Canadian Blood Services

BLOOD
PLASMA
STEM CELLS
ORGANS
& TISSUES

DIAGNOSTIC SERVICES

British Columbia / Yukon

YEAR IN REVIEW

JANUARY – DECEMBER 2018

Diagnostic Services “Year in Review” statistics are based on a January to December calendar year. The calendar year provides better correlation with Health Canada birth statistics.

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PERINATAL LABORATORY

The Perinatal Laboratory within Diagnostic Services at Canadian Blood Services provides diagnostic testing of pregnant women for blood type and red blood cell antibodies. Results from this screening assist physicians, midwives and nurse practitioners in ensuring the appropriate management of a pregnancy for both the mother and baby.

A. Testing Performed

Canadian Blood Services Perinatal Laboratory routinely performs the following tests:
ABO/Rh blood type
Screen for red blood cell antibodies
Antibody Identification, if antibodies are detected
Antibody Identification referrals
Antibody Titre, if a clinically significant antibody is identified
Phenotyping

B. Testing Frequency

Mothers – Initial Testing: All women should be tested upon their first prenatal visit.

Mothers – 26-28 Weeks Gestation: All Rh negative women should be retested at 26-28 weeks gestation. Rh positive women should also be retested at 26-28 weeks gestation when there is only one blood group result available (usually first pregnancy) or if patient is at increased risk of allo-immunization (e.g. previous transfusion, trauma, obstetrical procedure, or fetal maternal hemorrhage).

Mothers – Antibody Present: If the antibody is known to cause HDFN, it is recommended that specimens be submitted every month followed by biweekly in the last trimester for the duration of the pregnancy dependant on the specificity of the antibody and the strength of the antibody titre.
For patients with titers of 16 or greater (and dependant on paternal phenotype) referral to Maternal Fetal Medicine clinic is recommended. Less frequent sampling may also be recommended for antibodies that are unlikely to be clinically significant or in cases where clinical monitoring through fetal Doppler ultrasound has commenced.
Refer to Fetal Genotyping (page 17) for additional information.

Mothers – Postnatal: Following delivery, specimens from the mother and her baby should be tested if the Rh of the mother is unknown, the mother is Rh negative, the mother has a clinically significant antibody or if the baby shows signs of HDFN (i.e. anemia or jaundice).

Partners: When a woman has an antibody capable of causing HDFN, specimens from the partner will be requested for ABO/Rh and antigen phenotyping. This will assist in assessing the probability of the baby being affected by the antibody. Partners' specimens may also be tested to assess Rh Immune Globulin (RhIG) eligibility of Rh negative mothers.

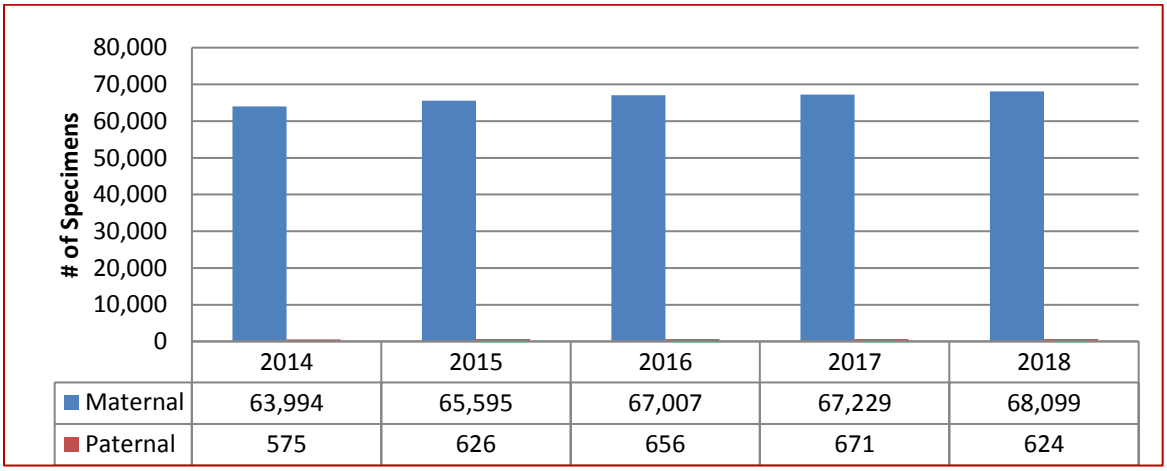
C. Specimens Tested

The data includes all women tested, including referrals.

Table 1: Perinatal Specimens Tested

Specimen Type	Test Type	2014	2015	2016	2017	2018
Maternal	Type and Screen	63,994	65,595	67,007	67,229	68,099
Paternal	ABO/Rh	575	626	656	671	624
Total # of Specimens Tested		**64,569**	**66,221**	**67,663**	67,899	68,723
Total # of Patients Tested		**55,052**	**55,869**	**57,089**	**62,063**	**64,992**

Figure 1: Total Perinatal Specimens Tested



D. Antibodies Identified

In 2018, a total of 533 antibodies were reported (see *Table 2*). This is significantly higher than 2017. Five hundred and seven women (507) had antibodies identified during their pregnancies (increased from 349 women in 2017), of these; 498 women had clinically significant antibodies, 35 had clinically insignificant antibodies and 22 women had multiple antibodies. Passive anti-D data has been excluded from the preceding numbers. Antibodies identified were considered to be clinically significant if they have been reported to cause HDFN. The most common clinically significant antibodies identified were: anti-D, anti-E, anti-c, anti-K, (see *Figure 2*) which together represented 67% of the total antibodies identified. IgG Anti-M can also be considered clinically significant as they may cause HDFN and/or delayed anemia in rare cases.

Titres for 11 of the clinically significant antibodies increased from non-critical to critical levels during the pregnancy with a total of 23 antibody titres at critical levels (see *Table 3*). Recommendations were made for all patients with a critical titre level (current or previous pregnancy) and all Kell system antibodies to be referred to a High Risk Fetal Assessment Clinic for further follow-up and monitoring during pregnancy.

