

2016 Annual Report



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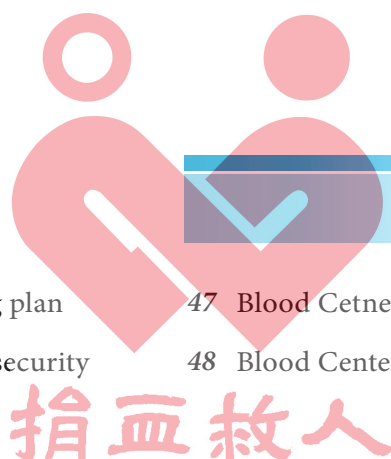
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Message from the Chairman of the Board

It has been three years since I began my service in Taiwan Blood Services Foundation. Many plans that require improvisation and the addition of care and services for blood donors are in the midst of implementation.

In order to provide better blood donation operations and environment for the donors and staff, we have added 8 fixed blood donation sites between 2014 and 2016. Currently, there are 62 blood donation sites in Taiwan, and some of the existing blood donation sites are undergoing renovations to provide a more comfortable environment and better services to the donors.

The addition of blood donation sites and decrease in blood mobile deployment is one of our objectives. Blood donation rooms are more spacious and comfortable, thus providing donors with enough room for resting and reducing the possibilities of discomfort after the donation while staff can also provide better care to the donors. This project will continue to be implemented in future. Next, we need to strive to increase blood

donation volume on non-holidays and reduce the deployment of bloodmobiles on holidays to prevent the imbalance and over-concentration of blood donations during the holidays, which will cause difficulty in staff deployment during holidays. As such, the cultivation of regular blood donation habits is one of our key priorities.

Beginning from November 2015, we have provided cholesterol, low-density lipoprotein (LDL-C), and glycated hemoglobin (HbA1c) tests for donors over 40 years of age and have participated in multiple donations over the past 2 years. BMI calculation was also fully included in the health inspection reports to assist donors in avoiding chronic diseases caused by obesity, hypertension, hyperglycemia, and hyperlipidemia. Beginning from 2017, we have made plans to expand the services to more donors and decrease the age limit as we have found an increasing number of young people showing same symptoms. We have a responsibility to ensure the healthcare of donors because healthy donors ensure a high quality and safe blood supply for medical use.

In terms of the safety and quality control of blood transfusions, this is one of our key emphasized areas. We have passed PIC/S GMP certification, which is considered quite advanced in the Asia Pacific region. We have prioritized the use of male-predominant plasma, stored leukoreduced apheresis platelets (reached 33.7% of supply volume), stored leukoreduced packed RBC (reached 12.5% of supply volume), and these blood products are still increasing gradually by the year. Some of the newer items such as “Taiwan Hamovigilance System” will also be implemented this year, signifying a good start.

Blood components and supply need to undergo changes in response to the reforms in medical environments, especially so for automation processes of blood components, as well as equipment upgrades. This change will be one of the key work priorities for the next two years, and we hope that we will be able to replace the blood component manufacturing equipment with the latest models. As for blood screening instruments, we will conduct assessments, and complete the



necessary instrument upgrades within the next two years.

Due to sub-replacement fertility rates and aging population, the promotion of blood donation among the younger population is also one of our key emphases. In 2016, we successfully integrated the popular communication software, LINE, to develop the “Blood” official account and establish a smart portal for the communication of donation information. Through the high reliance of young generation on LINE, the software can remind the users to roll up their sleeves and donate their blood, in turn cultivating a regular blood donation habit. Besides “Smart Inquiries”, “Personalized Notifications”, and sending “Specified Summons”, the official account can serve as a mobile assistant for donors, and more than 80 percent of donation inquiries can be answered through LINE, for example, want to find blood donation spots, you



can obtain a map easily through the LINE account. The successful experiences of the collaboration with LINE this time, has also created an unprecedented example in the dissemination of donation-related information to widespread or specific groups through the LINE communication software. This is also a major breakthrough and challenge to us.

With the major changes to the Labor Standards Act, the implementation of the “one fixed day off and one flexible rest day” policy has required us to come up with an appropriate response measure for human resource management, overtime, and work schedules, such as reducing the scheduling of work on Saturdays and Sundays, reducing bloodmobile deployment, and ensuring that most of the blood recruitment burden would be handled by the fixed blood donation sites. This is our future expectation, and we believe that the donors would be able to understand and strive to make this change.

Blood donation exists because the injured and the patients require blood transfusion to save their lives. However, it is only made possible with the efforts of countless and passionate donors. What we are doing is to provide blood users with the most suitable, safest, and high quality blood, provide

comprehensive donation environment to donors to allow them to complete the donation comfortably, and assist donors in caring for their health as only healthy donors can ensure safe blood supplies.

In addition, I would also like to thank the media, all walks of the society and our government departments for devoting their attention and contributing their guidance to the blood donation sector. I believe that all the staff in the blood donation sector of Taiwan is doing their best to ensure the sustainability of the noble operations and to achieve the expected objectives. Regardless of the difficulties, we have reached a consensus, similar objectives, and we are proud to be a part of the medical industry in Taiwan. We will stand together with the donors and contribute our part to ensuring the safety of blood users and blood transfusion!

Chairman of the Board

Yeh Ching-Chuan



Goals and Missions

The Foundation is to practice a non-remunerated blood donation system, to conduct donation and supply of blood, to improve the quality of blood for medical use, to protect the rights of patients, and to enhance the health of the citizens. Specifically, the missions of the Foundation are:

1. To plan and implement blood donation services;
2. To establish blood donation systems, and to conduct research and development on safe blood use;
3. To conduct research on blood science and technology;
4. To collect , laboratory-test, and supply blood for patients of public and private hospital;
5. To conduct research on the health maintenance of blood donors;
6. To conduct matters concerning the use and safety management of blood suitable for transfusion;
7. To plan and supply blood in large quantity at times of major disasters or wars;
8. To commission toll fractionation , to storage and supply domestic plasma derived products;
9. Other matters concerning blood donation and supply.

Chronicles

(1974-2016)

- 1974**
- April** • Chinese Blood Donation Association was formally established on April 19.
 - August** • Taipei Blood Center was established on August 1.

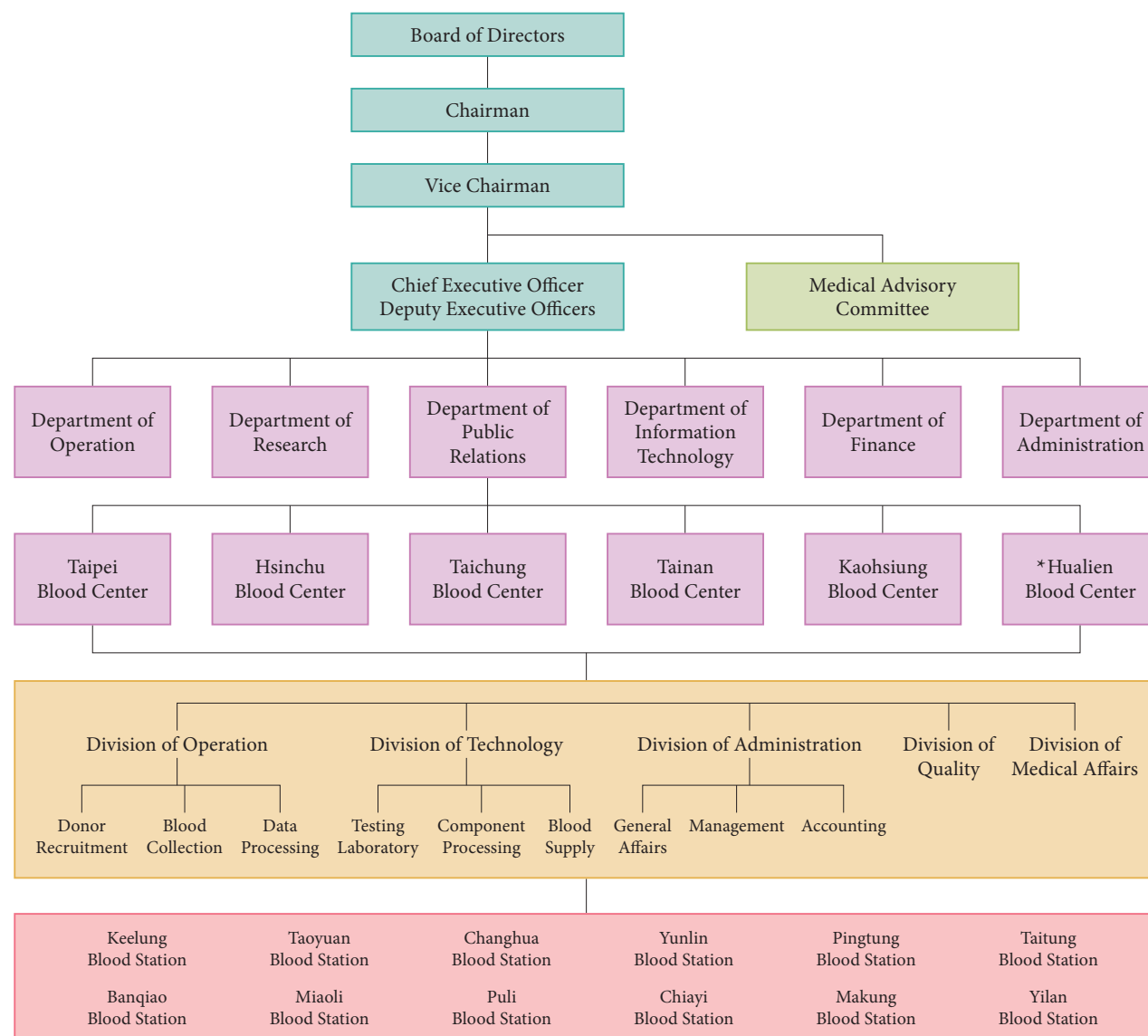
- 1975**
- October** • Taichung Blood Center was established on October 31.

- 1976**
- September** • The donation ceremony of the first blood donation mobile, “Ren-Yi Bloodmobile”, was held on September 3.
 - December** • The Kaohsiung Blood Center was established on December 21.

- 1977**
- September** • The Technical Advisory Council was formed on September 14. In order to increase the control over blood quality, improvements in blood screening, and other handling processes related to the collection, testing, derivative production, supply, and disposal of blood, as well as other technical issues, experts and researchers were specifically invited to join the council to provide specific suggestions. The first batch of council members included Yan, Chun-Hui, Liu, Zhen-Hui (Director of Experimental Diagnosis Department, currently known as Department of Laboratory Medicine NTU Hospital), Huang, Yun-Fei (Director of Hematology, Tri-Service



Organization



* As of April 1, 2017:
Hualien Blood Center will be renamed as Hualien Blood Station and placed under the administration of Taipei Blood Center.
Yilan Blood Station will be placed under the administration of Taipei Blood Center.
Taitung Blood Station will be placed under the administration of Kaohsiung Blood Center.

General Hospital), and Dr. R. Palmer Beasley (Maxwell Finland Award in 2011, Hepatitis B Foundation's Distinguished Scientist Award in 2010).

1978

- June** • Chinese Blood Donation Association began issuing the bi-monthly “Blood Donation Newsletter”.
- July** • Taipei Blood Center was the first to start the production and supply of blood component products. During the initial stages, the center supplied packed RBC, washed RBC, WBC concentrates, platelets, FFP, and FP.
- September** • Dr. Baruch S. Blumberg visited Taipei Blood Center and proposed that plasma tested positive for HBsAg could be used to manufacture Hepatitis B vaccines. (Dr. Baruch S. Blumberg was the co-recipient of the Nobel Prize in Physiology or Medicine in 1976 for discovering the Hepatitis B)

1979

- August** • Kaohsiung Blood Center began the production and supply of blood component products.
- October** • Taichung Blood Center began the production and supply of blood component products.

1980

- January** • To support the blood donation campaign, Taipei Mayor Lee Teng-Hui (later became the first elected President in Taiwan) encouraged citizens to participate actively in the blood donations and arrived at Taipei Blood Center, becoming the 150 thousandth blood donor in Taipei.

1981

- April** • Began to supply frozen RBC, frozen deglycerolized RBC, and cryoprecipitate.
- July** • Tainan Blood Center was established on July 1.

1982

- January** • Tainan Blood Center began the production and supply of blood component products.

1983

- January** • Taipei Blood Center began to conduct apheresis blood donations, and offered WBC apheresis and platelet apheresis services.
- March** • Hsinchu Blood Station, Taipei Blood Center was established on March 1.

1984

- July** • Taipei Blood Center and National Taiwan University (NTU) Hospital collaborated to establish the “Hemophilia Care & Research Center” on July 18.

