Transfusion Camp Annual Report

2019-2020

2020-09-18

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Executive Summary

Transfusion Camp is an education program that aims to increase transfusion knowledge and best practice by providing high-quality and relevant transfusion medicine (TM) training to Canadian postgraduate medical residents and their faculty members in various specialties related to transfusion. It has been recognized as a novel and scalable approach to delivering effective TM education

Since 2016-2017, Transfusion Camp has trained >920 trainees. In 2019, we demonstrated that Transfusion Camp increased knowledge, fostered positive attitude towards TM and enabled a self-reported positive impact on transfusion practice in postgraduate trainees.[1]

First established in 2012 as a TM education program for postgraduate trainees at the University of Toronto, Transfusion Camp is now a national program led by faculties at the University of Toronto. It is delivered through the collaboration of transfusion experts with residency training program administrators and managed centrally by Canadian Blood Services' Centre for Innovation. Transfusion Camp counts multiple partners who facilitate the delivery of this unique program locally. The 2019-2020 annual report continues to demonstrate the impact Transfusion Camp has on transfusion education.

Highlights for the year include:

- 287 trainees, representing 12 medical specialties from 13 Canadian universities and one U.K. university participated in Transfusion Camp.
    - 2019-20 Medical programs addition: Université Laval, Université de Sherbrooke, and the University of Alberta joined Transfusion Camp.
- 15 hours of didactic lectures delivered by 17 faculty and supplemented by 13 hours of team-based learning seminars delivered by 29 faculty.
    - 2019-20: Addition to lecture program: Dr. Nancy Robitaille of Héma-Québec joined the Transfusion Camp faculty to deliver a virtual tour of Héma-Québec. Dr. Steven Drews of Canadian Blood Services joined the Transfusion Camp faculty, replacing Dr. Fearon. Both speakers expand the lecture faculty beyond Toronto. Dr. Yulia Lin delivered a new lecture related to transfusion medicine and COVID-19.
- Transfusion Camp transitioned to entirely virtual delivery for days 4 and 5 to accommodate social distancing measures necessitated by the COVID-19 pandemic.
- Assessments of TM knowledge using a validated test, conducted before and after program completion, continue to show the positive impact of Transfusion Camp (Pre-Camp mean score 53% vs. Post-Camp mean score 72%).

  - Due to COVID-19 related social distancing restrictions, the validated post-test was administered using an online survey tool.

- The majority of trainees self-reported that they have applied their learning from Transfusion Camp to their clinical practice (from a minimum of 53% after Day 2 to a maximum of 78% after Day 5).
- A collaboration with faculties at the Australian Red Cross Lifeblood was established providing access to Transfusion Camp lectures and resources for adaptation and delivery to the Australian transfusion medicine training environment.

Program Overview

Program objective

Blood transfusion is the most common procedure administered in hospitalized patients and is prescribed by physicians of almost every specialty.[2,3] Despite advances in recent decades, transfusion remains an intervention associated with risk. Expert panels have recommended strategies to reduce mortality and morbidity related to transfusion, including adherence to evidence-based transfusion guidelines and increased transfusion medicine (TM) education.[4] One of the challenges in delivering TM education is determining the optimal time in training to deliver such content. Recent reviews advocate for TM education at the beginning of clinical training, either in medical school or early in the postgraduate training period, so as to tailor to the specialty.[5-7] However, several studies have shown that TM knowledge at this level is deficient.[8-13] Additional challenges include reaching trainees in multiple specialties, and limited faculty to deliver TM education.

In response to these needs and challenges, **Transfusion Camp was developed with the vision that medical residents across Canada have access to up-to-date transfusion knowledge and to effective educational methodologies.** Established at the University of Toronto in 2012, Transfusion Camp is now national and includes partners in the U.K.

In 2019-2020, Transfusion Camp established a collaboration with faculties at the Australian Red Cross Lifeblood. This collaboration provides access to Transfusion Camp lectures and other resources for adaptation and delivery within the Australian transfusion medicine training environment. Also during the year, collaborations were initiated to leverage Transfusion Camp for delivering transfusion medicine education program in Ethiopia.

Program content and delivery

The Transfusion Camp Planning Committee is responsible for determining the program learning objectives and developing the program content to meet these objectives. The Committee meets after each session to review participant feedback, changes in transfusion practice, and to modify the program's upcoming educational content accordingly.

The main learning objectives for 2019-20 were: **Indications for blood products, Blood bank testing, Risks of transfusion, Indications for manufactured blood products, Special transfusion situations, and Blood conservation**. The program content was delivered over five days on July 19, September 06, January 31, April 3, and June 5. Participants were provided with 26 publications as part of pre-reading materials, received a total of 15 hours of didactic lectures and actively participated in 13 hours of team-based learning seminars.

Didactic lectures were delivered in person by 17 faculty in Toronto and broadcast live to eleven sites across Canada. This year saw the addition of a “virtual tour of Héma-Québec” lecture by Dr. Nancy Robitaille, the first Québec specific content to be included in Transfusion Camp curriculum in alignment with the addition of trainees from medical programs from Québec. Dr. Steven Drews of Canadian Blood Services also joined the Transfusion Camp faculty, replacing Dr. Fearon. Both speakers expand the lecture faculty beyond Toronto.

