



appendix

144 methods

150 glossary

154 abbreviations

As time passes and healing occurs, I realize donation was a gift given to us as well as to the recipients. It is a real comfort to know that quality life was made possible by our decision to donate.

Judy, donor mother

methods

POPULATIONS REPORTED

Figure titles indicate adult or pediatric populations; if not specified, data include all patients of all ages.

With the exception of the “total transplants” figure in each organ-specific chapter (i.e., KI 4.1), and of pancreas figures which specify SPK and PAK transplants, all figures in these chapters are limited to patients on the waiting list for a single-organ transplant (i.e, not heart-lung, not kidney-pancreas).

PEDIATRIC FIGURES

Pediatric figures use the same methods as those defined for the equivalent figures in other sections. To help in the location of these methods, the table below lists the pediatric figures for each organ-specific chapter; the left-hand column shows the first listed figure using the same methods.

AGE

Adult patients are defined as those 18 and older for all organs except lung; lung allocation policy treats patients 12 and older as adults. For wait-list figures, age is defined at time of listing unless otherwise specified.

RACE/ETHNICITY

Multi-racial patients are defined as other/unknown.

PRA

PRA is defined as the first non-missing value of the initial allocation PRA, current PRA, peak PRA, and calculated PRA.

ECD KIDNEYS

Data on willingness to accept an ECD kidney are available from 2003.

PANCREAS DATA

Pancreas data encompass the three types of pancreas wait lists or transplants: simultaneous kidney-pancreas, pancreas after kidney, and pancreas-alone.

LUNG ALLOCATION SCORE

The lung allocation score (LAS) became available in 2005. Data by LAS are presented using the most recent LAS before December 31 of each year.

wait list

KI 1.1, 8.1; PA 1.1, 7.1; LI 1.1, 8.1;

IN 1.1; HR 1.1, 7.1; LU 1.1, 7.1

Patients waiting for a transplant. A “new patient” is defined as one who first joins the list (or, for pancreas, one of the three lists) during the given year, without having listed in a previous year. However,

Pediatric figures: for methods, see text for figure in left-hand column					
Adult KI	Kidney	Pancreas	Liver	Heart	Lung
KI 1.1	KI 8.1	PA 7.1	LI 8.1	HR 7.1	LU 7.1
KI 1.2	KI 8.2	PA 7.2	LI 8.2	HR 7.2	LU 7.2
KI 1.6	KI 8.4	PA 7.4	LI 8.4	HR 7.4	LU 7.4
KI 1.7	KI 8.5	PA 7.5	LI 8.5	HR 7.5	LU 7.5
KI 1.10	KI 8.6	PA 7.6	LI 8.6	HR 7.6	LU 7.6
KI 1.12	KI 8.7	PA 7.7	LI 8.7	HR 7.7	LU 7.7
KI 4.1	KI 8.8	PA 7.8	LI 8.8	HR 7.8	LU 7.8
KI 4.3	KI 8.9	PA 7.9	LI 8.9	HR 7.9	LU 7.9
KI 4.8	KI 8.10	PA 7.10	LI 8.10	HR 7.10	LU 7.10
KI 3.2	KI 8.11		LI 8.11		
	KI 8.12		LI 8.12		
KI 4.9	KI 8.13	PA 7.11	LI 8.13	HR 7.11	LU 7.11
KI 5.7	KI 8.14				
KI 6.9	KI 8.15	PA 7.12	LI 8.14	HR 7.12	LU 7.12
KI 7.4	KI 8.16	PA 7.13	LI 8.15	HR 7.13	LU 7.13
KI 6.3	KI 8.17		LI 8.16		LU 7.14
KI 6.4	KI 8.18		LI 8.17		
KI 6.5	KI 8.19		LI 8.18	HR 7.15	LU 7.15
wait list	KI 8.3	PA 7.3	LI 8.3	HR 7.3	LU 7.3
outcomes					
PA 5.2		PA 7.14			
PA 5.3				HR 7.14	LU 7.14

if a patient has previously been on the list, has been removed for a transplant, and has relisted since that transplant, the patient is considered a “new patient.” Persons listed at multiple centers are counted only once. Those with multiple listings and active at any program are considered active; those inactive at all programs at which they are listed are considered inactive.

KI 1.2, 8.2; PA 1.2, 7.2; LI 1.2, 8.2;

IN 1.2; HR 1.2, 7.2; LU 1.2, 7.2

Patients waiting for a transplant on December 31 of each year. Age determined on this date, and each patient counted only once. For HR 1.2, ventricular assist device information comes from the TCR form at the time of listing, and includes LVAD, RVAD, TAH, and LVAD + RVAD. For LU 1.2, patients first listed prior to LAS implementation may remain scoreless after 2005 due to missing data among elements required to compute LAS.

KI 1.3, PA 1.3, LI 1.3, IN 1.3, HR 1.3

New patients per year, defined as in Figure 1.1. For HR 1.3, ventricular assist device information comes from the TCR form at the time of listing, and includes LVAD, RVAD, TAH, and LVAD + RVAD.

KI 1.4

Prevalent dialysis patients, all ages, wait-listed for a kidney-alone transplant. Percentage calculated as the sum of wait-list patients divided by the sum of point prevalent dialysis patients on December 31 of each year (data from the United States Renal Data System). Counts of dialysis patients are taken from the USRDS 2008 Annual Data Report, reference table D.6.

