

# Safety Initiatives For Young Donors

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ASFA Annual Meeting  
Scottsdale, AZ

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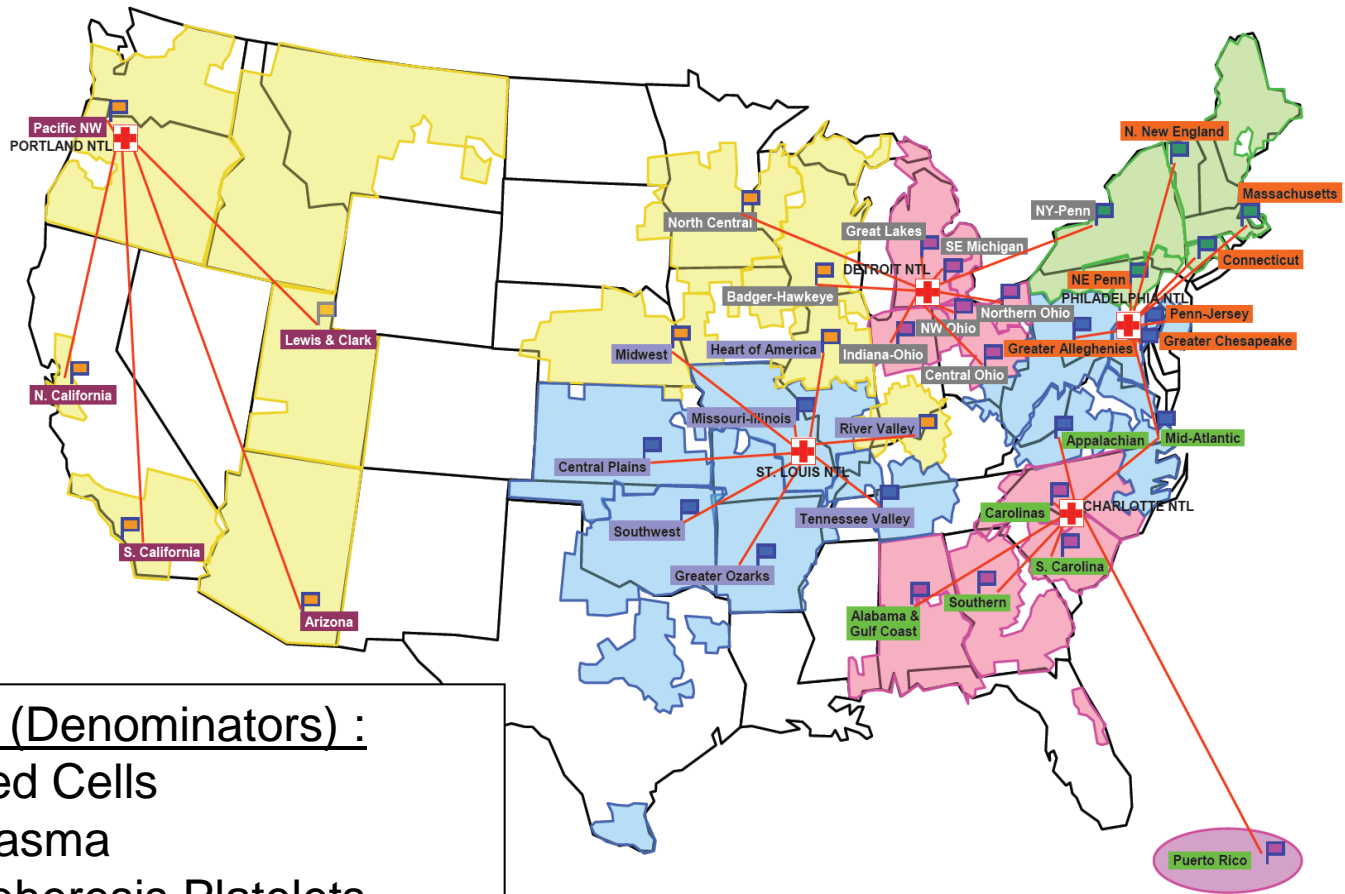
June 2, 2011



**American  
Red Cross**

- **Describe the young donor safety initiative in the American Red Cross**
- **Evaluate the data on the effectiveness of the interventions to improve safety for young donors**
- **Derive safety recommendations for a program targeted to high school blood donors**

# American Red Cross, 2011



<u>Distributions (Denominators) :</u>	
6 M	Red Cells
1.7 M	Plasma
850,000	Apheresis Platelets
250,000	WB-derived Platelets
40,000	Pooled WB Platelets



## Young donor safety initiative

“The first donor younger than 18 during a blood drive Tuesday at the High School.”