Table 2: Total Number of Perinatal Antibodies Detected

Clinically Significant Antibodies	2014	2015	2016	2017	2018
Anti-D	44	46	38	52	48
Anti-C	12	8	5	7	26
Anti-Cw	1	2	2	1	0
Anti-Ce	0	1	0	0	0
Anti-c	23	14	11	30	65
Anti-E	92	85	80	101	150
Anti-e	8	3	3	2	4
Anti-G	2	1	2	4	6
Anti-K	43	41	33	41	70
Anti-Kpa	0	0	0	1	2
Anti-Lub	1	1	1	0	2
Anti-M*	39	46	47	49	52
Anti-S	8	8	6	8	13
Anti-s	0	2	2	1	0
Anti-U	0	0	0	0	2
Anti-Fya	3	4	1	8	12
Anti-Fyb	3	1	1	1	3
Anti-Jka	18	12	15	23	28
Anti-Jkb	3	2	1	8	4
Anti-Jk3	0	0	1	0	0
Anti-Vw	2	0	0	0	0
Anti-Wra	9	3	3	3	4
Anti-Jra	0	1	0	0	0
Anti-Inb	0	0	0	0	0
Anti-Sc1	0	1	0	0	0
Anti-Lua	0	1	0	1	2
Anti-Cob	0	1	0	0	0
Anti-Dantu	1	1	0	0	0
Anti-Joa	0	0	0	0	1
Anti-Mur	0	0	0	0	1
Anti-PP1Pk	0	0	0	0	1
Anti-Yta	0	1	0	1	2
Total	**312**	**286**	**252**	**342**	**498**

*Anti-M – IgG antibody component detected

Clinically Insignificant Antibodies	2014	2015	2016	2017	2018
Anti-A1	5	10	12	11	9
Anti-Lea	17	9	7	11	20
Anti-Leb	11	1	1	5	3
Anti-N		3	1		1
Anti-P1	38	23	20	19	2
Anti-Sda		6			0
Passive Anti-D *(not included in totals)*	514	651	681	726	588
TOTAL: Clinically Insignificant Antibodies	**71**	**52**	**41**	**46**	**35**

Table 3: Perinatal Patient Antibody Titres (2018)

Antibody	Critical Level	Non-Critical Level	Non-Critical to Critical
Anti-D	6	39	4
Anti-C		2	
Anti-E	6	60	4
Anti-c	2	16	2
Anti-e		2	
Anti-Ec	2	3	
Anti-Ce			
Anti-G		1	
Anti-DG	3		
Anti-CG	1		
Anti-Fya	1	5	1
Anti-Fyb		2	
Anti-Jka	1	17	
Anti-Jkb		8	
Anti-M	1	42	
Anti-S		9	

*Titres are not normally performed on Kell system antibodies as these antibodies may be critical at any level. This titre was performed upon request of the physician.