KI 1.5, PA 1.4, LI 1.4, IN 1.4, HR 1.4, LU 1.3

Patients waiting for a transplant; age as of January 1 of the given year. Yearly period-prevalent rates for all transplants/deceased-donor transplants are computed as the number of all transplants/deceased-donor transplants per 100 patient years of waiting time in the given year (for pancreas, within each list). All waiting time per patient per listing is counted, and all listings that end in a transplant for the patient are considered transplant events.

KI 8.3, PA 7.3, LI 8.3, HR 7.3, LU 7.3

Prior transplant is obtained from the OPTN Transplant Candidate Registration form.

KI 1.6, 8.4; PA 1.5, 7.4; LI 1.5, 8.4;

IN 1.5; HR 1.5, 7.4; LU 1.4, 7.4

Patients waiting for a transplant; multiple listings counted.

KI 1.7, 8.5; PA 1.6, 7.5; LI 1.6, 8.5;

IN 1.6; HR 1.6, 7.5; LU 1.5, 7.5

Patients waiting for a transplant and first listed in 2006; multiple listings counted.

KI 1.8, PA 1.7, LI 1.7, IN 1.7, HR 1.7, LU 1.6

Patients waiting for a transplant and listed in 2005–2009; multiple listings counted, and percentiles of time to transplant obtained by Kaplan-Meier estimates. Observation ended at December 31, 2009. Lines in the figures stop at the last observed percentile per cohort group. For example, only 60% of all kidney listings between 2005–2009 were transplanted as of December 31, 2009.

KI 1.9, PA 1.8, LI 1.8, HR 1.8, LU 1.7

Patients receiving a deceased-donor transplant in 2009. Observed median time to transplant presented by DSA of the transplanting center. DSAs with no transplant program are shown in white.

KI 1.10, 8.6; PA 1.9, 7.6; LI 1.9, 8.6;

IN 1.8; HR 1.9, 7.6; LU 1.8, 7.6

Patients waiting for transplant, with observations censored at December 31, 2009; Kaplan-Meier method used to estimate time to transplant. If an estimate is not plotted for a certain year, 50% of the cohort listed in that year had not been transplanted as of the censoring date. Only the first transplant is counted. Data by LAS use the LAS at listing, and are not provided until 2005, when LAS went into use.

KI 1.11

Patients waiting for a kidney-alone transplant, 2003 (beginning of ECD program) to 2009; multiple listings counted.

KI 1.12, 8.7; PA 1.10, 7.7; LI 1.10, 8.7;

IN 1.9; HR 1.10, 7.7; LU 1.9, 7.7

Patients waiting for a transplant. Rates by age are shown by the patient’s age in the given year. Yearly mortality rates computed as deaths per 100 patient years of waiting time in the given year. Total waiting time per patient per listing per year is counted. Counted deaths are those in which patients were removed from list because of death, and not transplanted before death.

KI 1.13, PA 1.11, LI 1.11, IN 1.10, HR 1.11, LU 1.10

Patients waiting for a transplant on December 31, 2009, regardless of first listing date; active/inactive status is on this date, and multiple listings are not counted.

deceased donation

KI 2.1, PA 2.1, LI 2.1, IN 2.1, HR 2.1

Deceased donors whose organ(s) were recovered for transplant. Denominator: US population age 70 and younger (population data downloaded from <http://www.census.gov/popest/national/asrh/2009-nat-res.html>). Donors are limited to those age 70 and younger.

LU 2.1

Lungs recovered from deceased donors and transplanted in the given year. Donors who donate two lungs are counted twice. Denominator: US population age 12–70 (population data downloaded from <http://www.census.gov/popest/national/asrh/2009-nat-res.html>).

KI 2.2, PA 2.2, LI 2.2, HR 2.3, LU 2.3

Deceased donors residing in the 50 states whose organ(s) were recovered for transplant in the given year. Denominator: US population age 70 and younger (population data downloaded from http://www.cdc.gov/nchs/nvss/bridged_race.htm).

KI 2.3, PA 2.3, LI 2.3, IN 2.2, HR 2.2, LU 2.2

Denominator: all deceased donors with at least one organ recovered for transplant. Numerator for recovery rate: number of organs recovered for transplant in the given year; organs recovered for other purposes are not included. Numerator for transplant rate: all deceased donor organs transplanted in given year.

KI 2.4, PA 2.4, LI 2.4, IN 2.3, HR 2.4, LU 2.4

All patients receiving a deceased donor transplant. A transplant is considered multi-organ if any other organ is transplanted at the same time. Two of the same organ (kidney, lung) is not considered multi-organ. A multi-organ transplant may include more than two different organs in total.

KI 2.5, PA 2.5, LI 2.5, IN 2.4, HR 2.5, LU 2.5

Denominator: organs recovered for transplant. Numerator: organs recovered for transplant but not transplanted.

KI 2.6

Patients receiving a kidney-only, deceased-donor transplant.

PA 2.6, LI 2.6

Deceased donors whose relevant organ was recovered for transplant. DCD status is reported on the OPTN registration forms.

KI 2.7

Deceased kidney donors. DCD status and ECD are reported on the OPTN registration forms.

KI 2.8

Patients receiving a kidney-only, deceased-donor transplant, 2009.

LU 2.6

Smoking history is reported on the OPTN registration forms.

KI 8.12, LI 8.12

Patients receiving a deceased donor transplant.

live donation

KI 3.1–2, 8.11; LI 3.1–2, 8.11

Number of living donor donations; characteristics recorded on donor registration form.

