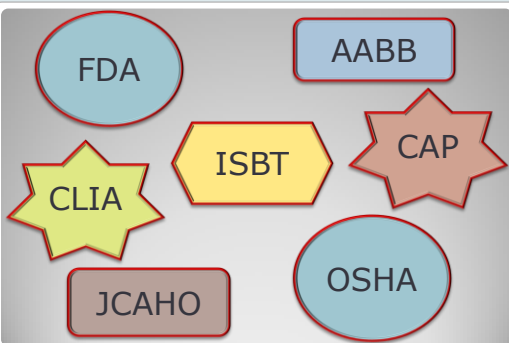


Immunohematology in Disasters and Emergencies

Kristin Butler, MLS (ASCP)^{CM}
Clinical Laboratory Science
LSUHSC Shreveport

Objectives

1. Discuss supply and demand needs of the Immunohematology lab during normal operation and during disaster/emergency situations
2. Summarize the blood system consequences and the effects on public health of disaster/emergency situations
3. Recognize the inventory and potential threats to the Immunohematology lab at the local, state, and national level



Regulatory Agencies



- Global standard of labeling MPHO
- Internationally agreed upon terminology
- Implemented and managed by International Council for Commonality of Blood Bank Automation (ICCBBA)

ISBT-128

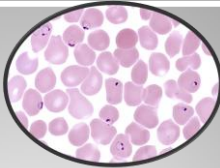
COMING SOON TO A LABEL NEAR YOU...

+C International Federation of Red Cross and Red Crescent Societies



What happens elsewhere?

- Malaria
- Dengue fever
- Chikungunya
- Zika
- HIV, AIDS



Blood demand – Other nations

- Lack of national/legislative policy
- No infectious disease testing
- Labs with no quality assurance
- Rely on family directed donations
- Paid blood donors
- Import blood products

What happens elsewhere?

Armed Services Blood Program

- Active Duty
- Reserves
- Veterans
- Families
- 20 donor centers worldwide



<http://www.militaryblood.dod.mil>

Military Blood Supply

- Type and screen
- Compatibility testing



- Select units for transfusion
- Pregnancy testing

Hospital Blood Bank

- Antibody identification

Antibody	Panel A	Panel B	Panel C	Panel D	Panel E	Panel F	Panel G	Panel H	Panel I	Panel J	Panel K	Panel L	Panel M	Panel N	Panel O	Panel P	Panel Q	Panel R	Panel S	Panel T	Panel U	Panel V	Panel W	Panel X	Panel Y	Panel Z
Anti-A																										
Anti-B																										
Anti-AB																										
Anti-D																										
Anti-C																										
Anti-E																										
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Anti-W																										
Anti-X																										
Anti-Y																										
Anti-Z																										

Hospital Blood Bank

- Blood donation center
- Component separation
- Rare donor file



Community Blood Center

- Donor unit testing
- Full antibody testing
- Special antigen typing

Community Blood Center

- Provides blood to 117 facilities

Louisiana
East Tx
South Ark

www.lifeshare.org

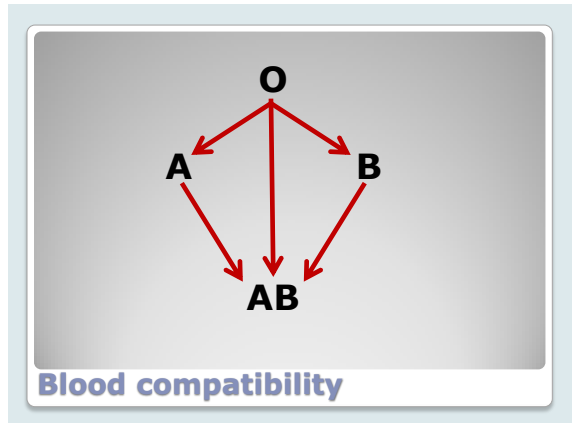
LifeShare Blood Bank

THE BLOOD CENTER
Serving you for life!

