Fig 1.

Once a tick has attached, it is important to understand the mechanics of the feeding process. The tick head and mouth, or capitulum, are made up of two basic parts: The hypostome and two attachment arms called palps, see Fig. 2. The tick secretes a cementing fluid to securely attach the palps on either side of the puncture site. The tick will then “drill-in” with the hypostome to reach a blood source. For this reason, it is important to use a slow and steady motion when removing an attached tick so as to completely remove the proboscis and not tear it — causing part to stay behind in the skin. It also is important grab the tick closest to the skin avoiding squeezing the body of the tick which would cause secretion to be injected into the host.

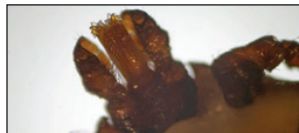


Fig 2

QUESTIONS AND COMMENTS

If you have questions or comments, please contact **Jeremy Angell**, coordinator, CentraCare Laboratory Services, 320-251-2700, ext. 57248 or cclabser@centracare.com. If you would like to be added or removed from our email distribution list, please let us know.



Laboratory information system support

By Luke Rieland, Coordinator, IS Ancillary Systems

A **laboratory information system (LIS)** is a software-based computer system that manages multiple aspects of laboratory informatics. The LIS provides a mechanism for order tracking and management, data exchange between instrumentation and other operating systems, result delivery and billing, as well as many other quality assurance components.

These complex systems cannot function without a team “behind the curtain.” The LIS team for CentraCare Health acts as the resource for Sunquest LIS and products. They also support our affiliate partners using Sunquest including Douglas County Hospital, St. Gabriel’s Hospital, Tri-County Hospital and Clinics and Renville County Hospital and Clinics.

In addition to providing general computer support, the team develops and oversees the interfaces between the analyzers in the laboratory as well as the interfaces between Sunquest and CentraCare’s Epic electronic medical record (EMR). Team members also work on the Epic side of the laboratory environment build and work with the other LIS systems that integrate with Epic.

If they aren’t working on a support call, they are partnering closely with the CCH Information Systems teams on one of many health system projects. This can include building a new test in Sunquest, programming functionality for new clients, or testing new workflows in the Sunquest test environment for the Epic project team so they can ensure that their build works with laboratory orders, results or charges.

sunquest.

If you have Sunquest issues and need help, you can open up an ISSM ticket through the CentraNet or call the **CentraCare Health IS Helpdesk at ext. 54540** and ask for the **Sunquest LIS team**. We’ll be happy to help!



CCH LIS Team

Pictured (L-R): Ronda Arnold, Renae Wirkkula, Karen Kiffmeyer, Diane Stein

Upcoming Education Opportunities



Tri-State (Regional) CLMA Conference
September 15–16

Sanford Research Facility, Sioux Falls, SD

FALL SYMPOSIUM



VOICE-VALUE-VISION

ASCLS Region V Fall Symposium
October 6–7

Baymont Inn and Suites, Fargo, ND



2016 ASCP Workshops for Laboratory Professionals
November 16–18

The Ramada Plaza, Minneapolis, MN