GLOSSARY

This glossary provides descriptions of some of the terms used in the *Annual Report*. For additional details, please see the Technical Notes.

ABO Blood Type. Includes blood types A, B, AB, and O.

Actual Donor. A deceased donor with at least one organ recovered for transplantation who meets the criteria of an eligible death.

Acute Rejection. The graft is recognized as foreign, and the host produces an immunological assault on the graft tissues. Acute rejections most commonly occur within the first year.

Additional Donor. A deceased donor who does not meet the criteria of an eligible death, such as one over 70 years old or one who has sustained cardiac death (i.e., falls into the category Donation After Cardiac Death, or DCD). Such a patient is not included in the calculation of the donation rate for hospitals.

Advisory Committee on Organ Transplantation (ACOT). Formed by the United States Department of Health and Human Services (HHS) in the autumn of 2000, the ACOT was convened to strengthen the scientific, medical, and public oversight by HHS over transplantation policy. In particular, ACOT provides independent review and advice to HHS concerning organ donation, patient welfare, and organ allocation policies.

Allocation Policies. Rules or policies, generally based on medical criteria, established by the OPTN to guide and regulate organ allocation and distribution in the United States.

Allograft. An organ transplanted between individuals of the same species.

American Society of Transplantation (AST). A membership organization founded in 1982 comprising more than 2,500 transplant professionals; it promotes research, education, and patient care in the area of transplantation.

American Society of Transplant Surgeons (ASTS). The nonprofit membership organization of transplant surgeons that advances and fosters the practice and science of transplantation in order to benefit patients and all of society.

Annual Death Rate. Calculated as the annual death rate per 1,000 patient years at risk. See **Death Rate**.

Antibody. A protein made by the body's immune system in response to a foreign substance. Exposure to foreign cells from a previous transplant, blood transfusion, or pregnancy may cause a transplant recipient to make antibodies that can react against subsequently transplanted cells, tissues, or organs.

Antigen. A foreign molecule or substance with the capacity to trigger an immune response. Special antigens on the surface of each cell indicate to the immune system whether that cell is foreign or native to an individual.

Anti-rejection Drugs (immunosuppressive drugs). These drugs are taken to prevent the body from rejecting a new graft.

Arbor Research Collaborative for Health. Located in Ann Arbor, Michigan, Arbor Research (formerly URREA) is a private, nonprofit organization established for the purpose of collecting information and conducting worldwide epidemiological, clinical, and economic studies of organ failure and related diseases. Its mission is to conduct research, distribute information focused on improving patient care, and provide analysis and research training opportunities for medical professionals. Arbor Research, in collaboration with the University of Michigan, is responsible for the administration of the Scientific Registry of Transplant Recipients (SRTR).

Association of Organ Procurement Organizations (AOPO). A nonprofit organization that supports and represents organ procurement organizations.

Asystole. The absence of contractions of the heart.

Beneficence. The principle of physicians and surgeons acting in ways that are reliably expected to result in a greater balance of clinical good over harm for their patients.

Benign. Non-cancerous.

Biopsy (Bx). A sample of a tissue from the body that has been removed and examined in order to determine organ rejection, diagnose disease, and evaluate organ donations and tissues.

Blood Type. Categorical classification of blood based on differences in molecules (carbohydrates and proteins) on red blood cell surfaces.

Blood Vessels. The system by which blood travels throughout the body via veins, arteries, and capillaries. Some blood vessels can be donated as well as transplanted.

Body Mass Index (BMI). A measure of body fat that is based on weight as well as height.

Brain Death. Termination of brain stem and cerebral function. Brain death is characterized by the absence of electrical activity in the brain, functioning of brain activity through clinical assessment of responses, and blood flow to the brain.

Cadaveric Donor. See **Deceased Donor**.

Candidate. An individual who is registered on the organ transplant waiting list.

Cardiac. Having to do with, or referring to, the heart.

Cardiac Death. Death caused by termination of heart function; if the organs can be efficiently cooled, a person who has had a cardiac death can donate organs for transplantation.

Cardiomyopathy. A disease that causes dysfunction of the heart muscle (myocardium).

Censoring. A statistical technique used to analyze survival, waiting time before transplantation, and time to transplantation. Censoring allows the analysis to use all of the follow-up data for a case even if the follow-up period is incomplete. For instance, in the survival analyses, a patient's data are censored when reported as "lost to follow-up."

Centers for Medicare & Medicaid Services (CMS). CMS (formerly the Health Care Financing Administration, or HCFA) is an agency of the United States Department of Health and Human Services (HHS). CMS administers the Medicare and Medicaid programs, which provide health care coverage to America's aged, disabled, and indigent populations (about one in every four Americans, including nearly 18 million children), as well as nursing home coverage for low-income elderly people.

