Cord Blood Bank Looks to Expand Volume, Diversity of Supply

By Tyler Smith

The signs of growth on the bustling Anschutz Medical Campus are obvious, even to the casual visitor: cranes, swinging beams, and thousands of square feet of new drywall and brick. But behind the scenes, and just beyond the edge of campus, another boom is under way – one that is creating an ever-brighter beacon of hope for researchers and patients with serious illnesses who depend on blood cell transplants to save or extend their lives.

The University of Colorado Cord Blood Bank (UCCBB), housed behind a non-descript door in a corner of the Bioscience East building at the eastern end of Montview Blvd. in the Fitzsimons Life Science District, is one of roughly a dozen federally funded cord blood banks in the U.S. Within its walls are 8,000 units of blood available for transplant, thanks to women who have donated the blood from their umbilical cords following birth.

The frozen red blood cells processed from the donations go all over the world to the rapidly growing number of patients in need of transplants to treat blood and autoimmune disorders.

Donated cord blood that can’t be used for transplant is available to researchers at University of Colorado Hospital, the CU School of Medicine and elsewhere.

“‘We’re a substantial bank in the cord blood world and one of the oldest,’” said Jonathan Gutman, MD. Gutman, of UCH’s Blood and Marrow Transplant/Hematologic Malignancies program, is co-medical director of the bank with Ralph Quinones, MD, of Children’s Hospital Colorado's Center for Pediatric Cancer and Blood Disorders.

Period of growth. The bank has provided some 600 cord blood units for transplant, but that number could become a distant memory soon. In June, the UCCBB began collecting cord blood from three Arizona hospitals: St. Joseph's Hospital and Medical Center, Phoenix Baptist Hospital, and Maricopa Integrated Health System.

The collections are the result of a partnership between ClinImmune Labs, the parent organization of the UCCBB, and the Arizona Biomedical Research Commission. A $6.3 million grant from the federal Human Resources and Services Administration fueled the collaboration.

Donations from the Arizona hospitals will bolster the stores of cord blood the bank already collects locally from Denver Health and Exempla St. Joseph, noted Brian Freed, PhD, executive director of ClinImmune Labs.

“The contract with Arizona should double the amount of cord blood we collect in the next three years,” he said.

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Blood ties. Like any good collaboration, the benefits are mutual. Building a cord blood bank from the ground up in Arizona would have cost roughly $5 million, a price tag the state concluded it couldn’t afford, Freed noted. On the other hand, collecting blood from Arizona not only increases the number of units the UCCBB has to meet demand, it helps the bank meet one of its key goals: increasing the diversity of its blood supply.

The greater the number of donors from various ethnic groups and nationalities, the better the chances of finding blood that closely matches a recipient’s human leukocyte antigen (HLA) – the protein the immune system uses to recognize foreign cells in the body.

“We want to reach out to more minorities,” Freed said. “We were particularly interested in Arizona, as it is home to 28 different Native American tribes – and we want to collect blood from more Native Americans.”

Freed said it’s about twice as hard to find a blood match for minorities as it is for Caucasians.

The problem is caused not only by a lack of supply – there are many fewer African-Americans than Caucasians, for example – but also because older populations, such as Africans, are more diverse. That makes it more difficult to match the HLA of donor and recipient.

A bigger, more diverse cord blood supply could make all the difference to a patient suffering from acute myeloid leukemia, sickle cell disease or another potentially deadly blood disorder, Gutman said.

“We may be able to get a match in days instead of weeks,” he said. “That’s important for those without much time to wait.”

The search for additional supplies continues, Freed added. ClinImmune recently received a request-for-proposal from the state of California, which is looking for a cord blood banking partner to serve its highly diverse population of 38 million.

A partnership with Hawaii, which has a large population of Pacific Islander Americans, is also a possibility. Freed said officials from the state are scheduled to visit ClinImmune and the UCCBB this week.

New regs. Meanwhile, the bank is in line to become the second public cord blood bank to earn licensure from the Food and Drug Administration (FDA). The FDA conducted a five-day inspection of the facility in early August. The bank made its final responses to the inspectors’ observations this month, Freed said.

The FDA considers cord blood a drug because it’s manipulated and stored for long periods of time, and ultimately goes into an individual’s body. The licensure establishes standards for the storage and collection of blood, HLA and infectious disease screening and other factors, Gutman said.

All public cord blood banks will eventually be FDA-licensed, he added, but the supplies in those banks represent only a small portion of the cord blood inventory worldwide. Large numbers of private companies solicit cord blood donations from women, promising to bank the blood, but also demanding a large, upfront charge for collection and storage. Donors to public banks, in contrast, pay nothing.

“It’s an unregulated industry and the quality of the product can be poor,” Gutman said. “The standards are not necessarily in line with what cord blood banks need to do.”
Obtaining cord blood suitable for transplant is an expensive, resource-intensive process – the blood must be milked from the umbilical cord, stored, extensively screened and typed. If it is safe, the blood is centrifuged to separate the red blood cells, which are frozen until they’re needed for transplant.

But the state of Colorado, Gutman added, has set aside dollars to ensure that a woman who wants to donate her cord blood can, free of charge.

“The idea is to make it possible for anyone who is motivated to donate,” Gutman said.