1985

- January** • Hualien Blood Station was established on January 16.
- April** • To promote national research and development in blood science and technology, the National Science Council, Executive Yuan collaborated with South African Medical Research Council to delegate Lin Su-Juan (Supervisor of Component Department, Taipei Blood Center) to South African National Blood Service to learn the dry powder production techniques of cryoprecipitate for a period of 2 months.

1986

- November** • Due to illness, one French priest in Taiwan required to transfuse C,e and Fya antigens negative, group O blood. Taipei Blood Center immediately contacted French National Blood Service (EFS) and delivered 1,600 units of the same blood type to Taipei in time for transfusion.

1987

- March** • The bi-monthly “Blood Donation Newsletter” published by the Chinese Blood Donation Association was changed to a monthly publication, “The Blood”.
- April** • When the car bomb attack occurred in Colombo, Sri Lanka on April 21, Taipei Blood Center immediately provided about 11 thousand units of frozen plasma to Sri Lanka by air transport. The incident created the first precedent of Taiwan providing blood supplies in foreign assistance.
- June** • Effective from June, the Department of Health, Taiwan Provincial Government revoked all blood bank operations jointly organized by the Red Cross and the ten county hospitals, and



ceased all paid donations; as well as assisted the hospitals to set up their blood banks, supplied by the Chinese Blood Donation Association, to improve the blood quality.

1988

January • Began HIV antibody screening test for all blood donors.

1989

January • Increased the maximum age limit of blood donors to 65 years old

December • To prevent blood donations from high-risk AIDS groups and other unsuitable donors, the Blood Centers have issued out “Considerate Call leaflet”, whereby donors could call to notify the Centers if the blood donated is unsuitable for use to avoid jeopardizing harming the health of recipients.

1990

January • Chinese Blood Services Foundation was formally established on January 1.

September • Due to the unrest, Sri Lanka made requests to Taiwan for plasma and other medical supplies. The Foundation immediately sent 200 bags of frozen plasma by airfreight to Sri Lanka to assist the wounded for the first time.

1991

January • Ceased sending blood usage notices.

• The Department of Health, Executive Yuan reduced the legal age for blood donation from 18 to 17.

April • Hualien Blood Center was established on April 1.

1992

May • Hsinchu Blood Center was established on May 1.

• Magong Blood Station was established on May 1, becoming the first blood donation station established on the outlying islands.

• Began HCV antibody screening test for all blood donors.

• Began to supply leukocyte-reduced RBC.

September • Began to provide HLA Class 1 and antibody screening services.

October • Chinese Blood Donation Association was awarded the first “National Public Service Award – Social Service Award”.

1993

January • President Lee Teng-Hui issued a public plea for blood donations, urging the people to participate actively in the blood donation campaign and be a happy donor.

February • Began to provide HLA matching services in platelet apheresis

July • The first case of AIDS window period infection in Taiwan occurred on July 21.

1994

March • In accordance with Department of Health, Executive Yuan regulations, with effect from March 1, blood donors must present their Identification Cards or other certification when donating blood. At the same time0, to eliminate the risks of people abusing the blood donation for testing AIDS, all donors would not be notified of the HIV test results.

October • With effect from October 1, a pilot trial was implemented to change intervals between whole blood donations (including 250cc and 500cc) to 3 months.

November • With effect from November 3, an additional 1% was charged in every unit of blood transfused as the relief fund for HIV contacted via blood transfusions.

December • To protect the right to know of blood donors, the testing reports were once again sent to donors. Besides HIV testing results, the donor should be notified of all other testing items.

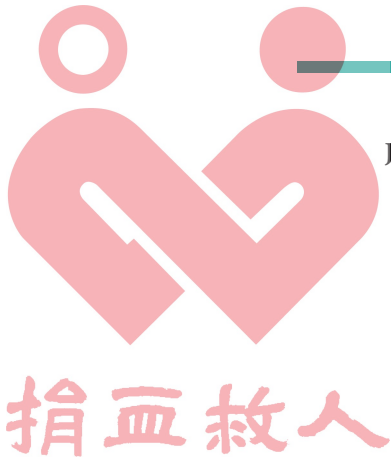
1995

July • Began HIV-2 screening test for all blood donors from July 1.

October • Effective from October 1, the interval between whole blood donations of 250cc would be resumed to 2 months whereas the interval between whole blood donations of 500cc would be resumed to 3 months.

1996

January • With effect from January 26, Anti-HTLV inspection was implemented on blood products to ensure the safety of medical blood supplies.



1997

- January** • The “TBSF” plasma derivative production was officially launched on January 1.
- April** • Taipei Blood Center was the first to conduct pilot trials of plasma apheresis donation.

1998

- February** • Began RBC irregular antibody screening test
- April** • Established the first public umbilical cord blood bank in Taiwan, and collaborated with Department of Obstetrics & Gynecology, NTU Hospital, formally commencing the collection of umbilical cord blood.

1999

- November** • The 10th Western Pacific Regional Congress of the International Society of Blood Transfusion (ISBT) was held in Taipei from November 11~14, during which the Foundation and the Blood Centers present on 29 scientific abstracts
- December** • The Foundation was awarded the second National Public Service Award on December 29.

2001

- April** • Began to supply leukocyte-reduced platelets apheresis.
- November** • On November 5, the Foundation passed UKAS ISO 9001: 2000 accreditations and a certification conferring ceremony was held.

2002

- June** • In order to prevent new type Creutzfeldt-Jakob diseases (CJD), effective from June 25, the Department of Health amended the health requirements of blood donors whereby donors are ineligible to donate if they have traveled to or resided in United Kingdom for more than 3 months, shortened from 6 months. Donors who have traveled to or resided in Europe for a cumulative time of 5 years or more from 1980 were also included in the donation eligibility conditions.

2003

- January** • The online donor inquiry system was officially launched on January 28.

- May** • The severity of the SARS outbreak greatly impacted the blood donation and supplies of the Blood Centers.

2005

- January** • Effective from January 1, the calculation for the annual donation volume and the number of apheresis donations conducted a year of the donor was changed from calendar-based computations to birthdate-based computations.

2006

- June** • The Foundation established a free Donor Service Hotline 0800-099-519 on June 1 to provide comprehensive services.

2007

- June** • On June 6, an HLA-matched umbilical cord blood was sent to the Bone Marrow Transplant Center in Hong Kong.

2008

- January** • The domestic “TBSF” component derivatives were officially supplied to the hospitals and medical institutes for use on January 1.
- April** • The Foundation was officially renamed as “Taiwan Blood Services Foundation” on April 28.
- July** • To strengthen services to the donors, beginning from July 1, cholesterol, uric acid, and ferritin inspection services were offered to regular donors (donated blood within the past three years) every six months to increase the health awareness of donors and encourage them to protect their health.

2009

- September** • The “Automatic Low-Temperature Archive Samples Bank” built within Hsinchu Blood Center was completed and launched on September 1.



2010

- January** • The “Inventory Stock Management System” of the Foundation was activated on January 1, vastly improving procurement and warehousing efficiency.

2011

- May** • On May 30, the Foundation donated 1,249 bottles of “TBSF” High Purity Factor IX Concentrate, and commissioned DHL to deliver the supplies to the “World Federation of Hemophilia” in Dublin, Ireland, where the supplies would be donated to 14 other countries, such as Bangladesh, Philippines, Tunisia, Kenya, Jordan, Egypt, Lebanon, Bolivia, El Salvador, Nicaragua, Paraguay, Moldova, Uzbekistan, and Kyrgyzstan.
- June** • On June 27, the Foundation delivered a second batch of supplies containing 2,400 bottles of “TBSF” High Purity Factor VIII Concentrate to the “World Federation of Hemophilia” in Dublin, Ireland, where the supplies would be donated to 6 other countries, such as Myanmar, Laos, Sudan, Cuba, Paraguay, and Kyrgyzstan.
- July** • On July 18, the Foundation delivered a third batch of supplies containing 2,462 bottles of “TBSF” High Purity Factor VIII Concentrate to the “World Federation of Hemophilia” in Dublin, Ireland, where the supplies would be donated to 5 other countries, such as Bangladesh, Vietnam, Syria, Ecuador, and Uzbekistan.
- October** • The Taipei Blood Center obtained the cGMP certification on October 5.
• The Taichung Blood Center obtained the cGMP certification on October 27.
- November** • The Tainan Blood Center obtained the cGMP certification on November 17.
• The 2011 Asia Regional Congress of the International Society of Blood Transfusion (ISBT) was held in Taiwan from November 19~23, during which the Foundation and the Blood Centers present 55 scientific abstracts.
- December** • Hsinchu Blood Center obtained the cGMP certification on December 1.
• Kaohsiung Blood Center obtained the cGMP certification on December 9.

2012

- March** • The Reference Laboratory of Taipei Blood Center obtained the Taiwan Accreditation Foundation (TAF) certification on March 12.
- April** • The HLA Reference Laboratory of the Foundation obtained the Taiwan Accreditation Foundation (TAF) certification.
- May** • The Reference Laboratory of Kaohsiung Blood Center obtained the Taiwan Accreditation Foundation (TAF) certification on May 14.

2013

- January** • The Nucleic Acid Amplification Testing (NAT) was implemented on all blood products of the Foundation.
• In accordance with the Personal Information Protection Act, blood usage reports were ceased to protect the confidentiality of the blood users.
- February** • Beginning from February 1, NAT negative blood products would be supplied.
- September** • In the “Pharmaceutical Inspection Co-operation Scheme (PIC/S) 20th Expert Circle Meeting on Human Blood, Tissues, Cells and ATMPs” organized by the Food and Drug Administration, Ministry of Health and Welfare on September 9~14, 47 participants from 22 countries were invited to visit Taipei Blood Center and engage in inspection simulation.
• On September 13, the umbilical cord blood bank suspended operations, and 2,056 specimens of umbilical cord stem cells were transferred to the College of Life Science, National Taiwan University for use in biomedical research.

2014

- July** • A TransAsia aircraft crashed in Magong, Penghu Island on July 23. The Kaohsiung Blood Center activated the contingency response mechanism, ensuring a stable supply of blood for the Penghu regions.
• On July 31, a major gas explosion occurred in Qianzhen and Lingya Districts, Kaohsiung City, causing high fatality and casualty rates. The Kaohsiung Blood Center immediately deployed blood supplies to ensure a reliable supply.
- December** • On December 31, the Foundation completed the establishment of WiFi networks for blood donors at the 103 blood donation sites.

2015

- February** • A TransAsia aircraft crashed in Taipei City on February 4. Taipei Blood Center immediately deployed personnel and blood supplies to the hospitals.
- June** • On June 27, an explosion occurred in Formosa Fun Coast in New Taipei City. The Foundation immediately deployed personnel and blood supplies to offer support to the hospitals.
- July** • In order to reduce transfusion reactions, TBSF would adopt two types of measures in donor screening and blood supplies with effect from July 1. 1) Plasma from male donors would be prioritized for clinical transfusions. 2) Leukocyte Antibody Detection (LAD) tests would be conducted on apheresis donations from female donors. Donors with antibodies would be



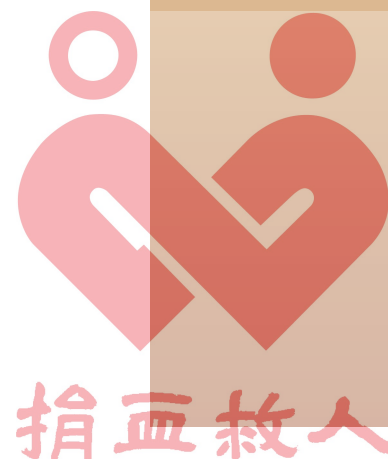
advised to donate whole blood.

- November** • With effect from November 1, blood donors who have donated blood in the past 2 years and are above 40 years of age would have to undergo additional cholesterol, LDL-C, and HbA1c tests every 3 years, and BMI values would be included in every inspection report.

2016

- January** • A major earthquake occurred in southern Taiwan on January 6, causing building collapses and heavy casualties. Media reported of blood shortages while internet users forwarded messages of blood shortage on the social media. The Foundation immediately issued a press release on the response measures taken.
- July** • From July 27~December 22, Technical Specialist Yang Meng-Hua of the Research Department of the Foundation joined Dr. Uchikawa's team in studying the monoclonal antibody production techniques for the Miltenberger blood group at the Kanto Koshin-etsu Block Blood Center, Japanese Red Cross.
- August** • "BE THE 1—Donor Recruitment Campaign" was a global campaign in which American company Abbott invited the captain of Portugal national football team, Cristiano Ronaldo, to be the representative for the recruitment of blood donation. The Taiwan Blood Services Foundation had obtained the authorization from the headquarters of the global campaign, allowing the portrait of international football star, Cristiano Ronaldo to be displayed in Taiwan, in the hopes of inspiring more people in Taiwan to become donors.
- October** • The LINE official account ID, "Blood", of the Foundation was formally launched on October 6. The three main functions of the account include "Smart Inquiry", "Personalized Notices", and "Specified Feeds". It is like a mobile assistant for blood donors, and it created a new benchmark in smart inquiries.