Chimerism. The simultaneous existence and function of components of both the donor's and the recipient's immune systems in the same patient, resulting in cross-regulation of immune system activities.

Cockcroft-Gault Formula. The Cockcroft-Gault Formula calculates an estimate of creatinine clearance, a measure of kidney function, based upon a patient's serum creatinine, age, weight, and sex.

Cohort. The observations selected for a study based on specific patient characteristics during a designated time period. For example, a cohort of transplant recipients might include all patients who received a transplant between 1995 and 2004.

Cold Ischemia Time (CIT). The time interval that begins when an organ is cooled with a cold perfusion solution after organ procurement surgery and ends when the organ's blood supply is restored after implantation.

Compliance. Adherence to protocols or standards. In the context of organ procurement organizations, "compliance" refers to adherence by members of the OPTN to the policies and bylaws of the OPTN.

Confidence Interval. A 95% confidence interval accounts for occasional fluctuations in the observed value of a rate that may fluctuate above and below the long-term rate. Although observed data during a specific time interval does not always reflect the long-term rate, the 95% confidence interval is a range within which the long-term, or "true," value will lie 95% of the time. Similarly, although a summary based on sample data often differs from the summary that would result if the entire population were evaluated, a confidence interval gives a range that is likely to enclose the population value.

Creatinine. A waste product of muscle metabolism that is excreted by the kidney. The level of serum creatinine is an indirect measure of kidney function.

Crossmatch. A test to detect preformed antibodies in a potential recipient's blood against antigens on the surface of a potential donor's cells. A positive crossmatch means that the recipient has antibodies against the donor's cells. With a few exceptions, a positive crossmatch makes successful transplantation between that donor and recipient pair impossible.

Death Rate. The estimated death rate is calculated as the number of patient deaths observed per 1,000 patient years. Patient years are calculated based on the actual amount of follow-up time that patients are studied. Each study has inclusion criteria that determine which patients are included and for which periods of time they are followed.

Deceased Donor. An individual whose tissues or organs are donated after his or her death. Such donations come from two sources: patients who have suffered brain death and patients whose hearts have irreversibly stopped beating. Donation from the latter group is referred to as "donation after cardiac death" (DCD). The term "deceased donor" is preferred to "cadaveric donor."

Decoupling. The process of separating a pronouncement of death from a request for organ donation from the deceased. The decoupling may involve a time delay as well as the use of different individuals when approaching a family.

Delayed Graft Function (DGF). This occurs when a transplanted organ is unable to function properly after the transplantation. Often, DGF occurs with kidney transplants, as kidneys may take up to three or four weeks to function properly. Until proper functioning occurs, kidney transplant recipients will need to receive dialysis.

Department of Health and Human Services (HHS). The department of the federal government in charge of health-related programs and issues.

Division of Transplantation (DoT). The DoT is a component of the Healthcare Systems Bureau in the Health Resources and Services Administration (HRSA). The DoT regulates and provides federal oversight and funding support for the nation's organ procurement, allocation, and transplantation system; coordinates national organ and tissue donation activities; funds research to improve donation rates; and administers the National Bone Marrow Registry program.

Domino Transplant. A procedure in which an organ is removed from one patient and immediately transplanted into a second patient, with the first patient receiving a new organ from another source (e.g., a deceased donor).

Donation After Cardiac Death (DCD). Use of tissues or organs from a donor whose heart has irreversibly stopped beating. Such donors were formerly known as nonheartbeating donors.

Donation Rate. The number of actual donors from whom at least one organ is recovered for the purpose of transplantation divided by the total number of eligible deaths.

Donation Service Area (DSA). A geographic area designated by the Centers for Medicare & Medicaid Services (CMS) that is served by an organ procurement organization (OPO) with respect to organ donation, procurement, and allocation.

Donor. An individual who supplies tissues or organs for transplantation.

Eligible Death. In OPTN terminology, a heartbeating individual meeting, or imminently meeting, death by neurological criteria; aged 70 years or under; who has not been diagnosed with exclusionary medical conditions.

End-Stage Liver Disease (ESLD). Irreversible liver failure that requires transplantation as hepatic replacement therapy.

End-Stage Organ Failure. The permanent need for organ replacement therapy. The option of transplantation exists for the failure of kidney, liver, heart, lung, pancreas, and intestine.

End-Stage Renal Disease (ESRD). Irreversible kidney failure that requires either dialysis or transplantation as renal replacement therapy.

Epidemiology. The branch of medicine that studies origins, control, and distribution of diseases within a population.

Ethnicity. In the SRTR database, race and ethnicity are now reported together as a single data element, reflecting the way these data are now collected. See **Race** for details.

