PROFICIENCY TESTING SERVICE
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PARTICIPANT STATISTICS — IMMUNOHEMATOLOGY — SECOND QUADRIMESTER 2016

ABO Group

	Specimen 1				Specimen 2			Specimen 3				Specimen 4					Specimen 5	
Method	**A**	**A1**	**A2**	**F/B disc**	**A**	**B**	**AB**	**O**	**A**	**B**	**O**	**A**	**A1**	**B**	**AB**	**F/B disc**	**O**	**A**
Biotest Tube	11					11		11				11					11	
Gamma Tube	5			1		6		6				6					6	
Grifols	1					1		1							1		1	
Immucor Microwell	1					1		1				1					1	
Immucor Slide	1					1		1				1					1	
Immucor Tube	47	1				48		48			1	46	1				48	
Medion Tube	1					1		1				1					1	
Ortho Gel	59	1				60		60				55	1	1		3	60	
Ortho Tube	26	1				27		27				26	1				27	
Other Tube	9	1				10		10				9	1				10	
Quotient Tube	3					3		3				3					3	
Total Population	**166**	**4**	**0**	**1**	**0**	**171**	**0**	**171**	**0**	**0**	**1**	**161**	**4**	**1**	**1**	**3**	**171**	**0**
Flagging			***		***		***		***	***	***			***	***			***

D (Rho) Typing

	Specimen 1			Specimen 2			Specimen 3			Specimen 4			Specimen 5			
Method	**Neg**	**Pos**	**Weak D (Du)-Positive**	**Neg**	**Pos**	**Neg, weak D (Du) not performed**	**Neg**	**Pos**	**Weak D (Du)-Positive**	**Neg**	**Pos**	**Neg, weak D (Du) not performed**	**Neg**	**Pos**	**Neg, weak D (Du) not performed**	**Weak D (Du)-Positive**
Biotest Tube		10		9		1		10		9		1	9		1	
Eldon Biologicals		24		15		9		24		15		9	15		9	
Gamma Slide		11		3		8		11		3		8	3		8	
Gamma Tube		6		6				6		6			6			
Immucor Slide		7		7				7		7			7			
Immucor Tube		51		42		9		50		42		9	42		9	
Ortho Gel		58		22		36		58		22		36	22		36	
Ortho Tube		31		19		12		31		19		12	18	1	12	
Other Tube		12		7		5		12		7		5	8		4	
Quotient Tube		4		3		1		4		3		1	3		1	
Total Population	**0**	**225**	**0**	**137**	**0**	**88**	**0**	**224**	**0**	**137**	**0**	**88**	**137**	**1**	**87**	**0**
Flagging	***		***		***		***		***		***			***		***

Unexpected Antibody Detection

	Specimen 1			Specimen 2			Specimen 3			Specimen 4			Specimen 5		
Method	**Would Refer**	**Not Detected**	**Detected**	**Would Refer**	**Not Detected**	**Detected**	**Would Refer**	**Not Detected**	**Detected**	**Would Refer**	**Not Detected**	**Detected**	**Would Refer**	**Not Detected**	**Detected**
Biotest Tube			8		8			8			8				8
Gamma Tube			3		3			3			3				3
Immucor Microwell			1		1			1			1				1
Immucor Tube		2	43		44			45			45				45
Medion Tube		1	1		2			2			2			1	1
Ortho Gel			77		77			77		1	76				76
Ortho Tube			13		13			13			13				13
Other Tube		1	5		6			6			6		1		5
Quotient Tube			1		1			1			1				1
Total Population	**0**	**4**	**154**	**0**	**157**	**0**	**0**	**158**	**0**	**1**	**157**	**0**	**1**	**1**	**155**
Flagging	***	***		***		***	***		***			***		***	

Antibody Identification, First

	Specimen 1		Specimen 2		Specimen 3		Specimen 4		Specimen 5	
Method	**E**	**Would refer**	**Would refer**	**D**	**Would refer**	**E**	**K**	**E**	**D**	**Would refer**
Total Population	**14**	**7**							**14**	**7**
Flagging										

Compatibility Testing

Specimen 1

Name	Would refer	Compatible	Not Compatible	Immediate spin only, incompatible	Immediate spin only, compatible
Biotest Tube		1			
Gamma Tube		3			
Grifols		1			
Immucor Tube	4	22			2
Medion Tube					1
Ortho Gel	9	53	1		1
Ortho Tube	1	10			2
Other Tube		3			3
Quotient Tube		1			
Total Population	**14**	**95**	**1**	**0**	**9**
Flagging			***	***	

Specimen 2

Would refer	Compatible	Not Compatible	Immediate spin only, incompatible	Immediate spin only, compatible
	1			
	3			
	1			
	19			9
				1
	54			10
	11			2
	2			4
	1			
0	**93**	**0**	**0**	**26**
***			***	

Specimen 3

Would refer	Compatible	Not Compatible	Immediate spin only, incompatible	Immediate spin only, compatible
	1			
	3			
	1			
	19			9
				1
	54			10
	11			2
	2			4
	1			
0	**93**	**0**	**0**	**26**
***		***	***	