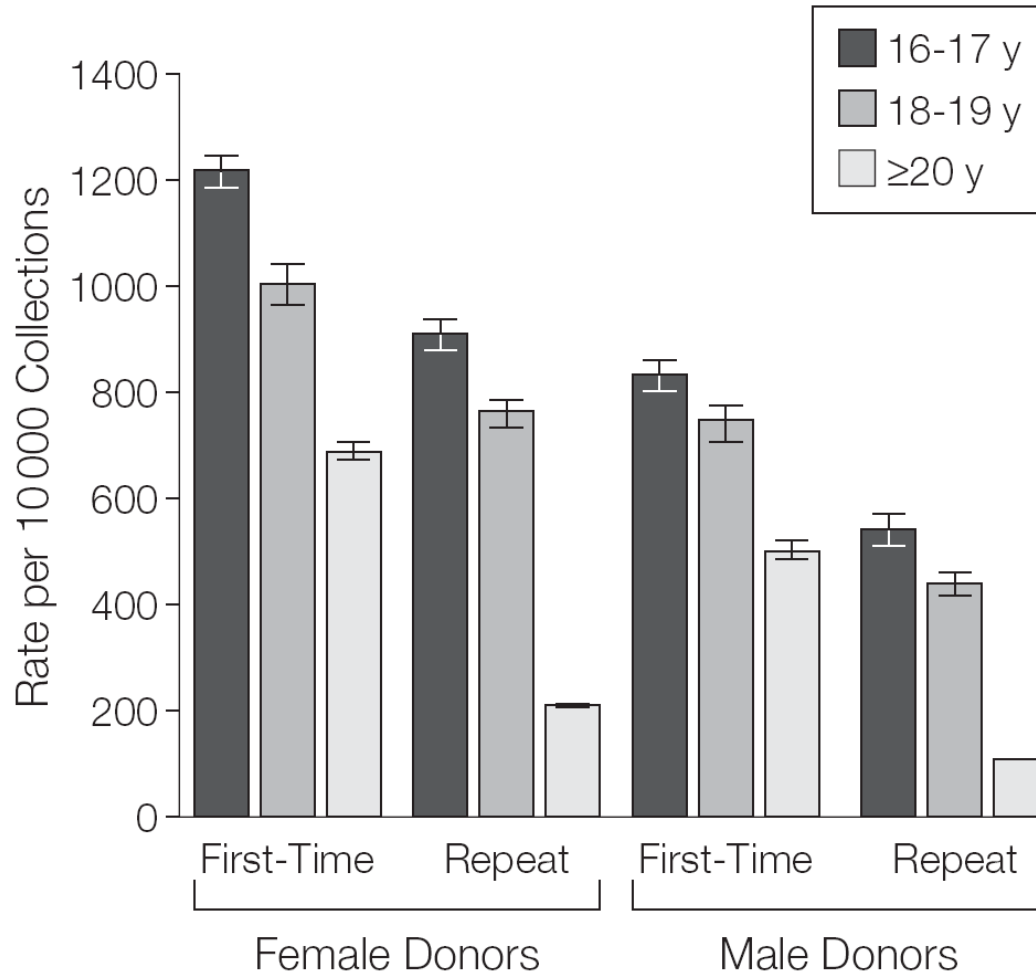
Photo credit: Pueblo Chieftain, Chris McLean, Sept 4, 2009

## 16- to 18-year-old Whole Blood Donors

- Donors younger than 19 years contribute substantially to the blood supply
- 16 year olds are increasingly recruited as more States lower their minimum age for blood donation
  - In 2006: ~15 States
  - In 2010: ~34 States
  - Most states require parental permission
- 16-18 year olds account for ~16% of the whole blood donations in the American Red Cross during the school year

# Syncope and related complications

## Donor subgroups, by age



Eder et al, 2008 J Amer Med Assn 299(19):2279-2286.



August, 2008

Predonation education

Drive set-up and environment

- Water ingestion before donation and within 10-20 min
- Muscle tension during phlebotomy

Staff supervision and phlebotomist skills

- Distraction during phlebotomy

Donor selection, collection

- Donor eligibility criteria –height and weight restrictions
- Automated red cell collection

Post-reaction instructions to donors and parents

August, 2008

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## A Student's Guide to Blood Donation

### Why Should I Give Blood? Because You Can Make a Difference!

Almost everyone during their life will know someone who needs a blood transfusion. They may be car accident and trauma victims, cancer or transplant patients, and people with sickle cell disease or other blood disorders. There is no substitute and still only one source of blood for transfusion - volunteer blood donors.

Learn about measures for a good donation and improve your donor experience.

What happens

### What Happens During the Blood Donation Process?

#### 1. Registration

- Remember to bring your photo ID and, if required, the signed parental consent form.
- Bring the names of medications that you are taking.
- Bring a list of the places you have traveled outside the US and Canada in the last 12 months.
- Read the educational materials about donating whole blood or apheresis.
- Ask Red Cross staff if you have questions.

#### 2. Health History & Mini Physical

- You should feel healthy and well, and meet other criteria.
- We will take your temperature, check your blood count, and measure your blood pressure and pulse.
- We will ask you questions during a private and confidential interview. This protects your health and the safety of patients who receive blood transfusions.

#### 3. Donation

- We will cleanse an area of your arm and insert a needle to draw whole blood.
- You can relax, listen to music, talk to other donors or read while the blood is collected.
- After the collection, a staff member will remove the needle and place a bandage on your arm.

#### 4. Refreshments

- You should spend at least 15 minutes or more enjoying refreshments in the recovery area.
- If you become dizzy or light-headed, stay in the recovery area and tell a staff member immediately.



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How to prepare

### What Should I Do To Prepare? Before Donation

**Sleep:** Get at least eight hours of sleep the night before your donation.

**Eat:** Eat a healthy breakfast or lunch - or both if your appointment is later in the day.

- Don't skip meals on the day of a donation.
- Make healthy food choices. Eat proteins (lean meat, cheese, and yogurt) or complex carbohydrates (bread, cereal, and fruit).
- Include iron-rich foods in your regular diet (red meat, fish, poultry, beans, iron-fortified cereals, and raisins).

**Drink:** Drink a few extra glasses of water or fluids in the days before you donate. Start the day with a bottle of water or a glass of orange juice.

**If you drink water within 10-30 minutes before donation,** you may be less likely to experience dizziness and light-headedness.

#### During Donation

Most people relax during donation and feel fine afterwards. Sometimes it's hard to think about something else to distract your attention from the blood being drawn.

You may also be told to try a simple technique to tense and relax the muscles in your legs:

- Lift your legs (one at a time) off the donor bed.
- Hold for a few seconds, then repeat.
- Breathe normally.

If you practice this technique to tense and relax your legs during the donation, you may be less likely to react.

Tell Red Cross staff immediately what you are experiencing and they will take care of you. Ways to help prevent or limit discomfort will be discussed.