Team-based learning seminars, developed by faculty in Toronto, consisting of relevant case studies were led by 29 local transfusion medicine experts with supporting materials provided by the program. The seminar questions were translated into French Dr. Robitaille’s staff at Héma-Québec to make the content more accessible to the French-speaking trainees.

Video recordings of the lectures were made available to all participants, including participating schools in distant time zones (i.e. University of Alberta, University of British Columbia, and University of Oxford (U.K.)). At these distant schools, trainees viewed the recorded lectures as either a group or individually, followed by team-based learning seminars led by local transfusion medicine experts. See Appendix I for full details on the program, faculties, planning committee members, partners and collaborators.

The COVID-19 pandemic declared in March necessitated changes. A revised program was implemented for days 4 and 5. In particular, a short COVID19 presentation was added to Day 4 to provide trainees with key knowledge about the developing pandemic and its impact on transfusion medicine. Due to scheduling demands, Dr. Jordan Tarshis’ lecture on the Authority Gradient was removed from the Day 5 agenda. The Camp also transitioned to an entirely virtual format. Didactic lectures were delivered remotely by faculty, trainees from live sites joined the webinar to view the lectures individually, and the sites that were able to mobilize their resources held their seminars online through web conferencing programs. Post-live sites had their trainees view the lectures on their own and held their seminars online.

Program evaluation

Trainees completed a TM knowledge assessment at the start of Day 1 and at the end of Day 5. In response to COVID19 social distancing requirements, the test was adapted to an online survey tool for Day 5.

A post-event online survey was sent to all trainees registered in the program after each of the completed Transfusion Camp days.

Program support

A coordinating office located within Canadian Blood Services' Centre for Innovation provides support for delivering the program on a national scale. These tasks include managing Camp registration and attendance; collecting and analyzing trainee feedback; and recruitment and onboarding of prospective participating universities. The technology resources required to deliver the Camp include a **collaborative online sharing platform** (Microsoft SharePoint) where all program related materials for faculties and local program administrators are housed and can be accessed throughout the year; **webinar technology** (GoToWebinar) to broadcast and record the lectures; **video editing capabilities** (Adobe Premiere Elements); **survey capabilities** to facilitate trainee registration, obtain participants feedback, and collect post-test results (SurveyMonkey). During the year, a password protected web portal was developed on ProfessionalEducation.blood.ca website to facilitate access of Transfusion Camp resources to all registered trainees. This improvement was implemented in response to trainee feedback.

Faculty members and administrative leads from participating universities provide support for delivering the program to their trainees. These tasks include identifying trainees to participate in the program, booking meeting rooms with appropriate technology, coordinating catering as needed, organizing and leading team-based learning seminars, facilitating completion of TM knowledge assessments and registration/attendance records.

Analysis of the TM knowledge assessment completed by the trainees is performed by the University of Toronto.

Registration and Attendance

In 2019-2020, 287 trainees from 14 universities, including 12 different specialties, registered for Transfusion Camp. Maximum and minimum attendance were recorded on Day 1 (224) and Day 5 (172), respectively.

Registration: 287 trainees from 12 different specialties and 13 Canadian universities registered for Transfusion Camp, including 17 trainees from the University of Oxford (U.K.) (Table 1). Trainees who initially registered for Transfusion Camp but did not attend a single Day were not included in the final registration count.

Table 1: 2019-20 Transfusion Camp registration.

Academic Institution	Medical Programs	Trainees Registered	Mode of Participation
Dalhousie University	Hematopathology, Hematology	11	Lectures: Live webinar Seminars: In-person
McGill University	Critical Care Medicine, Emergency Medicine	19	Lectures: Live webinar Seminars: In-person

McMaster University	Anesthesia, Critical Care Medicine, Emergency Medicine, Hematology, Internal Medicine, Obstetrics, Pathology, Pediatric Hematology/Oncology, Surgery	33	Lectures: Live webinar Seminars: In-person
Northern Ontario School of Medicine	Anesthesia	6	Lectures: Live webinar (group and individual) Seminars: In-person and via webinar
Queen's University	Anesthesia, Hematology	16	Lectures: Live webinar Seminars: In-person
Université de Sherbrooke	Anesthesia, Hematology, Internal Medicine, Oncology, Obstetrics	15	Lectures: Live webinar Seminars: In-person
Université Laval	Anesthesia, Critical Care Medicine, Emergency Medicine, Hematology, Internal Medicine, Medical Oncology, Obstetrics	38	Lectures: Live webinar Seminars: In-person
University of Alberta	Anesthesia, Hematology, Hematopathology, Pathology, Pediatric Hematology/Oncology	21	Lectures: Recorded videos group viewing Seminars: In-person
University of British Columbia*	Anesthesia, Critical Care Medicine, Emergency Medicine, Hematology, Hematopathology, Internal Medicine, Obstetrics, Pediatric Hematology/Oncology	25	Lectures: Recorded videos group viewing Seminars: In-person *Days 3, 4, 5 were canceled due to disruptions caused by COVID-19.
University of Ottawa	Hematology	7	Lectures: Live webinar Seminars: In-person
University of Saskatchewan	Emergency Medicine, Hematopathology, Pathology	16	Lectures: Live webinar Seminars: In-person
University of Toronto	Anesthesia, Critical Care Medicine, Hematology, Internal Medicine, Medical Oncology, Obstetrics, Pediatric Hematology/Oncology,	49	Lectures: Live in-person Seminars: In-person
Western University	Anesthesia, Hematology	14	Lectures: Live webinar Seminars: In-person
University of Oxford (U.K.)	Anesthesia, Critical Care Medicine, Hematology	17	Lectures: Recorded videos individual viewing Seminars: In-person

Modes of participation (Days 1 – 3): Most Canadian trainees attended the lectures in-person as a group (University of Toronto) or remotely as a group via webinar. All trainees from the University of Alberta, University of British Columbia, and University of Oxford viewed the recorded lectures as a group or individually (Table 1). All trainees attended the seminars in-person in groups of 7-15 participants. A few trainees from the Northern Ontario School of Medicine attended the lectures and seminars individually via webinar.