Program activities



Program activities

5.1 Recruitment and retention of blood donors

In Taiwan, blood donations tend to drop significantly during the Chinese New Year period because everyone is busy celebrating the most important holiday according to traditional customs. Therefore, the month before Chinese New Year has been designated “Blood Donation Month,” not only to raise people’s awareness about donating blood but also to ensure plentiful blood supply for medical procedures in each hospital. During Blood Donation Month each year, we choose a broadcasting theme. In 2016, the theme of Blood Donation Month, which falls between January 6th and February 6th is “Healthy blood donation, unlimited energy!” This is meant to especially emphasize that “Safe blood comes from healthy blood donors”, which means that people need to keep healthy in their daily lives so they can continue to donate blood to save the lives of others.

A press conference with the theme “Healthy blood donation, unlimited energy!” was organized in Bao-Zhen Shen Hall at Taipei City Government by the Taiwan Blood Services Foundation, Taipei Blood Center, and Department of Health at Taipei

City Government on January 5th. On that day, Taipei’s Mayor, Wen-Je Ko, was invited along with blood recipient, Ceri Line, blood donor, Mr. Kun-Lin Wu, and entertainer, Yin-Yin to encourage people to donate their blood. At the press conference, Yin-Yin demonstrated healthy gymnastics, leading blood mascots to dance for health with all the attendees.

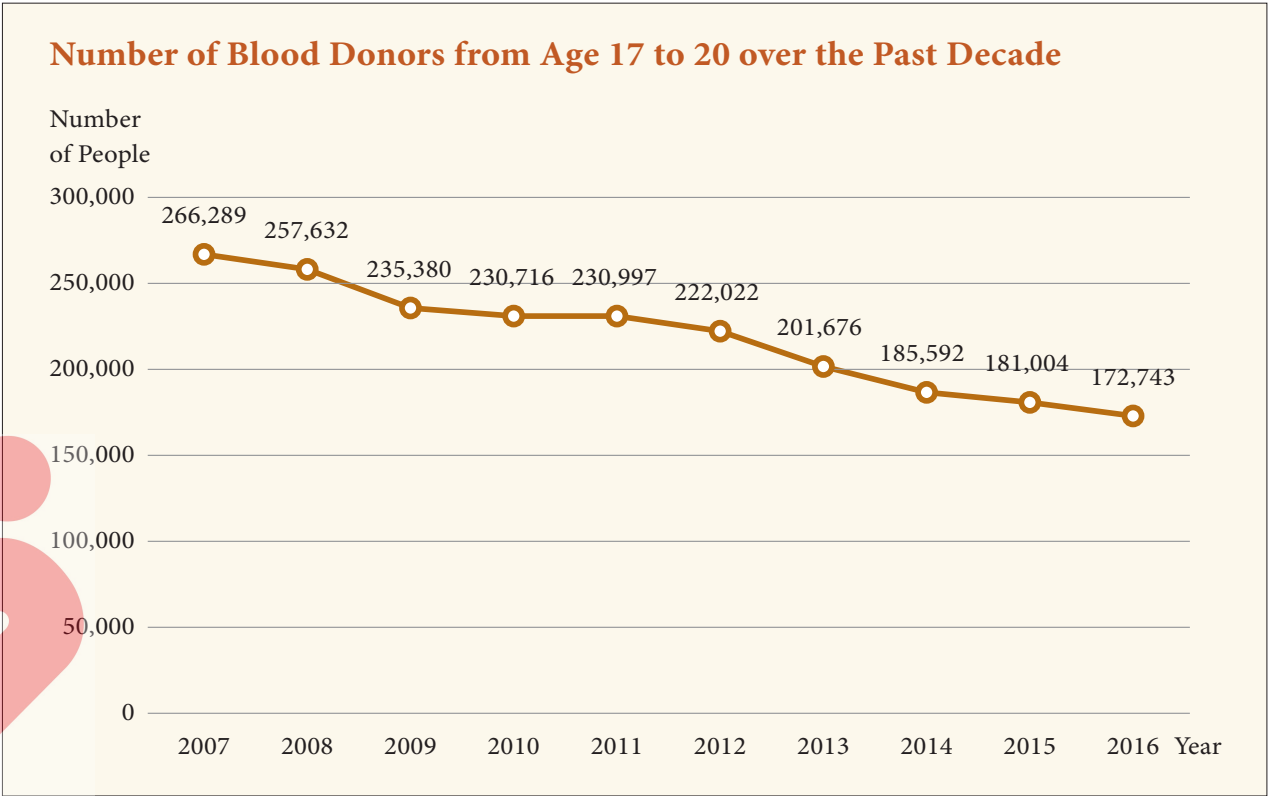
Ceri Lines from Great Britain, who followed his parents when they returned to Taiwan, has lived here for more than 30 years. In March 2011, he was diagnosed with acute leukemia, also known as blood cancer, which only has a two-week survival rate. However, instead of just giving up, he actively pursued treatment. After the long and harsh treatment process, including chemotherapy, blood infusions, and so on, he has gradually recovered and now has a new lease of life. He is very grateful to the numerous strangers who donated their blood to help him restore his health through multiple blood transfusions during his treatment. He is a sports lover and often participates in ironman contests in addition to jogging and biking regularly. Therefore, exercise is the best way to stay healthy.

Mr. Kun-Lin Wu, who works for the Department of Environmental Protection at Taipei City Government, has donated blood since he was 20 years old. His motivation is from his father’s need for a blood transfusion during an operation when he was young. At that time, he borrowed blood donation cards from his friends and relatives so that his father could get first priority for a blood transfusion. He kept this support in mind and became determined to donate his blood to help others in the future. Once he started donating his blood, he made it a habit and has become a regular blood donor at the blood donation room at Taipei City Government. As of the end of 2015, he has donated 1510 units of blood.

The theme of World Blood Donor Day 2016 determined by the World Health Organization (WHO) was “Blood connects us all” with the slogan

“Share life, give blood”, which focused on voluntary non-remunerated blood donation schemes and encouraging people to love each other.

In 2016, the 3M Company collaborated with the Taiwan Blood Services Foundation and was sworn in as a good partner for promoting blood donation activities in Taiwan. 3M Nexcare™ Give events have been held in 23 countries around the world in collaboration with blood donation agencies in each country, continuing the “Feel the Beat, Give Blood” activity first launched in the U.S. to encourage more people to understand their ideas. The first 3M Nexcare™ Give event was held in Taiwan in 2016. In order to let young people feel the vitality of giving blood, 3M Taiwan particularly applied for breathable water-proof bandages with a limited quantity of 45,000 and encouraged people to wear the Nexcare™ Give bandages, which



symbolizes the support for blood donation and has become a national priority for public welfare campaigns and pay tribute to blood donors. These activities aim to raise public awareness to the issue of blood donation issues and urge young people to actively donate blood.

Furthermore, blood donation statistics show that the number of blood donors from the ages of 17 to 20 in the past decade have decreased from 260,000 in 2007 to 180,000 in 2014 due to the effect of low birth rates. The “Young Blood donation activity was initially promoted on June 14th, 2015 to ensure the number of blood donors could be maintained at the same rate as in 2016 with 180,000 donors. The rate of decline has slowed, but the number of blood donors has gradually decreased to less than 170,000. In the future, we hope that more Young Blood will join the ranks of the blood donation cause to increase the number of young blood donors.

The “BE THE 1—Donor Recruitment Campaign” is a global scheme in which the U.S. firm Abbott invited Cristiano Ronaldo, Captain of Portugal’s National Football Team, to serve as the spokesperson for blood donor recruitment. The concept of this initiative is: “For many blood recipients, finding blood that is perfectly matched is not just a matter of blood type; every blood donor is different, and the blood of each donor is likely to be unique. Blood donors may be the only people among the 7 billion population in the world who can save another life. Like Cristiano Ronaldo, inspire and motivate your friends to donate and

help them realize the profound impact they can have on the lives of others. After negotiations with Abbott, the Taiwan Blood Services Foundation has obtained the authorization of this global initiative from Abbott headquarters and so the portrait of this international football superstar can appear in Taiwan, which may inspire more people to become blood donors.

In addition, we would like to thank the Chinese Taipei Football Association, where 18 regional football committee members in the Association displayed posters of Cristiano Ronaldo’s “BE THE 1” on their football fields and promoted them on the main page of their official website to successfully promote both football and blood donation. The Taiwan branch of the U.S. firm Abbott also sponsored advertisements in MRT train cabins and on advertising lightboxes of the platforms so that the more people who see the blood donation supporter, Cristiano Ronaldo, the more blood donors could be recruited!

The mobile communication software, LINE has been installed by almost everyone in Taiwan. It not only rapidly sends messages but can also be combined with a variety of APPs to provide users with greater convenience. As a part of its corporate social responsibility policy, the LINE company provides our Foundation with the right to use an official account and platform. On October 6th 2016, our Foundation and LINE jointly held a press conference “Blood” to launch the Foundation’s official LINE account and announcing the collaboration between both parties. This not

only marked the first collaboration in the world to combine the communication software LINE with a blood donation agency, but also symbolizes the new milestone that opens communication channels between Taiwan’s blood donation organization and blood donors.

The LINE official account “Blood” features three major functions: “Smart query”, “Customized notifications”, and “Push notification”. It can serve as a mobile assistant for blood donors. Some solutions can be found immediately via LINE, which sets a new benchmark for smart query. Meanwhile, our Foundation hopes that the LINE official account “Blood” can bring more understanding of the concepts of blood donation to more young potential blood donors in order to increase their willingness to donate blood.

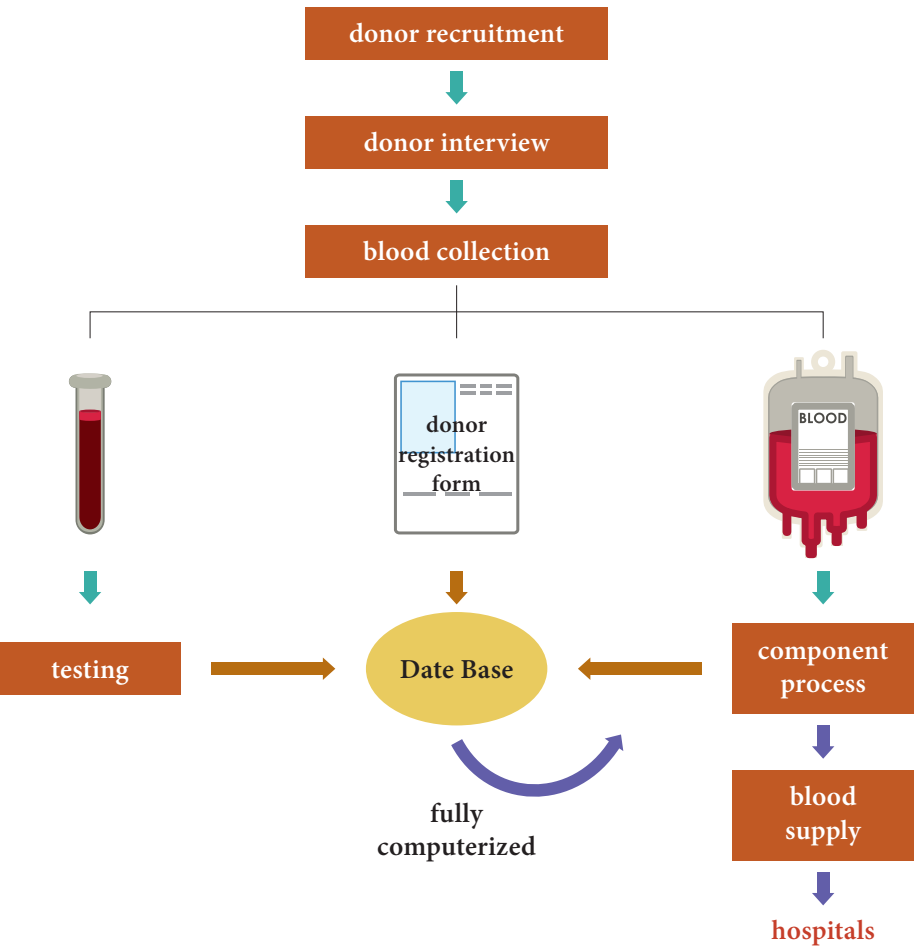
Simply enter the “keyword” and “Blood donation location check” of your questions in the chat window of our LINE official account. The system will automatically reply with the correct

answers. Furthermore, it provides such customized notification services as the “inspection report is completed” or the “next blood donation date”. Most importantly, whenever an emergency disaster occurs or large quantities of specific blood are needed, a message for blood donation can be delivered via the “Blood” LINE official account to qualified blood donors of a specific blood type or a particular region so that more people who need blood can be helped.