#### After Donation

Be sure to sit and relax in the refreshment area for at least 15 minutes or more and have a drink of water. Afterward, drink a few glasses of fluids to stay well hydrated.

Most donors have uneventful donations and feel good about donating. Some people may experience light-headedness, dizziness or an upset stomach that resolves soon after donation. Less commonly, a donor may faint after blood donation. If you feel faint, stop what you are doing and sit or lie down until you feel better.

Call the American Red Cross toll-free number provided to you after your donation if you have questions or concerns.

What to expect afterward

## A Student's Guide to Blood Donation

### Student Athletes

Special advice for student athletes

Student athletes should wait about 48 hours or more before competing on how they feel. You temporarily lose 8 units of blood during a donation which your body replaces within 24 hours or sooner if you drink extra fluids. As a precaution, do not donate blood on the same day of a competition or strenuous practice.

After a whole blood donation, your body replaces the red blood cells (the cells that deliver oxygen to muscles and tissues) within about 5 weeks, depending on nutrition and iron status. High-performance competitive athletes may notice a marginal decrease in exercise tolerance for about 1 week after a whole blood donation.

Plan ahead to best schedule your donation with sports and other activities.

### Information for Parents

Parental permission is required for all 16-year-olds to donate blood. It may or may not be required for 17-year-olds depending on state laws and school requirements.

When we are required to obtain parental consent, your son or daughter will need to turn in a signed consent form to the donation site at the time he or she plans to donate.

Most donors have uneventful donations and do fine afterwards. Some donors may become light-headed or dizzy during or after the donation or may faint or experience other injury requiring additional medical care. Donors who are thin and/or low weight (less than 130 lbs) donors are more likely to experience these side effects than other donors.

Every donation is tested for HIV (the virus that causes AIDS), hepatitis B and hepatitis C viruses, and other infectious diseases.

If any test result or repeat one to the questions suggests that you may be donating blood in the future or may have a condition that is added to a confidential list of people who are not eligible to donate, we are required to report donor information to the appropriate state health departments and regulatory agencies.

The infectious disease tests are done on the blood that you donate. We are required to notify and disqualify you if the donor is not infected.

We will communicate test results directly with your son or daughter. We maintain the confidentiality of information we obtain about a donor, and we will release a donor's confidential information to his or her parents only with the donor's consent.

We may use information or residual blood samples we collect from donors confidentially and anonymously for medical research. Examples of this type of research include studies to increase the safety of the blood supply.

If you have questions about blood donation, please contact the American Red Cross.



1-800-GIVE-LIFE | givelife.org

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Version No. 2



Addresses parents' questions

A new brochure for high school students tells donors and parents what to expect and how to prepare



## Student Volunteers

### Student Volunteer Guidelines On High School Blood Drives

Student volunteers have an important safety role on a high school blood drive. We ask that you take a few minutes to review the material provided to you and to ask the American Red Cross staff any questions that you have about your role or about blood donation.

Most students have a good donation experience and feel good about giving blood. Some people may experience light-headedness or dizziness or an upset stomach that resolves soon after donation. Sometimes, reactions can occur after donors have left the collection site.

#### What You Should Do If Donors Become Light-Headed or Faint

Donors may become light-headed or faint before, during, or after donation. Fainting happens most frequently when the donor is walking from the donor bed to the canteen or while in the refreshment area. You can help by watching for signs that the donor doesn't feel well.

Donors May Become

- restless or look anxious
- withdrawn and may stop interacting with others
- pale and their skin may look shiny

They may also...

- say they feel sick or nauseated
- vomit
- say they are dizzy or light-headed

**If the donor exhibits any of these signs CALL FOR HELP**

Remain calm, but call loudly enough so the donation-area staff can hear you. Repeat the call if needed. If the noise level is such that staff cannot hear you, ask someone nearby to get staff attention.

Remain with the donor until a staff person arrives. If the donor is standing, have them lie down where they are. Do not walk the donor to a chair or recovery bed by yourself. If the donor is sitting, stand near the donor to help prevent them from falling off the chair and have them place their head on the table.

**Do not hurt yourself**

If you are a small person, do not try to catch a fainting 300 pound donor. You may be able to help ease the donor to the floor or to brace him at the table and prevent him from falling.

**Your job is to be alert and attentive and notify Red Cross staff if a donor needs help.**



v1 July 2009

## School Nurses

### Guide to Blood Donation for High School Nurses & Staff

#### Introduction

Thank you for your continued support of the American Red Cross. Working together, we can provide the safest possible donation experience for young students and help ensure the continued availability of life-giving blood for patients in need.

Most blood donors in every age group have uneventful donations and feel good about donating blood. High school students as young as 16 years of age are allowed to donate blood in many states with parental permission. Today, young donors ages 16 - 18 contribute a substantial portion of the blood supply - almost 1 out of every 10 units for transfusion to patients in our communities. Exposing students at a young age to blood donation may encourage them to become our committed donors of the future.

However, young donors are more likely than adults to experience lightheadedness or dizziness after donation, faint, or have a more serious reaction. There are steps to take to prepare for a donation that may reduce the risk of a reaction.

This packet contains the information you need to prepare for a blood drive and provides an overview of the blood donation process, including the steps to take when a donor has an adverse reaction during donation or after leaving the donation area.

#### Overview



1. Preparing for the Blood Donation
2. Screening Blood Donors and Safety Criteria for Donation
  - New Requirement for Height and Weight
3. What Happens During Whole Blood Donation or Apheresis Procedures
4. Adverse Reactions to Blood Donation
  - Role of School Nurse
5. Recognizing Donor Reactions
  - Information for Volunteers
6. Treating Donor Reactions
7. Post-reaction Precautions and Care Instructions
  - Information for Blood Donors



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## Coaches/Student Athletes

### Guide To Student Athlete Blood Donation For High School Coaches

High School Athletic Directors and Coaches

Thank you for your support of American Red Cross high school blood drives. We are committed to providing the safest possible donation experience for young students. The Red Cross wants to provide you information regarding student athletes and blood donation.