- Services 40 area hospitals in Mississippi and Southern Louisiana

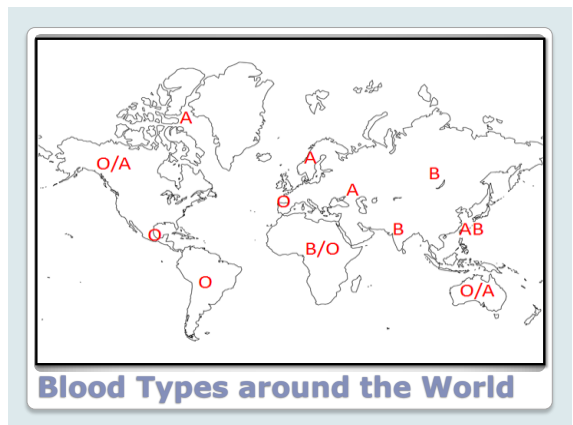
www.thebloodcenter.org

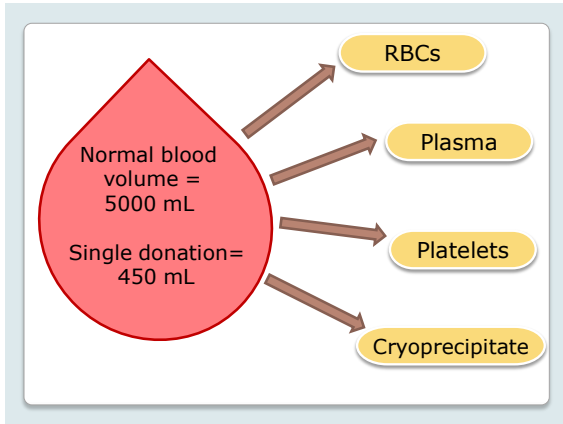
The Blood Center



	Caucasian	Asian	African American	Hispanic
O+	37%	39%	47%	53%
O -	8%	1%	4%	4%
A+	33%	27%	24%	29%
A -	7%	0.5%	2%	2%
B+	9%	25%	18%	9%
B -	2%	0.4%	1%	1%
AB+	3%	7%	4%	2%
AB -	1%	0.1%	0.3%	0.2%

Blood types





RBC
42 days refrigerated

Platelets
5 days room temp

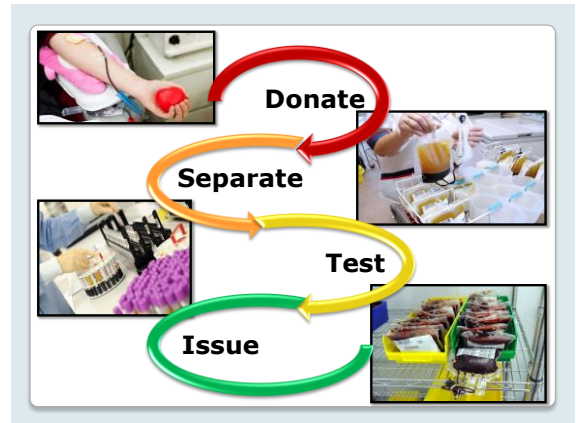
Plasma
1 year frozen

Cryo
1 year frozen

Blood component expiration

Type O	Type A	Type B	Type AB
We need your RBC	We need your PLATELETS	We need your PLASMA	We need your PLASMA
Your RBC can be transfused to ALL patients	Your PLATELETS can be transfused to 88% of patients	Your PLASMA can be used for 50% of the population	Your PLASMA can be transfused to ALL patients

Your Blood Can Save Lives!



According to the AABB, a "disaster" is any domestic disaster or act of terrorism that:

- Suddenly requires a much larger amount of blood than usual
- Temporarily restricts or eliminates a blood collectors ability to collect, test, process and distribute blood
- Temporarily restricts or prevents the local population from donating blood or restricts or prevents the use of the available inventory of blood products requiring immediate replacement or re-supply of the region's blood inventory from another region
- Creates a sudden influx of donors requiring accelerated drawing of blood to meet an emergent need elsewhere





9/11



2005 London Bombings



Soccer stadium disasters



2003 Bam earthquake



Dengue Fever outbreaks



2013 Boston bombing



Biloxi Train crash



Blood donor response - disaster

What % of the US population is eligible to donate blood?

Source: U.S. Food & Drug Administration, 2013

Blood donor response - normal

What % actually donate?