KI 3.3, LI 3.3

Number of living donors whose relevant organ was recovered for transplant each year. Denominator: US population age 70 and younger (population data downloaded from <http://www.census.gov/popest/national/asrh/2009-nat-res.html>).

KI 3.4, LI 3.4

Number of living donors residing in the 50 states whose relevant organ was recovered for transplant in the given year. Denominator: US population age 70 and younger (population data downloaded from http://www.cdc.gov/nchs/nvss/bridged_race.htm).

KI 3.5

Counts include “domino” donation chains.

LI 3.5

Living donors by graft type for each year. Denominator: total number of living liver donors for each year.

KI 3.6, LI 3.6

eGFR estimated by CKD-EPI formula. (Levey AS et al., Chronic Kidney Disease Epidemiology Col-

laboration (CKD-EPI). A new equation to estimate glomerular filtration rate. *Ann Intern Med.*, 2009 May 5; 150(9):604–12).

KI 3.7

Data sparse prior to 2004.

KI 3.8, LI 3.15

Cumulative readmission to the hospital. “Unknown” means that patient has been lost to follow-up as of this follow-up visit. The six-week time point is recorded at the earliest of discharge or six weeks post-transplant.

KI 3.9

Complications defined as a readmission, a reoperation, a complication requiring intervention, or an “other” interventional procedure. The six-week time point is recorded at the earliest of discharge or six weeks post-transplant.

KI 3.10

Limited only to complications requiring reoperation. Donors could experience more than one complication.

LI 3.7–15

Living liver donors, excluding domino donors. For LI 3.13, the six-week time point is recorded at the earliest of discharge or six weeks post-transplant.

transplant

KI 4.1, 8.8

Patients receiving a kidney-alone or simultaneous kidney-pancreas transplant. Retransplants are counted.

KI 4.2, PA 3.1–2, 7.8; LI 4.1–2, 8.8;

IN 3.1–2; HR 3.1, 3.4, 7.8; LU 3.1–2, 7.8

Patients receiving a transplant. Retransplants are counted.

KI 4.3, 8.9; PA 3.3 (limited to deceased-donor transplants only), 7.9; LI 4.3, 8.9; IN 3.3; HR 3.2, 7.9; LU 3.3, 7.9

Patients waiting for a transplant; age as of January 1 of the given year. Yearly period-prevalent rates for all transplants/deceased-donor transplants are computed as the number of all transplants/deceased-donor transplants per 100 patient years of waiting time in the given year (for pancreas, within each list). All waiting time per patient per listing is counted, and all listings that end in a transplant for the patient are considered transplant events.

KI 4.4

Patients receiving their second, third, or fourth kidney-alone transplant in the given year.

LU 3.4

Living donor lung transplants.

KI 4.5, PA 3.4, LI 4.4, LU 3.5

Percent of deceased-donor transplants using a DCD donor.

KI 4.6, PA 3.5, LI 4.5, LU 3.6

Percent of deceased-donor transplants using a DCD donor, by DSA of the transplanting center, 2007–2009.

PA 3.6

Living donor transplants.

KI 4.7, PA 3.7, LI 4.6, HR 3.3, LU 3.7

Deceased-donor transplant rates by state of residence, limited to those on the waiting list in 2009. Maximum time per person on the list is one year. If no residents of a given state received a transplant of that type in 2009, the transplant rate is 0.

KI 4.8–9, 8.10, 8.13; PA 3.8–9, 7.10–11;

LI 4.7–8, 8.10, 8.13; IN 3.4–5;

HR 3.5–6, 7.10–11; LU 3.8–9, 7.10–11

Patients receiving a transplant. Retransplants are counted. For HR 3.5, ventricular assist device information comes from the TRR form at the time of listing, and includes LVAD, RVAD, TAH, and LVAD + RVAD.

LI 4.9

Deceased donor liver transplants; DSA of transplant center location. Patients with status 1A, 1B and inactive status excluded, and allocation MELD score used.

donor-recipient matching

KI 5.1, PA 4.1, LI 5.1, HR 4.1, LU 4.1

PRA is most recent value recorded at the time of transplant. If “most recent PRA” is not provided, peak PRA is used.

KI 5.2–5, PA 4.2–5, LI 5.2–5,

HR 4.2–5, LU 4.2–5

Donor antigens and recipient unacceptable antigens are reported on the OPTN Donor Histocompatibility form and the Recipient Histocompatibility form, respectively.

KI 5.6–11, 8.14; PA 4.6–11, LI 5.6–11, HR 4.6–11, LU 4.6–9

Patients transplanted 2005–2009. Donor serology is reported on the OPTN donor registration forms; recipient serology is reported on the OPTN recipient registration forms. Data are shown as the overall percentage in each donor/recipient group.

outcomes

KI 6.1, PA 5.1, LI 6.1, IN 4.1, HR 5.2, LU 5.2

Early graft failure identified from the Transplant Recipient Registration form (TRR) and defined as a transplant failure that occurred prior to or at discharge, a graft functional status of ‘N’ on the TRR, or, for kidney, within 90 days of transplant.

KI 6.2

Delayed graft function defined as receiving dialysis within a week post-transplant.

PA 5.2, 7.14

Cox proportional hazards models, adjusting for age, gender, and white/non-white race.

PA 5.3, LI 6.2–3, IN 4.2;

HR 5.1, 7.14; LU 5.1, 7.14

Cox proportional hazards models, adjusting for age, gender, and race.

KI 6.3–4, 8.17–18; PA 5.4; LI 8.16–17

Cox proportional hazard models, adjusting for age, gender, and race, and, for kidney, primary cause of disease. Death with function defined as no graft failure prior to death; return to dialysis defined as graft failure preceding death.