#### Recommendations

Student athletes should wait about 12 hours or more to resume strenuous exercise after blood donation, depending on how they feel. There is a temporary loss of fluids after donation which the body replaces within 24 hours or sooner if extra fluids are consumed. As a precaution, we are asking students to not donate on the same day of a competition or strenuous practice.

#### High Performance Athletes

After a whole blood donation, the body replaces the red blood cells (the cells that deliver oxygen to muscles and tissues) within about 5 weeks, depending on nutrition and iron status. High-performance competitive athletes may notice a marginal decrease in exercise tolerance for about 1 week after a whole blood donation.

#### Your Role

Talk with the blood drive coordinator at your high school and discuss these guidelines. Take a look at the competition and game schedule and see how it will impact the blood drive. Make sure student athletes and all coaches are aware of these recommendations.

Thanks again for your support and contributions to maintaining a safe and stable blood supply.



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August, 2008

Predonation education

## **Drive set-up and environment**

- **Water ingestion before donation and within 10-20 min**
- **Muscle tension during phlebotomy**

Staff supervision and phlebotomist skills

- Distraction during phlebotomy

Donor selection, collection

- Donor eligibility criteria –height and weight restrictions
- Automated red cell collection

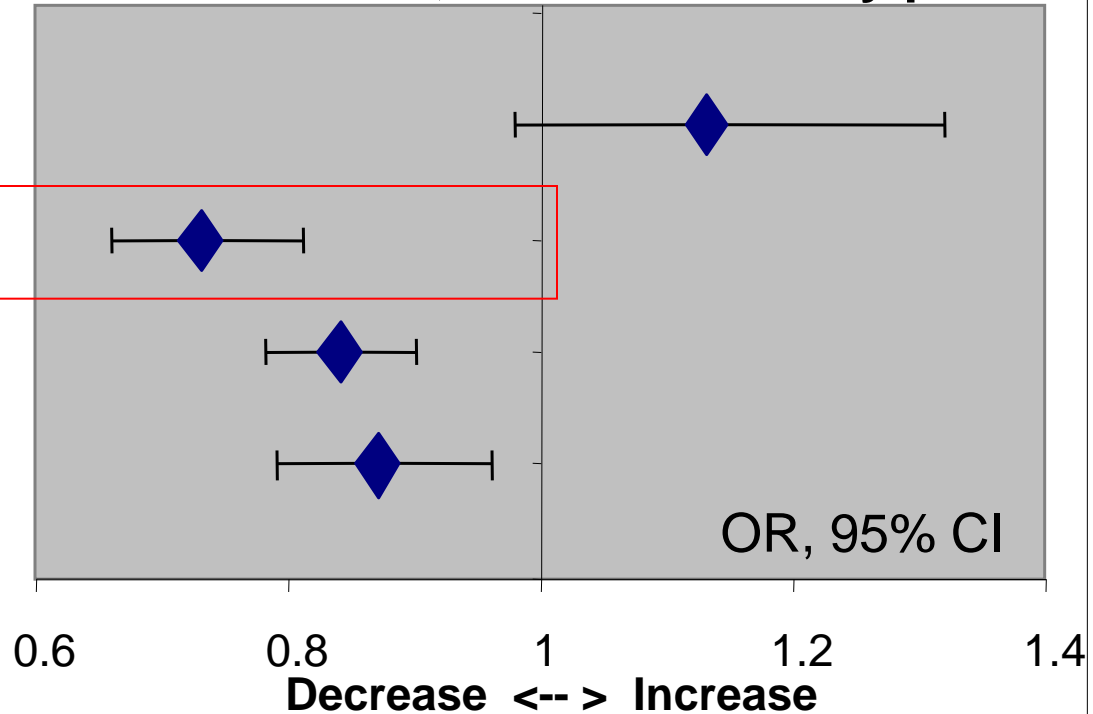
Post-reaction instructions to donors and parents

# Effect of Standard Drive Guidance

16- 17 year old whole blood donors

Region	16-yr olds (% Total)	
A	0	0
B	0	30%
C	36%	38%
D	35%	37%

Risk of Reaction, control vs. study period



**Conclusion:** A standard work process was associated with a significantly decreased rate of pre-faint reactions among 16- and 17-year-old donors in 3 of the 4 regions.

August, 2008

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# High School Donors

11%  
(13%)\*

17%  
(20%)\*

Loss (% blood volume) with 525 mL whole blood donation

16 years old  
5 ft, 9 in  
65 kg  
TBV = 4.7 L



16 years old  
5 ft  
50 kg  
TBV = 3.1 L

Nadler et al. Prediction of blood volume in normal human adults, Surgery 1962; 51:224

\* Holme et al Prediction BV: do current nomograms overestimate? Transf 2008; 48 910



# New Selection Criteria For Young Donors\*

Boys:			
If you are	4' 10"	4' 11"	5' or taller
You must weigh at least	120	115	110

Girls:						
If you are	5' 1"	5' 2"	5' 3"	5' 4"	5' 5"	≥ 5' 6"
You must weigh at least	133	129	124	118	115	110