Figure 2: Total Number of Perinatal Antibodies

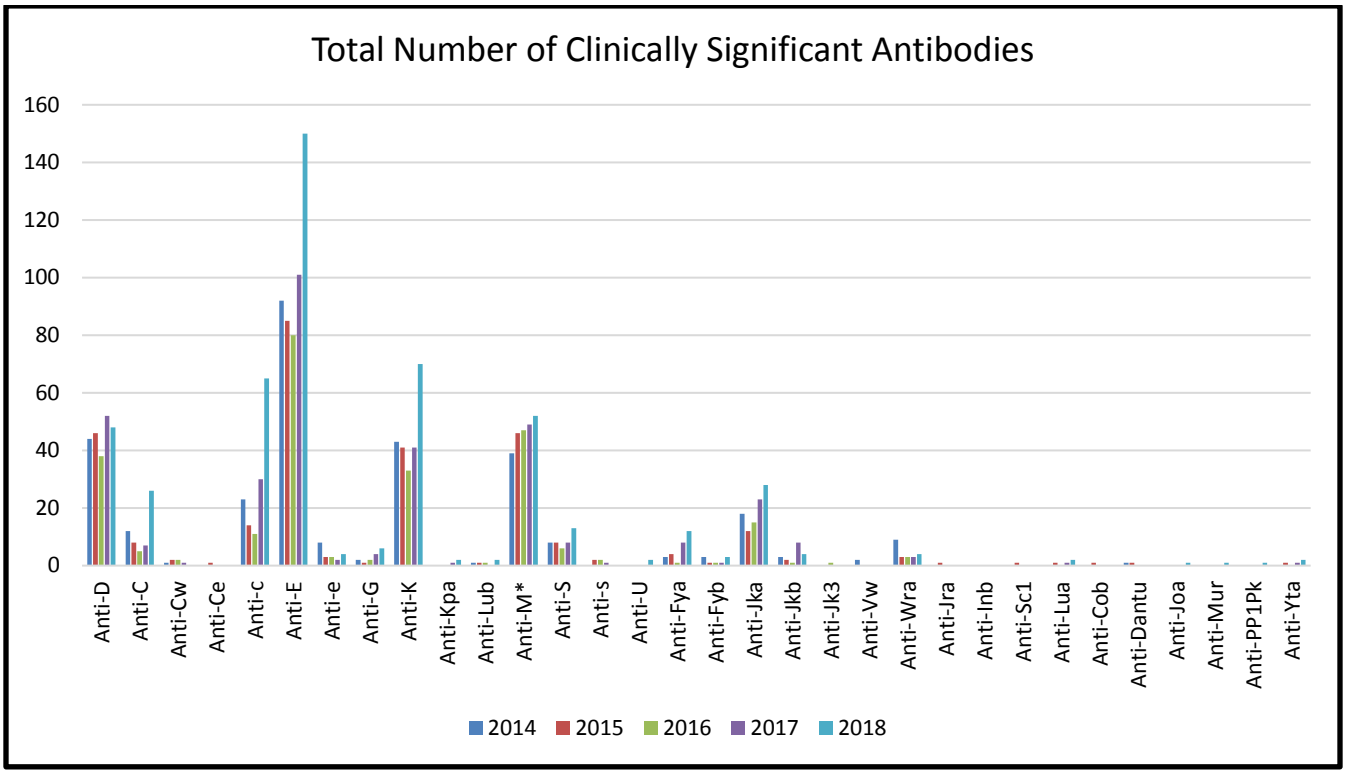


Figure 3: Frequency of Clinically Significant Antibodies

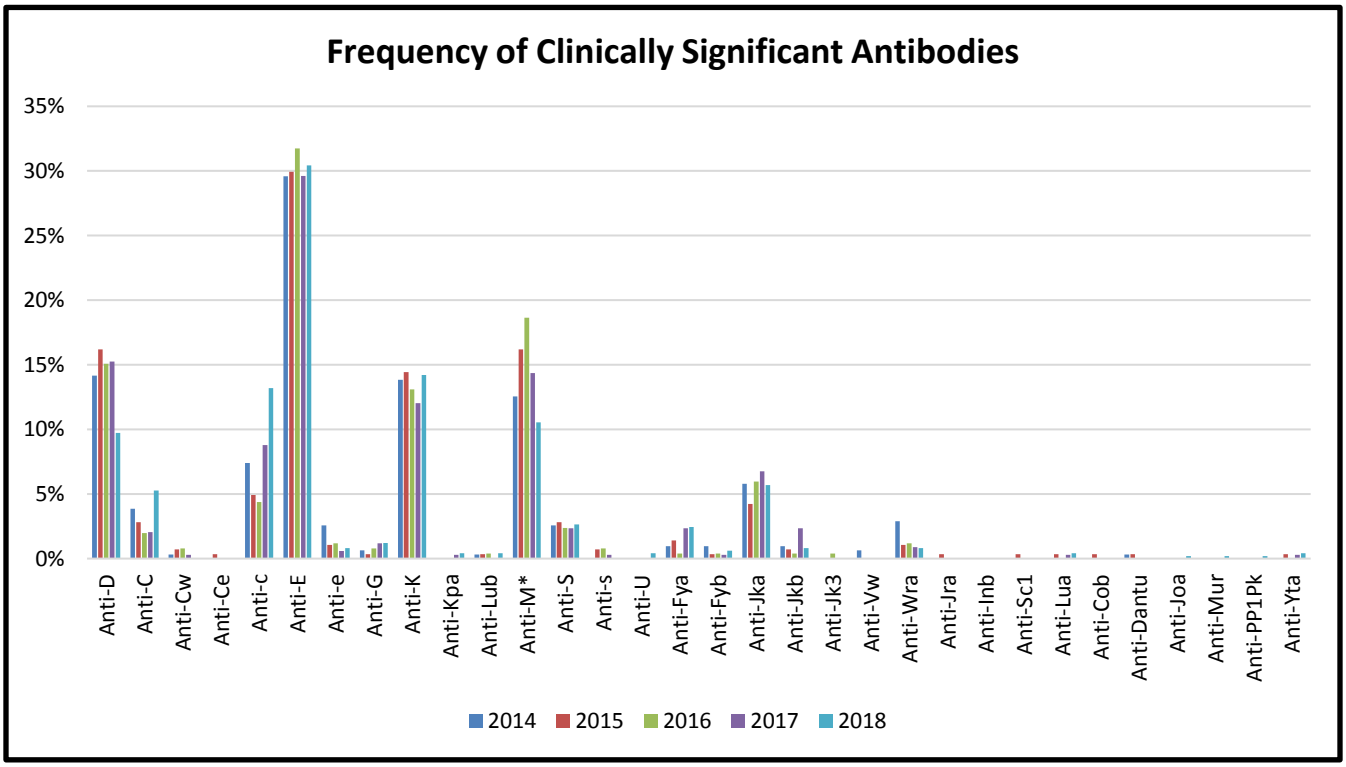


Table 4: Combination Antibodies

Antibodies	Number in 2018
Anti-D Anti-G	4
Anti-D Anti-G Ant-P1	1
Anti-D Anti-C Anti-Jkb	1
Anti-D Anti-C Anti-E	1
Anti-E Anti-c	3
Anti-E Anti-Jkb	1
Anti-E Anti-c Anti-Fya	1
Anti-E Anti-K	1
Anti-E Anti-P1	2
Anti-E Anti-Cw Anti-Cx Anti-Wra	1
Anti-c Anti-P1	2
Anti-c Anti-Jka	1
Anti-C Anti-P1	1
Anti-C Anti-G Anti-K	1
Anti-Jka Anti- Fya Anti-P1	1
Anti-M Anti-K	1
Anti-S Anti-Jka	1
Anti-S Anti-K Anti-Fya	1
Anti- K Anti-Jkb	1
Anti-Kpa Anti-Fya	1
Anti-Lea Anti-Leb	2

REFERENCE LABORATORY

The Reference Laboratory, Vancouver Diagnostic Services provides testing for hospital transfusion medicine laboratories. Hospital patients who are repeatedly transfused may develop red cell antibodies and as a result may have difficulty in tolerating transfusions. Diagnostic Services has specialized and experienced technologists that assist and provide consultation to hospital transfusion medicine laboratories (24 hours, 7 days per week). The Reference Laboratory identifies red cell antibodies and provides transfusion recommendations. Diagnostic Services has a varied selection of specialized procedures and rare reagents to resolve more difficult red cell antibody cases. Staff within our department have collaborated serological investigations with other reputable references laboratories such as the New York Blood Center and the National Immunohematology Reference laboratory (NIRL).
BC Diagnostic Services contributes to continuing technologist education at provincial or national transfusion medicine conferences. (Refer to Accomplishments – page 23)

Diagnostic Services Red Cell Antibody Investigations

In 2018, hospitals have referred 412 requests for red cell antibody identification.

Diagnostic Services provides support for all BC and Yukon hospitals. Since hospitals have different capabilities and expertise in resolving red cell antibody investigations, Diagnostic Services has categorized hospitals into three levels based on their capabilities.

Level 1

Level 1 is defined by hospital transfusion medicine laboratories that do not have the resources for either antibody identification or phenotyping of patient and donor units prior to transfusion. Hospital transfusion medicine laboratories capabilities usually include the following methods:

Routine Services	Additional Methods:
ABO and Rh Antibody detection Crossmatch	Gel / SIAT / PEGIAT / LIAT / Solid Phase Pre-warm Saline replacement

Diagnostic Services Support Provided - Level 1 Hospitals

- Consultation.
- Identifying and/or excluding antibodies to the major blood group antigens.
- Providing compatible/antigen negative donor units if applicable.
- Forwarding an interim report followed by the final antibody report and patient antibody wallet card (where applicable) to the hospital Transfusion Service.

