Since its founding in 1972, our program has performed more than 8,730* transplants for adult patients – making us one of the largest and most experienced transplant centers anywhere in the world.

We performed more than 480 transplants in 2016.

In addition, our program:

• Consistently exceeds expected outcomes established by the Center for International Blood and Marrow Transplant Research (CIBMTR)

• Currently follows nearly 4,200 patients over the long term

*Includes transplants since 1982. While our transplant center has been operational since 1972, data capture using current standards began in November 1982.
<table>
<thead>
<tr>
<th>Transplant Type</th>
<th>Historical Program Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autologous</td>
<td>4,321</td>
</tr>
<tr>
<td>Allogeneic (Related Donors)</td>
<td>1,793</td>
</tr>
<tr>
<td>Allogeneic (Unrelated Donors)</td>
<td>1,962</td>
</tr>
<tr>
<td>Other (Cord Blood, Mismatched)</td>
<td>656</td>
</tr>
</tbody>
</table>

Total Transplants performed 1982 through 2016: **8,732**
### Allogeneic Transplants performed by conditioning intensity

<table>
<thead>
<tr>
<th>Conditioning Regimen Intensity</th>
<th>Transplants Performed Through 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myeloablative</td>
<td>2,282</td>
</tr>
<tr>
<td>Non-myeloablative</td>
<td>2,089</td>
</tr>
<tr>
<td>Rescue transplants</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total Allogeneic Transplants performed, 1982 through 2016</strong></td>
<td><strong>4,411</strong></td>
</tr>
<tr>
<td>Primary Disease</td>
<td>Total Performed 1982 – 2016</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>NHL</td>
<td>2,420</td>
</tr>
<tr>
<td>Multiple Myeloma/Plasma Cell Disorder</td>
<td>1,931</td>
</tr>
<tr>
<td>AML</td>
<td>1,593</td>
</tr>
<tr>
<td>Hodgkin Disease</td>
<td>558</td>
</tr>
<tr>
<td>MDS</td>
<td>552</td>
</tr>
<tr>
<td>CLL, SLL, PLL</td>
<td>446</td>
</tr>
<tr>
<td>ALL</td>
<td>442</td>
</tr>
<tr>
<td>CML</td>
<td>423</td>
</tr>
<tr>
<td>MPD and Mixed MDS/MPD</td>
<td>155</td>
</tr>
<tr>
<td>Aplastic Anemia, Sickle Cell, and Other Disorders of Hematopoiesis</td>
<td>131</td>
</tr>
<tr>
<td>Other Malignancy</td>
<td>47</td>
</tr>
<tr>
<td>Other Acute Leukemia</td>
<td>15</td>
</tr>
<tr>
<td>Immunodeficiency</td>
<td>13</td>
</tr>
<tr>
<td>Other Disease</td>
<td>6</td>
</tr>
<tr>
<td>All Diseases</td>
<td>8,732</td>
</tr>
</tbody>
</table>
As a direct result of major advances in transplantation protocols – propelled significantly by insights gleaned from the work of our researchers – the number of older adults our program is treating with transplant continues to grow.

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>55-59</td>
<td>5</td>
<td>25</td>
<td>64</td>
<td>162</td>
<td>287</td>
<td>371</td>
<td>476</td>
<td>1,390</td>
</tr>
<tr>
<td>60-64</td>
<td>1</td>
<td>4</td>
<td>19</td>
<td>87</td>
<td>206</td>
<td>384</td>
<td>501</td>
<td>1,202</td>
</tr>
<tr>
<td>65-70</td>
<td>1</td>
<td>5</td>
<td>27</td>
<td>87</td>
<td>283</td>
<td>471</td>
<td>874</td>
<td></td>
</tr>
<tr>
<td>70+</td>
<td>14</td>
<td>80</td>
<td>211</td>
<td>305</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>29</td>
<td>88</td>
<td>276</td>
<td>594</td>
<td>1,118</td>
<td>1,659</td>
<td>3,771</td>
</tr>
</tbody>
</table>
ADULT STEM CELL TRANSPLANTATION PROGRAM
BREADTH AND DEPTH OF SPECIALIZATION

MORE THAN 35 CREDENTIALED TRANSPLANT PHYSICIANS ON STAFF

- All are faculty members of Harvard Medical School
- Includes past and present leaders of organizations such as the American Society for Blood and Marrow Transplantation (ASBMT), American Society of Hematology (ASH), Blood and Marrow Trials Clinical Trial Network (BMT-CTN), Center for International Blood and Marrow Transplant Research (CIBMTR), and Alliance for Clinical Trials in Oncology (formerly CALGB)

