

FELLOWSHIP PROGRAM DESCRIPTION

A. Program Demographics

1. *Name of Host Institution:* **Mary Hitchcock Memorial Hospital at Dartmouth-Hitchcock Medical Center**
2. *Program Specialty/Subspecialty:* **Blood Bank/Transfusion Medicine**
3. *Program Address (Mailing):* Transfusion Medicine Service
Department of Pathology and Laboratory Medicine
Dartmouth-Hitchcock Medical Center
One Medical Center Drive
Lebanon NH 03756-0001
4. *Program Address (Physical location, if different from mailing):* as above
5. *Program Phone Number:* 603 650-9485
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7. *Program E-mail* zbigniew.m.szczepiorkowski@hitchcock.org
8. *Program Director* Zbigniew M. Szczepiorkowski, MD, PhD, FCAP
9. *Alternate Program Contact* Sarah E. Probst

B. Introduction

1. **History.** The program was accredited by the ACGME in Spring 2008, effective **July 1, 2008**. The first Fellow entered the program on July 1, 2008 and graduated the program on June 30th, 2009. The tradition of teaching transfusion medicine at Dartmouth-Hitchcock Medical Center goes back to mid-1940's. The Fellowship Program is a natural extension of our Pathology Residency Program, which has been in existence for decades. This program has been equally successful as the residency program which has graduated many accomplished pathologists.
2. **Duration.** The fellowship is a 12-month training program.
3. **Prerequisite Training/Selection Criteria.** At the time of entry into the fellowship applicants have to be board eligible/certified in the following specialties: Anatomic and Clinical Pathology, Clinical Pathology only, Anesthesiology, Internal Medicine, Obstetrics/Gynecology, Pediatrics, Surgery, Neurological Surgery, or Thoracic Surgery.

Selection of fellows is based on the candidate's preparedness, intellectual and humanistic skills. Aptitude, academic credentials, personal characteristics, ability to communicate, and ability to benefit from the program will be considered. These qualities will be assessed through review of residency and medical school records, letters of recommendation, standardized test scores and other means, including interviews. Other sources of information, such as phone conversations with residency program faculty, may also be considered in the selection process.

4. **Goals and Objectives for Training.** The goal of this program is to train transfusion medicine physicians. To fill this role adequately, a physician must have a thorough understanding of the technical and scientific basis of transfusion medicine. In addition, the transfusion medicine physician must be able to translate this understanding into clinical problem-solving at the bed-side.

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An important part of this program is the involvement of the fellow in the care of transfusion recipients, apheresis patients, and formal and informal consultation at the bed-side or in the operating room.

A second goal of the program is to train transfusion medicine physicians to teach and lead. The involvement of a physician in formal teaching may be quite variable. As an evolving field brings new techniques and concerns a transfusion medicine physician is continuously involved in the education of technical staff as well as their fellow medical staff in the form of consultation or the modification of transfusion practice. For this reason, fellows are expected to take responsibility for some aspects of physician and non-physician teaching.

A third goal is to provide for the fellow the opportunity for, and appropriate guidance in, the development of an investigative project. Although it is anticipated that such a project will be part of the growth of the fellow's academic career, the experience will be valuable for all trainees as they increase their ability to assess new advances critically and to understand the role of investigation in advancing the field.

5. **Program Certifications.** The program is accredited by ACGME. The Transfusion Medicine Fellowship is also integrally connected with the Transfusion Medicine Service at DHMC, which boasts the following accreditations: College of American Pathologists; AABB (formerly known as American Association of Blood Banks); Foundation for the Accreditation for Cellular Therapy (collection and processing facility); and National Marrow Donor Program apheresis center.

C. Resources

1. Teaching Staff.

Name	Credentials	Description
Zbigniew M. Szczepiorkowski	MD, PhD	Program director responsible for day to day education; supervision of the fellow; summative evaluation. More than 15 years of experience in the field.
Nancy M. Dunbar	MD	Blood Bank Medical Director; responsible for the supervision and instruction of fellow in blood bank and transfusion medicine. Participates in teaching conferences in Pathology, Medicine, and Anesthesiology.
Swaroop Yerrabothala	MD	Attending in Transfusion Medicine and Hematology Oncology; responsible for teaching the fellow. Graduate of the fellowship program.
Nora Ratcliffe	MD	Attending; responsible for teaching the fellow, primarily during call. More than 15 years of experience.
Isabella Martin	MD	Attending in Transfusion Medicine and Microbiology; responsible for teaching the fellow.