Modes of participation (Days 4 & 5): All trainees viewed the lectures individually either during the live event (via GoToWebinar) or by watching the recorded lectures provided on SharePoint and ProfesisonalEducation.blood.ca. All trainees attended virtual seminars consisting of groups of 6-20 participants if virtual seminars were held at their site.

Attendance: Overall, maximum attendance was recorded on Day 4 (84%) and minimum attendance was recorded on Day 5 (66%). An average of 74% of registered trainees attended each Day (Table 2).

Table 2: Transfusion Camp attendance.

Attendance by Day, n (%)	
Day 1	224 (78)
Day 2	196 (68)
Day 3	201 (77)
Day 4	219 (84)
Day 5	172 (66)

Attendance percentages based on 287 registered trainees for Days 1&2 and 262 registered trainees for Days 3-5.

Knowledge Gain Assessment

In 2019-2020, an increase in trainees' TM knowledge was observed. The attendees' mean knowledge assessment scores increased from 53% to 72% while the attendees self-rating of TM knowledge increased from mostly beginner/intermediate to intermediate/advanced. The majority of trainees responding to a survey also indicated having applied the knowledge gained through Transfusion Camp in their clinical practice.

A validated knowledge assessment including 20 questions was completed in writing by Transfusion Camp attendees at the start of Day 1 (pre-test; n=229) and completed online at the end of Day 5 (post-test; n=167). An overall increase in scores was observed following Transfusion Camp (53% vs 72% for pre- and post-test, respectively) (Figure 1). In addition, attendees were asked to self-rate their knowledge of TM before (n=229) and after (n=167) attending Transfusion Camp. Overall, attendees increased their self-rating from Beginner (60%)/Intermediate (36%) to Intermediate (68%)/Advanced (25%) (Figure 2).

In addition to the pre-and post-tests, registered trainees were emailed a link to an electronic survey following each of the five Days. Beginning on Day 2, and after each subsequent day, trainees were asked "Since starting Transfusion Camp, have you applied any of your learning from Transfusion Camp into your clinical practice?". The majority of trainees responding to the

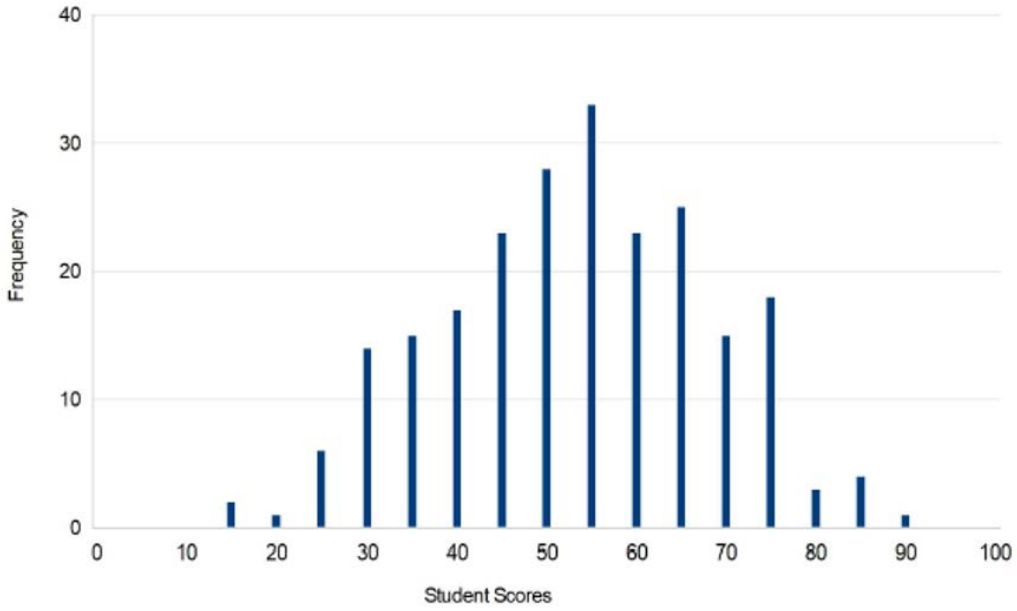
surveys reported applying their learning from Transfusion Camp into their clinical practice (Figure 3).

Figure 1: Pre-Test Scores vs. Post-Test Scores.

