

Attachment B

Exhibits for the Rate of Hospital Referrals of Potential Organ Donors Made to the Organ Procurement Organization (OPO) From Within the OPO's Donation Service Area (DSA) in a Calendar Year

CBE ID #5601, Full Measure Submission, Spring 2026

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Measure Definitions

To facilitate uniformity and standardization in the proposed measures, the following list of definitions were developed in cooperation with Organ Procurement Organization (OPO) subject matter experts.

Exhibit 1: Measure Definitions

Term	Definition
Approach	Any type of conversation in person, over the telephone, or via telehealth with the intent to make donation a possibility after preliminary suitability has been determined by the OPO staff. This includes situations where the: • Patient appears to meet DBD criteria but is not formally declared; • Patient is declared to be brain dead and appears to be a suitable donor (at least one organ); or • OPO has determined patient is a suitable DCD candidate and has talked to family about organ donation. This definition does not change regardless of outcome or rule out circumstances (e.g., family declines, patient expiration, medical examiner denial, or other rule-out status). This does not include courtesy calls where a family has requested information about donation, but the OPO has already chosen not to investigate further or pursue donation.
Adverse Event	Adverse events include but are not limited to transmission of disease from a donor to a recipient, avoidable loss of a medically suitable donor for whom authorized donation has been obtained, or delivery to a transplant center of the wrong organ or an organ whose blood type does not match the blood type of the intended beneficiary, or an organ infected with a transmissible disease that should have been identified by the OPO prior to transplant.
Authorization	Written first-person authorization (donor designation) or agreement by the next of kin or by Uniform Anatomical Gift Act hierarchy of a donor to continue with first-person authorization for organ donation, or agreement by the next of kin on behalf of a donor to donate organs.
Calendar Year	Time between 12:00 a.m. on January 1 of a calendar year and 11:59 p.m. on December 31 of that same year. For Multiple Cause of Death (MCOB) and Scientific Registry of Transplant Recipients (SRTR) data, a death is attributed to the calendar year based on the time of death as recorded on the death certificate.
Contraindications to Donation	See Potential Donor Population.
Donation Service Area (DSA)	A CMS designated geographical region where the OPO is responsible for coordinating organ donation. Hospitals may request a CMS waiver to participate in a DSA other than the one where they are geographically located.

Term	Definition
Donor	A deceased individual from whom at least one organ was recovered for transplant, regardless of whether the organ was transplanted. An individual would also be considered a donor if only the pancreas is procured and is used for islet cell research or transplantation.
Donor Hospital	A hospital that has a signed agreement with an OPO to participate in referrals of organ donors .
Donor With Transplanted Organs	A deceased individual from whom at least one organ was recovered for transplant and transplanted into a recipient.
Eligible Death	See Potential Donor Population .
Hospital Waivers From Donation Service Area	Hospitals with a written waiver from CMS to work with an OPO other than the OPO in their geographic DSA .
Multiple Cause of Death File	Mortality data from the National Center for Health Statistics (NCHS) based on death certificate data for all deaths occurring in the United States. The provisional and final versions of this data are available at https://wonder.cdc.gov/mcd.html .
Organ	Human kidney, heart, lung, liver, pancreas, intestine, or a vascularized composite allograft .
Organs Available for Transplant	See Recovered Organs .
Organs Recovered for Research	The number of organs recovered and placed for research at an institution or organization that has an ongoing program of research to improve transplantation or support the discovery of cures for organ-related conditions, such as diabetes.
Potential Donor	A hospitalized patient that meets the following clinical criteria for donation: • Brain death or imminent death from severe brain injury or trauma, cerebrovascular insult, anoxic injury, amyotrophic lateral sclerosis, or • Assist device dependent (e.g., extracorporeal membrane oxygenation (ECMO)), or • Referred as outlined in each OPO to Hospital Memorandum of Understanding (MOU).¹

¹ OPOs maintain MOUs with donor hospitals regarding hospital notification of imminent deaths. These MOUs are specific to each hospital and generally require hospitals to make referrals within 1 to 3 hours of a ventilated patient meeting any of the following established clinical triggers and prior to the withdrawal of mechanical and/or pharmacological support: (a) patient with a neurological and/or life-threatening injury, (b) loss of neurological function without sedation, (c) patient meeting a Glasgow Coma Scale (GCS) of 5 or less, (d) anticipated family meeting to discuss end-of-life care, or (e) prior to the discontinuation of ventilator support, the family asks to discuss donation options.