EACH PATIENT IS ASSIGNED THEIR OWN TEAM OF TRANSPLANT SPECIALISTS

- Attending transplant physician
- Transplant nurse practitioner/physician assistant
- RN transplant coordinator
- Non-RN transplant coordinator
- Transplant social worker
- Donor search and collection coordinators
- Donor collection NP/PA
- Financial counselor
- Clinical data specialist
- For patients enrolled in clinical trials: Transplant research nurse and clinical research coordinator
- Patients also have access to specialists in infectious disease, gynecology, oral medicine, dermatology, and other specialty areas as needed

EXPERTISE THAT GOES BEYOND TRANSPLANT TO SUBSPECIALTY AND “SUB-SUBSPECIALTY” BY DISEASE
Patients are cared for by a dedicated team of nurses in both the inpatient and outpatient setting. With specialized training in stem cell transplantation, nurses play a key role in managing a patient’s clinical care, and in educating patients throughout the stem cell transplant process.

**Role of Nursing**

**Before Transplant**
- Coordinates treatment plan with transplant physician
- Serves as key contact to answer clinical questions
- Provides education to help patients and caregivers prepare for transplant

**During Admission**
- Administers pre-transplant conditioning
- Manages daily care and monitoring
- Conducts discharge education to facilitate patients’ transition home
- Assists in coordinating post-transplant services (e.g. VNA, rehab, etc.)

**Follow-Up Care**
- Manages post-transplant care with transplant physician
- Monitors blood counts
- Addresses side effect concerns
- Monitors for graft-vs-host disease

Dana-Farber Cancer Institute was awarded Magnet designation by the American Nurses Credentialing Center — the nation’s preeminent accreditation organization — for excellence in nursing service and practice. This gold standard for nursing is an honor that represents Dana-Farber’s ongoing commitment to providing patients and families with the most expert, compassionate nursing care.
We treat patients who have been diagnosed with the following conditions, including older adults and those with advanced disease:

**Blood cancers**
- Acute lymphoblastic leukemia (ALL)
- Acute myeloid leukemia (AML)
- Chronic lymphocytic leukemia (CLL)
- Chronic myelogenous leukemia (CML)
- Hodgkin lymphoma
- Non-Hodgkin lymphoma
- Multiple myeloma
- Waldenström’s macroglobulinemia
- T-cell lymphoma
- Mantle cell lymphoma
- Follicular lymphoma
- And others
- Testicular cancer

**Bone marrow failure syndromes and rare and congenital blood disorders**
- Myelofibrosis
- Polycythemia
- Thrombocytopenia
- Myelodysplastic syndrome (MDS)
- Chronic myelomonocytic leukemia (CMML)
- And others
- Aplastic anemia
- Diamond-Blackfan anemia
- Dyskeratosis congenita
- MonoMAC Syndrome
- Paroxysmal nocturnal hemoglobinuria (PNH)
- Shwachman-Diamond syndrome
- Sickle cell anemia
- Thalassemia
- Hemophagocytic lymphohistiocytosis (HLH)
- And others