Level 2

Level 2 is defined by hospital transfusion medicine laboratories that have limited resources available for antibody identification. Level 2 hospitals generally have one in-date antibody panel and a small inventory of the common antisera to some of the major blood group antigens (eg. anti-C, -E, -c, -e, -K, -Fya, -Fyb, -Jka and -Jkb). Hospital Transfusion Service capabilities usually include the following methods:

Routine Services	Additional Methods
ABO and Rh Antibody detection Crossmatch Resolve antibody cases with exclusions of most single specificity antibodies base on an in-date panel Phenotype patient and donor units if antisera is available Resolve antibody cases with exclusions of most single specificity antibodies based on the in-date panel Phenotype patient and donor units if antisera available.	Gel/SIAT/PEGIAT/LIAT/ Solid Phase Pre-warm Saline replacements Differential DAT

Diagnostic Services Support Provided - Level 2 Hospitals

- Consultation.
- Identifying and excluding antibodies to the major blood group antigens.
- Providing antigen negative donor units if the corresponding antisera is not available at the hospital and if donor testing is not able to provide phenotyped inventory.
- Forwarding an interim report followed by the final antibody report and patient antibody wallet card (where applicable) to the hospital Transfusion Services. The hospital Transfusion Service should forward a copy of the report to the patient's physician (if indicated by hospital policy) as well as the antibody wallet card to the patient.

Level 3

Level 3 is defined by Hospital transfusion medicine laboratories that have the resources to resolve the majority of serological problems. Resources would include two or more in-date panels and antisera to the major blood group antigens. Hospital Transfusion Service capabilities usually include the following methods:

Routine Services	Additional Methods
ABO and Rh Antibody detection Crossmatch donor units SIAT/PEGIAT/LIAT// Solid Phase and/or Gel Identify or exclude most single/multiple/rare antibodies based on two or more in-date panels Phenotype patient/donor units as required Provide a written report to the patient's physician and an antibody wallet card to the patient.	Pre-warm Saline replacement Differential DAT Elution Auto/Alloadsorptions Inhibition/Neutralization

Diagnostic Services Support Provided - Level 3 Hospitals

- Consultation
- Identifying and excluding antibodies to the major blood group antigens
- Providing antigen negative donor units if the corresponding antisera is not routinely stocked at the hospital
- Forwarding an interim report followed by the final antibody report to the hospital Transfusion Service

A. Testing Performed

The Reference Laboratory routinely performs the following tests:

- ABO/Rh blood type
- Screen for red blood cell antibodies
- Antibody Identification
- Phenotyping (patient and donor units)
- Transfusion Reaction Investigation
- Direct Antiglobulin Test
- Elution and Allo and Auto Absorptions
- Neutralization Tests
- Referral Genotype Testing

Antibody Screening is routinely performed by solid phase testing. A combination of solid phase testing and indirect antiglobulin tube testing using PEG for enhancement is the primary antibody identification methods. PEG IAT is also the manual back-up method for antibody screening.

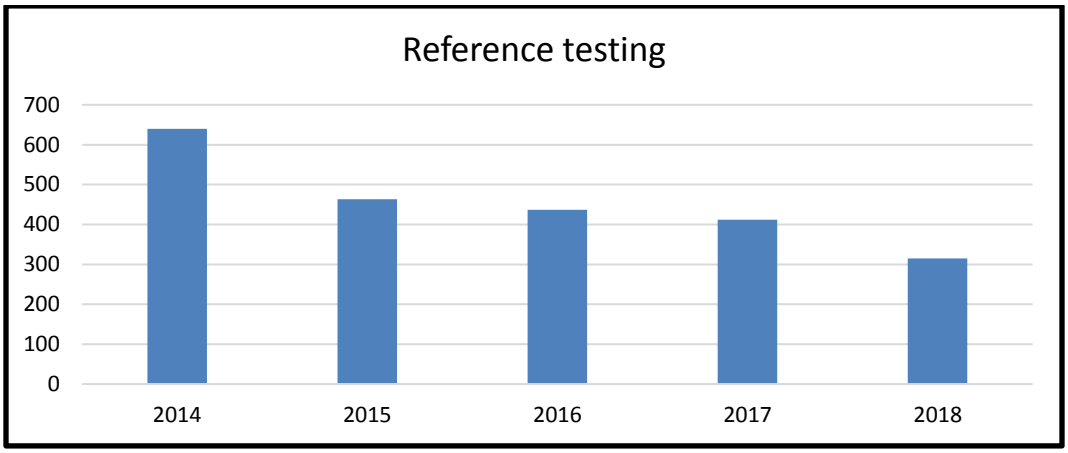
B. **Specimens Tested**

The data in this report reflects a calendar year period to enable better correlation to other government statistical data.

Table 5: Reference Specimens Tested

Specimen Type	2014	2015	2016	2017	2018
Total Reference Antibody Investigations	640	463	437	412	315