Expanded Criteria Donor (ECD). A donor not considered to be "ideal" or "standard." A formal definition exists only for kidney donors: a deceased donor over the age of 60 years or a donor over the age of 50 years with two of the following: a history of hypertension, a terminal serum creatinine greater than 1.5 mg/dl, or death resulting from a cerebrovascular accident (stroke). While definitions do not exist yet for other organs, the characteristics of these nonstandard organs may include general or organ-specific factors such as advanced donor age, prior infection with hepatitis B or hepatitis C, a history of hypertension or diabetes mellitus, abnormal donor organ function, or nonheartbeating status of a deceased donor. The term "expanded" is used because an expansion of the donor pool is considered to increase transplantation; it is preferred to the term "marginal."

FEV_1. Forced expiratory volume in one second (FEV_1) is a measure of lung function. A decline in FEV_1 is associated with worsening lung disease.

Final Rule. The Organ Procurement and Transplantation Network (OPTN) Final Rule (42 CFR Part 121) was issued and published in the Federal Register on April 2, 1998. This rule governs the operation of the OPTN and was amended (resulting from the Institute of Medicine's report *Organ Procurement and Transplantation*, 1999). The amended version was issued and published in the Federal Register on October 20, 1999. The Final Rule went into effect on March 16, 2000.

Fraction Transplanted (FT). A simple fraction of all waiting list registrants who received a transplant, regardless of the program where the transplant was performed. The FT summarizes the time to transplantation at any program among all registrants in that transplant program.

Geographic Units for Organ Distribution. The way that organs are allocated to individuals within geographic areas. With the exception of perfectly matched organs, donated organs are first offered to candidates within the designated service area (DSA) of the host organ procurement organization (OPO). If not accepted within the DSA of the host OPO, they are offered to transplant centers within the region, then to all centers across the nation.

Glomerular Filtration Rate (GFR). The rate at which the kidney filters blood. The GFR decreases with age and disease.

Graft. In the context of transplantation, a graft is an organ or tissue transplanted from one individual to another of the same species (e.g., human to human).

Graft Survival. Continued functioning of a transplanted organ, usually expressed as a measure of time since transplantation.

Haplotype. One of a pair of three linked tissue-matching genes that are usually inherited as a unit.

Health Resources and Services Administration (HRSA). HRSA, an agency of the United States Department of Health and Human Services (HHS), is charged with oversight of the Healthcare Systems Bureau, which in turn

provides oversight to the Division of Transplantation (DoT). The mission of HRSA is to improve the nation's health by assuring equal access to comprehensive, culturally competent, quality health care for all. The goal is to assure total access health care and to eliminate health disparities for all Americans. HRSA supports a nationwide network of community and migrant health centers and primary care programs for the homeless and residents of public housing, serving more than 8 million Americans each year. HRSA also works to build the health care workforce and maintains the National Health Service Corps, oversees the nation's organ transplantation system, helps provide health resources for medically under-served populations, works to decrease infant mortality and improve child health, and provides services to people with AIDS through the Ryan White CARE Act programs.

Hepatitis C Virus (HCV). A form of hepatitis caused by the hepatitis C virus (HCV), previously known as non-A, non-B hepatitis.

Heterotopic Transplant. Transplantation of an organ to a site that is different from the location that the organ would ordinarily occupy within the body.

Histocompatibility Antigens. See **Human Leukocyte Antigen System (HLA System)**.

Human Leukocyte Antigen System (HLA System). Human leukocyte antigens (HLA), also known as histocompatibility antigens, are molecules found on all nucleated cells in the body. Histocompatibility antigens help the immune system recognize whether a cell is foreign to the body. These antigens are inherited from one's parents. Human leukocyte antigens are used to determine the compatibility of kidneys and pancreata for transplantation from one individual to another. The major groups of HLA antigens are HLA-A, HLA-B, and HLA-DR. The values shown are based on the six HLA antigens (two each for the A, B, and DR loci) reported for both donors and recipients. Tables reporting the level of HLA mismatch indicate the number of HLA antigens found in the donor that are not shared by the recipients. In general, a smaller number of HLA mismatches yields better compatibility between donor organ and recipient.

Immunogenicity. The capacity of an antigen to stimulate an immune response.

Immunosuppression. The suppression of the immune response, usually with medications, to prevent the rejection of a transplanted organ or tissue. Medications commonly used to suppress the immune system after transplantation include corticosteroids, calcineurin inhibitors, antimetabolites, polyclonal antibodies, monoclonal antibodies, and TOR inhibitors, among others. A recipient's immunosuppressive regimen may include several different drugs, and it may vary depending on whether it is being used for induction, maintenance, or to treat a rejection episode.

Induction Therapy. The administration of a brief course of high-dose immunosuppression in the early period following transplantation. Induction therapy precedes and overlaps with less intense long-term maintenance immunosuppression.

Informed Consent. The process of agreeing to accept a medical test, procedure, or treatment. Informed consent is based on (1) full disclosure of the nature, risks, and benefits of the intended medical intervention; (2) comprehension of the disclosed elements; (3) competence to make an independent decision; and (4) freedom from coercion to allow for a truly voluntary response.