PA 5.5

PAK transplants, with pancreas transplant in 1991–2009. Cox proportional hazard models used, adjusting for age, gender, and race.

PA 5.6

PAK transplants, with pancreas transplant in 1991–2009; uses most recent kidney transplant prior to the pancreas transplant. Cox proportional hazards models used, adjusting for age, gender, and race. Follow-up begins at pancreas transplant; estimates conditional on surviving to pancreas transplant without recorded kidney graft failure or retransplant.

KI 6.5, 8.19; PA 5.7; LI 6.4, 8.18;

IN 4.3; HR 5.3, 7.15; LU 5.3, 7.15

Estimates of conditional half-lives are conditional on first-year graft survival, and estimated from

the cumulative hazard between years one and two. Conditional half-lives are interpreted as the estimated median survival of grafts which survive the first year. Cox proportional hazards models used, adjusting for age, gender, and race, and, for kidney, primary cause of disease.

KI 6.6, PA 5.8, LI 6.5, IN 4.4, HR 5.4, LU 5.4

Transplants before June 30 of the year that are still functioning and are actively being followed by their center after June 30 of that year. A recipient can experience a graft failure and drop from the cohort, then be retransplanted and re-enter the cohort.

KI 6.7, PA 5.9, LI 6.6, IN 4.5, HR 5.5, LU 5.5

Acute rejection defined as a record of acute or hyperacute rejection, or a record of an anti-rejection drug being administered on either the Transplant Recipient Registration form or the Transplant Recipient Follow-up Form. Only the first rejection event is counted, and patients are followed for acute rejection only until graft failure, death, or loss to follow-up. For simultaneous kidney-pancreas recipients, an acute rejection may be of the kidney or pancreas, and graft failure is the first of kidney or pancreas graft failure. Cumulative incidence estimated using Kaplan-Meier method.

KI 6.8, PA 5.10, LI 6.7, IN 4.6, HR 5.6, LU 5.6

Cumulative rate of hospitalization; hospitalization identified from follow-up form. Patients required to be alive with graft function at each time period, so denominators reduce over time.

KI 6.9, 8.15; PA 5.11, 7.12; LI 6.8, 8.14;

IN 4.7; HR 5.7, 7.12; LU 5.7, 7.12

Cumulative incidence of post-transplant lymphoproliferative disease (PTLD) after transplant. PTLD identified as either a reported complication or cause of death on the Transplant Recipient Follow-up forms. Only the first PTLD record is counted, and patients are followed for PTLD only until graft failure, death, or loss to follow-up. For simultaneous kidney-pancreas recipients, graft failure is defined as the first of kidney or pancreas graft failure. Cumulative incidence estimated using Kaplan-Meier method.

immunosuppression

KI 7.1, PA 6.1, LI 7.1, IN 5.1, HR 6.1, LU 6.1

Top three baseline immunosuppression regimens are given, plus the “all others” group. Regimens are defined by use of calcineurin inhibitors, anti-metabolites, and mTor inhibitors. Steroids are not

included in regimen definition, and are reported in the last figure of the section.

KI 7.2, PA 6.2, LI 7.2, IN 5.2, HR 6.2, LU 6.2

Patients transplanted in 2009.

KI 7.3, PA 6.3, LI 7.3, IN 5.3, HR 6.3, LU 6.3

Patients transplanted in 2008 and remaining alive with graft function one year post-transplant, as reported on the one-year follow-up form. Top three one-year immunosuppression regimens shown, plus the “all others” group. Regimens defined by use of calcineurin inhibitors, anti-metabolites, and mTor inhibitors. Steroids are not included in regimen definition, and are reported in the last figure of the section.

KI 7.4, 8.16; PA 6.4, 7.13; LI 7.4, 8.15;

IN 5.4; HR 6.4, 7.13; LU 6.4, 7.13

One-year post-transplant data for mTOR inhibitors and steroids limited to patients alive with graft function one year post-transplant. One-year post-transplant data are not reported for 1998 transplant recipients, as medication follow-up was very sparse that year. CsA is cyclosporine A, CsM is cyclosporine microemulsion.

center characteristics

KI 9.1, PA 8.1, LI 9.1, IN 6.1, HR 8.1, LU 8.1

Denominator is all active centers transplanting the specific organ, 2009. Centers are grouped by transplant volume in that year.

KI 9.2, LI 9.2, HR 8.2, LU 8.2

All active centers transplanting the specific organ, grouped by total number of transplants performed during 2005–2009. A center is defined as a multi-organ transplant center if it performed at least one multi-organ transplant during 2005–2009.

PA 8.2, IN 6.2

All active transplant centers within a given year.

KI 9.3, LI 8.3, LU 8.3

All active kidney transplant centers, grouped by total number of deceased donor transplants performed during 2005–2009. A center is defined as transplanting DCD or ECD organs if it used at least one DCD or ECD donor during 2005–2009.

glossary

Acute rejection The host recognizes the graft as foreign and mounts an immunological attack on the graft tissues. Most acute rejections occur in the first year.

Allocation The process of determining how organs are distributed. Allocation includes the system of policies and guidelines, which ensure that organs are distributed in an equitable, ethical and medically sound manner.

Allocation analysis Review of the allocation of an organ to determine whether the allocation policies were followed. The analysis is performed by the OPTN contractor through the peer review process of the OPTN Membership and Professional Standards Committee.