Figure 4: Total Reference Specimens Tested



C. Antibodies Identified

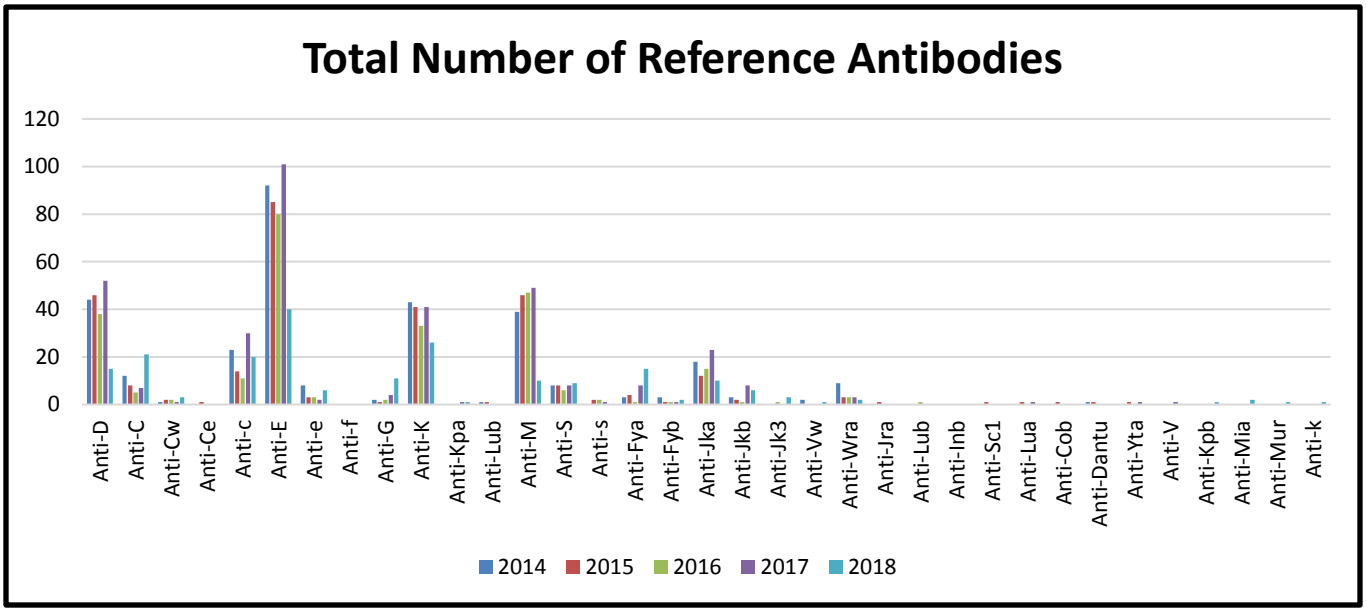
In 2018, a total of 412 antibodies were reported (see *Table 6*). The total number of antibodies detected is lower than in 2017, but the distribution of the most common antibodies remains consistent. Three hundred and twenty-three patients had antibodies identified; of these, ninety-five patients had multiple antibodies. Antibodies identified were considered to be clinically significant if they have been reported to cause acute or delayed hemolytic transfusion reactions. The most common clinically significant antibodies identified were: anti-E, anti-D, anti-M, anti-K, anti-c (see *Figure 5*) which together represented 80% of the total antibodies identified.

Table 6: Total Number of Reference Antibodies Detected

	2014	**2015**	**2016**	**2017**	**2018**
Anti-D	44	46	38	52	15
Anti-C	12	8	5	7	21
Anti-C^{w}	1	2	2	1	3
Anti-Ce		1			
Anti-c	23	14	11	30	20
Anti-E	92	85	80	101	40
Anti-e	8	3	3	2	6
Anti-f					
Anti-G	2	1	2	4	11
Anti-K	43	41	33	41	26
Anti-Kp^{a}				1	1
Anti-Lu^{b}	1	1			
Anti-M	39	46	47	49	10
Anti-S	8	8	6	8	9

Anti-s		2	2	1	
Anti-Fya	3	4	1	8	15
Anti-Fyb	3	1	1	1	2
Anti-Jka	18	12	15	23	10
Anti-Jkb	3	2	1	8	6
Anti-Jk3			1		3
Anti-Vw	2				1
Anti-Wra	9	3	3	3	2
Anti-Jra		1			
Anti-Lub			1		
Anti-Inb					
Anti-Sc1		1			
Anti-Lua		1		1	
Anti-Cob		1			
Anti-Dantu	1	1			
Anti-Yta		1		1	
Anti-V				1	
Anti-Kpb					1
Anti-Mia					2
Anti-Mur					1
Anti-k					1

Figure 5: Total Number of Reference Antibodies



FETAL GENOTYPING

Canadian Blood Services in BC refers specimens for fetal genotyping on maternal plasma to the International Blood Group Reference laboratory (IBGRL) of the National Health Services (NHS) in Bristol, United Kingdom.

Specimens are submitted through the Maternal Fetal Medicine clinics in BC and are accepted if they meet the following criteria:

- The mother has an antibody capable of causing hemolytic disease of the fetus/newborn (HDFN), AND
- The father is heterozygous for the corresponding antigen (or unknown), AND
- The antibody titre has reached a critical level, OR
- There has been a previous fetus/newborn affected by HDFN, and
- The antibody is RH and/or anti-K

Discussion with a Canadian Blood Services physician is required prior to submitting specimens for testing outside of these criteria.

The number of specimens referred for fetal genotyping has ranged between two and eight specimens in recent years.

Table 7: Fetal Genotyping Results Summary (2018)

Patient	Maternal Antibody	Paternal phenotype	Predicted Fetal Genotype	Follow-up Phenotype (on baby after delivery)
1	Anti-E	D+ C+ E+ c+ e+	Not done – delayed in transit and thawed. No repeat sample sent.	N/A
2	Anti-E	D+ C- E+ c+ e+	E+	E+
3	Anti-c	Unknown	c+	c+
4	Anti-E	D+ C+ E+ c+ e+	E-	E-
5	Anti-E	D+ C+ E+ c+ e+	E+	E+
6	Anti-D	D+ C+ E- c+ e+	D+	D+
7	Anti-D	Unknown	D+	Not tested due to O neg IUTs
8	Anti-K	Unknown	K-	K-
9	Anti-K	Unknown	K-	Not tested. Cord sample unavailable.
10	Anti-D	D+ C+ E- c+ e+	D-	D-
11	Anti-E, anti-c	D+ C+ E+ c+ e+	E+ c+	E+ c+
12	Anti-E	D+ C+ E+ c+ e+	E+	E+
13	Anti-K	Unknown	K+	K+
14	Anti-K	K+ k+	K-	K-
15	Anti-E	D+ C+ E+ c+ e+	E-	Baby not yet born
16	Anti-K	K+ k+	K+	Baby not yet born

Based on the following testing algorithm patients with a serologically variable Rh D typing results may have a genetic testing for the RHD gene. For 2018, the following results were obtained in patients using one of the two Red Cell antigen genotyping platforms available at CBS:

Figure 6: Rh D Testing Algorithm

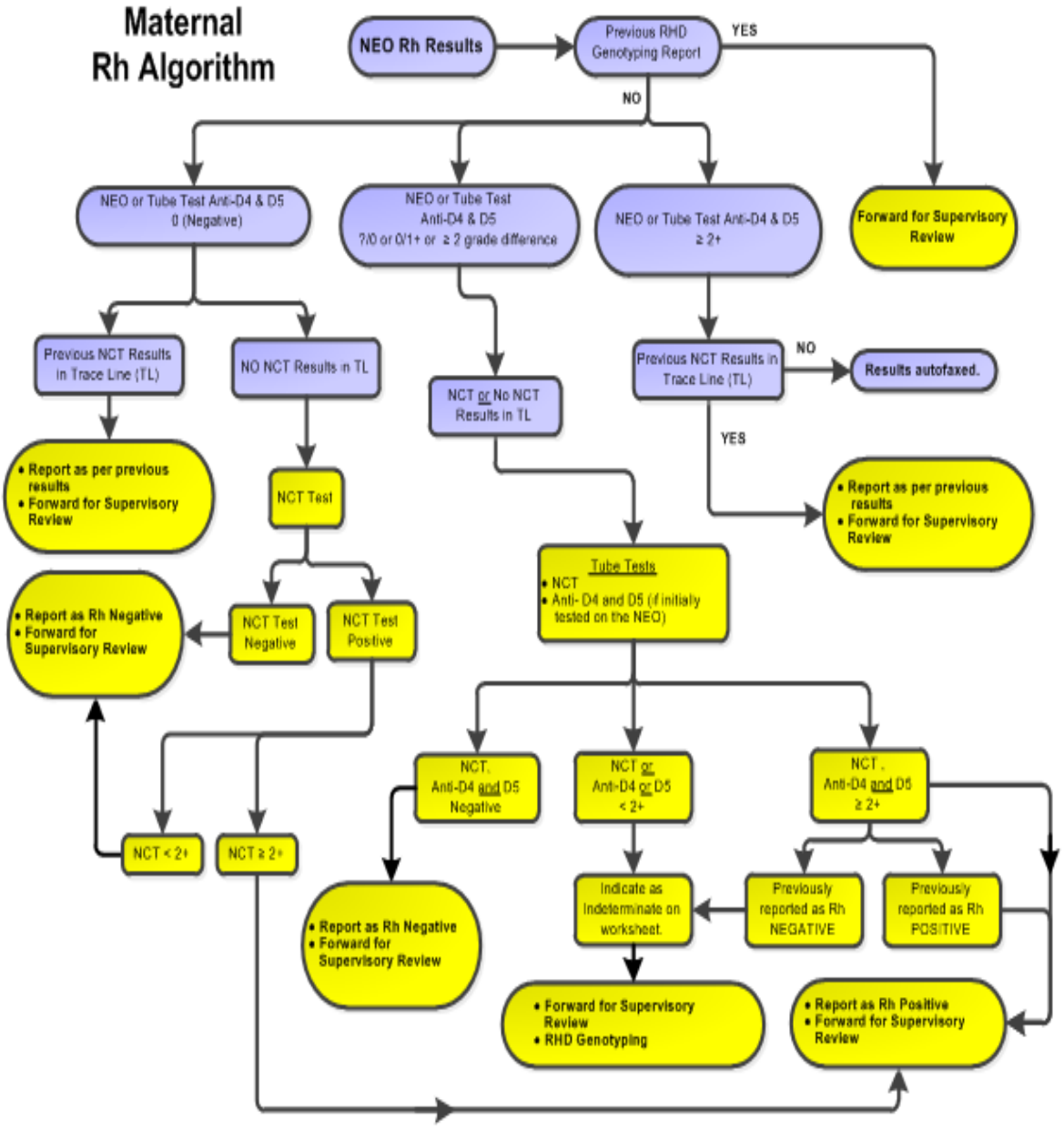


Table 8: Patient # - RHD Type/Result (2018)

# of Patients	RHD Genotype	Predicted Phenotype	RHD Sequencing	Rh(D) Group
2	DAR	Partial D	NO	NEG
1	DAR/weak D type 4.0 or 4.3	weak D	NO	NEG
1	DAU2	D variant	NO	NEG
1	DCS1 or DFV	partial D	NO	NEG
1	DVI	D variant	NO	NEG
11	Possible D*	D variant	NO	NEG
28	Possible D	D positive	NO	POS
47	weak D Type 1	weak D	NO	POS
1	weak D type 14 or 40 or 51	weak D	NO	NEG
22	weak D type 2	weak D	NO	POS
1	Weak D type 2/ DAR	partial D	NO	NEG
26	weak D type 3	weak D	NO	POS
7	weak D type 4.0 or 4.3	weak D	NO	NEG
149	**Total number tested**			

Possible D* = Rh neg (prior to 2018-04-16).
Possible D = Rh pos (after 2018-04-16).

The array used for RHD genotyping (Immucor's BioArray BeadChip™ Molecular Assay) is extensive and can detect the most common mutations of the RHD gene. The most common variants detected are weak D type 1, weak D type 2 and weak D type 3. Individuals with these phenotypes can be safely treated as Rh positive as it has been well established that they will not form alloanti-D. Patients with any other weak or partial D phenotypes may be capable of forming alloanti-D, and should be treated as Rh negative. When none of the variants present on the array are detected, the software will produce a result of "Possible D". Prior to 2018, it was decided to err on the side of caution, and Canadian Blood Services recommended that patients with a result of "Possible D" be treated as Rh negative. However, based on clinical experience and sequencing studies, it has been confirmed that the vast majority of these patients do not have a mutation of the RHD gene. In 2018 the reporting was changed to reflect this and patients with results of "Possible D" were reported as Rh positive individuals.

QUALITY INDICATORS

The laboratories monitor many quality indicators and the two which are most relevant to this document are turnaround times and rejected specimens which are presented below.

A. Turnaround Times

To ensure timely reporting of patient test results, Canadian Blood Services monitors turnaround time (TAT) from when the specimen is received at Canadian Blood Services in Vancouver to the time when the results are available. Since monitoring of this quality indicator began in 2008, the percentage of specimens has consistently exceeded the predefined TAT threshold. Samples whose testing exceeds the expected TAT are usually those where clinically significant antibodies are detected or where difficulty in finding compatible blood is encountered.