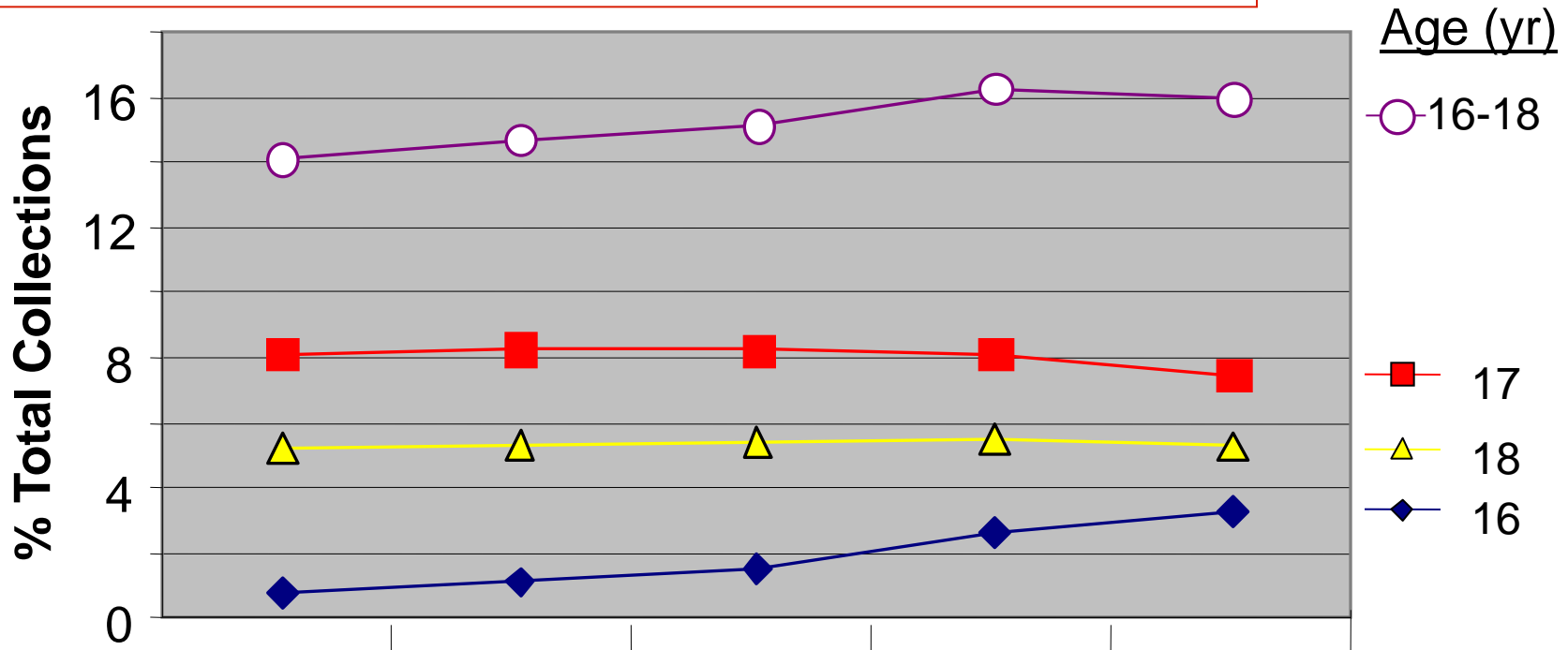
Predicted to prevent **~16%** of prefaint/faint reactions and identifies **~9%** of current donors in this age group (16-18 yr). Recruitment strategies will likely compensate for donor "loss"

\* All high school students and donors < 19 yrs; Effective, Fall 2009

## System-wide Interventions

School Year (Sept to May)	Activity
<i>Baseline</i>	<ul style="list-style-type: none"><li>• Implement ARC Hemovigilance Program</li><li>• Establish baseline complication rates</li></ul>
2005	
2006	
2007	
<i>Transition</i>	<ul style="list-style-type: none"><li>• Supervisor initiative</li><li>• Standard educational material for high school donors</li><li>• Standard drive guidance, pilot regions<ul style="list-style-type: none"><li>▪ Predonation hydration and muscle tension advice</li></ul></li></ul>
2008	
<b>2009</b>	<ul style="list-style-type: none"><li>• <b>Height/Weight Selection Criteria ( &lt;19 yo)</b></li></ul>