Each blood donation center of our Foundation organizes the “Blood Donors Award” between April and May every year to thank blood donors and blood donation organizers for their blood donations and enthusiasm, as well as to show respect toward them for their efforts throughout the year. Furthermore, some annual blood donors with excellent performance are even selected to meet the President via an activity co-organized by the government. We hope these activities will encourage and attract blood donors in order to maintain Taiwan’s blood supply at all times.



5.2 Blood operation process



The production of each bag of blood results from regional blood donation activities held after the evaluation and planning by the Donor Recruitment Section of the Blood Center. The personal information of each blood donor is filed and stored after the blood donor completes the blood donation registration form, the physical examination interview, and the blood collecting process. Then, each tube of collected blood is sent to

the Laboratory for viral, biochemical, & blood-type testing. The examination results are automatically delivered to the computer for storage. Each blood bag is sent to the Blood Component Processing Section to be further processed as each kind of final plasma product, such as packed RBCs, platelets, and so on. Finally, each qualified blood bag will be sent to the Distribution Section based on the needs of the hospital.

5.3 Blood donation operation process

A “Private Interview Space” is arranged in each blood center, blood donation room, and blood donation van so that each blood donor can honestly complete the survey and relevant questions in private surroundings. The following is an introduction to the blood donation process:



A photo ID, such as a Identification Card of Taiwan is needed to verify the identity of a blood donor during the blood donation process. In 2016, more than one million people donated their blood so the blood supply reached approximately 5.6 billion milliliters.



Inside the blood donation van, each seat is equipped with a monitor that plays a health lesson video about blood donation to remind blood donors of the importance of blood safety.



Each person needs to fill in the blood donation registration form, which in addition to basic information, also asks questions concerning recent individual health status and whether there is a high risk of sexual behavior and other issues that need to be answered honestly. Lastly, each person needs to sign the form.



The “Private Interview Space” is arranged to enable blood donors to honestly answer the questionnaire and related questions in private surroundings.





In addition to measuring weight, body temperature, blood pressure and hemoglobin, a nurse will provide health education about blood safety and ensure that the blood donor is qualified. This is the first step for blood safety check.



During the blood collection process, each blood bag is put in the automatic oscillator for weight measurement, and the quantity of collected blood is monitored to protect the safety of blood donors.



The “Conscience Call Back” sheet can remind blood donors to call the blood center back via the phone number on the sheet to ensure appropriate follow-up treatment of the blood can be carried out if they have not told health professionals of high-risk behaviors or any issues that they think may affect the safety of the blood.



Each blood unit will have four tubes reserved for each test.



The collected blood will be temporarily stored in a temperature-controlled container to maintain quality.



The following table lists relevant criteria and conditions for blood donation:

	Whole blood		Platelet apheresis	
	250 ml	500 ml	1 unit	2 units
Volume	250 ml	500 ml	1 unit	2 units
Age	17-65	17-65	17-65	17-65
Body weight	male: 50 kg female: 45 kg	60 kg	60 kg	60 kg
Oral Temperature	35.5~37.5°C			
Hemoglobin	male: 13g% female: 12g%			
Platelet count			180,000/uL	Trima: 250,000/uL MCS: 300,000/uL
Interval	2 months	3 months	2 weeks	
Max donations per year	male: 1500 cc female: 1000 cc		24 donations	



In the bright and open blood donation rest area, snacks like cookies and milk are served. Magazines and TVs are also provided in the area so that blood donors can relax after the process.



The collected blood and tubes will be delivered to the blood center by professionals in dedicated incubators and trolleys.

5.4 Inspection Testing

To ensure that the quality of examination is consistent and labor costs are kept low, laboratory testing is mainly performed in two sites. Testing Sections in Taipei Blood Center and Kaohsiung Blood Center are in charge of nationwide blood examination operations. Currently, standard examination items include: ABO blood type, Rh blood type, irregular antibody screen, ALT, HBsAg, anti-HCV, anti-HTLV, anti-HIV, syphilis, and viral nucleic acid testing (HBV, HCV, and HIV-1). The examination operating procedure is as follows:



Daily inspection operations can accommodate up to 6,000 specimens using fully automated testing equipment. Test results are delivered via an exclusive network to each blood donation center to meet the goals of speed, accuracy, and safety.



The specimen will undergo a centrifugal operation process for the convenience of fully automated testing operations.



After tubes are ranked in order, a fast fully automated barcode scan is performed to accurately and safely obtain information.

A variety of automated test equipment



Freedom EVOlyzer:
EIA methods are used to test HBsAg, anti-HCV, anti-HTLV, anti-HIV and so on. To ensure test sensitivity, British working standards are used for each test run.



Beckman AU5800:
Fully automated ALT, Cholesterol, and LDL-C test equipment.



Beckman PK7300:
Fully automated blood type, syphilis test equipment, and irregular antibody screening.



TIGRIS:
Fully automated viral nucleic acid test (HBV, HCV, and HIV-1)



5.5 Blood donor services

In addition to the routine regular blood donation testing, since November 1st 2015, our Foundation has also performed three tests, namely, Cholesterol, LDL-C, & HbA1c, every three years for consenting blood donors who are older than 40 years old and have donated blood more than once within the past two years. The BMI of a blood donor is shown in the test report. Furthermore, for blood donors who are older than 40 years old and have donated blood more than once within the past two years, if they have donated whole blood more than 100 times or apheresis blood more than 500 times, they can receive one free abdominal ultrasonic examination in one of our Foundation's appointed hospitals.

5.6 Component Processing

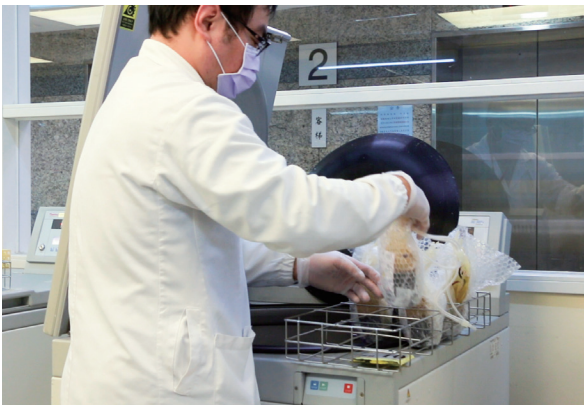
After non-remunerated blood donated is returned to the blood donation center, it will go through the counting process, computer input, blood component processing, checking and bacteria testing (Apheresis platelet) to be made into a variety of final blood products. These final products will be supplied to each hospital for patient blood transfusions after undergoing strict blood testing processes.



Generally, blood will be sent to the Component Process Section within 8 hours of blood collection.



The number of blood units is counted and recorded in the computer.



Based on different centrifugal criteria, different final blood products can be produced.



Blood can be separated into plasma in the upper layer and red blood cells in the lower layer based on the principle of different blood composition density. The Automatic Blood Components Extractor can squeeze plasma out into adjunct bags to be sealed.



Using a WBC filtering device, white blood cells triggering an immune response can be removed to make the blood safer for transfusion recipients.



Packed RBC is sealed into four sections for blood group testing and cross matching in the future. Each blood bag tubing has a unique blood section number for further tracing, checking, and testing.



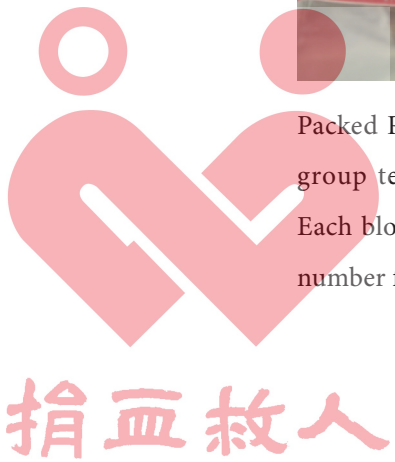
Every blood bag has a unique barcode and blood-type label for further tracing, checking, and testing.



Qualified blood items are put in blue baskets while unqualified ones are put in red baskets; while ones with unidentified results are put in green baskets, and ones that have not been examined are in yellow baskets.



Separated plasma and each final product needs to be carefully placed neatly to avoid stacking for uniform freezing.





Each qualified component needs to be labeled and placed neatly in blue baskets. These items are then managed in the warehouse according to different temperature conditions.



Other matters



Each unit of apheresis platelets is supplied only after passing bacteria testing to ensure the safety of transfusion recipients.

The preservation time, temperature, and material cost for each final product are listed in the table below:

Component	Expiration	Storage temperature	Cost (Dollar/ unit)
Packed RBCs	35 days or 42 days	1~6°C	475
Washed red blood cells	24 hours	1~6°C	675
Deglyceride Frozen RBC	10 years	< -65°C	1,375
PLT Concentrate	5 days	20~24°C	300
White blood cell concentrate	1 day	20~24°C	300
Apheresis platelets	5 days	20~24°C	4,300
Fresh frozen plasma	1 year	< -20°C	300
Frozen plasma	5 years	< -18°C	200
Cryoprecipitates	1 year	< -20°C	150
Whole blood	35 days	1~6°C	575
Leukocyte-Poor RBC	35 days or 42 days	1~6°C	925
Pre-storage Leukocyte-Reduced Apheresis Platelet	5 days	20~24°C	7,300

5.7 Distribution

The management, allocation, and transportation of blood for medical use are monitored based on the strictest standards in the five blood donation centers. The blood storage warehouse in each blood donation center sets different conditions for preservation temperature, environment, and equipment for different blood products. Blood supplies for hospitals are always available 24 hours. Specific refrigerator vans for blood freezing/storage are responsible for the allocation and transportation of blood for medical use in each hospital blood bank.

Current blood supply channels include five blood centers, 13 blood stations, and several proxy-supply hospitals.

Each blood storage warehouse of a blood center is equipped with a central temperature monitoring system to monitor blood temperature 24 hours/day. In addition to written documents, relevant information about temperature is filed and stored in electronic files so the records are more complete and accurate, and both the blood items and the equipment are safer and more secure. Each blood transportation vehicle of a blood donation center is equipped with the latest cold-storage/freezing system to monitor whether the temperature is stable and maintained within the standardized range so that the quality of each blood item can be ensured.



Blood supplies are currently classified into two categories: individual and group. Individual blood supply refers to the approach for an individual to get blood from the blood center when patients in hospitals that neither have blood banks nor a signed group-supply contract for the need of a blood transfusion. Group blood supply refers to hospitals that have blood banks or have signed a “group-supply contract” with a blood center. With this approach, the blood center will regularly deliver blood products needed to each hospital for storage so that blood is ready for transfusion at any time.

Meanwhile, each blood center has established a list of blood donors filed by red blood cell antigen. If a blood usage emergency occurs, the center will contact blood donors for immediate support.



The blood supplies of each blood donation center are available to hospitals 24 hours/day.





The quantity of stored blood in each blood center needs to be maintained at more than seven days for safety concerns. Four to seven days of storage are a bit lower, while less than four days of storage is considered dangerous. There is a safe storage quantity signal display set up on the official website of Taiwan Blood Services Foundation so that people can check the latest information of each blood donation center.



Each kind of final blood product to be dispatched to hospitals will be checked by computer one-by-one to ensure safety.



Based on the needs of each hospital, final products are put into boxes with clear labels for blood-type and blood item name.



Each packaged box of blood items will be put into a dedicated incubator bags.



They are put in specific transportation vehicles according to the temperature requirement of the blood item with temperature-monitored equipment and are ready to be delivered to each hospital.

In line with the health policy of “National blood used by the nation”, our Foundation started to collect source plasma in January 2007 to ease the difficult situation of a lack of blood preparations in Taiwan. The collected blood plasma’s original material is delivered by batch to the CSL plasma factory in Australia to be further processed into blood derivatives. Four blood derivatives of the TBSF are made: 20% Human albumin for Intravenous Use, Human Immunoglobulin for Intravenous Use, 250IU Blood Coagulation Factor VIII Concentrate, and 500IU Blood Coagulation Factor IV Concentrate. Among them, TBSF Human Immunoglobulin for Intravenous Use is the main supply in Taiwan and can already achieve the 100% supply-to-demand goal.

5.8 Reference Laboratory

As medical treatment improves, the demand for each subtype of blood clinically provided to patients receiving long-term blood transfusion also increases. Some blood types are quite rare. We continue to provide red blood cell consultation testing services, blood transfusion reactions, and blood transfusion infection survey services, as well as red blood cell raw materials to produce the testing reagents and supply the pre-blood transfusion antibody screen conducted by the hospital blood bank. Therefore, the clinical safety of blood transfusion can be ensured.