Specimen 4

Name	Would refer	Compatible	Not Compatible	Immediate spin only, incompatible	Immediate spin only, compatible
Biotest Tube		1			
Gamma Tube		3			
Grifols		1			
Immucor Tube		19			9
Medion Tube					1
Ortho Gel	1	51	2		9
Ortho Tube		11			2
Other Tube		2			4
Quotient Tube		1			
Total Population	**1**	**90**	**2**	**0**	**25**
Flagging			***	***	

Specimen 5

Would refer	Compatible	Not Compatible	Immediate spin only, incompatible	Immediate spin only, compatible
		1		
		3		
		1		
5		22		1
				1
7	1	55		1
1		10		2
		3		3
		1		
13	**1**	**96**	**1**	**8**
	***		***	

Correct responses are defined as those reflecting agreement among 95% or more of all participants or referees. Unacceptable responses are indicated by "*****" on the Flagging line of each specimen.

Q2 2016 – Immunohematology

Participant statistics for the Second Quadrimester survey showed superb performance. This held true for ABO group testing, D (Rho) typing, unexpected antibody detection, antibody identification, and compatibility testing. Regardless of the testing platform used, consistent results were obtained. For Specimens #1 (contained anti-E) and #5 (contained anti-D), only 2.5% and 0.6% of participants, respectively, failed to detect the antibody. All participants who performed antibody identification reported the correct antibody specificities.

Blood Bank – What's In a Name?

The term "blood bank" is typically used to refer to that area of the hospital where blood products are stored and various immunohematology tests (ABO/Rh, antibody screen, antibody identification, compatibility testing) are performed. However, the Food and Drug Administration (FDA) has specific definitions for blood establishments. The FDA defines a blood bank as a commercial or non-profit establishment that collects and processes blood. Blood components can be collected by apheresis or prepared from Whole Blood donations. It may also perform testing on the blood (infectious disease testing), and it then routinely distributes blood or blood products to one or more hospitals. A blood bank may be a stand-alone facility or can be located within a hospital.

Alternatively, the FDA defines an establishment that performs compatibility testing for blood or blood components but does not routinely collect or process blood as a transfusion service. Confusing, isn't it? Especially since many of us use the term blood bank to mean our hospital transfusion service! To make things a bit more complicated, if a hospital transfusion service freezes, deglycerolizes, washes, irradiates, rejuvenates, or performs leukocyte reduction of blood components in addition to compatibility testing, it is also considered a blood bank in the eyes of the FDA.

Military conflicts and wars served as the primary catalysts for the development of the first blood banks. Prior to the development of anticoagulants and storage facilities, transfusion was "vein-to-vein" from the donor to the patient. As European countries were confronted with impending war, the need for the availability of large amounts of blood for transfusion became apparent. Citrate anticoagulant was introduced in the early 1900's, allowing blood to be collected into flasks, beakers, and other containers. For the first time, "indirect" transfusions could occur – the donor no longer had to be connected via intravenous tubing to the recipient. The discovery of citrate anticoagulant coupled with the ability to store blood in a refrigerator led to the establishment of blood storage facilities, with the first such blood depot being established by the British during World War I. However, outside of the military setting, many physicians were reluctant to use blood that had been collected and stored for any period of time, preferring to continue use of direct person-to-person transfusion.

During World War II, the anticipation of a large number of civilian and military casualties led to initiatives to collect more blood and establish larger blood depots. The discovery that the addition of glucose to citrate anticoagulant would allow prolonged storage of whole blood aided in meeting these demands. In the mid-1930's, blood banks and transfusion services were established by both Spain and Britain. The Barcelona Blood-Transfusion Service collected and tested blood, pooled like blood types together (yes, they pooled whole blood!), aliquoted it into 300mL glass bottles placed in refrigerators, and transported the bottles in military vehicles (outfitted with refrigerators) to the front lines during the Spanish Civil War. In 1939, the British Army Blood Supply Depot (ABSD) was established. The ABSD created four blood collection and storage depots within Britain and collected more than 700,000 blood donations over the course of the war. Like the Spanish system, this allowed blood to be collected and supplied via centralized depots rather than relying on blood collected from troops at the battlefront.

During World War II, plasma was in great demand for the treatment of hemorrhagic shock in military trauma victims. This prompted the United States to develop facilities dedicated to the collection, processing, and storage of plasma to ship overseas. In 1941, the American Red Cross organized civilian blood donor plasma centers, collecting over 13 million units of plasma during the course of the war. As with earlier transfusions of whole blood, large pools of plasma were typically prepared and aliquoted into sterile 300-500mL glass bottles for transfusion.

The first hospital blood bank in the United States was established at the Cook County Hospital in Chicago by Dr. Bernard Fantus in 1937. He coined the term "blood bank" to describe a facility where blood could be collected and stored ("deposited"), making it available for "withdrawals" for patient transfusion. Over the course of the next several years, blood banks were established in hospitals and communities throughout the United States, allowing blood to be collected in one location and subsequently shipped to wherever it was needed.