Pre-Test

Total Possible Points:	20	**Median Score:**	11	**Maximum Score:**	18
Total Students:	228	**Mean Score:**	10.66	**Minimum Score:**	3
Standard Deviation:	2.99	**Reliability Coefficient (KR20):**	0.61	**Range of Scores:**	15

Overall Mean Score: 53.29%



Post-Test

Possible Points:	20	Medican Score:	15	Maximum Score:	20	Range of Scores:	19
Total Students:	167	Mean Score:	14.48	Minimum Score:	1		

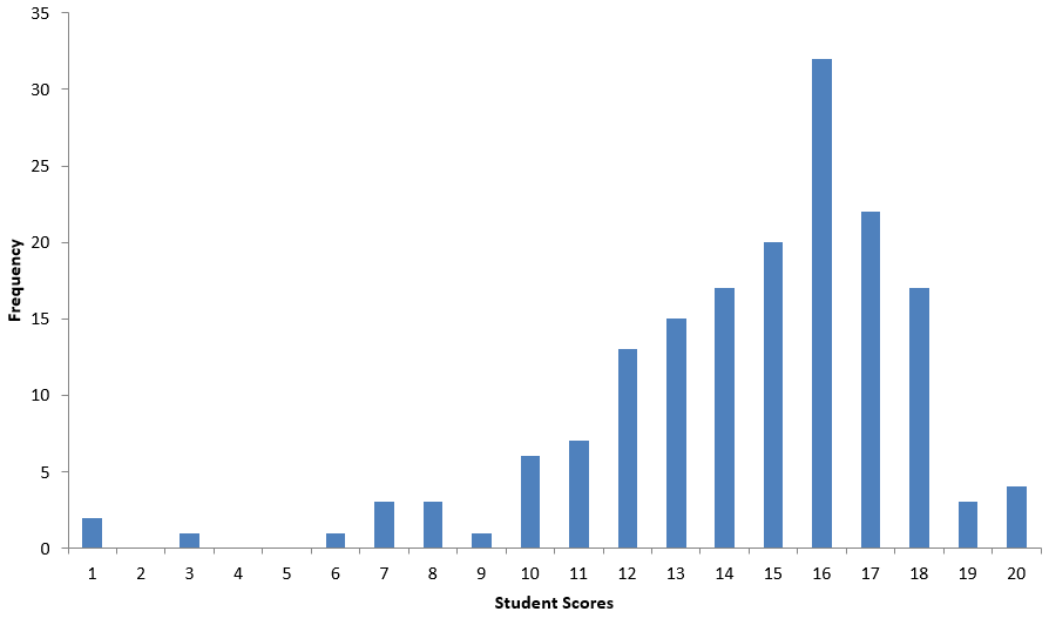


Figure 2: Self-rated knowledge of transfusion medicine by trainees.

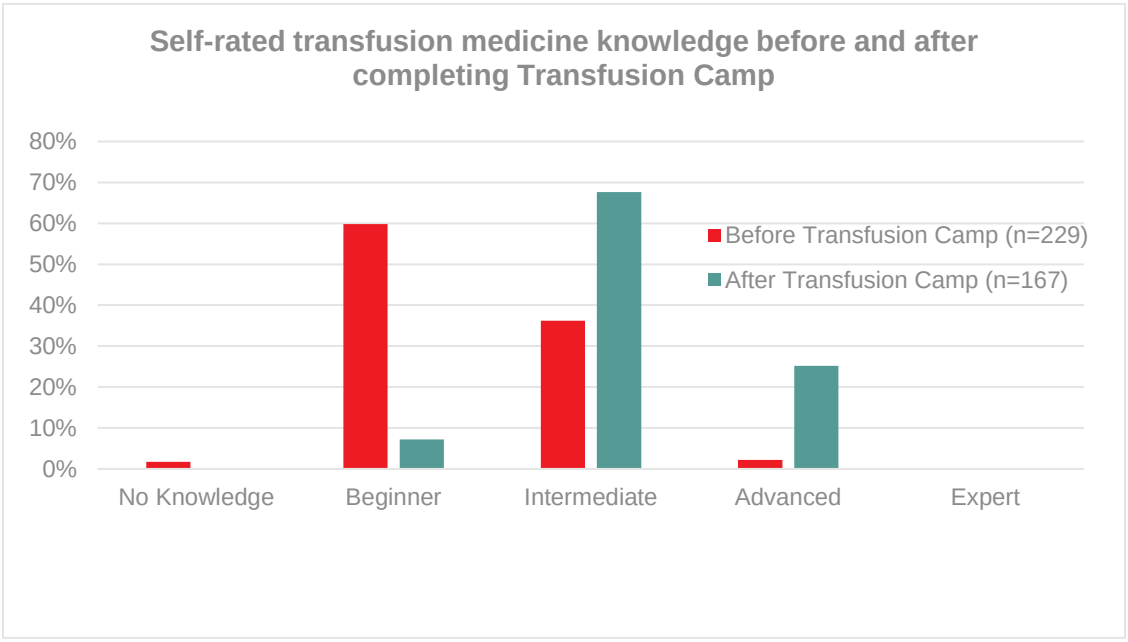


Table 3: Application of knowledge imparted by Transfusion Camp in clinical practice.

Day (# of survey responses)	Day 2 (n = 60)	Day 3 (n = 67)	Day 4 (n = 62)	Day 5 (n = 71)
Trainees responding "Yes" to the survey question "Since starting Transfusion Camp, have you applied any of your learning from Transfusion Camp into your clinical practice?"	53.3% (n =32)	65.6% (n = 44)	62.9% (n = 39)	78.8% (n = 56)

Responses provided by trainees who participated in the post-event survey after attending the Day.

Program Assessment

In 2019-20, Transfusion Camp lectures and team-based learning seminars were scored very highly by trainees.