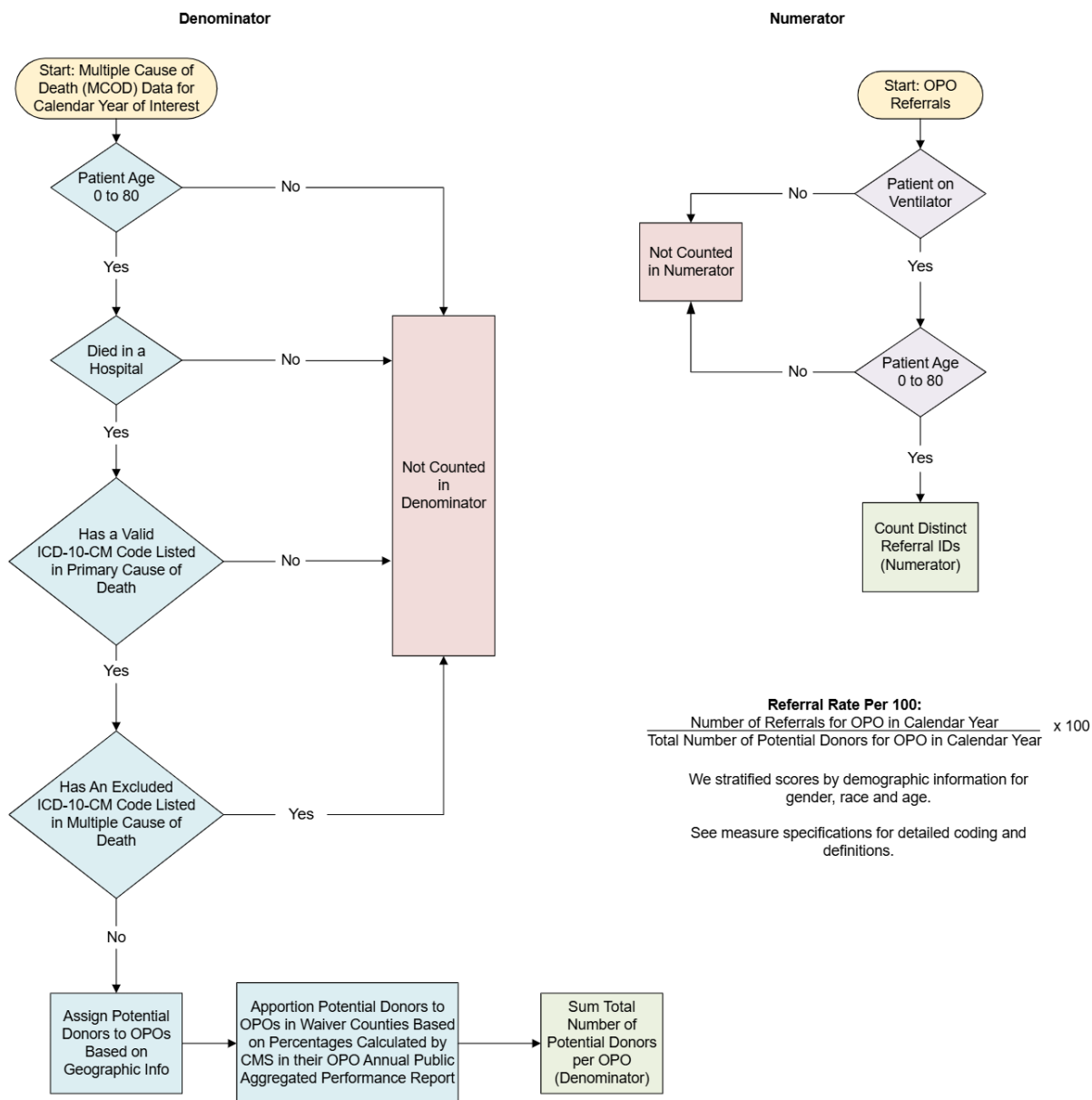
Potential Donor Population	The potential donor population is calculated by using the NCHS Provisional National Vital Statistics System (NVSS) Multiple Cause of Death (MCOD) file and following these steps: • Determine which deaths are within a DSA. • Exclude deaths of anyone: ◦ Over the age of 80; or ◦ With no discernible cause of death; or ◦ Who died outside a hospital. • Identify deaths with one of the following ICD–10–CM codes listed as the primary cause of death: ◦ I20–I25 (ischemic heart disease); or ◦ I60–I69 (cerebrovascular disease); or ◦ V01–Y89 (external causes of death): blunt trauma, gunshot wounds, drug overdose, suicide, drowning, and asphyxiation. • From that pool of deaths, remove any deaths with any of the following ICD-10-CM codes listed among any of the multiple causes of death: ◦ Bacterial: ▪ A15–A19, B90 (tuberculosis) ▪ K46.1, K45.1 (gangrenous bowel) ▪ K63.1 (perforated bowel) ▪ A40-A41 (intra-abdominal sepsis) ◦ Viral: ▪ B20 (HIV infection by serologic or molecular detection)² ▪ A82 (rabies) ▪ A83-86, B33.3, B97.3 (retroviral infections including viral encephalitis) ▪ B27 (acute Epstein-Barr virus (mononucleosis)) ▪ A92.3 (West Nile virus infection) ▪ A98.4 (Ebola virus) ◦ Fungal: ▪ B45 (active infection with cryptococcus) ◦ Parasites: ▪ B55 (leishmania) ▪ B78.7 or B78.9 (strongyloides – widespread infection) ▪ B50-B54 (malaria (plasmodium sp.)) ◦ Prion: ▪ A81.0 (Creutzfeldt-Jakob disease) ◦ D60-D61 (aplastic anemia) ◦ D70 (agranulocytosis) ◦ C00-C97 (current malignant neoplasms, except non-melanoma skin cancers, such as basal cell and squamous cell cancer, and primary CNS tumors without evident metastatic disease) ◦ Z85.820 (history of melanoma) ◦ Hematologic malignancies:
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Term	Definition
	▪ C90.1, C91-C95 (leukemia) ▪ C81 (Hodgkin's disease) ▪ C82-C88 (lymphoma) ▪ C90.0 (multiple myeloma)
Recovered Organs	Organs recovered for the purpose of transplant, regardless of whether transplanted or used successfully.
Referral	The telephonic or electronic notification by a donor hospital of a potential donor based on clinical criteria. A referral is attributed to a calendar year based on the date of the referral, not the date of death. Referred potential donors are counted as referrals regardless of whether the referral was made using accurate clinical criteria for donation (donor referral triggers).
Registration	The written provision of first-person authorization to a state, other legally recognized registry, physician, or hospital of the person's intent or wish to become an organ donor .
Terminal Conversation	See Approach .
Transplant	Organ transplants include solid organ transplants and islet infusions. An organ transplant begins at the start of organ anastomosis or the start of an islet infusion. An organ transplant procedure is complete when any of the following occurs: • The chest or abdominal cavity is closed and the final skin stitch or staple is applied. • The transplant recipient leaves the operating room, even if the chest or abdominal cavity cannot be closed. • The islet infusion is complete.
Vascularized Composite Allograft	A body part that includes multiple types of tissue, such as skin, bone, muscle, nerves, and blood vessels (see organ).