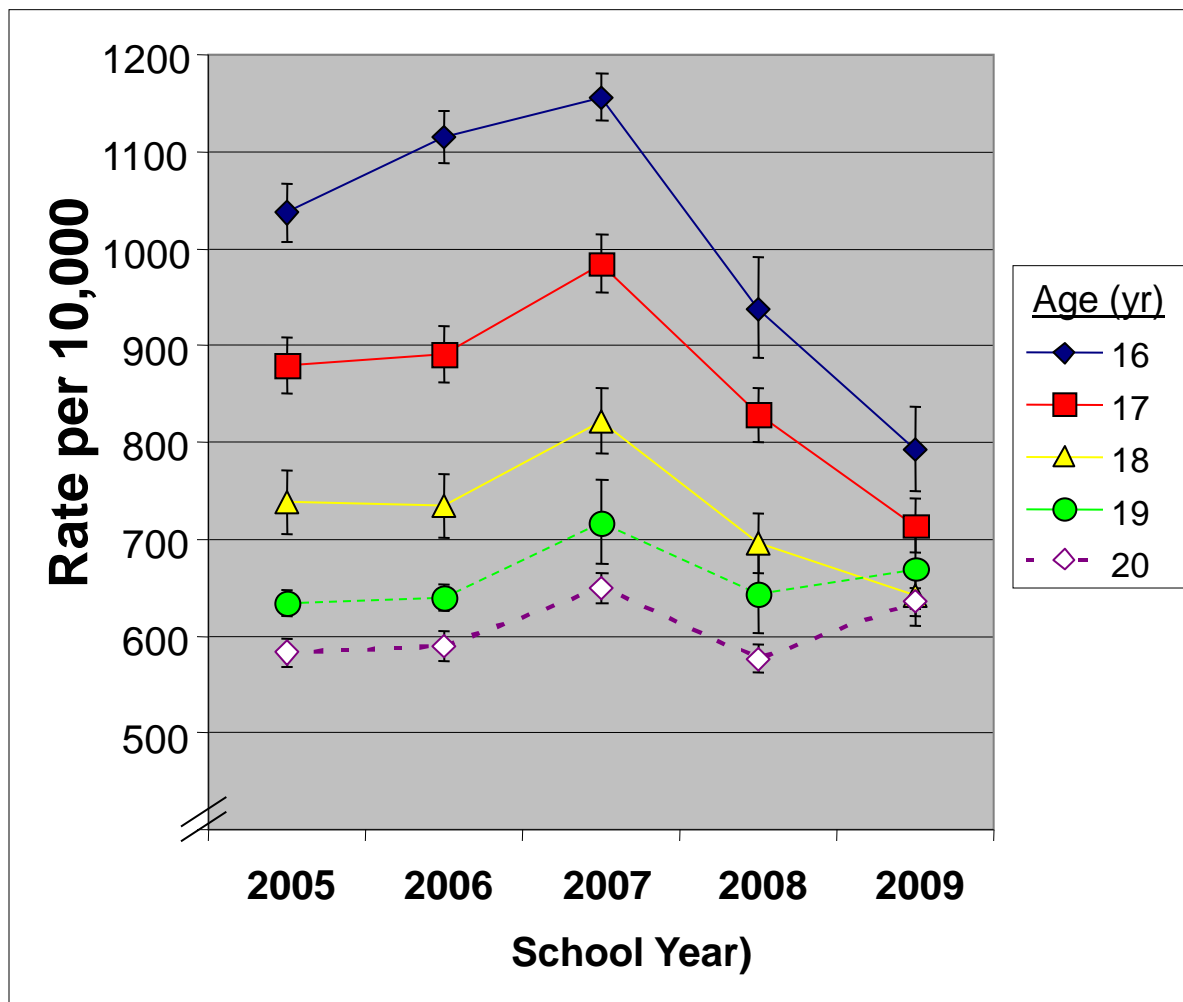
# Total WB Collections, School Years



	2005	2006	2007	2008	2009
◆ 16	37,873	49,869	69,636	121,944	143,880
○ 16-18	660,232	663,527	695,843	754,407	710,918
Total	4,685,490	4,518,033	4,593,177	4,638,754	4,451,933