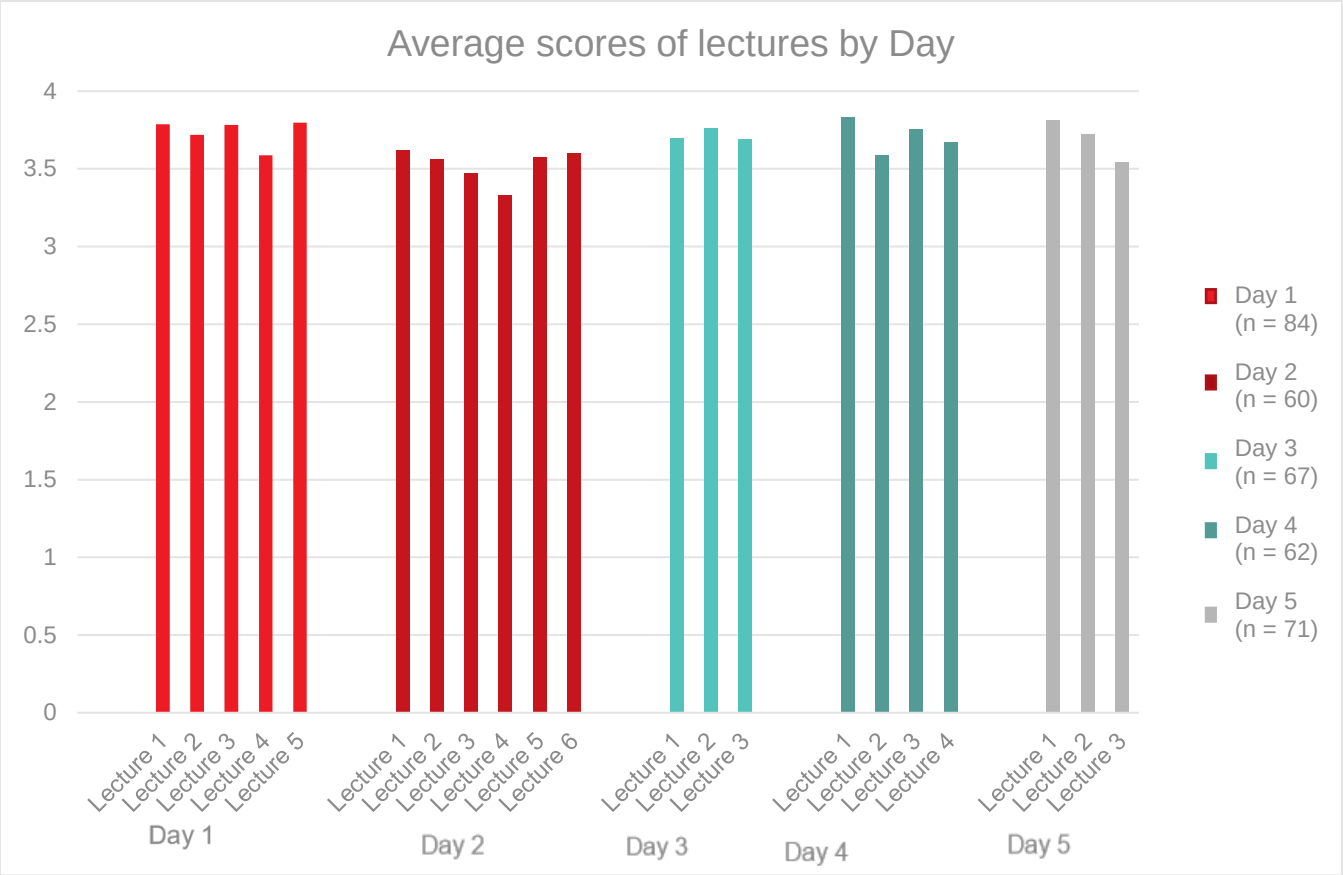
Following each of the five days, registered trainees were emailed a link to an anonymous electronic survey to assess the program delivery model and content.

Trainees were asked to score (Poor = 1, Fair = 2, Good = 3, Excellent = 4) lectures on the following criteria: Objectives of presentation defined and met; Practical value; Knowledge of topic; Presentation skills; and Balanced and unbiased. Average scores of each lecture were tallied to calculate the average lecture score. All Transfusion Camp lectures were scored at 3.3/4 or higher (Figure 3).

Trainees were asked to indicate their level of agreement (Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5) with several aspects of each seminar including: Content was relevant and organized; Content had practical value; Interaction with others was beneficial; and This seminar should be kept every year. Average scores of each seminar were tallied to calculate the average seminar score for each day. All Transfusion Camp seminars were scored at 4.1/5 or higher (Figure 4).