Inotropes. Medications that increase the force of contraction of the heart muscle.

Justice. As applied to the medical ethics of transplantation, justice refers to allocation of organs to those patients in the most immediate need. Issues of justice are balanced by concerns of utility that, in this context, refer to allocating organs to those individuals who will make the "best" use of them. An example would be whether a potential recipient facing imminent death without a transplant but with a poorer chance of long-term survival should be given a transplant in preference to another individual with less immediate risk of death but a better long-term prognosis.

Kidney Allocation Review Subcommittee (KARS). A subcommittee of the OPTN Kidney-Pancreas Allocation Committee, created in 2004 to conduct a comprehensive review of the national system for allocating deceased donor kidneys, including a series of public hearings with expert testimony and open discussion focused on specific aspects of the national kidney allocation system and opportunities for assessment and/or improvement.

Kidneys. A pair of organs that removes waste in the blood, resulting in the production of urine. Kidneys may be donated from both deceased and living donors.

Laparoscopic Surgery. A set of minimally invasive procedures for surgery in the abdominal and pelvic areas; it may be used for living kidney donors.

Life-years. A total number of years lived within a certain population. Example: There were 10 transplant recipients, each lived 20 years following their transplantation. The posttransplant survival would be 200 life-years for these recipients.

List Exchange. A living kidney donor who does not have a compatible blood type with the intended recipient may offer his or her kidney to a stranger on the kidney waiting list; the intended recipient then advances on the waiting list. This practice is also known as living paired exchange.

Liver. Aids in digestion and helps process proteins, carbohydrates, and fats. Also helps in storing substances like vitamins. Produces bile and removes wastes from the blood. Both living and deceased donors can donate livers.

Living Donor. A living person who donates for transplantation an organ such as a kidney or a segment of the lung, liver, pancreas, or intestine. Living donors may be blood relatives, emotionally related individuals, or altruistic strangers. These may also include domino heart or liver transplants. See **Domino Transplant**.

Living Donor Paired Donation. The practice of two kidney recipients trading donors to avoid the problem of blood type incompatibility between recipient and intended donor.

Living Related Donor. When a blood-related family member donates an organ, which can include a kidney or part of a lung, liver, or pancreas, to another family member or relative. Examples include parent to child and sibling to sibling.

Living Unrelated Donor. A person who is not closely related by blood donates an organ to another person; this can include a kidney or part of a lung, liver, intestine, or pancreas. Examples of this include husband to wife or friend to friend. Stranger-to-stranger living donations and transplants have become increasingly common within the past few years.

Lost to Follow-up (LTFU). Having no available data at some point following a particular event, such as the transplantation of an organ. Patients may become lost to follow-up in two different ways: (1) the transplant center reports them as being lost or (2) the center does not complete follow-up forms for a patient.

Lung Allocation Score (LAS). A measure used since 2005 to rank candidates for lung transplantations on the waiting list since 2005. A patient's LAS is calculated from estimates of survival probability while on the lung transplant waiting list and following transplantation.

Lungs. Respiration organs that aid in aeration of the blood. There is both a right and left lung that include two lobes each.

Match. The compatibility of an organ between a donor and a recipient. The greater the compatibility of the match, the more likely the transplantation will be successful.

Median Time to Transplant. See **Time to Transplant (TT)**.

Median Waiting Time. See **Waiting Time (WT)**.

Medical Urgency Status Codes. Each candidate on the liver, heart, and heart-lung waiting lists is assigned a status code that corresponds to how medically urgent it is that he or she receives a transplant. Medical urgency status for liver and heart is reported in the waiting list, recipient, and survival tables. The entries below present the definitions for each code, covering the last 10 years.

Medical Urgency Status Codes for Liver Allocation.

Pre-1997:

1 ICU-bound due to acute or chronic liver failure with a life expectancy of less than seven days without a liver transplant.

2 Hospitalized in an acute care bed for at least five days or ICU-bound.

3 Requiring continuous care.

4 At home.

7 Temporarily inactive.

1997:

In January 1997, Status code 4 was eliminated and all Status 4 patients were grandfathered into Status 3. In July 1997, an interim redefinition was given to Status 1 and Status codes 2A and 2B were introduced.

1 Age 18 or older with acute liver failure, with a life expectancy without a transplant of less than seven days, or less than 18 years of age and in ICU due to acute or chronic liver failure, with a life expectancy without a transplant of less than seven days. (See OPTN policies for a description of acute liver failure.)

2A In ICU due to chronic liver failure, with a life expectancy without a transplant of less than seven days.

2B Continuously hospitalized in an acute care bed for at least five days or ICU bound.

3 Requiring continuous care.

7 Temporarily inactive.

1997-2001:

1 Adult–Age 18 years or older with fulminant liver failure, with a life expectancy without a transplant of less than seven days.