1. To provide HLA- or HPA-matched platelets.
2. To supply antigen-negative red blood cells (mainly E-, c-, Mia-)

5.9 Research on Quality assurance and blood safety

The Taiwan Blood Services Foundation and each blood center have passed ISO 9001 quality assurance. Our foundation and the laboratories in each blood center have also passed the ISO 15189 medical laboratory certification audit. Operation procedures include blood donor screening, blood collection, blood testing, blood component processing, storage & management, blood transportation and so on, all of which follow standard operating procedures (SOP) and are regularly audited by Taiwan’s health authorities (including TFDA, PIC/S GMP audit) and other certified bodies (SGS and TAF).

To produce plasma preparations for medical use in Taiwan from plasma raw material, we are regularly audited by Australian CSL plasma factories (the major plasma-producing factory in the world) and approved by the Australian government (TGA).

Our Foundation and the laboratories at the blood centers continuously participate in proficiency testing both inside and outside of Taiwan, including proficiency tests at CAP, NRL, ASHI, and the Taiwan Society of Laboratory Medicine.

We completed the initial study of the Dengue fever outbreak in Southern Taiwan in 2015, and these reports were presented at the ISBT in 2016.

Regarding blood donor management, we have analyzed the following repeat-donation behavior of blood donors with increasing willingness to donate from Northern Taiwan due to significant events, namely the relevant factors influencing



the quantity of the blood donation group, the corresponding construction for a predictive model of blood donation quantity, the effect analysis of introducing “Encouraging blood donors to donate fixed locations on regular weekdays” to the blood donation forecasting model, and the research of sleep quality and discomfort due to blood donation of blood donors from Eastern Taiwan. Regarding blood quality, the quality of packed RBCs returned and proxy-issued by hospitals has been discussed. With regard to the data bank, we accumulate, plan and organize huge amounts of data of blood donation/supply every year so we hope that such data may benefit relevant research.

To improve blood quality and increase blood safety, we continue our research programs. All research programs have been reviewed by the IRB (Institutional Review Board), and the IRB of our Foundation has passed the audit by the Ministry of Health and Welfare. Our research results are primarily recognized by blood transfusion medical experts and published in academic journals and at medical associations of blood transfusion both internationally and domestically.

5.10 Blood transfusion safety

To better understand the adverse reactions of transfusion, we and Taiwan Society of Blood Transfusion have established “Taiwan Haemovigilance System”. At first, five hospitals will start to report adverse events, and then every hospital in Taiwan will follow. Therefore, more improvements and reference data will be available for ensuring blood transfusion safety.

Furthermore, to reduce the risk of transfusion-related acute lung injury (TRALI), the policy of supplying male-donor-only plasma has been implemented since July 11th, 2015. Female blood donors for apheresis donation must pass the leukocyte antibody screening, which has led to the reduction in donations of antibody-positive blood. Therefore, more protection is provided for our blood supply. In addition, medical doctors at our Foundation actively hold medical lectures about blood transfusion in each hospital to advocate the concepts of “Blood transfusion reactions and preventive procedures”, “Blood component therapy-usage of pre-storage leukoreduced blood components before blood transfusion, and “Proper and effective blood transfusion”. These concepts can help to reduce the possibility of patient injury caused by blood transfusion, improve recovery, and reduce hospitalization costs so that the medical quality of blood transfusions can be promoted even further.

5.11 International exchange and training plan

Exchanges with other nations through active participation in international conferences and acquiring relevant new knowledge not only provides an important reference for every aspect of improvement but also serve as important channels for better understand of international situations.

In order to learn from the Japan Red Cross Blood Center project, we sent representatives to Japan from July 10th to 16th. The goal of this trip was to learn about the blood program experiences from one another through continuing international

exchange between Taiwan and Japan. During the visit, the Director of the Kaohsiung Blood Center, Chih-Min Hung delivered a briefing on “Performance of Blood Work Processes” , and the Director of Public Relations, Lilei delivered a briefing on “Introduction to the Taiwan blood services” as requested by our Japanese counterparts.

Regarding blood-type research, the research department at our Foundation has sent staff to Japanese Red Cross Kanto-Koshinetsu Block Blood Center produce a human hybridoma cell line to generate the monoclonal antibody Miltenberger. The finished cell lines include anti-Mia, anti-Mur, and anti-MUT. Since no testing reagents for such a blood-type antigen are available on the market, these could be applied to the Miltenberger blood-type assessment of blood donors and hospital patients and thus reduce the blood transfusion reaction of patients caused by un-matched Miltenberger blood types.

To strengthen the interaction and the mutual learning between Taiwan and mainland China, our Foundation has started the “Health professionals of blood donation & blood supply” training class, which covers topics including recruitment of blood donors, blood collection, testing and blood composition supply. We held three training sessions in 2016 with 46 participants from 15 organizations, including Chang-Sha Blood Center of Hu-Nan Province, Blood Center of Jiang-Sue Province, and Blood Transfusion Association of Hu-Nan Province.

5.12 Information business and network security

Our Foundation has used the current blood donation/supply management information system for more than a decade. Considering the assessment and concern of future blood donation services, the improvement of internal operational processes, blood safety, and quality control, our Foundation will complete the updated blood management information system and formally launch it online at the beginning of 2018. We hope to take advantage of these computer technologies to attain our digitalized, paperless, and automation goals to promote both operation quality and blood donor services.

To strengthen the prevention of malevolent software spread by new blackmail software via webpages or e-mail, we regularly invite professional lecturers to give educational training to all the staff at each blood donation center, in addition to daily updating of computer viral protection software codes. We hope to protect the personal information of blood donors, employees, and internet friends in a highly standardized way through everyone’s efforts and the monitoring by the personal information management committee. To increase complete network efficiency and effectiveness and the safety of computer information, we conduct risk assessments of information assets on information facilities and data. The risk classifications are all controlled in the range of low risk. In March 2016, the AD (Active Directory) web domain and virtual platform setup project was launched to establish and integrate the internet service



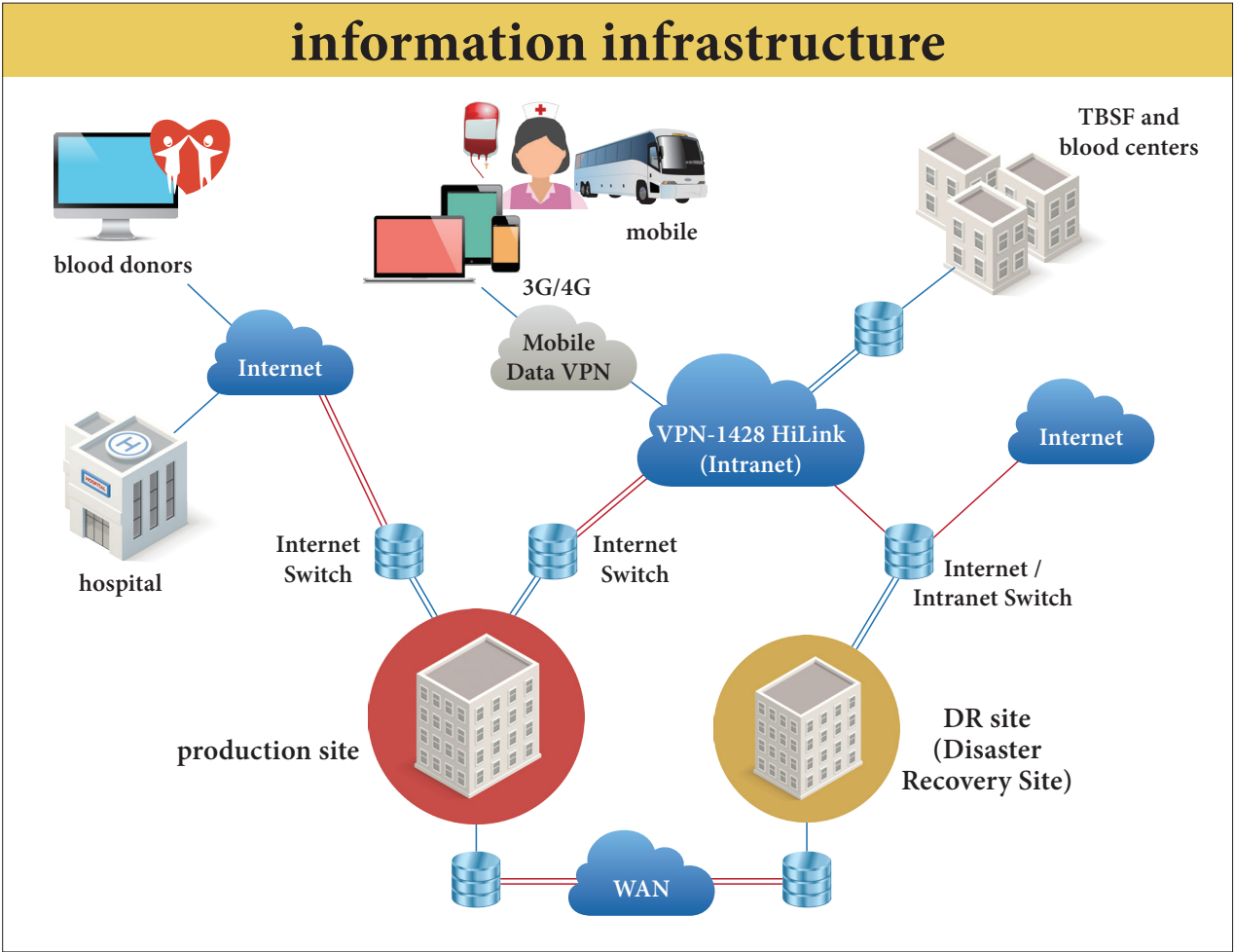


Illustration: Our Foundation provides the internet framework for the blood donation/supply system. Via a high-speed internet cable and wireless transportation, the information of blood donors can be checked quickly and accurately at each blood donation site.

management framework of activity contents at our Foundation and blood donation centers. We have also implemented a highly usable virtual platform framework into the management framework and completed the setup by the end of 2016.

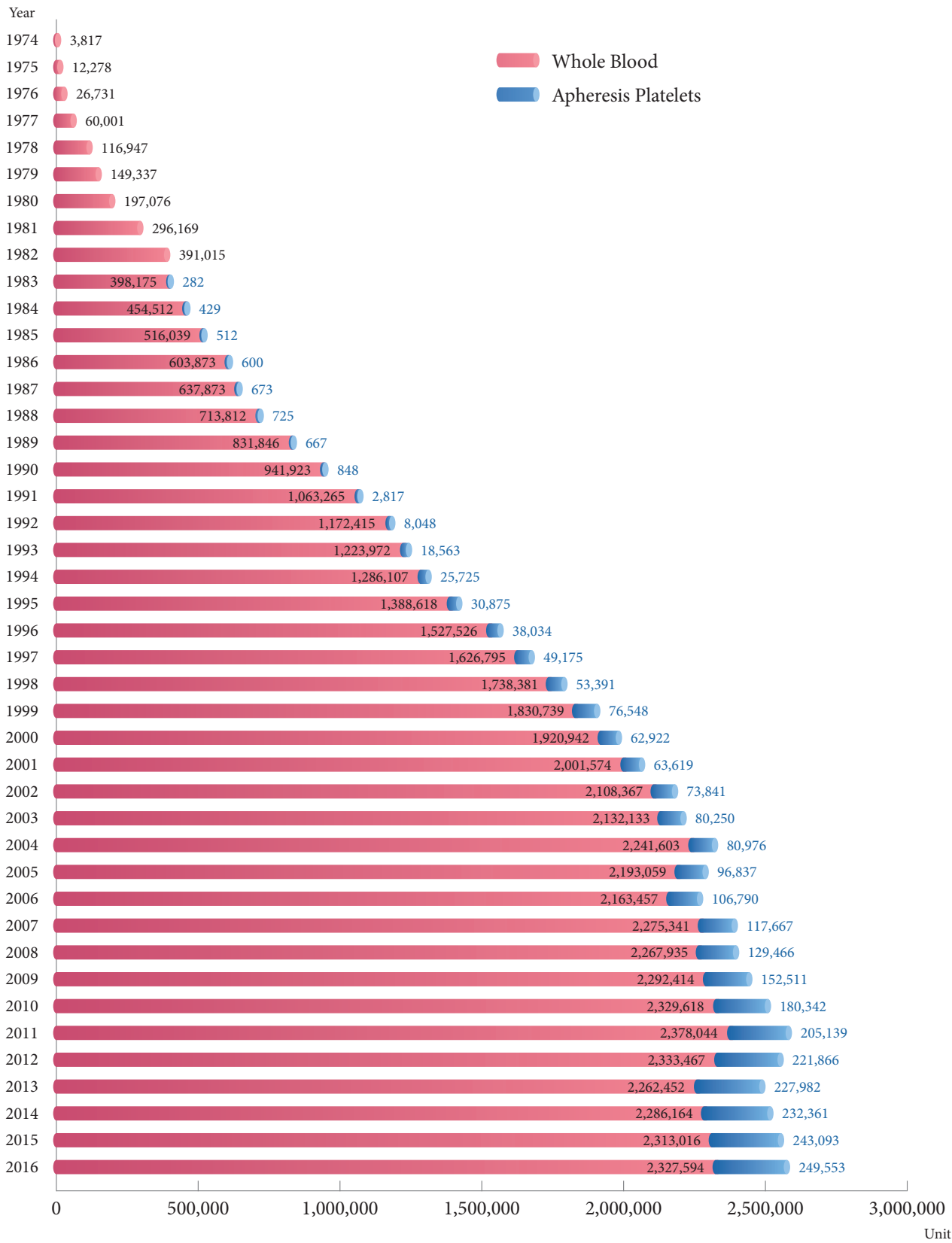
The system framework of the LINE interactive application platform adopts Gateway and Firewall to separate the LINE OA server from the backstage

management server and database to ensure the safety of blood donor information. The backstage function of the system can execute all automatic displays and accurately display to respective blood donors for blood donation activity broadcasts or individual blood donation invitations. In the future, more functions will be developed for the purpose of promoting blood donations.

