



An intelligent system monitors the entire blood collection, use and transportation process in Shanghai.

Another critical task for the authorities is blood safety, and Shanghai has taken the lead in this area.

“Checking for viruses and bacteria among blood donors is more difficult and time-consuming than in hospitals. We must use the most strict check and pathogen inactivation technology to ensure blood safety because these are healthy people who may be carriers or asymptomatic,” said Zhu Ziyang, vice director of Shanghai Blood Center.

In addition to using advanced technology to stop diseases from being passed through the blood, local scientists are working with their counterparts from other countries to make a new blood collection machine that can kill pathogens while collecting blood.

“Typically, blood center technicians must open the blood bags to insert the inactivator. There is a risk of pathogenic exposure and contamination. The new machine, which has an international patent, can lower the risk,” Zhu said. “The next step will be to conduct a clinical trial.”

Blood safety is not only a clinical issue, but also provides people with a sense of security. Shanghai is home to the country’s largest rare blood bank, which has identified and stored information on more than 1,200 different

types of rare blood.

Most countries such as China have similar definitions of rare blood. Blood types with fewer than one per 1,000 people are classified as “rare blood,” according to Zhu.

“When determining whether a donated blood sample is rare, we conduct extensive tests. Hospitals will also share information about patients who have been identified as having rare blood during primary screening prior to blood transfusion.”

Blood is complex. There are over 350 classifications for red blood cells alone. There are only two types of ABO and Rh, which are known to the general public, Zhu noted.

“We also developed two chips that can identify more than 120 genetic loci for common rare blood types in a single analysis,” he added. “When we find someone with rare blood, we contact him or her for more personal information. If there is another rare blood holder with clinical demand, they can assist one another.”

“Because rare blood types are usually genetically inherited, we encourage the person to bring their family here for testing. We will recommend that such a person freeze their blood in our center for emergency use,” said Zhu.

“Unfreezing the blood for clinical use only takes one to two hours.”

There is a long deadline for rare blood freezing period. It is 10 years in China while different countries have different rules.

“To detect and collect more rare blood types, we have established the Yangtze River Rare Blood Alliance, which centralizes all rare blood type information in the region in a single database. Over 600 rare blood types have been identified and recorded in the last two years,” Zhu said.

Compared with Han Chinese, minorities and foreigners are more likely to have rare blood.

“If we have information on more holders of the same rare type and more frozen samples, it will be extremely useful in the event of an accident or medical emergency,” he said.

Shanghai Blood Center has sent or received rare blood from both domestic and international blood centers in order to save patients, according to Zhu.

“A large rare blood bank is also a kind of public health and safety guarantee,” he added. “So, for our own safety, I believe blood donation is the best way to find rare blood. Everyone who is eligible to donate blood is encouraged to do so not only for others but also for themselves and their families.”



Donors can keep track of their blood on smartphone after donation.