Table 9: Turnaround Time – Routine Criteria by Specimen Type

Specimen Type	Expected Turnaround Time	Expected % of Specimens Which Meet or Exceed Expected TAT
Routine Perinatal	< 72 hours	85%
Reference Testing	<72 hours	85%

Table 10: Turnaround Time – Routine Perinatal Specimens

% of Specimens Tested within 72 hours	91%	89%	89%	91%	89%
% of Specimens Tested > 72 hours	8%	11%	11%	9%	11%

Figure 7: Perinatal Routine TAT

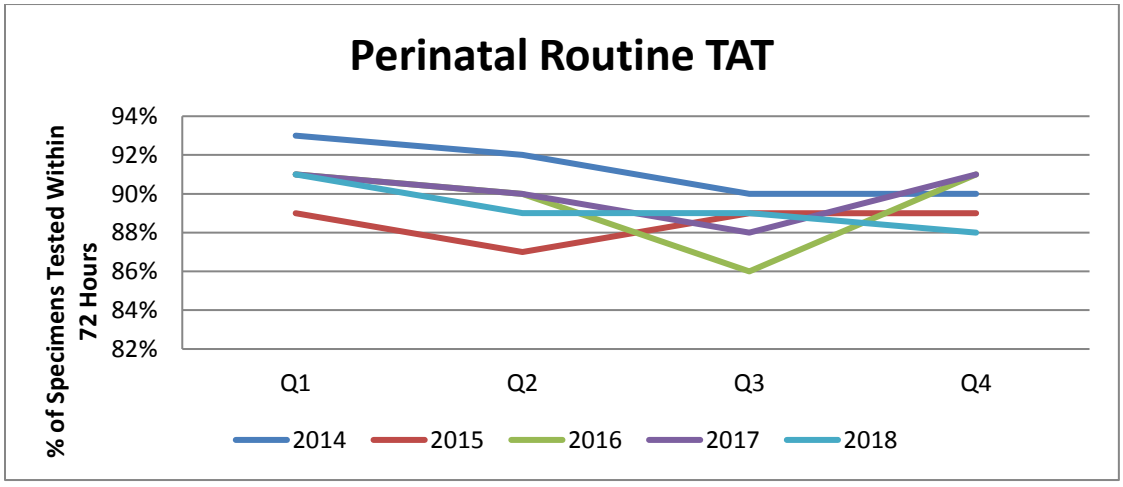
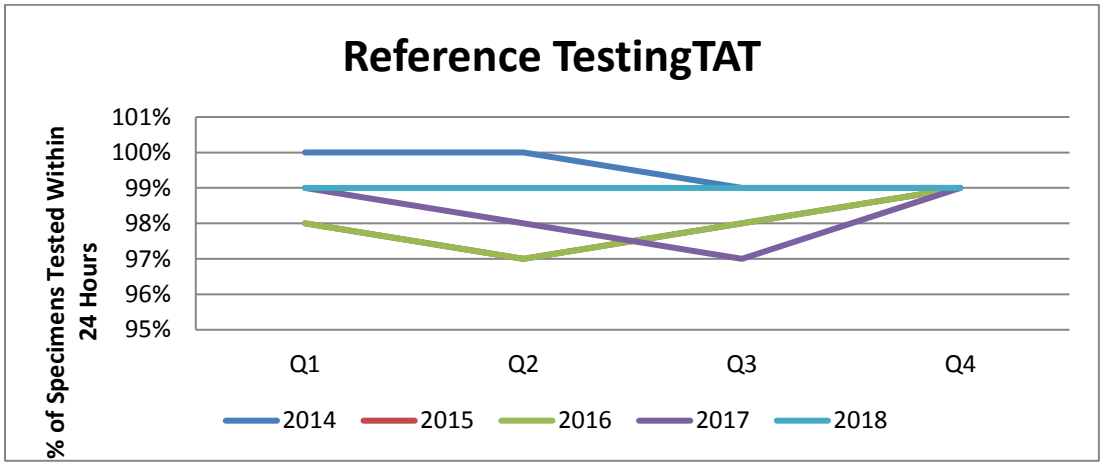


Table 11: Reference TAT

Turn Around Time (TAT)	2014	2015	2016	2017	2018
% of Specimens Tested within 72 hours	99%	98%	98%	98%	99%
% of Specimens Tested > 72 hours	1%	2%	2%	2%	1%

Figure 8: Reference TAT



B. Rejected Specimens

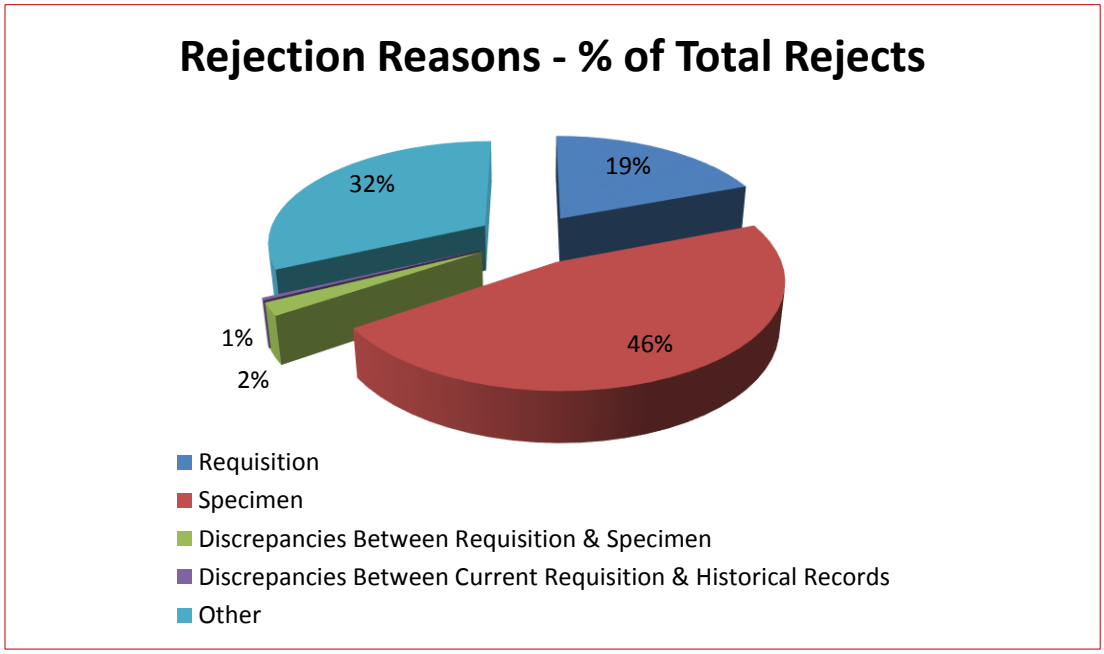
Each time a specimen is rejected, a reason for rejection is entered into our Laboratory Information System. This data is then retrieved and analyzed on a quarterly basis. The number of rejected specimens is quite low for both perinatal and reference specimens. Reference specimens come from hospitals and perinatal samples are primarily collected at external collection sites.