Source: U.S. Food & Drug Administration, 2013

Blood donor response - normal

- Summer and winter
- Displacement
- Cancelled blood drives



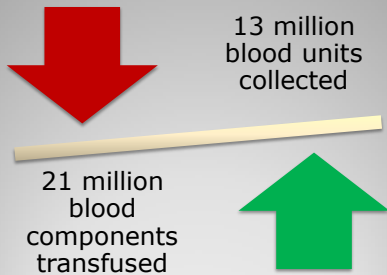
Blood shortages

American Red Cross:
37,000 fewer donations
≥ 300 blood drives cancelled

CDC Flu Weekly report:
hospitalization rate
43.5 per 100,000

LifeShare Blood Center:
< 2 day supply

Blood shortages 2017



Source: American Red Cross

Supply vs Demand

- Every day in the US, blood required for:
 - Cancer and chemotherapy
 - Anemias
 - Organ transplant procedures
 - Cardiothoracic surgery
 - Accidents/trauma

• Every 2 seconds, someone in the US needs a blood transfusion

Blood demand - normal

- What is needed everyday?
 - 36,000 units of RBC
 - 10,000 units of plasma
 - 7,000 units of platelets



Source: American Red Cross

Blood demand - normal

- Est 1.7 million new cancer patients in 2017
 - LA incidence rate ~ 490.4 per 100,000
 - LA new cancer cases ~ 24,220
- 90,000 – 100,000 sickle cell patients
 - Louisiana ~ 3000 children and adults
- Surgery, accidents, trauma

Source: Louisiana Dept of Health & Hospitals, American Cancer Society and National Cancer Institute

We need blood!



- U.S. and Canada
- 600 blood centers
- 45 states
- Provides 1/2 U.S. blood supply
- Provides 1/4 Canada blood supply

www.americasblood.org

Blood supply – North America



- 40% of blood supply
- 2,700 hospitals & blood centers
- Collects 6 million units/year
- Issues 8 million products/year
- 14,000 donors needed daily to maintain supply

www.redcross.org

Blood supply – America

- 500 donors needed everyday to maintain supply
- Current supply will only last 2 days (February 2017)



www.lifeshare.org

Blood supply – Louisiana



- 300-350 donors needed everyday to maintain supply

www.thebloodcenter.org

Blood supply – Louisiana

University Health

- 250 units RBCs
- 75 units plasma
- 50 units platelets
- 3-4 units cryo

after London bombing

- 440 units RBCs
- 106 units plasma
- 29 units platelets
- 235 units cryo

Transfusions – normal vs. disaster

University Health

- 250 units RBCs
- 75 units plasma
- 50 units platelets
- 3-4 units cryo

after Boston bombing

- 163 units RBCs
- 69 units plasma
- 23 units platelets

Transfusions – normal vs. disaster

<p><u>University Health</u></p> <ul style="list-style-type: none"> • 250 units RBCs • 75 units plasma • 50 units platelets • 3-4 units cryo 	<p><u>after Orlando shooting</u></p> <p>first 24 hours:</p> <ul style="list-style-type: none"> • 372 units RBCs <p>the next 2 weeks:</p> <ul style="list-style-type: none"> • 109 units RBCs
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Transfusions – normal vs. disaster

<p><u>University Health</u></p> <ul style="list-style-type: none"> • 250 units RBCs • 75 units plasma • 50 units platelets • 3-4 units cryo 	<p><u>India Dengue Crisis</u></p> <p>Daily need:</p> <ul style="list-style-type: none"> • 200-250 units platelets
---	--

Transfusions – normal vs. disaster

9/11	<ul style="list-style-type: none"> • Normal = 27,000 units • After = 49,000 units
Orlando	<ul style="list-style-type: none"> • Normal = 18,000 units • After = 28,000 units
2003 Bam Earthquake	<ul style="list-style-type: none"> • Normal = 3,458 units • After = 27,246 units

Blood donation – normal vs. disaster

Suddenly requires a much larger amount of blood than usual

- Any disaster
- Periodic shortages

↑ demand for healthcare

↑ demand for transfusions

Blood system distress

Temporarily restricts or eliminates a blood collectors ability to collect, test, process and distribute blood

- Illness
- Natural disaster

→ reduced workforce

→ stressed workers

→ cancelled blood drives

Blood system distress

Temporarily restricts the local population from donating

Restricts use of the available inventory of blood products requiring immediate replacement