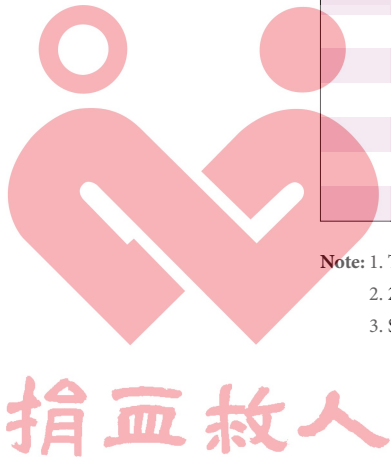
Statistics



Annual Blood Collection, 1974-2016



Note: 1. Whole blood: 250ml/1 unit; 500ml/2 units.
2. Single adult dose per unit for apheresis platelet and double dose counts for 2 units.



Annual Blood Collection by Blood Centers, 1974-2016

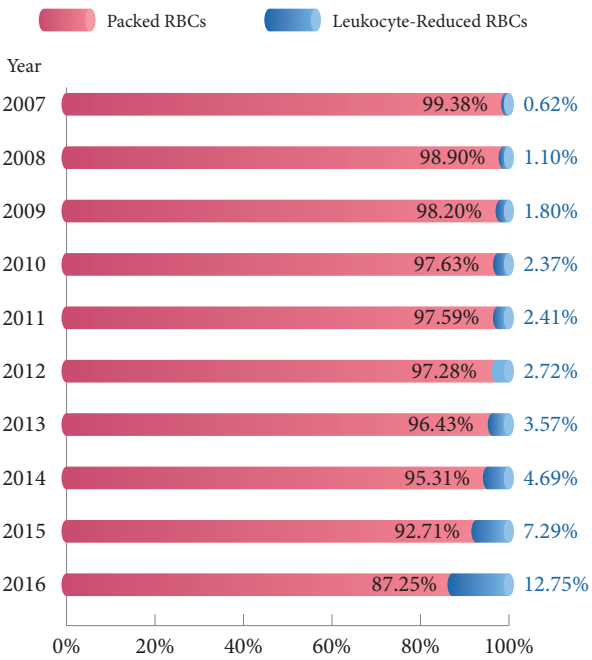
Unit

<div>Blood Centers</div> <div>Year</div>	Taipei Blood Centers	Hsinchu Blood Centers	Taichung Blood Centers	Tainan Blood Centers	Kaohsiung Blood Centers	Hualien Blood Centers	Total
1974	3,817	0	0	0	0	0	3,817
1975	11,734	0	544	0	0	0	12,278
1976	22,976	0	3,539	0	216	0	26,731
1977	42,277	0	9,004	0	8,820	0	60,101
1978	71,195	0	18,132	0	27,620	0	116,947
1979	92,730	0	24,723	0	31,884	0	149,337
1980	103,070	0	37,941	0	56,065	0	197,076
1981	141,944	0	58,861	22,535	72,829	0	296,169
1982	178,518	0	75,272	54,848	82,377	0	391,015
1983	166,589	0	81,054	49,897	100,917	0	398,457
1984	187,362	0	101,219	60,123	106,237	0	454,941
1985	212,340	0	126,400	66,602	111,209	0	516,551
1986	244,830	0	157,679	75,742	126,222	0	604,473
1987	220,585	0	187,697	88,036	142,228	0	638,546
1988	263,387	0	202,488	92,310	156,352	0	714,537
1989	312,578	0	231,199	119,179	169,557	0	832,513
1990	373,188	0	238,548	139,423	191,612	0	942,771
1991	421,109	0	252,561	156,192	205,905	30,315	1,066,082
1992	370,657	125,164	246,912	160,502	222,832	54,396	1,180,463
1993	388,038	149,011	243,638	161,876	241,022	58,950	1,242,535
1994	406,604	161,765	252,889	173,297	252,897	64,380	1,311,832
1995	428,194	192,614	274,883	183,239	268,862	71,701	1,419,493
1996	459,619	220,519	303,393	209,790	295,052	77,187	1,565,560
1997	471,476	244,527	330,239	224,863	323,066	81,799	1,675,970
1998	510,626	253,910	363,878	239,515	336,566	87,277	1,791,772
1999	553,940	266,497	378,516	257,309	360,060	90,965	1,907,287
2000	557,873	278,782	412,654	275,983	367,373	91,199	1,983,864
2001	579,618	294,690	425,953	285,551	381,998	97,383	2,065,193
2002	624,408	307,553	439,269	301,756	406,502	102,720	2,182,208
2003	618,458	313,214	462,180	305,455	411,132	101,944	2,212,383
2004	642,945	333,898	489,079	321,441	437,362	106,854	2,331,579
2005	650,850	320,732	463,553	322,630	429,914	102,217	2,289,896
2006	659,268	322,197	453,015	326,286	403,243	106,238	2,270,247
2007	694,060	338,614	488,984	348,662	413,210	109,478	2,393,008
2008	684,968	342,069	491,754	358,126	413,348	107,136	2,397,401
2009	718,841	326,619	487,230	382,251	420,616	109,368	2,444,925
2010	738,274	343,531	500,298	389,938	423,333	114,586	2,509,960
2011	753,611	347,807	507,104	405,553	453,274	115,834	2,583,183
2012	752,304	343,225	504,362	405,409	434,767	115,266	2,555,333
2013	737,642	336,853	487,170	401,442	414,876	112,451	2,490,434
2014	743,926	337,408	485,767	409,314	431,181	110,929	2,518,525
2015	744,106	355,943	498,956	418,909	423,721	114,474	2,556,109
2016	771,779	364,244	507,973	421,457	447,145	64,549	2,577,147

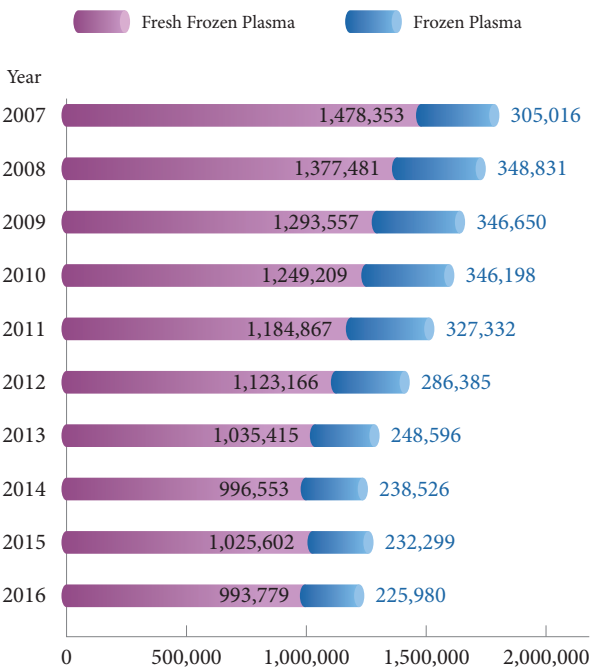
Note: 1. Total blood collection units: calculated by both whole blood and apheresis collection.
2. 250ml per unit for whole blood and 500ml counts for 2 units.
3. Single adult dose per unit for apheresis platelet and double dose counts for 2 units.

Blood Supply, 2007-2016

Leukocyte-Reduced Red Blood Cell Products



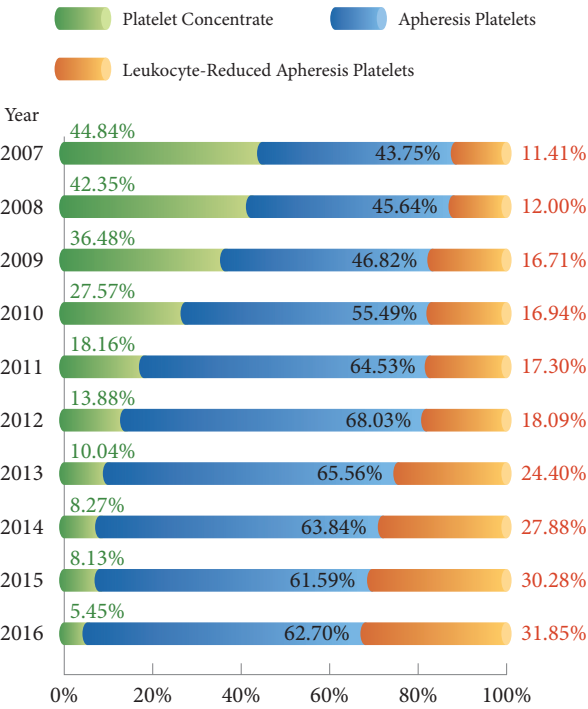
Plasma Products



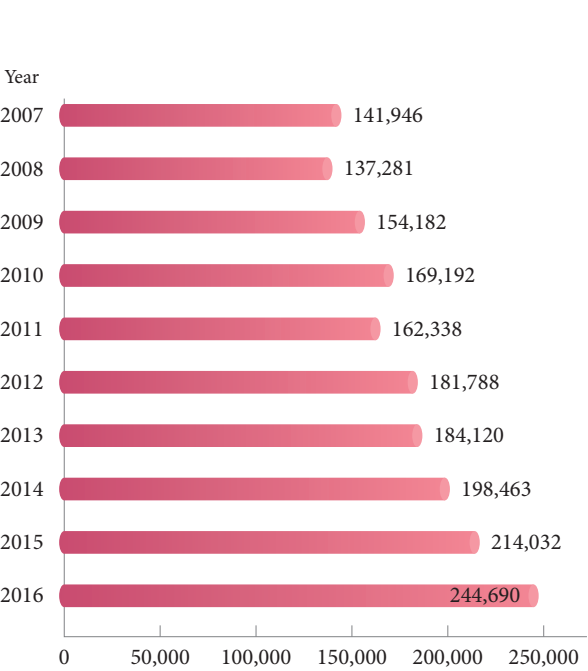
Note: 1. 250ml per unit for whole blood and 500ml counts for 2 units.
2. Single adult dose per unit for apheresis platelet and double dose counts for 2 units.
3. Single adult dose per 12 units for platelet concentrate.