Allograft An organ or tissue that is transplanted from one person to another of the same species: i.e. human-to-human. Example: a transplanted kidney.

Anti-rejection drugs (immunosuppressive drugs) Drugs that are used to prevent and/or treat rejection of a transplanted organ.

Antibody A protein molecule produced by the immune system in response to a foreign body, such as virus or a transplanted organ. Since antibodies fight the transplanted organ and try to reject it, recipients are required to take anti-rejection (immunosuppressive) drugs.

Antigen An antigen is any substance that causes your immune system to produce antibodies against it. An antigen may be a foreign substance from the environment such as chemicals, bacteria, viruses, pollen, or foreign tissues. An antigen may also be formed within the body, as with bacterial toxins.

Biopsy A tissue sample from the body, removed and examined under a microscope to diagnose for disease, determine organ rejection, or assess donated organs or tissues.

Blood vessels The veins, arteries and capillaries through which blood flows in the body. Certain blood vessels can be donated and transplanted.

Brain death Irreversible cessation of cerebral and brain stem function; characterized by absence of electrical activity in the brain, blood flow to the brain, and brain function as determined by clinical assessment of responses. A brain dead person is dead, although his or her cardiopulmonary functioning may be artificially maintained for some time.

Candidate A person registered on the organ transplant waiting list. When an organ is offered on behalf of the candidate, he or she is then referred to as a Potential Transplant Recipient (PTR).

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

Cardiac death Death defined as the irreversible cessation of circulatory and respiratory functions. Death is declared in accordance with hospital policy and applicable state and local statutes or regulation.

Chronic Developing slowly and lasting for a long time, possibly the rest of a person's life. For example: chronic kidney failure.

Chronic Disease Research Group (CDRG) A division of Minnesota Medical Research Foundation (MMRF). MMRF is the non-profit research subsidiary of Hennepin Faculty Associates, the academic medical group that staffs Hennepin County Medical Center, a teaching hospital in Minneapolis, Minnesota. The CDRG conducts research primarily focused in the areas of chronic kidney disease and organ transplantation. The MMRF-CDRG is responsible for the administration of the Scientific Registry of Transplant Recipients (SRTR).

Chronic rejection Slow, continuous immunological attack of the host immune system on the transplanted organ usually resulting in progressive loss of organ function.

Cirrhosis A disease of the liver in which normal, healthy tissue is replaced with nonfunctioning fibrous scar tissue and healthy, functioning liver cells are lost; usually occurs when there is a lack of adequate nutrition, an infection or damage caused by alcohol abuse.

Committees The OPTN currently maintains approximately 20 standing committees, a fluctuating number of ad hoc committees (established by the President to address a specific issue as it arises), subcommittees and joint subcommittees (created and maintained by standing committees). Committees are comprised of professionals, at least one Patient/Public representative, Minority Affairs Committee Representative, Pediatric Committee Representative, and one or more SRTR representatives. Permanent Standing Committees also include representatives from each of the 11 Regions. HRSA's OPTN Project Officer and Director of DoT, or their designees, serve as ex-officio non-voting members of all committees. Each committee is provided administrative, policy, analytic, clinical and technical support by one or more committee liaisons from the UNOS staff.

Corticosteroid A synthetic hormone used to reduce the body's normal immune reaction to infection and foreign tissue, such as a transplanted organ. Prednisone is a corticosteroid.

Criteria (medical criteria) A set of clinical or biologic standards or conditions that must be met.

Cyclosporine A drug used to prevent rejection of the transplanted organ by suppressing the body's defense system. Considered an immunosuppressant.

Deceased donor An individual from whom at least one solid organ is recovered or the purpose of transplantation after suffering brain death or cardiac death.

Deceased donor transplant The transplant of an organ from a deceased donor.

Department of Health and Human Services (DHHS or HHS) The department of the federal government responsible for health-related programs and issues.

Dialysis A mechanical process designed to partially perform kidney functions, including correcting the balance of fluids and chemicals in the body and removing wastes. See Hemodialysis and Peritoneal Dialysis.

Diastolic blood pressure The bottom number in the blood pressure measurement (80 in a blood pressure of 120/80), indicating the pressure in the arteries when the heart is at rest.

Division of Transplantation (DoT) DoT is the office within HHS/HRSA whose principal responsibilities include the oversight of management of the Organ Procurement and Transplantation Network (OPTN), the Scientific Registry of Transplant Recipients (SRTI) and the National Marrow Donor Program (NMDP) contracts; public education to increase organ and tissue donation; and technical assistance to organ procurement organizations (OPOs).

Domino transplant A procedure in which an organ is removed from one transplant candidate and immediately transplanted into a second patient, with the first patient receiving a new organ from a deceased donor.

Donate Life America Formerly the Coalition on Donation, Donate Life America is a national not-for-profit alliance of local affiliates and corporate partners that have joined forces to inspire all people to Donate Life through organ, eye and tissue donation. At the core of the organization's education efforts are the ongoing qualitative and quantitative research of public attitudes about organ and tissue donation and the development and dissemination of effective, motivating public service campaigns. Distributed at the national and community level, these multi-media campaigns effectively communicate two core messages: Transplants give people their life back, and here is how you can help. Founded by the transplant community in 1992, the Coalition publishes brochures, program kits and other materials; provides technical assistance, training, information and referral services; and coordinates the National Campaign for Organ and Tissue Donation. It is comprised of national organizational members and local coalitions across the U.S. that coordinate donation related activities at the local level. Volunteer advertising agencies work with the Coalition and its committees to develop targeted mass media campaigns.