² HIV is not a contraindication to donation, where HIV-positive donors and donor organs are able to be matched with an HIV-positive recipient. Therefore, we propose excluding HIV-positive donors from the potential donor population count for the purposes of calculation, because this would have a neutral impact on the calculations of the measure that utilizes this definition.

1.18a Measure Score Calculation Diagram

Exhibit 2: Measure Score Calculation Diagram



2.4 Performance Gap

Exhibit 3: Referral Rates by OPO

	OPO 1	OPO 2	OPO 3	OPO 4	OPO 5	OPO 6
Measure Rate per 100	161	122	215	138	213	180
N of Entities	1	1	1	1	1	1

	OPO 1	OPO 2	OPO 3	OPO 4	OPO 5	OPO 6
N of Persons Numerator*	18,734	19,199	7,131	12,887	13,511	8,634
N of Persons Denominator**	11,604	15,800	3,314	9,329	6,341	4,794

* The numerator includes counts of ventilated referrals where the value for age is not missing and in the range of 0 to 80 years old.

** The denominator includes potential donors where the value for age is not missing and in the range of 0 to 80 years old.

5.1.3 Characteristics of Measured Entities

Exhibit 4: OPO Characteristics

OPO Performance Tiers	Testing OPOs	All OPOs
1 – Passing	3	30
2 – Underperforming	3	16
3 – Failing	0	10
OPO Population Sizes		
Less than 2.9 million	1	13
2.9 to 5 million	1	13
5 to 7.2 million	1	13
Greater than 7.2 million	3	17
OPO Locations		
States and territories*	6	56

* OPOs provide donation services across all 50 states, plus the District of Columbia, the U.S. Virgin Islands, and Puerto Rico.

5.1.4 Characteristics of Units of the Eligible Population

Exhibit 5: OPO Data Demographic Table (2021–2024,* Ages <= 80)

Age	OPOs Vented Referrals Only*		MCOD Potential Donors (Referral Rate)	
	Count	%	Count	%
0 to less than 1	1,216	1.52	198	0.39
1 to 17	1,891	2.36	879	1.72
18 to 24	2,435	3.04	1,216	2.38
25 to 69	54,212	67.68	27,658	54.04
70 to 75	12,128	15.14	10,869	21.24
76 to 80	8,214	10.26	10,361	20.24
Total	80,096	100	51,182	100

	OPOs Vented Referrals Only*		MCOD Potential Donors (Referral Rate)	
Race	Count	%	Count	%
Non-Hispanic White	53,171	66.38	36,522	71.36
Non-White**	24,845	31.02	14,659	28.64
Unknown	2,080	2.60	N/A	N/A
Total	80,096	100	51,182	100
Gender	Count	%	Count	%
Female	32,381	40.43	18,652	36.44
Male	47,673	59.52	32,530	63.56
Unknown	42	0.05	N/A	N/A
Total	80,096	100	51,182	100

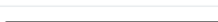
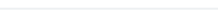
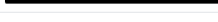
* One OPO provided less than 4 full years of data (2021–2024).

** Due to variation in coding for race across OPOs, “Hispanic” was coded as a mutually exclusive race and included in the “Non-White” counts.

5.2.2 Methods of Reliability Testing

Exhibit 6: Example of Medical Record Mortality Review

Medical Records Review

Period 				
Hospital	Matched	Unmatched	Date Processed	Disposition
Period: 2026-02 - 12 items				
 4	4	0	3/24/2026 1:13:37 PM	Completed
 8	8	0	3/24/2026 1:29:40 PM	Completed
 43	43	0	3/25/2026 11:48:15 AM	Completed
 53	53	0	3/25/2026 10:43:12 AM	Completed
 32	32	0	3/25/2026 10:48:38 AM	Completed
 8	8	0	3/25/2026 11:48:43 AM	Completed
 5	5	0	3/25/2026 11:49:20 AM	Completed
 71	71	0	3/25/2026 11:24:22 AM	Completed
 21	21	0	3/24/2026 10:26:19 AM	Completed
 0	0	0	3/17/2026 1:51:34 PM	Completed
 29	29	0	3/25/2026 11:49:44 AM	Completed
 16	16	0	3/24/2026 1:00:55 PM	Completed

« < 1 2 3 4 5 6 7 8 ... > »

2 of 20 pages (236 items)

Exhibit 7: Example of Data Validation of Medical Record Mortality Review

Validation of our Data

Based on our hospital partners reconciliation of referral data against hospital death data, we observe a **very high level of agreement**, with greater than **99% alignment** between our referral records and hospital-reported deaths.

The **non-agreement rate is less than 1%** annually and is primarily attributable to:
Occasional **data entry discrepancies** (e.g., incorrect hospital code), which are identified and corrected during our reconciliation process

Rare instances where hospitals indicate that a **referral may not have been made**

In addition, when evaluating **missed organ referrals specifically**, we identified approximately **1% of potential organ donors** who were not referred for organ donor evaluation in 2025 (14 of the approximately 1300 potential organ donors referred). These cases were identified retrospectively on death record review and typically involved patients referred after cardiac death.

Overall, discrepancies are infrequent, systematically reviewed, and corrected as part of our standard quality assurance process.