# Overall Complication Rate

## By Age

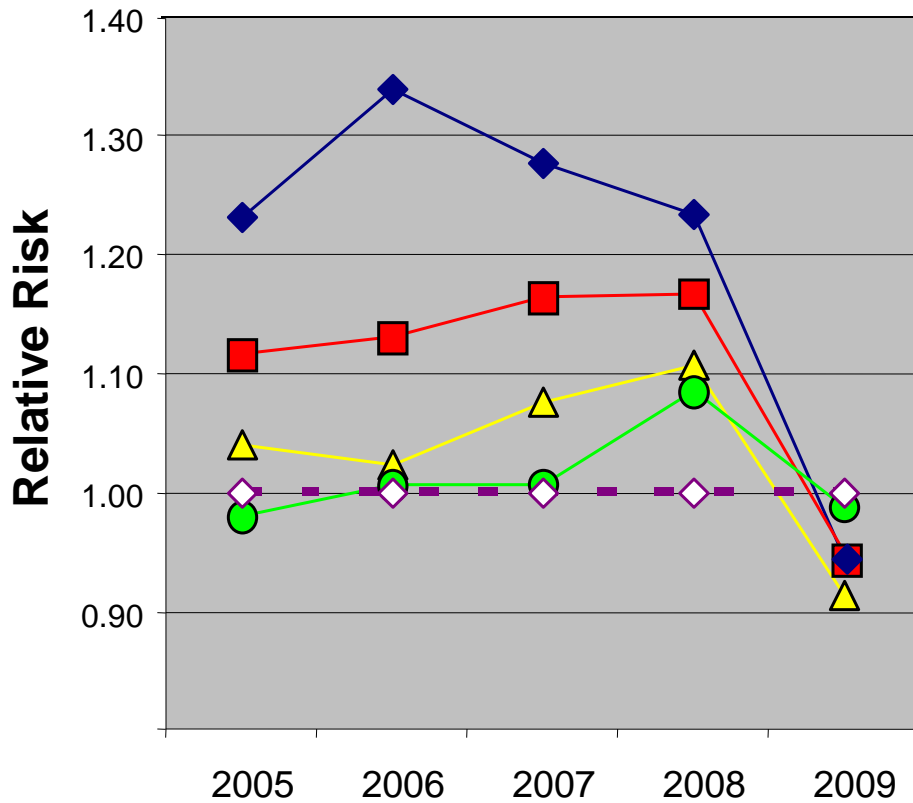


Eder et al. Transfusion, 2011, in press

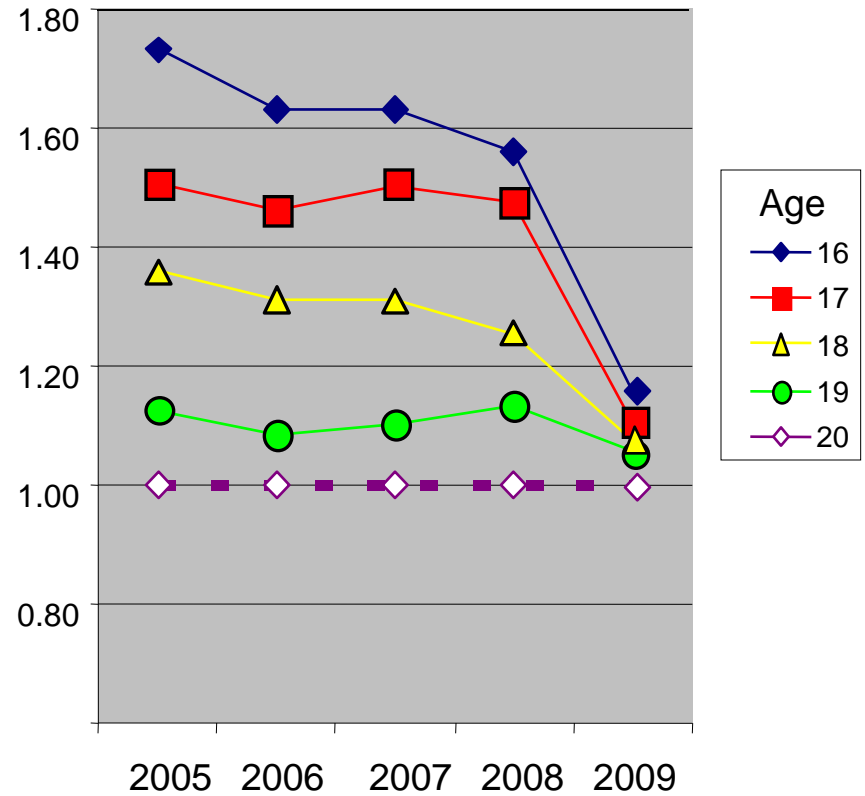


# Relative Risk of Complications

## Female Donors



First-time Donors



Repeat Donors

# Types of Complications

## Minor and Major Categories

Donor Age	Complication	School Year			Percent Decrease	
		2005-7	2008	2009	2009 vs. 2005-7	2009 vs. 2008
16	Prefaint	1053.3	876.8	731.9	<b>33%</b>	<b>18%</b>
	LOC	43.1	43.3	37.1	<b>14%</b>	<b>14%</b>
	Injury	6.4	6.3	7.1	NS	NS
17	Prefaint	868.0	777.3	662.7	<b>25%</b>	<b>16%</b>
	LOC	37.9	38.0	36.0	NS	NS
	Injury	5.2	4.8	5.7	NS	NS
18	Prefaint	725.6	655.5	600.3	<b>18%</b>	<b>9%</b>
	LOC	31.3	30.9	30.4	NS	NS
	Injury	3.5	3.6	4.6	NS	NS

LOC, loss of consciousness; NS, not significant

## Young Donor Safety Initiative

- 16-18 year olds accounted for 16% of whole blood donations in the 2008 and 2009 school years
- Selecting donors with an estimated blood volume  $\geq 3.5$  L significantly decreased reactions among 16-18 year olds in 2009 compared to previous school years
- Benefit was most apparent in youngest age group
  - 16 year olds: 18% decrease in presyncopal symptoms  
14% decrease in syncope
  - 17 year olds: 14% decrease in presyncopal symptoms
  - 18 year olds: 9% decrease in presyncopal symptoms

August, 2008

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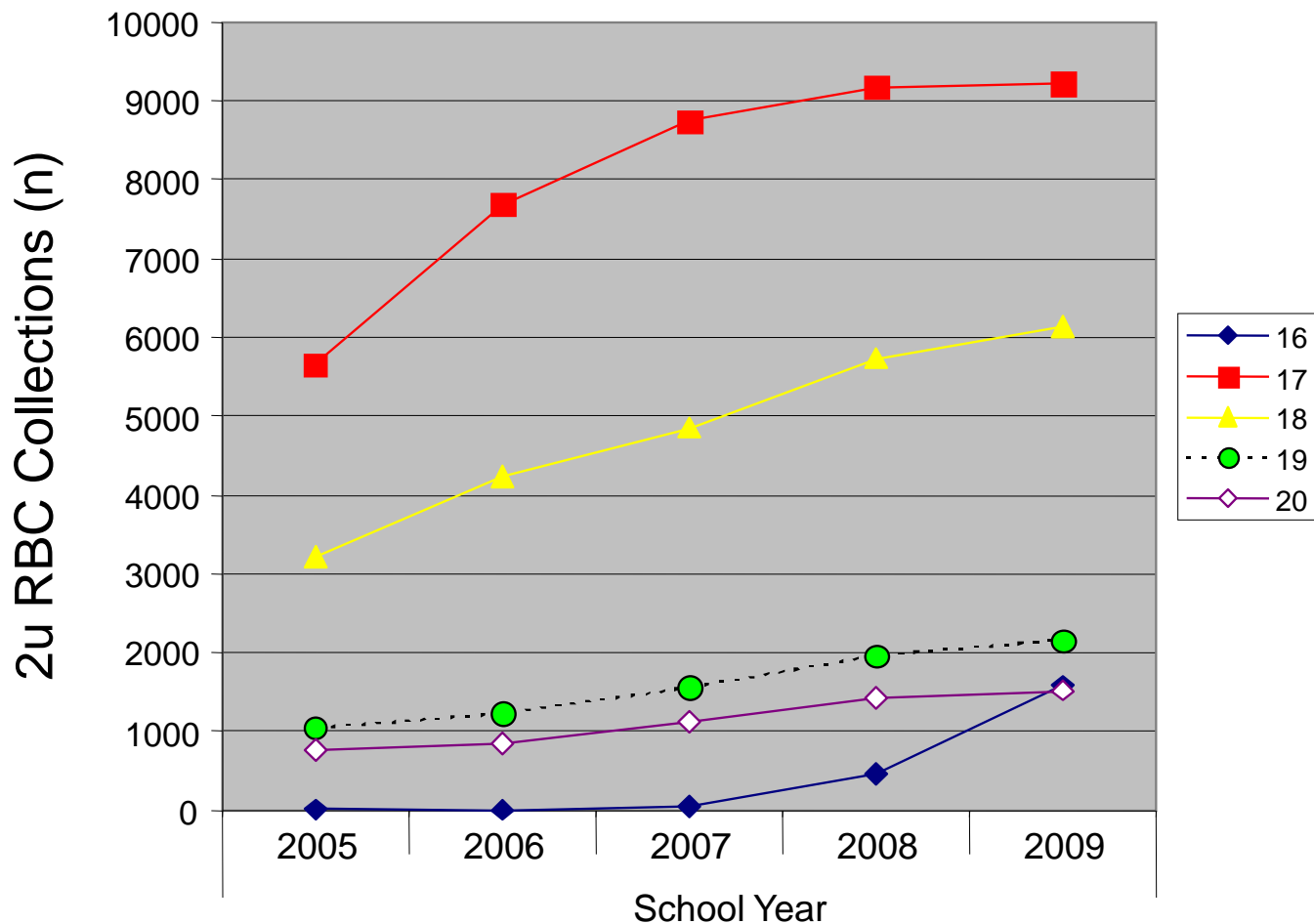
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- **Automated red cell collection**