- Illness
- Displacement
- Emerging issue

↑ demand for healthcare

↑ stressed workers

↓ inventory

Blood system distress

Sudden influx of donors requiring accelerated drawing of blood

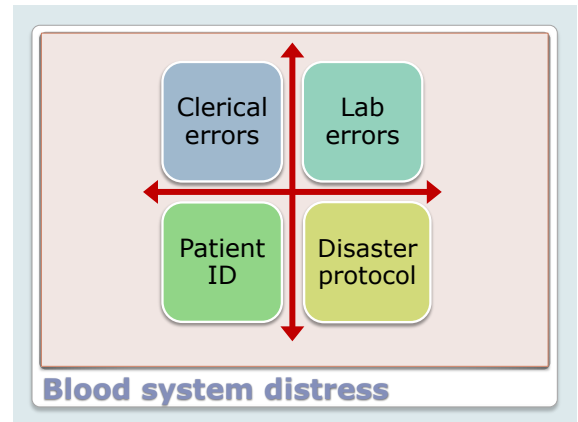
- Any disaster
- Donation surges

→ demand for healthcare

→ stressed workers

→ blood product waste

Blood system distress



- Ebola
- Zika
- Changes to eligibility criteria

Emerging Issues

Is transfusion transmission possible???

- 3% donors tested positive in 2013
- Documented transfusion transmission in Brazil (platelets)

Zika Virus

February 2016: FDA Guidance issued
August 2016: FDA Guidance updated

- Whole blood: FDA-licensed blood donor screening test for ZIKV
- Plasma and platelets: Pathogen reduction technology (PRT)
- Import from non-active areas

Source: AABB

Zika Virus

Alabama, Arizona, California, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, New York, South Carolina, Texas

Source: AABB

Zika Virus

- New questions about travel, symptoms, sexual contact
- 4 week deferral:
 - recent ZIKV infection
 - ZIKV symptoms
 - sex with a man diagnosed with ZIKV
- Destroy products from donor if:
 - develop ZIKV infection or symptoms within 2 weeks of donation

ADMIT
 DEFER
 DENY

Source: AABB

Zika Virus

www.lifeshare.org/faqs

www.redcrossblood.org/donating-blood/eligibility-requirements/eligibility-criteria-alphabetical-listing

Am I Eligible to donate?

Blood Donation

Text: "BLOODAPP" to 90999

Transfusion

Available on the **App Store**

Available on **Google play**

American Red Cross apps

- Governor Office of Homeland Security <http://gohsep.la.gov/>

App Info:
GetAGameplan

Available on the **App Store**

Available on **Google play**

Louisiana Disaster Response

- Louisiana Emergency Response Network <http://lern.la.gov/lern-disaster-response/>

Louisiana Disaster Response

❖ LifeShare Shreveport
8910 Linwood Ave
318-673-1471

<p>Tuesday, April 25 Willis Knighton South 11:00 am - 04:00 pm</p> <p>Thursday, April 27 University Health & LSU Health Shreveport 10:00 am - 04:00 pm</p> <p>Thursday, April 27 Willis Knighton Medical Center 11:30 am - 05:00 pm</p>	<p>Sunday, April 30 St. Elizabeth Ann Seton 09:00 am - 01:00 pm</p> <p>Wednesday, May 3 UH & LSUHSC 10:00 am - 04:00 pm</p> <p>Wednesday, May 3 Blue Cliff College 12:00 am - 03:30 pm</p> <p>Friday, May 5 Southern Hills Elementary 09:00 am - 01:00 pm</p>
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Upcoming Blood Drives

❖ LifeShare Bossier
1523 Doctors Drive
318-742-4636

Sunday, April 23
Airline Baptist Church
08:00 am - 12:30 pm

Sunday, April 23
Christ the King Catholic Church
09:00 am - 12:30 pm

Thursday, April 27
Margaritaville Resort Casino
09:00 am - 04:00 pm

Sunday, April 30
Stonewall Missionary Baptist
08:30 am - 01:00 pm

Wednesday, May 3
Promise Specialty Hospital
09:00 am - 12:00 pm

Wednesday, May 3
Sunflower Missionary Baptist
06:00 pm - 08:00 pm

Upcoming Blood Drives

❖ LifeShare Monroe
2909 Kilpatrick Boulevard
318-322-4445

Friday, May 5
Sparks Nissan
10:00 am - 02:00 pm

Sunday, May 7
White's Ferry Rd Church of
Christ
08:00 am - 01:00 pm

Monday, May 8
The Oaks
10:00 am - 02:00 pm

Friday, May 12
Dean Morris, LLC
09:00 am - 01:00 pm

Friday, May 12
Keller-Williams Realty
10:00 am - 02:00 pm

Monday, May 15
ShadowForest
04:00 pm - 07:00 pm

Upcoming Blood Drives

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Thank you for listening!

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