5.3.3 Method(s) of Validity Testing

Exhibit 8: Example of Review of Non-Referred Deaths

Validation of our Data

Based on our hospital partners reconciliation of referral data against hospital death data, we observe a **very high level of agreement**, with greater than **99% alignment** between our referral records and hospital-reported deaths.

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5.4.3 Variable Distribution Across Measured Entities

Exhibit 9: Demographic Tables (2021–2024,* Vented Only, Ages <=80)

	OPOs Vented Referrals Only*		MCOD Potential Donors (Referral Rate)	
Age	Count	%	Count	%
0 to less than 1	1,216	1.52	198	0.39
1 to 17	1,891	2.36	879	1.72
18 to 24	2,435	3.04	1,216	2.38
25 to 69	54,212	67.68	27,658	54.04
70 to 75	12,128	15.14	10,869	21.24
76 to 80	8,214	10.26	10,361	20.24
Total	80,096	100	51,182	100
Race	Count	%	Count	%
Non-Hispanic White	53,171	66.38	36,522	71.36
Non-White**	24,845	31.02	14,659	28.64
Unknown	2,080	2.60	N/A	N/A
Total	80,096	100	51,182	100
Gender	Count	%	Count	%
Female	32,381	40.43	18,652	36.44
Male	47,673	59.52	32,530	63.56
Unknown	42	0.05	N/A	N/A
Total	80,096	100	51,182	100

* One OPO provided less than 4 full years of data (2021–2024).

** Due to variation in coding for race across OPOs, “Hispanic” was coded as a mutually exclusive race and included in the “Non-White” counts.

5.4.6 Interpretation of Risk/Case-Mix Factor Findings (Exhibits 10–15)

In this section, we present Referral Rates stratified by age, race, and gender. The rate is created by dividing the total number referrals for the relevant category by the MCODE data for that category. The rate can be interpreted as the number of referrals per 100 potential donors in the MCODE file.

The team used a stratification approach to better understand the risks for different demographic groups and how the Referral Rate varied based on different patient characteristics. Our work was guided by previous research and approaches to risk adjustment and stratification (ASPE, 2020; CMS, 2023; CMS, 2025; NQF, 2014; Vogel & Chen, 2018).

First, we present the referral counts for the age categories overall and for each OPO. These are the number of total referrals for each age group. The distribution of ages is similar across all OPOs, as displayed in Exhibit 10.

Exhibit 10: Referral Counts by Age

Age Groups	0	1–17	18–24	25–69	70–75	76–80	Total
OPO 1	226	377	519	12,713	2,885	2,014	18,734
OPO 2	322	609	578	12,992	2,760	1,938	19,199
OPO 3	54	100	184	4,752	1,190	851	7,131
OPO 4	281	369	442	8,751	1,874	1,170	12,887
OPO 5	212	293	475	9,385	1,864	1,282	13,511
OPO 6	121	143	237	5,619	1,555	959	8,634
Total	1,216	1,891	2,435	54,212	12,128	8,214	80,096
Average	203	315	406	9,035	2,021	1,369	13,349
Median	219	331	459	9,068	1,869	1,226	13,199

The Referral Rates per 100 potential donors by age are the largest for age 0 for every OPO and smallest for the oldest group. These observations confirm some assumptions but also show that referrals are fairly evenly spread across all age groups at all the participating OPOs. The only unexpected finding is the much larger rate for the age 0 group, which far outstrips the potential donor denominator. This is due to the very small number of potential donors in the age 0 category. While these results illustrate the patterns for referrals by age, they do not reflect any unexpected patterns. Please refer to Exhibit 11.

Exhibit 11: Referral Rates per 100 by Age

Age Groups	0	1–17	18–24	25–69	70–75	76–80	Non-Stratified Rate
OPO 1	551	198	182	199	119	89	161
OPO 2	670	249	180	151	82	60	122
OPO 3	450	204	259	258	169	134	215
OPO 4	493	202	197	182	93	58	138
OPO 5	785	189	207	258	154	119	213
OPO 6	931	248	277	238	134	86	180
Overall Rate	614	215	200	196	112	79	156

Overall, there are more people in the Non-Hispanic White category in the raw referral counts (Exhibit 12).