Unit

Platelet Products



Cryoprecipitate



Blood Components supply in 2016

Unit

1. Whole Blood

Blood Centers		Taipei Blood Center	Hsinchu Blood Center	Taichung Blood Center	Tainan Blood Center	Kaohsiung Blood Center	Hualien Blood Center	Total
RBCs	Whole Blood	10,576	5,242	3,288	5,968	1,594	736	27,404
	Packed RBCs	574,879	288,251	300,075	335,961	374,695	48,763	1,922,624
	Washed RBCs	9,502	2,352	3,182	3,338	4,291	304	22,969
	Leukocyte-Reduced RBCs	72,068	20,906	142,537	21,586	13,688	10,066	280,851
	Frozen Thawed Deglycerolized RBCs	12	0	0	0	4	8	24
Subtotal		667,037	316,751	449,082	366,853	394,272	59,877	2,253,872
Plasma	Fresh Frozen Plasma	275,631	157,363	192,017	169,626	175,531	23,611	993,779
	Frozen Plasma	43,164	43,709	30,814	39,437	64,351	4,505	225,980
Cryoprecipitate		99,010	26,050	43,550	44,464	20,998	10,618	244,690
Platelet Concentrate		46,088	38,424	46,890	38,464	0	0	169,866
WBC Concentrate		3,108	0	2	52	2	0	3,164
Total Units Issued		1,134,038	582,297	762,355	658,896	655,154	98,611	3,891,351
Rate of Components		99.07%	99.10%	99.57%	99.09%	99.76%	99.25%	99.30%
Rate of Whole Blood		1.59%	1.65%	0.73%	1.63%	0.40%	1.23%	1.22%
PR ratio		47.79%	63.48%	49.62%	56.99%	60.84%	46.96%	54.12%

2. Apheresis

Blood Centers		Taipei Blood Center	Hsinchu Blood Center	Taichung Blood Center	Tainan Blood Center	Kaohsiung Blood Center	Hualien Blood Center	Total
Apheresis Platelets		59,657	20,942	25,911	28,019	25,128	3,264	162,921
Leukocyte-Reduced Apheresis Platelets		32,082	9,743	16,168	7,012	15,895	1,861	82,761
Total		91,739	30,685	42,079	35,031	41,023	5,125	245,682

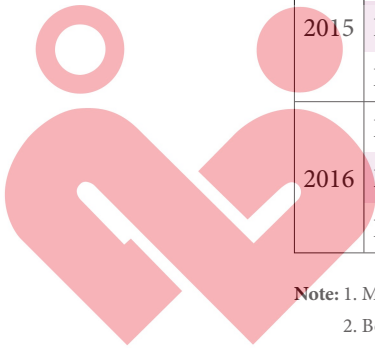
Note: 1. 250ml per unit for whole blood and 500ml counts for 2 units.
2. Single adult dose per unit for apheresis platelet and double dose counts for 2 units.
3. Blood component issued: total number of blood issued except whole blood.
4. The plasma numbers issued are for medical usage only, plasma for fractionation not included.
5. The supply of plasma-red cell ratio: total amount of plasma unit / total amount red cell unit.



Whole Blood Collection per 1000 Head of Population, 2007-2016 Liter/1,000 population

Year	<div>Blood Centers</div> <div>Item</div>	Taipei Blood Center	Hsinchu Blood Center	Taichung Blood Center	Tainan Blood Center	Kaohsiung Blood Center	Hualien Blood Center	總計 Total
2007	Blood Collection (Liter)	176,536	85,259	122,733	87,702	104,318	27,587	604,135
	Population	6,886,345	3,369,690	4,444,163	3,419,417	3,743,227	1,038,892	22,901,734
	Liter/1,000 population	25.64	25.3	27.62	25.65	27.87	26.55	26.38
2008	Blood Collection (Liter)	174,271	86,167	123,477	90,291	104,602	27,016	605,824
	Population	6,923,843	3,407,172	4,461,455	3,419,800	3,745,731	1,036,261	22,994,262
	Liter/1,000 population	25.17	25.29	27.68	26.4	27.93	26.07	26.35
2009	Blood Collection (Liter)	162,627	78,084	118,486	90,979	96,972	25,955	573,104
	Population	6,953,984	3,442,631	4,472,795	3,418,467	3,747,033	1,034,435	23,069,345
	Liter/1,000 population	23.39	22.68	26.49	26.61	25.88	25.09	24.84
2010	Blood Collection (Liter)	166,138	81,744	120,517	90,927	96,025	27,055	582,405
	Population	6,974,554	3,499,663	4,477,114	3,409,906	3,745,132	1,032,012	23,138,381
	Liter/1,000 population	23.82	23.36	26.92	26.67	25.64	26.22	25.17
2011	Blood Collection (Liter)	168,680	81,785	120,913	93,291	102,674	27,168	594,511
	Population	7,054,442	3,498,987	4,484,098	3,400,813	3,737,885	1,026,326	23,202,551
	Liter/1,000 population	23.91	23.37	26.96	27.43	27.47	26.47	25.62
2012	Blood Collection (Liter)	167,283	80,345	118,749	92,669	98,441	25,880	583,367
	Population	7,086,152	3,525,575	4,496,195	3,397,242	3,734,579	1,021,830	23,261,573
	Liter/1,000 population	23.61	22.79	26.41	27.28	26.36	25.33	25.08
2013	Blood Collection (Liter)	163,347	78,323	113,190	91,759	93,637	25,359	565,613
	Population	7,131,766	3,555,325	4,510,598	3,394,334	3,733,713	1,018,477	23,344,213
	Liter/1,000 population	22.90	22.03	25.09	27.03	25.08	24.90	24.23
2014	Blood Collection (Liter)	164,463	78,068	112,667	93,876	97,458	25,009	571,541
	Population	7,160,559	3,579,347	4,517,652	3,388,101	3,728,935	1,017,442	23,392,036
	Liter/1,000 population	22.97	21.81	24.94	27.71	26.14	24.58	24.43
2015	Blood Collection (Liter)	164,554	81,996	114,808	95,724	95,492	25,681	578,254
	Population	7,187,196	3,623,818	4,532,292	3,379,761	3,724,569	1,013,926	23,461,562
	Liter/1,000 population	22.90	22.63	25.33	28.32	25.64	25.33	24.65
2016	Blood Collection (Liter)	165,198	83,228	116,315	96,395	101,248	19,516	581,899
	Population	7,192,687	3,687,412	4,557,494	3,366,498	3,940,509	789,180	23,533,780
	Liter/1,000 population	22.97	22.57	25.52	28.63	25.69	24.73	24.73

Note: 1. Mid-year population, data from the Ministry of Interior.
2. 250ml per unit for whole blood.



捐血救人

Blood Donation by Blood Centers, 2007-2016 Donation

Year	<div>Blood Centers</div> <div>Item</div>	Taipei Blood Center	Hsinchu Blood Center	Taichung Blood Center	Tainan Blood Center	Kaohsiung Blood Center	Hualien Blood Center	Total
2007	Blood Donation	521,520	250,675	363,652	270,832	311,133	82,738	1,800,550
	Population	6,886,345	3,369,690	4,444,163	3,419,417	3,743,227	1,038,892	22,901,734
	Donation Rate	7.57%	7.44%	8.18%	7.92%	8.31%	7.96%	7.86%
2008	Blood Donation	518,696	253,678	366,167	276,218	311,525	81,473	1,807,757
	Population	6,923,843	3,407,172	4,461,455	3,419,800	3,745,731	1,036,261	22,994,262
	Donation Rate	7.49%	7.45%	8.21%	8.08%	8.32%	7.86%	7.86%
2009	Blood Donation	533,399	243,416	365,843	290,406	313,686	82,434	1,829,184
	Population	6,953,984	3,442,631	4,472,795	3,418,467	3,747,033	1,034,435	23,069,345
	Donation Rate	7.67%	7.07%	8.18%	8.50%	8.37%	7.97%	7.93%
2010	Blood Donation	531,254	255,439	372,360	291,710	313,490	84,989	1849242
	Population	6,974,554	3,499,663	4,477,114	3,409,906	3,745,132	1,032,012	23138381
	Donation Rate	7.62%	7.30%	8.32%	8.55%	8.37%	8.24%	7.99%
2011	Blood Donation	534,349	254,731	377,883	303,895	329,804	85,445	1,886,107
	Population	7,054,442	3,498,987	4,484,098	3,400,813	3,737,885	1,026,326	23,202,551
	Donation Rate	7.57%	7.28%	8.43%	8.94%	8.82%	8.33%	8.13%
2012	Blood Donation	526,216	248,420	371,259	304,184	300,906	83,536	1,834,521
	Population	7,086,152	3,525,575	4,496,195	3,397,242	3,734,579	1,021,830	23,261,573
	Donation Rate	7.43%	7.05%	8.26%	8.95%	8.06%	8.18%	7.89%
2013	Blood Donation	513,907	241,765	351,790	294,771	278,740	79,992	1,760,965
	Population	7,131,766	3,555,325	4,510,598	3,394,334	3,733,713	1,018,477	23,344,213
	Donation Rate	7.21%	6.80%	7.80%	8.68%	7.47%	7.85%	7.54%
2014	Blood Donation	509,548	239,797	345,234	295,028	287,690	76,822	1,754,119
	Population	7,160,559	3,579,347	4,517,652	3,388,101	3,728,935	1,017,442	23,392,036
	Donation Rate	7.12%	6.70%	7.64%	8.71%	7.72%	7.55%	7.50%
2015	Blood Donation	509,230	251,630	349,238	296,569	282,832	78,382	1,767,881
	Population	7,187,196	3,623,818	4,532,292	3,379,761	3,724,569	1,013,926	23,461,562
	Donation Rate	7.09%	6.94%	7.71%	8.77%	7.59%	7.73%	7.54%
2016	Blood Donation	511,032	253,135	349,751	293,792	296,706	58,592	1,763,008
	Population	7,192,687	3,687,412	4,557,494	3,366,498	3,940,509	789,180	23,533,780
	Donation Rate	7.10%	6.86%	7.67%	8.73%	7.53%	7.42%	7.49%

Note: 1. Mid-year population, data from the Ministry of Interior.
2. Both whole blood and apheresis donations are included.

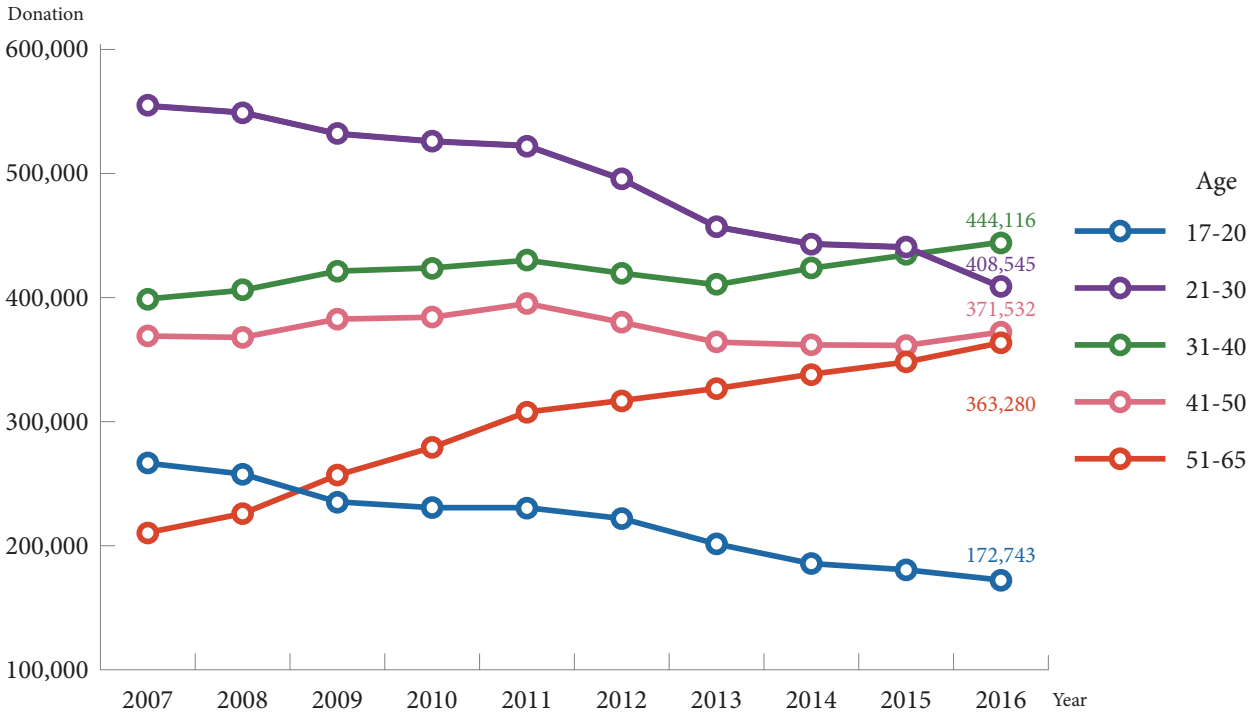
First-time Donors in 2016

Donor

Blood Centers		Taipei Blood Center	Hsinchu Blood Center	Taichung Blood Center	Tainan Blood Center	Kaohsiung Blood Center	Hualien Blood Center	Total
Item								
Total Donors(A)		303,407	147,629	215,338	178,346	172,735	30,348	1,010,144
First-time Donors	No.(B)	37,832	18,992	29,029	29,291	22,499	4,330	141,973
	%(B/A)	12.47%	12.86%	13.48%	16.42%	13.03%	14.27%	14.05%
First-time Donors Age ≤ 24	No.(C)	22,387	11,962	19,518	22,897	16,347	3,203	96,314
	%(C/B)	59.17%	62.98%	67.24%	78.17%	72.66%	73.97%	67.84%