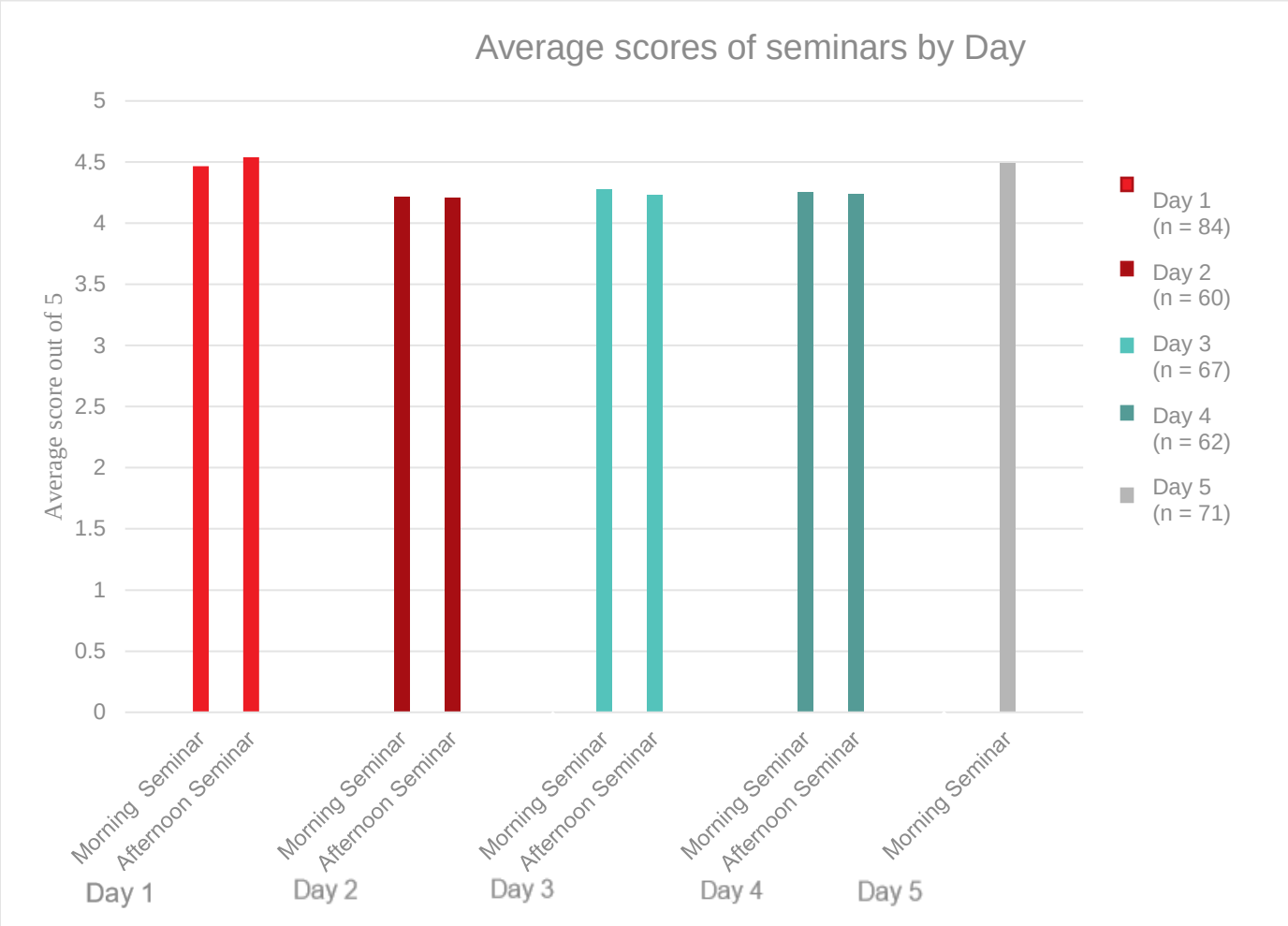
Lectures and seminars scores and comments were provided to the Planning Committee members and faculties to update content for next year.

Figure 3. Assessment of Transfusion Camp lectures by trainees.



Average scores calculated with assessments provided by trainees who participated in the post-event survey after attending the Day.

Figure 4. Assessment of Transfusion Camp seminars by trainees



Average scores calculated with assessments provided by trainees who participated in the post-event survey after attending the Day.

Transfusion Camp Dissemination

- The Transfusion Camp Annual Report will be distributed to all Program Directors participating in Transfusion Camp and to partners.
- The Transfusion Camp Annual Report will be posted to the Transfusion Camp password protected pages on ProfessionalEducation.blood.ca.

Contributing Partners

We remain deeply grateful for the ongoing support from our funders, partners and colleagues across the transfusion medicine community in Canada and abroad. We thank the trainees and faculty members who participated in Transfusion Camp and the following local Transfusion Camp site administrative leads and collaborators: Dr. Yulia Lin, Paula Nixon, Sue Balaga, Miriam Strzinar (University of Toronto); Dr. Elianna Saidenberg, Dr. Alan Tinmouth, Vincent Paul, Alycia-Anne Martin, Tyra Young (University of Ottawa); Dr. Dev Jayaraman, Dr. Patricia Pelletier, Sandy Fostaty, Teresa Lavecchia (McGill University); Dr. Michelle Zeller, Jess Clarke, Elena Bidochka, Gina Furlong (McMaster University); Dr. Robert Anderson, Dr. Rya Boscariol, Sara Cover (Northern Ontario School of Medicine); Dr. Jill Dudebout, Dr. Janet Lui, Belinda Stinson, Shelly Cox (Queen's University); Dr. David Conrad, Dr. Mahboubeh Rahmani, Heidi Devlin (Dalhousie University); Dr. Sheila Harding, Dr. Oksana Prokopchuk-Gauk, Dr. Tamalina Banerjee, Debbie Quirion, Megan Murk, Georgie Blackwell (University of Saskatchewan); Dr. Ziad Solh, Dr. Cyrus Hsia, Mattina Kranenburg (Western University); Dr. Patrice Beauregard, Dr. Catherine Latour, Dr. Susan Fox, Dr. Pierre-Aurèle Morin, Valérie Bédard, Marie-Josee Bernier (Université de Sherbrooke); Dr. Marianne Lavoie, Julie Pruneau (Université Laval); Dr. Melanie Bodnar, Dr. Lauren Bolster, Loretta Carroll (University of Alberta); Dr. Jacqueline Trudeau, Dr. Ed Conway, Dr. Matthew Yan, Hana Kim, Stefanie Mak, Mira Milutinovic (University of British Columbia); Dr. Michael Murphy, Dr. Stephen Hibbs, June Smith (University of Oxford).