For perinatal specimens, the most common reason for rejecting a sample is that the sample is a duplicate. Samples are rejected if another sample from the patient was tested within the previous week. Often a duplicate sample is collected when the patient has seen their family physician and then sees their obstetrician shortly after. We do ensure that the report from the initial testing is sent to the second physician making the request. Health care professionals can access Canadian Blood Services reports for BC patients on Care Connect (BC's Electronic Health Record).

Table 12: Quarterly Rejection Rates – Perinatal Specimens (2018)

Rejection Category	Q1	Q2	Q3	Q4
Requisition	0	2	26	20
Specimen	1	9	21	85
Discrepancies Between Requisition & Specimen	2	0	2	1
Discrepancies Between Current Requisition & Historical Records	0	0	1	0
Other (Duplicates, etc.)	33	32	65	117
Total # specimens rejected	36	32	65	117
Total # specimens received	16003	16325	23675	22275
Rejections as a % of total	**0.2%**	**0.2%**	**0.3%**	**0.5%**

Figure 9: Perinatal Rejection Reasons (2018)



ACCOMPLISHMENTS IN 2018

A. Saskatchewan Perinatal Testing

With the closure of the Saskatchewan (SK) Diagnostic Services in October 2017, BC and Yukon Diagnostic Services was assigned testing of SK perinatal patient samples to provide continuity of services to the healthcare providers of SK. Under the scope of the perinatal program, BC provides routine testing, antibody identification, titrations and report results to SK healthcare provider. The SK perinatal program will be repatriated back to Saskatchewan under the direction of SK Health in the near future.

B. Revised Diagnostic Services Web Pages

All Diagnostic Services sites (Vancouver, Edmonton, Regina, Winnipeg, and Brampton) and National Immunohematology Reference Laboratory (NIRL) collaborated in a project to redesign and refresh the current Diagnostic Services webpages on www.blood.ca. The new "Laboratory Services" webpages features includes (Test Catalogue and Quick Links) and information to make the site more user friendly for hospital customers. The new web-section https://blood.ca/en/hospital-services/laboratory-services launched June 25, 2018.

C. Perinatal Advisory Committee

The PNAC continues to collaborate throughout the year and at an annual November meeting. In 2018 several initiatives were finalized including a strategy for automated testing of passive anti D on the NEO analyzer, a standardized and updated investigation algorithm for patients with weak serological reactivity with anti D reagents and a standardized algorithm and repeat testing strategy for prenatal patients with anti M. These initiatives will be implemented in early 2019 with the final versions of the new Work Instruction format at all CBS perinatal testing labs.

The group reviewed and discussed recent national and international guidelines concerning recommendations for testing all prenatal patients with a repeat antibody investigation in mid pregnancy. Cost estimates were presented along with the calculated rate of new antibodies in this prenatal population. The group agreed to additional studies and collaboration with hospitals related to risks of antibody development in this group – possibly with feedback to the SOGC group based on the results.

Additional research and collaboration regarding a change in titration strategy to include titration of multiple antibodies as combined titers was also planned – with prospective studies to proceed in the future.

PNAC had a wide-ranging discussion related to the investigation strategies for referral samples.

Ongoing work over the coming year will include concentrated efforts to update and standardize work instructions and to continue with plans for integrating NIRL (National immunohematology Reference Laboratory) donor and patient testing into the Brampton antibody investigation laboratory.

D. Presentations / Abstracts / Publications (2017-2018)

- ***How valuable is our time?*** (Mar 2017 Lunch and Learn) - Lhevinne Ciurcovich – Technical Supervisor BCY Diagnostic Services
- ***Management of Daratumumab (DARA) Patients by the Transfusion Medicine Laboratory*** **-** Kamloops BCSLS Sept 2017 – Lhevinne Ciurcovich – Technical Supervisor BCY Diagnostic Services
- ***It's always a horse and never a zebra! A perinatal case study-*** Kamloops PBCO/CBS Education Session on Blood Transfusion Issues Sept 2017– Lhevinne Ciurcovich – Technical Supervisor BCY Diagnostic Services
- J. Hannon, G. Barr, T. Dolnik, L. Ciurcovich, T. Alport, G. Clarke. ***Summary of Cell-Free Fetal DNA (cffDNA) Testing in Pregnant Women in Western Canada.*** Poster/Abstract presented at CSTM (Canadian Society for Transfusion Medicine). April 20 – 23, 2017.
- J. Hannon, G. Barr, T. Dolnik, L. Ciurcovich, T. Alport, G. Clarke. ***An Approach to Ensuring Quality in Cell-Free Fetal DNA (cffDNA) Testing.*** Poster/Abstract presented at CSTM (Canadian Society for Transfusion Medicine). April 20 – 23, 2017.
- G. Barr, L. Ciurcovich, T. Dolnik, R. Fallis, L. Grabner, J. Hannon, T. Ison. ***Anti-G Testing and Titration Strategy in Prenatal Patients.*** Poster/Abstract presented at CSTM (Canadian Society for Transfusion Medicine). April 20 – 23, 2017.

GOALS FOR 2019

***A. MMA* Testing**

When serologically compatible red blood cells are not available for a patient with several or rare alloantibodies, the *Monocyte Monolayer Assay (MMA)* can help predict the survival of serologically incompatible red blood cells in vivo. Canadian Blood Services will be determining the feasibility of implementing the *MMA* in Edmonton, and the potential of offering it as referral test to transfusion medicine clinicians and facilities. A thorough assessment of the methodology and required equipment and reagents will be performed, and the viability of this project will be determined.