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Greg Tsongalis	PhD	Director of Clinical Genomics and Advanced Technology Laboratory where the fellow learns sophisticated techniques utilized in transfusion medicine and HLA analysis.
Prabhjot Kaur	MD	Director of Hematology Laboratory; responsible for teaching of coagulation and hemostasis to the fellow.
Deborah Ornstein	MD	Director of Flow Cytometry and Coagulation; responsible for teaching of coagulation and hemstasis to the fellow.
Buff Mair	MD	Chief Medical Officer at OneBlood / Florida Blood Services, FL; responsible for teaching the fellow during the rotation at the large donor center and infectious disease testing facility.
Jorge Rios	MD	Director of HLA Laboratory at the American Red Cross facility in Dedham, MA. Responsible for supervision during the HLA rotation.

2. **Facilities.** The fellow primarily (49 weeks) spends time at the Dartmouth-Hitchcock Medical Center, Lebanon, NH. In addition, the fellow spends two weeks at OneBlood / Florida Blood Services, St. Petersburg, FL and one week in American Red Cross New England Region HLA Laboratory, Dedham, MA.

D. Educational Program - Basic Curriculum

Describe the following elements of the training program:

1. **Clinical and research components.**

Name of Rotation	Length of Rotation (in weeks)	Description
Core Rotation I	4	This rotation provides the fellow with an introduction to the operations of Transfusion Medicine Service and builds upon previous residency training to prepare him/her for taking direct responsibility for patient-and administrative decisions. The operation, and thus the orientation, includes Blood Bank (BB), Blood Donor Program (BDP), and Cellular Therapy Center (CTC). This rotation will have a significant amount of didactic activities as well as introduction to bench activities in the Blood Bank. At the conclusion of this rotation, the fellow should be intimately familiar with the daily operations, testing techniques, and capabilities of the entire operation. Faculty: TMS Attendings, Transfusion Safety Officer (TSO), TMS Educator, BB Technical Specialist, BDP Supervisor, TMS Quality Specialist

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		Location: Transfusion Medicine Service, DHMC
Core Rotation II	8	<p>This rotation provides the fellow with additional interpretive and action capabilities in the following areas: daily operations, inventory; immunohematology laboratory; blood component utilization (as practiced at this institution); utilization of blood derivatives; operating room; intraoperative blood salvage, outpatient transfusions; donor and therapeutic apheresis procedures; hospital based donor center operation and decision making; unexpected antibody work-up; transfusion reaction investigation; teaching of a CP resident, hemophilia center interactions, and transfusion committee activities.</p> <p>Faculty: TMS Attendings, TSO, TMS Educator, BB Technical Specialist, BDP Supervisor, TMS Quality Specialist</p> <p>Location: Transfusion Medicine Service, DHMC</p>
Core Rotation III	20	<p>The bulk of the fellowship is spent in this rotation where the fellow practices interventional and consultative transfusion medicine first alongside and then under the supervision of attendings (with increasing responsibilities). The fellow will serve as acting attending for as little as two weeks and as long as six weeks at the end of core III. The length of the acting attending term will be determined based on the faculty's evaluation of the fellow.</p> <p>Faculty: TMS Attendings, TSO, TMS Educator, BB Technical Specialist, BDP Supervisor, TMS Quality Specialist</p> <p>Location: Transfusion Medicine Service, DHMC</p>
Cellular Therapy	2	<p>This rotation exposes the fellow to activities related to cellular therapy, including procurement, processing and administration of cellular therapy products. It is expected that the fellow will spend some time on the BMT unit as well as in the cell processing laboratory.</p> <p>Faculty: Program Director, BMT Attendings, CTC Technical Specialist</p> <p>Location: Cellular Therapy Center, DHMC</p>
HLA Tissue Typing	2	<p>This rotation consists of two parts. The first part is a one week immersion in molecular diagnostics with its new technologies. The second week will be devoted to exposure to HLA testing in a high volume laboratory with particular emphasis on the use of HLA typing in cellular therapy, platelet transfusion and organ procurement/transplantation.</p> <p>Faculty: HLA Laboratory Faculty/Molecular Pathology Faculty</p> <p>Location: Molecular Pathology, DHMC (week 1), HLA Laboratory/ ARCBS New England Region (week 2)</p>

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Core Hematology	2	This rotation encompasses exposure to special coagulation laboratory, flow cytometry, and general hematology testing. The purpose is to ensure that the fellow is cognizant of and comfortable with the testing performed in these laboratories so that he/she can appropriately apply the information in their practice. The fellow will be responsible for directing, managing and interpreting all work-ups requested during this rotation, in consultation with appropriate faculty. Faculty: Laboratory Director, Coagulation and Flow cytometry technical specialists Location: Hematology Laboratory, DHMC
Blood Donor Center *	1	This rotation familiarizes the fellow with activities involved in blood collection at a large donor center including recruiting, mobile donations and donor screening. Faculty: Blood Donor Center Faculty Location: OneBlood / Florida Blood Services
IDM Testing *	1	This rotation exposes the fellow to large volume infectious disease testing for blood donors, including EIA, NAT, confirmatory testing and automated testing. Faculty: Blood Donor Center Faculty Location: OneBlood / Florida Blood Services
Elective/Research	8	This rotation allows the fellow to pursue research projects and/or specific area of interest. Faculty: Selected Faculty Location: Departmental research laboratories/Transfusion Medicine Service, DHMC
National Conferences	1	The fellow is strongly encouraged to attend one of the following national conferences. The choice between annual meetings of the American Association of Blood Banks, the American Society of Hematologists, or the American Society for Apheresis will be offered.
Vacation	3	N/A

* These rotations will be combined into one two-week block.