Pediatric–Less than 18 years of age and in ICU due to acute or chronic liver failure, with a life expectancy without a transplant of less than seven days, and meeting other medical criteria. (See OPTN policies for a description of fulminant liver failure and for pediatric medical criteria.)

2A In a critical care unit due to chronic liver failure, with a life expectancy without a transplant of less than seven days and a long-term prognosis with a successful liver transplant equivalent to that of a patient with fulminant liver failure. Patient also has a Child-Turcotte-Pugh (CTP) score greater than or equal to 10 and meets other medical criteria. (See OPTN policies for a description of CTP score and other medical criteria.) This classification does not apply to pediatric patients, i.e., patients less than 18 years of age.

2B Age 18 years or older and has a CTP score greater than or equal to 10 or a CTP score greater than or equal to 7 and meets other medical criteria. (See OPTN policies for a description of CTP score and other medical criteria and for pediatric medical criteria.)

3 Requiring continuous care and, if age 18 years and older, has a CTP score greater than or equal to 7.

7 Temporarily inactive.

2002-2005:

1 Adult–Age 18 years or older with fulminant liver failure, with a life expectancy without a transplant of less than seven days.

Pediatric–Less than 18 years of age and in ICU due to acute or chronic liver failure, with a life expectancy without a transplant of less than seven days, and meeting other medical criteria. (See OPTN policies for a description of fulminant liver failure and for pediatric medical criteria.)

2006 and following:

1A Adult and Pediatric–Fulminant liver failure.

1B Pediatric–Mainly reserved for chronic liver failure.

Medical Urgency Status Codes for Heart Allocation.

Pre-1999:

1 (a) Patient requires cardiac and/or pulmonary assistance with one or more of the following devices in place: total artificial heart, left and/or right ventricular assist system, intra-aortic balloon pump, ventilator; (b) patient is in ICU and requires inotropic agents to maintain cardiac output; or (c) patient is less than 6 months of age.

2 All other active registrations.

7 Temporarily inactive.

1999 and following:

1A Adult–At least 18 years of age, with at least one of the following: (a) mechanical circulatory support for acute hemodynamic decompensation with a ventricular assist device (VAD) 30 days after being determined clinically stable (admittance to the listing hospital is not necessary for this criterion), total artificial heart (TAH), balloon pump, or extracorporeal membrane oxygenation (ECMO); (b) mechanical circulatory support for more than 30 days with objective medical evidence of significant device-related complications; (c) mechanical ventilation; (d) continuous infusion of a single high-dose intravenous inotrope or multiple intravenous inotropes, in addition to continuous hemodynamic monitoring of left ventricular filling pressures; or (e) the candidate is considered, using acceptable medical criteria, to have urgency and potential for benefit comparable to that of other candidates at this status.

Pediatric–Less than 18 years of age and meeting at least one of the following criteria: (a) requires assistance with a ventilator; (b) requires assistance with a mechanical assist device; (c) requires assistance with a balloon pump; (d) is less than 6 months old with congenital or acquired heart disease exhibiting reactive pulmonary hypertension at greater than 50% of systemic level; (e) requires infusion of high dose or multiple inotropes; or (f) meets none of the criteria specified above but has a life expectancy without a heart transplant of less than 14 days.

1B Adult–A registrant who (a) has a left and/or right ventricular assist device implanted for more than 30 days or (b) receives continuous infusion of intravenous inotropes.

Pediatric–A registrant who (a) requires infusion of low dose single inotropes, (b) is less than 6 months old and does not meet the criteria for Status 1A, or (c) exhibits growth failure (see OPTN policies for a definition).

2 A patient of any age who does not meet the criteria for Status 1A or 1B.

7 Temporarily inactive.

Medicare. A federal government agency that supports people aged 65 years and over, those who have permanent kidney failure, and certain people with disabilities by providing hospital and Medicaid insurance, through Social Security taxes.

MELD Score. See **Model for End-Stage Liver Disease (MELD) Scoring System.**

Mismatch. See **Human Leukocyte Antigen System (HLA System)**.

Model for End-Stage Liver Disease (MELD) Scoring System. A measure of illness severity used in the allocation of livers to adults, established in February 2002. The MELD system uses three laboratory values (bilirubin, creatinine, and INR) to calculate a score, on a scale of 6 to 40, that is predictive of the risk of death within three months on the liver waiting list. Livers are allocated to wait-listed patients with chronic liver disease on the basis of this score. See also **Pediatric End-Stage Liver Disease (PELD) Scoring System**.

Morbidity. A disease condition or the occurrence or rate of a disease among a population.

Multiple Listing. The act of being wait-listed at more than one transplant center.