Exhibit 12: Referral Counts by Race

Race Groups	Non-Hispanic White	Non-White	Unknown	Total
OPO 1	10,994	7,021	719	18,734
OPO 2	11,957	7,020	222	19,199
OPO 3	3,853	3,267	11	7,131
OPO 4	9,611	3,163	113	12,887

Race Groups	Non-Hispanic White	Non-White	Unknown	Total
OPO 5	9,257	3,320	934	13,511
OPO 6	7,499	1,054	81	8,634
Total	53,171	24,845	2,080	80,096

Referral Rates by race are somewhat higher in the Non-White group, with one exception. This reflects fewer people in the Non-White category in the denominator. This is informative of how referrals are managed by OPOs and could represent useful process information (Exhibit 13).

Exhibit 13: Referral Rates per 100 by Race

Race Groups	Non-Hispanic White	Non-White	Non-Stratified Rate
OPO 1	148	168	161
OPO 2	108	150	122
OPO 3	204	229	215
OPO 4	130	166	138
OPO 5	212	167	213
OPO 6	174	224	180
Overall Rate	146	169	156

Overall, there are more male referrals than female. This reflects the understanding that the death rate for males is generally higher than females (Exhibit 14).

Exhibit 14: Referral Counts by Gender

Gender Groups	Male	Female	Unknown	Total
OPO 1	10,754	7,980	0	18,734
OPO 2	11,586	7,613	0	19,199
OPO 3	3,963	3,167	1	7,131
OPO 4	7,916	4,965	6	12,887
OPO 5	8,270	5,239	2	13,511
OPO 6	5,184	3,417	33	8,634
Total	47,673	32,381	42	80,096

The Referral Rate for females is consistently higher than for males, reflecting the smaller number of females in the potential donor denominator (Exhibit 15).

Exhibit 15: Referral Rates per 100 by Gender

Gender Groups	Male	Female	Non-Stratified Rate
OPO 1	148	185	161
OPO 2	116	131	122

Gender Groups	Male	Female	Non-Stratified Rate
OPO 3	196	245	215
OPO 4	131	151	138
OPO 5	200	238	213
OPO 6	169	198	180
Overall Rate	147	174	156

In summary, stratification by race showed the most unpredictable patterns of the different stratification risk factors. Referral Rate by race is a potentially useful process measure for OPOs that want to better understand how they are reaching their potential donor population.

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Acronyms

Exhibit 16: Acronym List

Acronym	Definition
ACIN	AOPO Confirmation Information Network
AHRQ	Agency for Healthcare Research and Quality
AOPO	Association of Organ Procurement Organizations
API	Application Programming Interface
ASPE	Office of the Assistant Secretary for Planning and Evaluation
BD	Brain Death
CBE	Consensus-Based Entity

Acronym	Definition
CMS	Centers for Medicare & Medicaid Services
DBD	Donation after Brain Death
DCD	Donation after Circulatory Death
DCU	Donor Care Unit
DMG	Donor Management Goals
DSA	Donation Service Area
DUA	Data Use Agreement
ECMO	Extracorporeal Membrane Oxygenation
EDR	Electronic Donor Record
EHR	Electronic Health Record
EMS	Emergency Medical Services
FPA	First-Person Authorization
FRaT	Family Readiness Assessment Tool
GCS	Glasgow Coma Scale
HCT	Health Care Team
HIPAA	Health Insurance Portability and Accountability Act
HIV	Human Immunodeficiency Virus
HRSA	Health Resources & Services Administration
ICC	Intraclass Correlation Coefficient
ICD-10-CM	International Classification of Diseases, Tenth Revision, Clinical Modification
MCOD	Multiple Cause of Death
ME	Medical Examiner
MOU	Memorandum of Understanding
NASEM	National Academies of Sciences, Engineering, and Medicine
NCHS	National Center for Health Statistics
NRP	Normothermic Regional Perfusion
NTIS	National Technical Information Service
NVSS	National Vital Statistics System
OPO	Organ Procurement Organization
OPTN	Organ Procurement & Transplantation Network
OR	Operating Room
QA	Quality Assurance
SRTR	Scientific Registry of Transplant Recipients
TEP	Technical Expert Panel
UAGA	Uniform Anatomical Gift Act