- Participant's supervisory and patient care responsibilities.** The fellow will progress from orientation and learning how to operate in this Transfusion Medicine Service to responsibility for ensuring that the care provided by him/her and others is appropriate. The Program Director reviews the evaluations and, in consultation with the other attendings on the service, advises the fellow of his/her progress and, when and as appropriate, extended expectations for patient and laboratory management. It is expected that by the third month of the program the fellow will be able to handle most issues independently with limited faculty assistance and, by the last three months, will be able to function as a junior attending with fewer interactions (but with continued faculty awareness of the fellow's activities).

3. **Procedural requirements.** The fellow participates in provisions of therapeutic and donor apheresis as well as therapeutic phlebotomy. Other requirements include operational knowledge of techniques and technologies utilized in Transfusion Medicine Service.
4. **Didactic components.** The fellow is exposed to a variety of didactic options, starting with face-to-face time with the attending through case reviews, direct patient care, lectures, and conferences. It is also expected that the fellow presents during conferences and journal clubs.

E. Evaluation.

All assessment activities of the program utilize a web-based system (MedHub). The evaluations are based on rotation-specific objectives and the ACGME milestones for Transfusion Medicine. Fellows are evaluated on a regular basis in each of the Six Basic Competencies (with reference to activities specific to transfusion medicine). Fellows are expected to already be beyond the novice level and will be rated on a scale of 1-5. With 1 being unacceptable for level of training and 5 being exceed expectations for level of training. Text comments are also provided. These evaluation templates are made available to faculty at the end of each rotation. A reminder is sent if the completion does not occur promptly. Trainees also receive structured feedback on presentations made in conferences and Journal Club. Faculty evaluations are transmitted to the fellow electronically. These formative evaluations are assimilated and the program director reviews them with the fellow mid-year and at the end of the fellowship training ("final review"). The fellow will complete a self-evaluation on the ACGME Transfusion Medicine milestones twice per year. These evaluations along with the faculty rotation evaluations and the fellow's portfolio entries will be reviewed by the Clinical Competency Committee. The committee chair will report to the program director. The milestones scores will be discussed with the fellow at the mid-year and final evaluations. The program director will report the milestones scores to the ACGME.

The program also conducts 360° evaluations to allow the fellows to learn from the feedback from the technologists and other staff with whom they work daily. We believe this information is important in guiding them to establish communication styles that will aide their work and management in the future.

The fellow will take the Transfusion Medicine In-Service Exam (TMISE) twice in the fellowship. The exam will be proctored by the program coordinator. It will be administered at the beginning of the fellowship and at the end of the fellowship. The scores on this exam are used to provide a baseline knowledge level and to gauge board preparedness. They are not used in the direct evaluation of the fellow. The exam scores may be used by the clinical competency committee in making recommendations to the program director for ACGME milestones scores.

Using the MedHub system, fellows will be asked to supply feedback on the content and the effectiveness of each rotation and on faculty teaching. Fellows will be queried three to four times per year to provide structured comments on their educational experience and faculty teaching. The system holds these comments until the end of the term. These comments are aggregated with those from previous years and passed to the appropriate faculty. Though, evaluation process of the faculty by the fellows is guided by GME office due to a limited number of individuals going through the program (see detailed description of the process later). When deemed necessary by the fellow, he/she will meet with the Laboratory Medicine Section Chief or Department Chair, who is not part of the Transfusion Medicine fellowship program, to discuss faculty evaluations and suggestions for improvement in teaching and scheduling to make the program more effective. The Laboratory

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Medicine Section Chief/Department Chair will then relay constructive comments to the fellowship Program Director and other appropriate faculty.

1. At the end of each year, the program will send a survey to the department where the fellow proceeded to take appointment. The survey will include questions regarding the fellow's performance regarding Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism and Systems-Based Practice. This information will help assess the strengths and weaknesses of the fellowship program.
2. A list of the fellow's future career developments will be kept which can be used as a guide by the future fellow as proof of the program's effectiveness.
3. The GME office has suppressed identifying information on the fellow evaluations. The program is only permitted to pull reports of fellow evaluations once per year. The evaluations are blended across multiple years to further protect anonymity.