National Organ Transplant Act (NOTA). The National Organ Transplant Act (1984 Public Law 98-507), approved October 19, 1984, and amended in 1988 and 1990, provided for the establishment of the Task Force on Organ Transplantation; authorized the Secretary of Health and Human Services (HHS) to make grants for the planning, establishment, and initial operation of qualified organ procurement organizations (OPOs); and established the formation of the Organ Procurement and Transplantation Network (OPTN) and Scientific Registry of Transplant Recipients (SRTR).

Nephrologist. A specialist in the treatment of kidney diseases and malfunctions.

Non-Directed Donation. Donation of organs from living donors who are not related to or known by the recipient.

Nonheartbeating Donor (NHBD). See **Donation After Cardiac Death (DCD)**.

Notifiable Death. A subset of all in-hospital deaths aged 0-70 years with no exclusionary medical diagnoses for possible donation. The number of notifiable deaths is based on methodology to determine the relevant subset of deaths in a geographic area, as described in Ojo et al., *Transplantation*, 1999.

Organ Donation. To provide an organ or a part of an organ to be transplanted into another person. Organ donation can occur with a deceased donor, who can give kidneys, pancreas, liver, lungs, heart, and intestinal organs, and with a live donor, who can give a kidney or a portion of the liver, lung, or intestine.

Organ Donation Breakthrough Collaborative. A program launched by the Health Resources and Services Administration (HRSA) in 2003 as part of the Department of Health and Human Services (HHS) Gift of Life Donation Initiative to (1) identify and promote the best practices in organ donation and procurement for hospitals and organ procurement organizations (OPOs) achieving the highest donation rates in the country and (2) raise the overall donor consent rate to 75% among participating hospitals and OPOs. A 4.3% increase in deceased donors occurred from 2002 to 2003, with donor consent increasing by 5%. The model for the Breakthrough Collaborative was based upon the best practice strategies developed by HRSA and the Institute for Healthcare Improvement.

Organ Preservation. Between procurement from a donor and transplantation into a recipient, organs require special methods of preservation. The length of time that organs and tissues can be kept outside the body varies, depending on the organ, the preservation fluid, and the temperature. See also **Cold Ischemia Time (CIT)** and **Pulsatile Perfusion (PP)**.

Organ Procurement. The abstraction or recovery of organs from a donor for transplantation.

Organ Procurement and Transplantation Network (OPTN). Under a contract from the Health Resources and Services Administration (HRSA) and with oversight from the Division of Transplantation (DoT), the OPTN operates the national network for organ procurement and allocation and works to promote organ donation. Through its policies, the OPTN works to ensure that all patients have a fair chance at receiving the organ they need, regardless of age, sex, race, lifestyle, religion, or financial or social status. The current OPTN contractor is the United Network for Organ Sharing (UNOS), based in Richmond, Virginia.

Organ Procurement Organization (OPO). An organization designated by the Centers for Medicare & Medicaid Services (CMS) that is responsible for the procurement of organs for transplantation and the promotion of organ donation within a particular donation service area. There are currently 58 certified OPOs operating in the United

States; each is a separate, private, nonprofit organization with its own board of directors. See also **Donation Service Area (DSA)**.

Organs. Parts of the body made up of cells and tissues that have certain purposes and perform certain functions for the body. Organs that can be transplanted include hearts, lungs, livers, kidneys, intestines, and pancreata.

***P* Value**. The *P* value measures the statistical significance (or evidence) for testing a hypothesis. Usually, this hypothesis is either that two numbers are equal to each other or that a number is different from zero. A *P* value of less than 0.05, indicating that there is less than a 5% chance that any observed difference occurred by random chance alone, is often considered "statistically significant."

Pancreas. An irregularly shaped gland located behind the stomach. The pancreas aids in the process of digestion of proteins, fats, and carbohydrates. The pancreas secretes insulin and other hormones that regulate blood sugar and insulin levels. Upon failure of the pancreas, an individual becomes diabetic.

Panel Reactive Antibody (PRA). The PRA value is a measure of a patient's level of sensitization to human leukocyte antigens (HLA). It is the percentage of cells from a panel of blood donors against which a potential recipient's serum reacts. The PRA reflects the percentage of the general population that a potential recipient makes antibodies (is sensitized) against. The higher the PRA, the more sensitized a patient is to the general donor pool and, thus, the more difficult it is to find a suitable donor. A patient may become sensitized as a result of pregnancy, a blood transfusion, or a previous transplant.

Patient Survival. Patient survival refers to whether a transplant recipient is still alive at a certain time after transplantation.

Pediatric End-Stage Liver Disease (PELD) Scoring System. A measure of illness severity used in the allocation of livers to pediatric candidates, established in February 2002. The PELD system uses three laboratory values (albumin, bilirubin, and INR), a presence of growth failure (at least two standard deviations below average height or weight), and an indicator of whether the patient is less than 1 year of age to calculate a score predictive of the risk of death within three months on the liver waiting list for candidates under the age of 18 years. The range of PELD scores is greater than that of the model for end-stage liver disease (MELD) scores, ranging from less than zero to greater than 40. See also **Model for End-Stage Liver Disease (MELD) Scoring System**.