Donation Service Area (DSA) The geographic area designated by CMS that is served by one organ procurement organization (OPO), one or more transplant centers, and one or more donor hospitals. Formerly referred to as Local Service Area or OPO Service Area.

Donor Someone from whom at least one organ or tissue is recovered for the purpose of transplantation. A deceased donor is a patient who has been declared dead using either brain death or cardiac death criteria, from whom at least one vascularized solid organ is recovered for the purpose of organ transplantation. A living donor is one who donates an organ or segment of an organ for the intent of transplantation.

Donor registries Available 24 hours a day, seven days a week, online registries provide authorized professionals access to a confidential database of registered organ donors, allowing easy and quick confirmation of an individual's consent to organ donation. All registries are voluntary and some are affiliated with the local motor vehicle bureau, while others are independently operated or OPO-based.

End-stage organ disease A disease that leads to the permanent failure of an organ.

Ethnicity For OPTN data purposes, the use of categories such as white, black or African-American, Hispanic, Asian, American Indian/Alaskan Native, Pacific Islander, multiracial.

Expanded criteria donor (ECD) kidney A kidney donated for transplantation from any brain dead donor over the age of 60 years; or from a donor over the age of 50 years with two of the following: a history of hypertension, the most recent serum creatinine greater than or equal to 1.5 mg/dl, or death resulting from a cerebral vascular accident (stroke). This definition applies to the allocation of deceased donor kidneys.

Functional status A way to measure the effects that lung disease may have on a person's ability to perform routine daily tasks. Functional status is used in the Lung Allocation Score.

Glomerular filtration rate (GFR) A measure used to determine kidney function, the GFR indicates the kidney's ability to filter and remove waste products.

Graft A transplanted organ or tissue.

Graft survival The length of time an organ functions successfully after being transplanted.

Hemodialysis A treatment for kidney failure where the patient's blood is passed through a filtering membrane to remove excess fluid and wastes.

Hepatic Having to do with, or referring to, the liver.

Hepatitis A viral infection or non-specific inflammation of the liver that can lead to liver failure. Hepatitis C is the leading cause of liver failure that leads to transplantation.

High blood pressure See hypertension.

Histocompatibility The examination of human leukocyte antigens (HLA) in a patient, often referred to as "tissue typing" or "genetic matching." Tissue typing is routinely performed for all donors and recipients in kidney and pancreas transplantation to help match the donor with the most suitable recipients to help decrease the likelihood of rejecting the transplanted organ. See Human Leukocyte Antigen System (HLA System).

Human immunodeficiency virus (HIV) A virus which destroys cells in the immune system, which makes it difficult for the body to fight off infections; toxins, or poisons; and diseases. HIV causes AIDS, a late stage of the virus characterized by serious infections, malignancies, and neurologic dysfunctions.

Hypertension High blood pressure. Occurs when the force of the blood pushing against the walls of the blood vessels is higher than normal because the blood vessels have either become less elastic or have gotten smaller. Hypertension causes the heart to pump harder to move blood through the body. It can cause kidney failure and heart disease if not treated.

Immune response The body's natural defense against foreign objects or organisms, such as bacteria, viruses or transplanted organs or tissue.

Immune system The organs, tissues, cells and cell products in your body that work to find and neutralize foreign substances including bacteria, viruses and transplanted organs.

Immunosuppression Prevention or inhibition of the immune system to respond to foreign substances in the body. Medications often used to prevent a recipient's immune system from rejecting a transplanted organ or tissue include prednisone, methylprednisolone, azathioprine, mycophenolate mofetil, cyclosporine, tacrolimus, and sirolimus, among others.

Immunosuppressive Relating to the weakening or reducing of your immune system's responses to foreign material; immunosuppressive drugs reduce your immune system's ability to reject a transplanted organ.

Induction therapy Medications given for a short finite period in the perioperative period for the purpose of preventing acute rejection. Though the drugs may be continued after discharge for the first 30 days after transplant, it will not be used long-term for immunosuppressive maintenance.

Infection A condition that occurs when a foreign substance, such as bacteria, enters your body, causing your immune system to fight the intruder. All transplant recipients can get infections more easily because their immune systems are suppressed. It is more difficult for them to recover from infection (such as urinary tract infections, colds and the flu).

Inflammation The swelling, heat and redness produced when the body is injured or infected.

International normalized ratio (INR) A measure of a patient's coagulation (clotting) system. INR is used in the MELD and PELD calculations.

Kidneys A pair of organs that remove wastes from the body through the production of urine. All of the blood in the body passes through the kidneys about 20 times every hour. Kidneys can be donated from living and deceased donors and transplanted into patients with kidney failure.

Leukocyte A white blood cell.

Liver The largest organ in the body, made up of a spongy mass of wedge-shaped lobes. The liver secretes bile, which aids in digestion, helps process proteins, carbohydrates, and fats, and stores substances like vitamins. It also removes wastes from the blood. A living donor can give part of their liver, after which the liver will regenerate itself in both the donor and recipient.

Match The compatibility between the donor and the recipient. The more appropriate the match, the greater the chance of a successful transplant.

Medicaid A partnership between the Federal government and the individual states to share the cost of providing medical coverage for recipients of welfare programs and allowing states to provide the same coverage to low-income workers not eligible for welfare. Programs vary greatly from state to state.

Medicare The program of the Federal government that provides hospital and medical insurance, through social security taxes, to people age 65 and over, those who have permanent kidney failure and certain people with disabilities.