**Other malignant disorders**
- Myelodysplastic syndromes
- Myelodysplastic syndromes

For more information, visit [www.dfbwcc.org/BMT](http://www.dfbwcc.org/BMT).
<table>
<thead>
<tr>
<th>Commitment to identifying the best therapy for the individual patient</th>
<th>Cost-conscious approach to care</th>
<th>Team of Quality Assurance, Quality Control, and Quality Improvement experts dedicated to transplant and cellular therapies</th>
<th>Close collaboration with community providers and practices on financial, care continuation, and quality issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robust screening</td>
<td>Medication management</td>
<td>Robust quality systems are routinely subjected to external regulatory and accreditation agency reviews and audits</td>
<td>Enhanced patient support through “Shared Care” initiatives</td>
</tr>
<tr>
<td>Proceeding with transplantation option is based on strong clinical and scientific evidence, along with patient and family quality of life and outcomes goals</td>
<td>Efficient management of inpatient stay to enable patients’ recovery at home and post-transplant care</td>
<td>Scheduled internal audits examine manufacturing and treatment procedures in support of continuous process improvement</td>
<td>Education of regional referring provider practices on caring for patients post-transplant</td>
</tr>
<tr>
<td>Ongoing multidisciplinary case review</td>
<td>One of the nation’s most experienced unrelated donor search teams</td>
<td>Data collection and reporting activities results in peer-institution comparisons for measuring treatment outcome and effectiveness</td>
<td>Focus on post-transplant monitoring closer to patient’s home in collaboration with Dana-Farber’s transplant clinical team</td>
</tr>
<tr>
<td>Dedicated specialty consult services – including infectious disease, oral medicine, nephrology, and metabolic disorders – for transplant patients</td>
<td>– Routinely reviews strategies for finding the best donor for each patient, in the shortest time frame, at the lowest possible cost</td>
<td>Process and document controls ensure regular review and cross-reference to applicable standards and regulations</td>
<td>Dedicated to identifying factors that improve patient quality of life and clinical outcomes, including efforts to reduce patients’ travel burden</td>
</tr>
<tr>
<td>Specialized stem cell transplant survivorship program to help patients and local providers manage the long-term care needs of stem cell transplant survivors</td>
<td>Expert clinical operations research team investigating – and actively publishing on – cost reduction and outcomes improvement projects</td>
<td>Continuing education requirements and periodic competency evaluations ensure staff proficiency in their areas of expertise</td>
<td>Dedicated support for referrers and payers</td>
</tr>
</tbody>
</table>

**Adult Stem Cell Transplantation Program**

**Our Focus on Quality**

**Commitment to identifying the best therapy for the individual patient**

- Robust screening
- Proceeding with transplantation option is based on strong clinical and scientific evidence, along with patient and family quality of life and outcomes goals
- Ongoing multidisciplinary case review
- Dedicated specialty consult services – including infectious disease, oral medicine, nephrology, and metabolic disorders – for transplant patients
- Specialized stem cell transplant survivorship program to help patients and local providers manage the long-term care needs of stem cell transplant survivors

**Cost-conscious approach to care**

- Medication management
- Efficient management of inpatient stay to enable patients’ recovery at home and post-transplant care
- One of the nation’s most experienced unrelated donor search teams
  - Routinely reviews strategies for finding the best donor for each patient, in the shortest time frame, at the lowest possible cost
- Expert clinical operations research team investigating – and actively publishing on – cost reduction and outcomes improvement projects

**Team of Quality Assurance, Quality Control, and Quality Improvement experts dedicated to transplant and cellular therapies**

- Robust quality systems are routinely subjected to external regulatory and accreditation agency reviews and audits
- Scheduled internal audits examine manufacturing and treatment procedures in support of continuous process improvement
- Data collection and reporting activities results in peer-institution comparisons for measuring treatment outcome and effectiveness
- Process and document controls ensure regular review and cross-reference to applicable standards and regulations
- Continuing education requirements and periodic competency evaluations ensure staff proficiency in their areas of expertise

**Close collaboration with community providers and practices on financial, care continuation, and quality issues**

- Enhanced patient support through “Shared Care” initiatives
- Education of regional referring provider practices on caring for patients post-transplant
- Focus on post-transplant monitoring closer to patient’s home in collaboration with Dana-Farber’s transplant clinical team
- Dedicated to identifying factors that improve patient quality of life and clinical outcomes, including efforts to reduce patients’ travel burden
- Dedicated support for referrers and payers
## Research program

- Supported by funding from NIH program project and research project grants, LLS, PCORI, and other sources
- Publications in national and international journals and presentations at major meetings and conferences
- Thriving enterprise in both basic science and translational research
- Standard patient therapies often include participation in major multicenter clinical trials

## Breakthroughs and innovations including:

- Development of novel agents for preventing and managing graft-versus-host disease (GVHD)
- Vaccination with genetically engineered tumor cells to induce anti-tumor activity and prevent post-transplant relapse
- Use of co-stimulatory blockade to restore graft-versus-leukemia activity
- Collaboration with infectious disease specialists to develop and provide access to new antibiotics and diagnostic techniques for immune-compromised conditions
- Detection and quantification of minimal residual disease as a method of assessing post-transplantation disease status
- Rapid Heme Panel, a high-tech genetic test that provides critical information that aids in diagnosis and treatment planning for myeloid and lymphoid malignancies

## Outcomes data system

- Historic involvement in development of national reporting metrics and standards and analysis of outcomes data
- Major internal data repository following all transplant patients throughout their lifetimes — and reporting on millions of data points each year
- Long-standing data submission to the Center for International Blood and Marrow Transplant Research (CIBMTR) national outcomes database
- Ongoing metrics and research studies to evaluate cost and outcomes
- Ongoing advancement of patient education and self-assessment options for improving outcomes