Percentile. The Nth percentile measure is the value at which N% of the cases are at or below that percentile. For instance, for liver waiting list registrations in 1998, the 25th percentile for waiting time was 140 days. This means that by 140 days after being added to the liver-transplant waiting list, 25% of registrants had been transplanted. For the same group, the median for waiting time was 390 days. The median is defined as the 50th percentile. For this group of liver registrants, 50% had been transplanted by 390 days.

Potential Donor. In terminology of the Association of Organ Procurement Organizations (AOPO), a patient who meets the criteria for brain death with no absolute contraindications to organ donation as defined by a standardized list from the *International Classification of Diseases, Ninth Revision*.

Preservation. The process of keeping organs viable between procurement and transplantation.

Procurement. The process of donor screening and the evaluation, removal, preservation, and distribution of organs, tissues, or cells for transplantation.

Pulsatile Perfusion (PP). Preservation of kidneys using a machine that continuously circulates preservation solution rather than packaging the organs in a static iced preservation solution.

Race. In the SRTR database, race and ethnicity are now reported together as a single data element, reflecting the way these data are now collected (either race or ethnicity is required, but not both). Race and ethnicity sum to 100%. Race here includes the following categories:

- White (non-Hispanic)
- Hispanic/Latino

- African American
- Asian (listed as Asian, Indian Sub-Continent, Native Hawaiian, or other Pacific Islander)
- Other (listed as American Indian or Alaskan Native, or multiracial)

Recipient. A person who receives an organ or tissue transplant.

Referred Death. In OPTN terminology, "referred deaths" includes all deaths or imminent deaths reported by a hospital to the organ procurement organization (OPO) within the donation service area (DSA).

Regimen. See **Immunosuppression**.

Rejection. A phenomenon that occurs when a recipient's immune system attacks a transplanted organ, tissue, or cell. Immunosuppressive drugs help prevent rejection.

Renal. Having to do with, or referring to, the kidneys.

Retransplantation. The process of receiving another transplant due to rejection or failure of a transplanted organ.

Scientific Registry of Transplant Recipients (SRTR). The SRTR provides analytic support for the ongoing evaluation of the scientific and clinical status of solid organ transplantation in the United States. With oversight and funding from the Division of Transplantation (DoT), the SRTR is currently administered by Arbor Research Collaborative for Health (formerly URREA), in collaboration with the University of Michigan.

Sensitization. Potential recipients are "sensitized" if their immune system makes antibodies against potential donors. Sensitization usually occurs as a consequence of pregnancy, blood transfusions, or previous transplantation. The degree of sensitization is measured by panel reactive antibody (PRA). Highly sensitized patients are more likely to reject an organ transplant than are unsensitized patients.

Share 15. A component of liver allocation policy that became effective in January 2005. Under this policy, offers of livers are to be made to candidates with MELD scores of 15 or greater outside the procuring donation service area (but within the same region) if there are no local candidates with MELD scores of 15 or greater. Livers are allocated to local candidates with MELD scores of less than 15 only if there are no regional candidates with MELD of 15 or greater. See also **Model for End-Stage Liver Disease (MELD) Scoring System**.

Standard Acquisition Charge (SAC). Organ procurement organizations (OPOs) have a SAC that they pay directly to the transplant center for transplantation of deceased donor organs and for the costs of organ acquisition, hospitalization, and physician time.

Standard Criteria Donor (SCD) Kidney. A kidney donated for transplantation by a donor who has suffered brain death (i.e., not a donor after cardiac death) and who is not an expanded criteria kidney donor. See **Donation After Cardiac Death (DCD)** and **Expanded Criteria Donor (ECD) Kidney**.

Standard Error. The standard error measures the level of precision associated with the estimate of the mean of a population. Categories that include a large number of transplants generally have small standard errors, while categories with relatively few transplants generally have large standard errors. Survival rates associated with a smaller standard error are more precise than those associated with a larger standard error. Standard errors are presented in the graft and patient survival rates tables.

Steroid Avoidance, Steroid Withdrawal. Steroid avoidance is the practice of not using corticosteroids for immunosuppression following transplantation; steroid withdrawal is the practice of taking patients off corticosteroids for maintenance immunosuppression. These practices have evolved in response to concerns about adverse effects associated with steroid-based regimens.

Survival Rates. Survival rates indicate the percentage of patients who are alive and the grafts (organs) that are still functioning after a specified amount of time.

Thoracic Organs. Organs located in the chest, i.e., the heart and lungs.