Multiple listing Being on the waiting list for the same organ 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, outlawed the sale of human organs and provided for the establishment of the Task Force on Organ Transplantation; authorized the Secretary of HHS to make grants for the planning, establishment, and initial operation of qualified OPOS; and established the formation of the Organ Procurement and Transplantation Network (OPTN) and Scientific Registry of Transplant Recipients (SRTR).

New York Heart Association Functional Classification (NYHA) An assessment of a patient's heart failure based on the severity of symptoms. Range is Class I-IV.

Noncompliance 1) Failure of patients to follow the instructions of the medical team, 2) Failure of OPTN members to adhere to the policies and bylaws of the OPTN.

Organ A part of the body made up of tissues and cells that enable it to perform a particular function. Transplantable organs are the heart, liver, lungs, kidneys, pancreas and intestines.

Organ donation To give 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, intestinal organs, and with a live donor, who can give a kidney, or a portion of the liver, lung, or intestine.

Organ preservation Methods used to preserve organs while they are out of the body, between procurement from a donor and transplantation into a recipient.

Organ procurement The removal or retrieval of organs from a donor for transplantation.

Organ Procurement and Transplantation Network (OPTN) In 1987, Congress passed the National Organ Transplant Act that mandated the establishment of the OPTN and Scientific Registry of Transplant Recipients. The purpose of the OPTN is to improve the effectiveness of the nation's organ procurement, donation and transplantation system by increasing the availability of and access to donor organs for patients with end-stage organ failure. The Act stipulated that the Network be a non-profit, private sector entity comprised of all U.S. transplant centers, organ procurement organizations and histocompatibility laboratories. These members along with professional and voluntary healthcare organizations and the representatives of the general public are governed by a Board of Directors which reports to the Division of Transplantation, HRSA and ultimately HHS. UNOS holds the OPTN contract.

Organ Procurement Organization (OPO) An organization designated by the Centers for Medicare and Medicaid Services (CMS) and responsible for the procurement of organs for transplantation and the promotion of organ donation. OPOS serve as the vital link between the donor and recipient and are responsible for the identification of donors, and the retrieval, preservation and transportation of organs for transplantation. They are also involved in data follow-up regarding deceased organ donors. As a resource to the community OPOS engage in public education on the critical need for organ donation. See also Donation Service Area (DSA).

Pancreas Irregularly shaped gland that lies behind the stomach and secretes pancreatic enzymes into the small intestines to aid in

the digestion of proteins, carbohydrates and fats. Islet cells within the pancreas secrete glucagon, which regulates blood sugar levels and insulin, which lowers blood sugar levels. If the pancreas fails, the individual becomes diabetic, and may need to take insulin. The pancreas can be donated and transplanted.

Panel reactive antibody (PRA) The percent PRA value is a measure of a patient's level of sensitization to HLA antigens. 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. For example, a patient with a PRA of 80 percent will be incompatible with 80 percent of potential donors. Kidney patients with a high PRA are given priority on the waiting list. 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.

PCO₂ A blood gas test is performed to measure the amount of CO₂ in the blood. When the lung's ability to exchange oxygen and CO₂ becomes impaired, the PCO₂ level may become increased. The candidate's current PCO₂ and change in PCO₂ are both considered in the lung allocation score calculation to reflect worsening PCO₂ values. PCO₂ is used in the Lung Allocation Score.

Peritoneal dialysis A treatment technique for kidney failure that uses the patient's own body tissues inside of the (abdominal cavity) to act as a filter. The intestines lie in the abdominal cavity, the space between the abdominal wall and the spine. A plastic tube called a "dialysis catheter" is placed through the abdominal wall into the abdominal cavity. A special fluid is then flushed into the abdominal cavity and washes around the intestines. The lining (peritoneum) of the abdominal cavity and of intra-abdominal organs act as a filter between this fluid and the blood stream. By using different types of solutions, waste products and excess water can be removed from the body through this process.

Plasmapheresis A process in which plasma is removed from blood and the remaining components, mostly red blood cells, are returned to the donor. The process may be used in transplantation to remove pre-formed antibodies.

Procurement The surgical procedure of removing an organ from a donor. Also referred to as recovery.

Pulmonary Having to do with, or referring to, the lungs.

Race See ethnicity.

Recipient A person who receives a transplant.

Recovery (organ) The surgical procedure of removing an organ from a donor.

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

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

Required request Hospitals must tell the families of suitable donors that their loved one's organs and tissues can be used for transplant. This law is expected to increase the number of donated organs and tissues for transplantation by giving more people the opportunity to donate.

Retransplantation Due to rejection or failure of a transplanted organ, some patients receive another transplant.

Retrieval The surgical procedure of organ recovery. Also referred to as procurement.

Risk pools State-created, nonprofit associations that do not require tax dollars for operational purposes. The risk pools are a temporary stopping place for individuals who are denied health insurance for medical reasons. Risk pools often help individuals who, because of their physical condition, are unable to purchase health insurance at any price.

Scientific Registry of Transplant Recipients (SRTR) As called for by the National Organ Transplant Act (NOTA), the purpose of the SRTR is to provide ongoing evaluation of clinical data about donors, transplant candidates, and recipients, as well as patient and graft survival rates. With oversight and funding from the DoT, the SRTR is currently administered by the Chronic Disease Research Group (CDRG) of the Minneapolis Medical Research Foundation (MMRF).