Post-reaction instructions to donors and parents

## Trends – 6 ARC regions

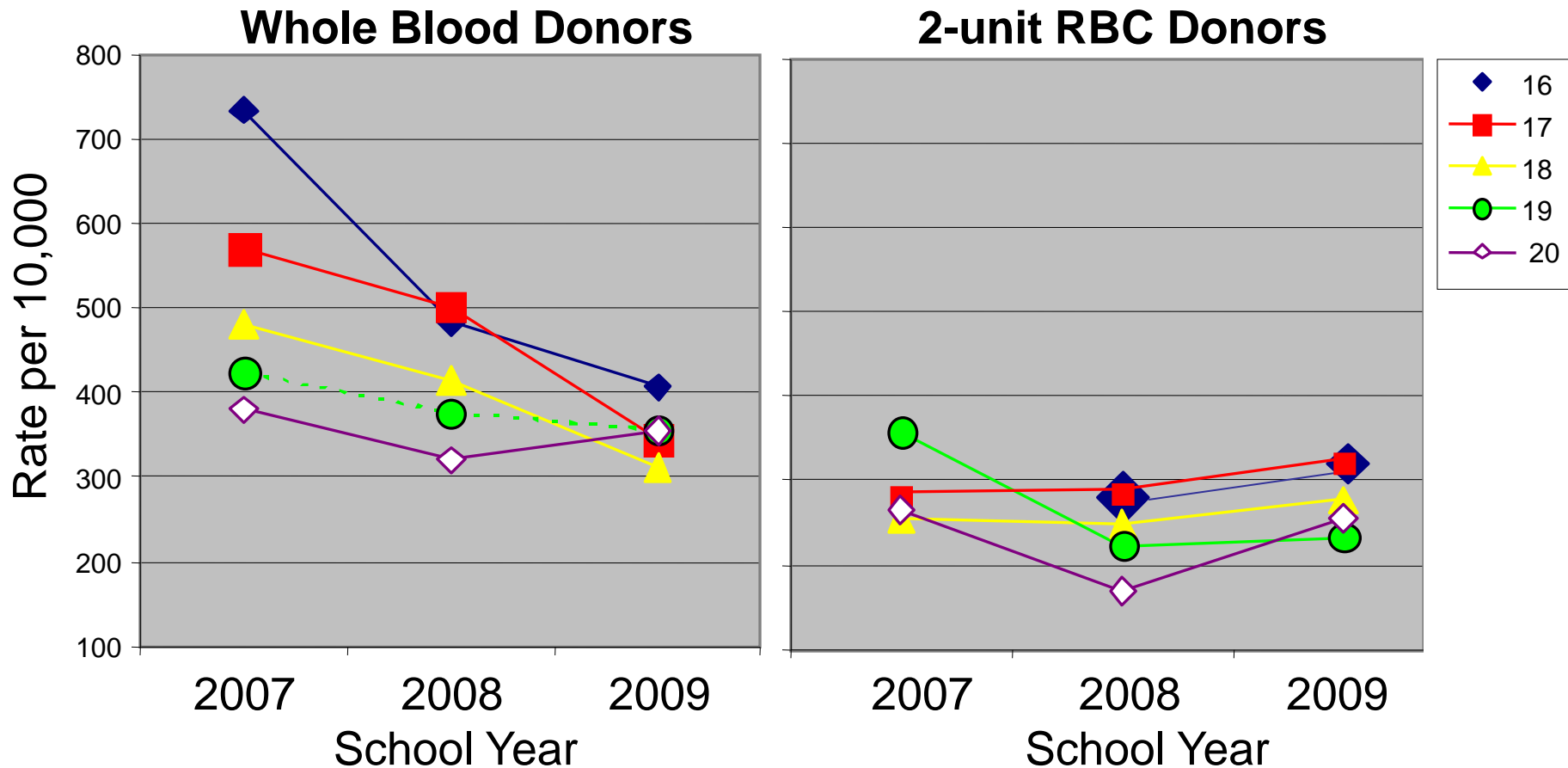


		Whole Blood	2u RBC
Weight (lbs)	Male	> 110	> 130 [>141**]
	Female	> 110 EBV > 3500 mL (2009)	> 150 [>152**]
Height	Male	NA	> 5' 1"
	Female	NA	> 5' 5"
Hematocrit		38%	40%
Volume collected		~ 500 mL	400 mL
Donation interval		8 weeks	16 weeks

\*Donor criteria for MCS+ (Haemonetics) \*\*Trima (Gambro), TBV > 4500 mL

# Complications, Apheresis vs WB

## Trends – Male donors – 6 ARC regions



\*Includes Prefaint, LOC, injury and citrate reactions (automated only)

- Safety initiative led to significant reductions in the rates of immediate reactions after whole blood donation
- Automated (2-unit) RBC collections by young donors are increasing and have a favorable safety profile
- Further study is needed to evaluate delayed complications and determine if a good experience at an early age increases lifetime blood donations