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Appendix I: 2019-2020 Transfusion Camp program

University of Toronto Transfusion Camp

2019-2020

Participating universities

British Columbia: University of British Columbia
Alberta: University of Alberta
Saskatchewan: University of Saskatchewan
Ontario: University of Toronto, University of Ottawa, McMaster University, Queen's University, Northern Ontario School of Medicine, Western University
Québec: McGill University, Université Laval, Université de Sherbrooke
Nova Scotia: Dalhousie University
International: Oxford University

UNIVERSITY OF TORONTO TRANSFUSION CAMP 2019-2020 CURRICULUM

LEARNING OBJECTIVES

Upon completion of this course, the attendees will be able to:

INDICATIONS FOR BLOOD PRODUCTS

1. Appropriately prescribe components (RBC, plasma, platelets, and cryoprecipitate)
2. Perform a preoperative bleeding history
3. Interpret coagulation testing results
4. Have a reasonable approach to the correction of coagulation prior to procedures

BLOOD BANK TESTING

5. Summarize basics about blood bank tests and pre-transfusion compatibility testing
6. Explain the implications of a positive antibody screen
7. Know when to screen patients for platelet alloimmunization

RISKS OF TRANSFUSION

8. Obtain informed consent for transfusion
9. Prevent, diagnose, manage and report acute and delayed transfusion reactions
10. State the current risks of transfusion-transmitted infections
11. Describe challenges to transfusion safety (getting the right blood to the right patient)

INDICATIONS FOR MANUFACTURED BLOOD PRODUCTS

12. Appropriately prescribe fractionated blood products (albumin, coagulation factor concentrates)
13. State when and how Rh immunoglobulin is administered in pregnancy

SPECIAL TRANSFUSION SITUATIONS

14. Know when to order irradiated blood products
15. Develop an approach to patients with congenital or acquired bleeding disorders (including reversal of common anticoagulants)
16. Safely transfuse a patient with sickle cell disease
17. Manage a massively hemorrhaging patient, including surgical, trauma and obstetric patients, with discussion of hemostatic medications (antifibrinolytics)

BLOOD CONSERVATION

18. Have a standard approach to the management of pre-operative anemia
19. Apply patient blood management strategies, including for patients who refuse blood on religious grounds

TARGET AUDIENCE & EXPECTATIONS

TARGET AUDIENCE

Trainees from participating universities and registered in non-hematology specialty adult or pediatric programs including pediatric or adult programs in Anesthesia, Critical Care Medicine, Oncology, Obstetrics, Pathology, Clinical Pathology, General Internal Medicine, General Surgery, Trauma, and Emergency Medicine. Hematology and Hematopathology residents are also welcome to attend.

Depending on location, there may be a maximum number of local attendees allowed.

ATTENDEE EXPECTATIONS

PARTICIPATION

1. Attend all sessions
2. Actively participate during lectures
3. Actively participate in team-based learning seminars
4. Refrain from excessive use of interruption devices (mobile phones)
5. Arrange not to be on call the night before
6. Complete evaluations

COST

Free for Canadian University trainees at the PGY1 level or greater

REGISTRATION

1. Register by contacting your program director.
2. Trainees must have their program director's approval to participate.
3. In addition to access to the course and course portal, registration also provides appropriate refreshments at breaks, depending on location.

COURSE INFO

COURSE INFORMATION

FORMAT

- Content is delivered over 5 days (see schedule below) usually from July to June
- Each day includes lectures and team-based learning seminars.
- Trainees attend lectures in groups either "live" (in Toronto) or "live" remotely (via webcast) or "post-live" (recorded lectures)
- Trainees attend team-based learning seminars in groups at their local sites.

LOCATIONS

- The course lectures are presented, webcast and recorded from St. Michael's Hospital LiKaShing Institute, Toronto
- Locations for trainees to attend the course vary depending on university program, please enquire with your program administrator.

MATERIAL & CERTIFICATION

Attendees will be provided with:

1. Access to a common course portal for reading materials, PDFs and recorded presentations, case studies and a discussion board
2. Exam review session
3. Depending on the university program, a Certificate of Completion of Transfusion Medicine Camp with attendance, and pre-test and post-test scores. To obtain a certificate, trainees must attend 3 of 5 days and complete the post-test exam.