Sensitization Transplant candidates are "sensitized" if their immune system makes antibodies against a general donor pool. 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 less likely to match with available donors and more likely to reject an organ than unsensitized patients.

Status An indication of the degree of medical urgency for patients awaiting heart or liver transplants. Examples: status 1A, status 1B, or status 2.

Steroids Naturally occurring hormones in the body that help control important body functions. Synthetic or man-made steroids can be used to suppress the immune system.

Survival rates Survival rates indicate the percentage of patients that are alive and the grafts (organs) that are still functioning after a certain amount of time. Survival rates are used in developing OPTN policy.

Systolic blood pressure The top number in the blood pressure (the 120 in a blood pressure of 120/80) measures the maximum pressure exerted on the vessel wall when the heart contracts.

Tissue An organization of a great many similar cells that perform a special function. Examples of tissues that can be transplanted are blood, bones, bone marrow, corneas, heart valves, ligaments, saphenous veins, and tendons.

Tissue typing A blood test that helps evaluate how closely the tissues of the donor match those of the recipient.

Uniform Determination of Death Act (UDDA) The 1981 Uniform Determination of Death Act is a model statute defining "brain death." Versions of this Act have been adopted in 39 states and the District of Columbia. The act states that an individual who has sustained either (a) irreversible cessation of circulatory or respiratory functions or (b) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards.

United Network for Organ Sharing (UNOS) The private, nonprofit membership organization that coordinates the nation's transplant system through HRSA's OPTN contract. As OPTN contractor, UNOS is responsible for meeting all contract requirements. As contractor since the first OPTN contract award in 1986, UNOS has established and continually strives to improve tools, systems and quality processes that support OPTN contract objectives and requirements. These include:

- Managing the national organ transplant waiting list

- Collecting, managing and reporting of sensitive clinical data in a secure, fail-safe environment
- Facilitating an open, inclusive forum for development and continuous refinement of evidence-based policies and standards
- Member and policy performance assessment to ensure equitable, safe treatment of candidates and recipients
- Increasing donation and making the most of every organ that is donated through professional education, outcomes research, patient services and resources and public and professional education
- Continuously improving the care, quality of life and outcomes of organ transplant candidates and recipients

Varices (esophageal) Enlarged and swollen veins at the bottom of the esophagus, near the stomach. A common condition caused by increased venous pressure in the liver. These veins can ulcerate and bleed.

Vascular Referring to blood vessels and circulation.

Ventilator A machine that “breathes” for a patient when the patient is not able to breathe properly.

Virus A group of tiny organisms capable of growing and copying themselves while living within cells of the body.

Warm ischemic time (witr) If the donor is a DCD donor, the warm ischemic time is the time from:

1. the time of Agonal Phase onset (from the time of cardiac arrest when the systolic pressure meets the following conditions for greater than five (5) minutes) to the time when core cooling is initiated. Agonal Phase onset:
 - a. Newborn up to 28 days, with a systolic blood pressure less than 60 mmHg, OR
 - b. 29 days up to 12 months, with a systolic blood pressure less than 70 mmHg, OR
 - c. 1 year up to 10 years, with a systolic blood pressure less than 70 mmHg, plus 2 times the age of the patient in years, not to exceed 79 mmHg, OR
 - d. 11 years or older, with a systolic blood pressure less than 80 mmHg, OR when the oxygen saturation is less than 80% at any age,
- The calculated time using the serial data to be collected beginning with the agonal phase and ending with the initiation of core cooling.

Xenograft An organ or tissue procured from a different species for transplantation into a human.

Glossary adapted from transplantliving.org, a UNOS website.

abbreviations

BMI	body mass index	LAS	lung allocation score
BRFSS	Behavioral Risk Factor Surveillance System	LD	living donor
CDC	Centers for Disease Control and Prevention	LVAD	left ventricular assist device
CDRG	Chronic Disease Research Group	MOTOR	mammalian target of rapamycin
CMV	cytomegalovirus	NOTA	National Organ Transplant Act
COPD	chronic obstructive pulmonary disease	NYHA	New York Heart Association Functional Classification
CPRA	calculated panel reactive antibody	OPO	Organ Procurement Organization
CSA	cyclosporine A	OPTN	Organ Procurement and Transplantation Network
CSM	cyclosporine microemulsion	PAK	pancreas after kidney transplant
DCD	donation after cardiac death/donation after circulatory death	PPO	preferred provider organization
DD	deceased donor	PRA	panel reactive antibody
DHHS	Department of Health and Human Services	PTA	pancreas transplant alone
DM	diabetes	PTLD	post-transplant lymphoproliferative disorder
DOT	Division of Transplantation	RRT	renal replacement therapy
DSA	Donation Service Area	RVAD	right ventricular assist device
EBV	Epstein-Barr virus	SCD	standard criteria donor
ECD	expanded criteria donor kidney	SPK	simultaneous pancreas-kidney transplant
ESRD	end-stage renal disease	SRTR	Scientific Registry of Transplant Recipients
eGFR	estimated glomerular filtration rate	STAC	SRTR Scientific and Technical Advisory Committee
GN	glomerulonephritis	TAH	total artificial heart
HIV	human immunodeficiency virus	TCR	transplant candidate registration
HLA	human leukocyte antigen	TRR	transplant recipient registration
HMO	health maintenance organization	UDDA	Uniform Determination of Death Act
HTN	hypertension	UNOS	United Network for Organ Sharing
INR	international normalized ratio	USRDS	United States Renal Data System
KDRI	kidney donor risk index	VAD	ventricular assist device
		WIT	warm ischemia time