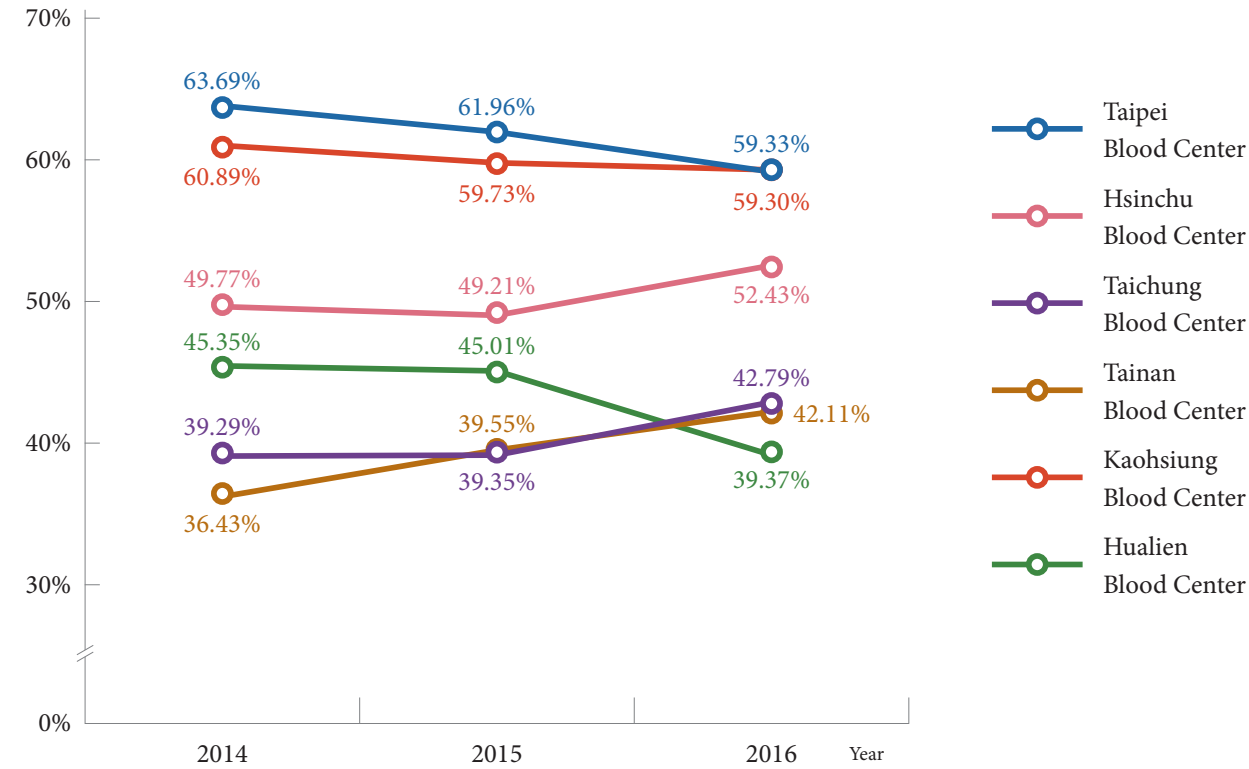
Note: Total donors refer to the sum of individuals donating blood one or more times in the year.

Distribution of Donations by Age, 2007-2016



Note: Both whole blood and apheresis donations are included.

Blood Donation From Fixed Site, 2014-2016



Note: Fixed Sites includes blood station/donor's room & fixed mobiles.

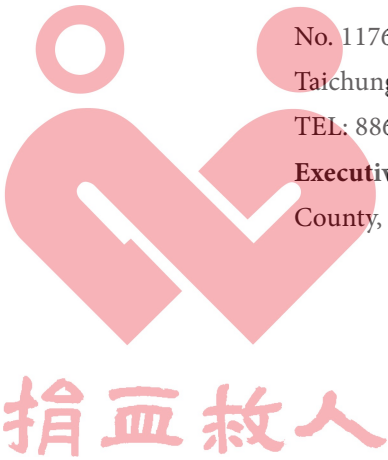


Pre-Donation Donor Deferral in 2016

Participants

Blood Centers		Taipei Blood Center	Hsinchu Blood Center	Taichung Blood Center	Tainan Blood Center	Kaohsiung Blood Center	Hualien Blood Center	Total
Reasons of Deferral								
1	Low Hemoglobin	37,041	9,516	19,270	15,687	22,441	4,157	108,112
2	Blood Pressure too High or too Low	10,500	2,483	6,570	2,473	4,858	807	27,691
3	Aspirin or other medications	8,870	4,128	4,054	3,263	3,186	820	24,321
4	Temporary Deferral	5,786	572	6,904	914	5,186	149	19,511
5	Interval of Donations	3,818	212	5,361	198	4,613	13	14,215
6	Under Medical Treatment	5,378	264	3,239	1,413	1,036	210	11,540
7	Lack of Sleeping	2,811	994	2,250	1,156	1,737	198	9,146
8	Abroad Within Past 1 Year	4,547	1,216	1,340	905	568	307	8,883
9	Acupuncture, Dental Extraction	1,735	1,185	1,100	1,131	808	283	6,242
10	Recipient of Blood or Surgery	1,242	873	968	1,333	321	325	5,062
11	Low Body Weigh	2,062	428	800	390	950	127	4,757
12	High-Risk Sexual Behaviors	1,788	312	1,416	455	640	72	4,683
13	Menstruation	1,942	376	1,258	468	550	85	4,679
14	No Identification	599	25	1,386	1,771	831	1	4,613
15	Receiving Injection	1,701	582	802	844	503	88	4,520
16	Other Abnormalities	12,420	12,102	9,218	5,390	5,612	1,143	45,885
Deferred Participants		102,240	35,268	65,936	37,791	53,840	8,785	303,860
Total Participants		627,920	288,403	415,687	331,583	350,546	52,729	2,066,868
%		16.28	12.23	15.86	11.40	15.36	16.66	14.70

Note: Total participants: total number of donors who attended to donate but were deferred and those who succeed to donate.



Blood Centers in Taiwan

Head Office

Taiwan Blood Services Foundation

3 FL. No. 3, Nan-Hai Road, Taipei 10066, Taiwan, R.O.C.
TEL: 886-2-2351-1600 FAX: 886-2-2395-1002
Website: www.blood.org.tw

Regional Office

Taipei Blood Center

No. 123, Lih-Der Road, Taipei 112, Taiwan, R.O.C.
TEL: 886-2-2897-1600 FAX: 886-2-2897-1601
Executive Region: Taipei City, New Taipei City, Keelung City, Kinmen County, Matsu County

Hsinchu Blood Center

No. 8, Lane 215, Guangming 11th Road, Jhubie City, Hsinchu County 302, Taiwan, R.O.C.
TEL: 886-3-555-6111 FAX: 886-3-555-0305
Executive Region: Taoyuan County, Hsinchu County, Miaoli County

Taichung Blood Center

No. 1176, Sec. 4, Taiwan Boulevard, Xitun Dist., Taichung City 407, Taiwan, R.O.C.
TEL: 886-4-2461-2345 FAX: 886-4-2461-3939
Executive Region: Taichung City, Changhwa County, Nantou County

Tainan Blood Center

No. 85, Sec. 1, Yongfu Road, West Central Dist., Tainan City 700, Taiwan, R.O.C.
TEL: 886-6-213-1212 FAX: 886-6-213-3201
Executive Region: Tainan City, Chiayi City, Chiayi County, Yuenlin County

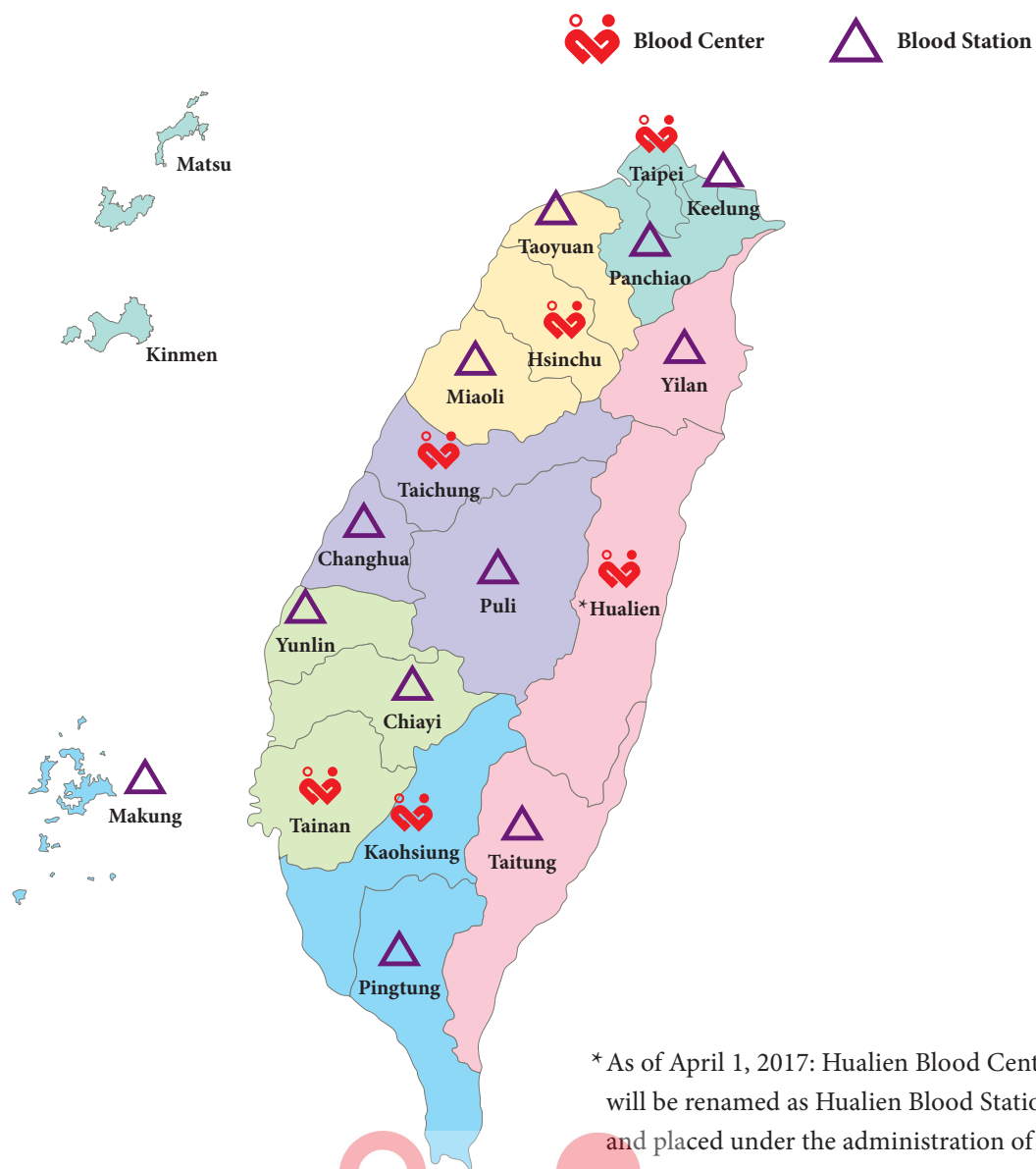
Kaohsiung Blood Center

No. 1837, Gaonan Highway, Nanzi Dist., Kaohsiung City 811, Taiwan, R.O.C.
TEL: 886-7-366-0999 FAX: 886-7-364-1556
Executive Region: Kaohsiung City, Pingtung County, Penghus County

Hualien Blood Center*

No. 170, Sec. 1 Jhongshan Road, Hualien 970, Taiwan, R.O.C.
TEL: 886-3-856-0990 FAX: 886-3-857-5190
Executive Region: Hualien County, Yilan County, Taitung County
* As of April 1, 2017: Hualien Blood Center will be renamed as Hualien Blood Station and placed under the administration of Taipei Blood Center.

Blood Centers and Stations



* As of April 1, 2017: Hualien Blood Center will be renamed as Hualien Blood Station and placed under the administration of Taipei Blood Center.

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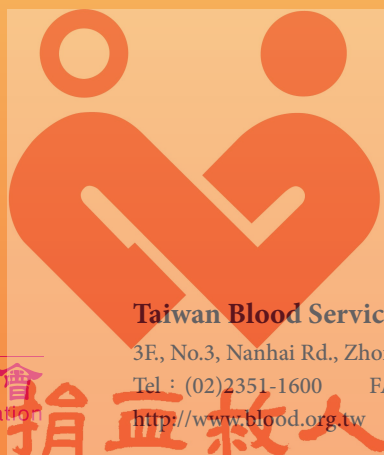
捐血救人



醫療財團法人

台灣血液基金會

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