Time to Transplant (TT). A measure of how long it takes until a wait-listed patient becomes transplanted, often reported in percentiles (e.g., 10th, 25th, median). TT considers all candidates who are initially registered on the waiting list and measures the time between waiting list registration and transplantation date. Of all the wait-listed patients in a cohort, half have been transplanted by the median TT; the other half may still be waiting or may have been removed for death or other reason. Among the factors affecting T are the size of the waiting list; biologic issues such as blood type, body size of donors and recipients, panel reactive antibody (PRA), immunological factors, and medical urgency status (for liver and heart); donation rates within an area; donation request and consent procedures at organ procurement organizations (OPOs); and patient registration and organ acceptance practices at transplant centers. An alternative measure, waiting time, in which inactive time on the waiting list is not counted and patients are censored at any removal from the waiting list, may also be considered. Additional measures—such as the median of the waiting time among wait-listed patients and the median of the waiting time among actual transplant patients—are often used to measure similar concepts. See also **Waiting Time (WT)**.

Tissue Type. An individual's combination of human leukocyte antigens. Matching for tissue type is used in kidney and pancreas transplantation. The tissue type for each patient on the waiting list is entered into a central computer maintained by the OPTN.

Transplant Center. A medical institution within the United States that operates an organ transplant program.

Transplant Program. Components of a transplant center. An individual transplant center may have programs for the transplantation of heart, lung, liver, kidney, pancreas, islets, and/or intestine.

Tumor. An abnormal growth of tissue resulting from an uncontrolled multiplying of cells that serves no physiological function. Tumors can be either malignant (cancerous) or benign (non-cancerous). Malignant tumors include newly developed or "*de novo*" solid tumors as well as recurrent tumors that had previously been treated. Posttransplant lymphoproliferative disorders (PTLD) are abnormal accumulations of immune cells brought about by the immunosuppressive therapies used to prevent organ rejection.

United Network for Organ Sharing (UNOS). Located in Richmond, Virginia, UNOS is a private, nonprofit membership organization that coordinates the nation's transplant system under the OPTN federal contract. UNOS assists the transplant community and the patients it serves by maintaining the national organ transplant waiting list, coordinating the matching and distribution of donated organs, increasing public awareness of the need for donated organs, serving as a forum to create and define organ-sharing policies that maximize the use of donated organs, producing professional education tools, and providing extensive information about organ transplantation to patients and the public.

United States Renal Data System (USRDS). The national data system that collects, analyzes, and distributes information about end-stage renal disease (ESRD) in the United States. The USRDS is funded by the National Institute of Diabetes and Digestive and Kidney Diseases. The USRDS collaborates with the Centers for Medicare & Medicaid Services (CMS), the OPTN, and the ESRD networks, sharing datasets and actively working to improve the accuracy of ESRD patient information.

Utility. As applied to the medical ethics of transplantation, "utility" refers to allocating organs to those individuals who will make the "best" use of them. Issues of utility are balanced by concerns for justice that, in this context, refer to allocation of organs to those patients in the most immediate need. An example would be whether a potential recipient facing imminent death without a transplant but with a poorer chance of long-term survival should be given a transplant in preference to another individual with less immediate risk of death but a better long-term prognosis.

Ventricular Assist Device (VAD). A mechanical pump that is implanted into a patient with heart failure to maintain blood circulation; it is used as a bridge to heart transplantation.

Waiting List (Active, Inactive, Removal). After evaluation by a team of transplant professionals, a patient is added to the national waiting list by the transplant center. Lists are specific to both geographic area and organ type: kidney, pancreas, kidney-pancreas, liver, intestine, heart, lung, and heart-lung. Each time a donor organ becomes

available, a computer generates a list of potential recipients based on factors that may include genetic similarity, organ size, medical urgency, and time on the waiting list. Through this process, a new list that best matches a waiting patient to a donated organ is generated each time an organ becomes available.

- Active—An "active" patient does not have any contraindications to transplantation at the current time and is actively awaiting transplantation.
- Inactive—Patients can be placed on inactive status if they temporarily are not appropriate candidates for transplantation (e.g., because of an active infection).
- Removal—A patient can be removed from the waiting list in the following ways: voluntarily, by becoming too ill to withstand or benefit from transplantation, by achieving a spontaneous recovery of organ function, by receiving a transplant, or by dying.

Waiting Time (WT). A measure of how long it takes until a wait-listed patient becomes transplanted, often reported in percentiles (e.g., 10th, 25th, median). This statistic is calculated using the successive rates of transplantation seen at each time after registration, among candidates who remain active on the waiting list (dropping candidates when they die or are removed from the waiting list and excluding inactive times). This time is generally shorter than time to transplant (TT) for the same percentile since it uses transplant rates among those who remain active on the waiting list. The statistic measuring access to transplantation should not be confused with the accumulated waiting time that may be used for allocation purposes. See also **Time to Transplant (TT)**.