## Quality, safety, and operations research

- Drug interactions in hematopoietic stem cell transplantation (HSCT)
- Reducing unnecessary testing on admission in stem cell transplant patients
- Cost effectiveness of allogeneic HSCT using different conditioning regimens and donor products
- Improving novel predictive parameters in apheresis
- Process improvement projects to increase the resource utilization and efficiency and reduce the cost of apheresis
- Ongoing quality improvement project to lower the rate of bacterial contamination in HPC-marrow products
- Assessing medication adherence through close follow-up post-discharge
On-site Connell and O’Reilly Families Cell Manipulation Core Facility

- New England’s only Class 10,000 Good Manufacturing Practices (GMP) cellular manufacturing facility at an academic medical center
- Manufactures cellular products for clinical use, including:
  - Hematopoietic stem cells
  - Tumor vaccines
  - Chimeric antigen receptor and genetically-engineered T cells
  - Induced/Pluripotent stem cells
  - Selected T-cell subsets (Tregs) for immunotherapy
  - Gene therapy products
  - Mesenchymal stromal cells
- Supports process development for new cell therapy clinical research protocols
- Provides regulatory support for Investigative New Drug (IND) applications
- Carries out pre-, intra-, and post-manufacturing validation and quality assessments
- Includes CLIA-approved quality control testing lab for product characterization
  - Sterility and endotoxin testing
  - Viability and colony-forming unit assays
  - Complex flow cytometry and ELISA testing
  - PCR testing for viral reectors
- Manages a major tissue and blood sample bank to facilitate clinical and research endeavors for patients with blood cancers and other related disorders
Comprehensive services and support for patients and families

- **Pre- and post-transplant collaboration** with local physicians and medical centers – enabling follow-up care close to patients’ homes
- **Graft-versus-host disease** prevention and management
- **Specialized programs for transplantation**
  - Imaging
  - Infectious disease
  - Pathology
  - Radiation oncology
  - Photopheresis
- Consultation, confirmation of diagnosis, and review of therapeutic options
- Hematopathologic evaluation and diagnosis
- Toxicity management
- Nutrition services
- Pharmacy services
- Integrative therapies
- Performing thorough sequencing on the DNA of abnormal cells from patients with leukemia and related disorders
- **Comprehensive patient education program**
  - Focus on post-transplant precautions, medication adherence, and urgent care
  - Extensive patient education materials provided in various formats and methods – including award-winning written guides and digital and blended learning applications – to meet different learning styles and diverse audiences
- Dedicated social work resources
- Patient and family resource center
- Emotional and psychosocial support, including private online support community
- Financial counseling
- Housing assistance
- **Stem Cell Transplant Survivorship Clinic** dedicated to helping patients and local providers manage the unique long-term care needs of stem cell transplant survivors
- **Dedicated caregiver guide** and support
Program Accreditations, Registrations, Licenses

• Foundation for the Accreditation of Cellular Therapy (FACT)
• U.S. Food and Drug Administration (FDA)
• American Association of Blood Banks (AABB)
• Centers for Medicare & Medicaid Services
• The Joint Commission

Clinical and research affiliations

• Member of the Center for International Blood and Marrow Transplant Research (CIBMTR)
• Fully accredited by the National Marrow Donor Program (NMDP)
• Member of the Alliance for Clinical Trials in Oncology (formerly CALGB)
• Charter member of the Blood and Marrow Transplant Clinical Trials Network (BMT-CTN) of the National Institutes of Health
• Both Dana-Farber Cancer Institute and Brigham and Women’s Hospital are founding members of Dana-Farber/Harvard Cancer Center, designated a comprehensive cancer center by the National Cancer Institute
Mailing Address:

Dana-Farber/Brigham and Women’s Cancer Center
Adult Stem Cell Transplantation Program
450 Brookline Avenue, Dana 2
Boston, MA 02215

Patient referrals and consultation/second opinion requests:
617-632-5138 | www.dana-farber.org/referrals

Managed care inquiries: Diane P. Lanahan, MBA, RN, Director of Managed Care Contracting
617-632-5074 | diane_lanahan@dfci.harvard.edu

Financial counseling and support requests:
617-632-3455, option 1

Shared Care and Referring MD Support: Alexis Steinberg
617-632-3069 | alexis_steinberg@dfci.harvard.edu