COURSE SCHEDULE

COURSE SCHEDULE FOR SITES ATTENDING "LIVE" 2019-2020 CURRICULUM

DAY 1> BLOOD COMPONENT INDICATIONS & ADMINISTRATION – July 19, 2019

Start time		
8:30	Dr. Yulia Lin	Pre-Course Exam (30 minutes)
9:00	Dr. Jeannie Callum	Red Cell Transfusion (45 minutes)
9:45	Dr. Katerina Pavenski	Platelet Transfusion (45 minutes)
10:30		**Break** (15 minutes)
10:45	Dr. Yulia Lin	Basic Blood Bank Testing (30 minutes)
11:15	Dr. Katerina Pavenski	Seminar 1A: RBC & Platelet Transfusion Cases (75 minutes)
12:30		**Lunch** (45 minutes)
13:15	Dr. Lani Lieberman	Neonatal & Pediatric Transfusion (30 minutes)
13:45	Dr. Jeannie Callum	Plasma, PCC & Cryoprecipitate (60 minutes)
14:45		**Break** (15 minutes)
15:00	Dr. Jeannie Callum	Seminar 1B: Plasma, PCC & Cryoprecipitate Cases (75 minutes)

DAY 2> COMPLICATIONS: COMPATIBILITY, ACUTE & LONG TERM TRANSFUSION RISKS & ERRORS – September 6, 2019

Start time		
9:00	Dr. Katerina Pavenski	Informed Consent (30 minutes)
9:30	Dr. Steven Drews	Acute & Delayed Transfusion Transmitted Infections (30 minutes)
10:00		**Break** (15 minutes)
10:15	Dr. Cserti-Gazdewich	Acute Non-Infectious Reactions (45 minutes)
11:00	Dr. Cserti-Gazdewich	Seminar 2A: Labile Component Reactions (90 minutes)
12:30*		**Lunch (non-Québec sites)** (60 minutes)
	Dr. Nancy Robitaille	Virtual Héma-Québec tour **(Québec sites)** (30 minutes)
13:00*		**Lunch (Québec sites)** (60 minutes)
13:30*	Dr. Robert Skeate	Virtual Canadian Blood Services Tour **(non-Québec sites)** (30 min)
14:00	Dr. Robert Skeate	Delayed Non-Infectious Reactions (30 minutes)
14:30		**Break** (15 minutes)
14:45	Dr. Jacob Pendergrast	Seminar 2B: "Delayed or Derivative" Transfusion Reactions (90 minutes)

*Non-Québec sites: 12:30-13:30 Lunch and 13:30-14:00 Virtual Canadian Blood Services Tour
*Québec sites: 12:30-13:00 Virtual Héma-Québec tour and 13:00-14:00 Lunch
All lectures are recorded and shared on the portal.

COURSE SCHEDULE...

DAY 3> SPECIAL TRANSFUSION SITUATIONS – MATERNAL, PERIOPERATIVE BLEEDING ASSESSMENT, SICKLE CELL DISEASE – January 31, 2020

Start time		
9:00	Dr. Nadine Shehata	Alloimmunization & Anemia in Pregnancy (30 minutes)
9:30	Dr. Zachary Liederman	Bleeding Assessment & Approach to INR/PTT (45 minutes)
10:15		**Break** (15 minutes)
10:30	Dr. Zachary Liederman	Seminar 3A: Perioperative Bleeding Assessment (90 minutes)
12:00		**Lunch** (60 minutes)
13:00	Dr. Jacob Pendergrast	Sickle Cell Disease (60 minutes)
14:00		**Break** (15 minutes)
14:15	Dr. Jacob Pendergrast	Seminar 3B: SCD & Transfusion (105 minutes)

DAY 4> PATIENT BLOOD MANAGEMENT, CONSERVATION AND COMPLEX HEMOSTASIS – April 3, 2020

Start time		
9:00	Dr. Yulia Lin	Pre-operative Patient Blood Management (45 minutes)
9:45	Dr. Keyvan Karkouti	Intra-op Patient Blood Management: Tranexamic Acid; Salvage and Triggers (45 minutes)
10:30		**Break** (15 minutes)
10:45	Dr. Yulia Lin	Seminar 4A: Patient Blood Management (90 minutes)
12:15		**Lunch** (45 minutes)
13:00	Dr. Michelle Sholzberg	Congenital Coag – VWD, Hemophilia (35 minutes)
13:35	Dr. Rita Selby	Reversal of antiplatelets & direct anticoagulants (40 minutes)
14:15		**Break** (15 minutes)
14:30	Dr. Nadine Shehata	Seminar 4B: Advanced Hemostasis Testing & Management (90 minutes)

DAY 5> TRAUMA, MASSIVE TRANSFUSION PROTOCOLS & CONTROVERSIAL ENTITIES – June 5, 2020

Start time		
9:00	Dr. Jeannie Callum	Massive Hemorrhage: Pathophysiology & Evidence based management (60 minutes)
10:00	Dr. Katerina Pavenski	Massive Hemorrhage Protocols: Real World Application (45 minutes)
10:45		**Break** (15 minutes)
11:00	Dr. Jacob Pendergrast	Seminar 5A: Massive, Disaster Bleeding Cases (90 minutes)
12:30		**Lunch** (45 minutes)
13:15	Dr. Stuart McCluskey	Albumin (30 minutes)
13:45	Dr. Jordan Tarshis	Transfusion Authority Gradient (45 minutes)
14:30		**Break** (15 minutes)
14:45	Dr. Yulia Lin	Review Session (60 minutes)
15:45	Dr. Yulia Lin	Post-Course Exam (30 minutes)

Canadian Blood Services BLOOD PLASMA STEM CELLS ORGANS & TISSUES

Laboratory Medicine & Pathobiology UNIVERSITY OF TORONTO

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ORBCoN Ontario Regional Blood Coordinating Network