The W·O·D Collaborative

FOR EVERYONE

Two Ways to Donate After Death — and Why It Matters

Brain death, circulatory death, and the worldwide picture

01 · THE BIG IDEA

Two different ways to be declared dead

When a hospital declares someone dead, there are two possible reasons. The first is that the brain has permanently stopped working. The second is that the heart and breathing have permanently stopped. Both count as death under the laws of almost every country with an organized transplant program, but the difference matters for organ donation. Each pathway shapes which organs can be recovered, when the donation can happen, and how the conversation with the family unfolds.

Most of the world’s deceased-donor transplants still come from the first pathway. The second is making a comeback, and in some countries it now produces more than half of all deceased donors.

02 · THE TWO PATHWAYS

Brain death, circulatory death, and a hybrid

Two pathways dominate worldwide. A third — a hybrid used in China and a few neighbors — sits between them.

Brain death (DBD) follows a catastrophic brain injury that permanently stops the entire brain, including the brainstem, from functioning. The heart can keep beating for a time on a ventilator, but the person cannot breathe on their own and will never wake up. Doctors confirm the diagnosis with a clinical examination

and an apnea test, supported in difficult cases by an ancillary scan of brain blood flow.

Circulatory death (DCD) is older. It was the original pathway for deceased donation, then nearly disappeared once brain death became the standard, then returned in the 1990s as transplant lists outgrew the DBD supply. In a DCD donation, the heart and breathing stop — often after a planned withdrawal of life support — the team waits a defined period to confirm the stop is permanent, and only then proceeds with organ recovery.

The hybrid pathway (DBCD), used in China, runs the two declarations in sequence: the donor first meets brain-death criteria, life support is withdrawn, circulatory death is confirmed, and only then does procurement begin. It exists because public acceptance of brain death is uneven in some health systems.

Underneath all three is a single principle, the dead donor rule: vital organs may only be recovered from a person who has already been declared dead. Every protocol described above is designed to satisfy it.

03 · THE FIVE TYPES OF DCD

The Maastricht categories, in plain words

A 1995 international meeting in Maastricht, the Netherlands, produced a five-part classification of circulatory-death donors that the field still uses today.

The first split is whether the cardiac arrest was planned. Types I and II are uncontrolled — the arrest is unexpected, often happening before or on arrival at hospital, and the team must react quickly. Type III is controlled — the family and clinical team have agreed to withdraw life support, the time of arrest is broadly predictable, and the procurement plan is set in advance.

The remaining categories cover edge cases. Type IV is a brain-death donor who unexpectedly arrests before procurement can begin. Type V, the newest, is a donor who has chosen medical assistance in dying and has separately consented to donation afterward; it is used in Belgium, the Netherlands, Spain, Canada, and a growing list of others.

In every high-volume program today, Type III — controlled DCD — does almost all the work. That single category is what has turned circulatory-death donation into the growth story it now is.

04 · THE FIVE-MINUTE WAIT

The pause that proves it’s permanent

In every controlled-DCD protocol there is a deliberate pause between the moment the donor’s circulation stops and the moment the team begins organ recovery. The pause is almost always five minutes, and it exists to confirm that

the heart will not restart on its own — a rare but documented event called "autoresuscitation." A 2023 systematic review found no documented case of restart more than five minutes after circulatory arrest in a controlled-withdrawal setting, and that finding anchors the international standard now used in Spain, the United Kingdom, Canada, Australia, and the Netherlands. A handful of centers experimented with shorter intervals in the past; recent guidance has steered them back to five.

05 · WHERE EACH PATHWAY IS USED

Country mixes vary dramatically

The mix of brain-death and circulatory-death donation differs enormously between countries. At the high-DCD end, Spain runs a roughly fifty-fifty split, the United Kingdom passed the same milestone in 2024–25, and the United States sits at about 43 percent DCD. The Netherlands sits above 50 percent and Belgium is at 45 percent.

At the other end, Germany does no circulatory-death donation at all because the law there does not permit it. Brazil, Chile, and India remain almost entirely brain-death-based. Japan has a low overall donor rate that lands almost entirely on living donors. China runs the hybrid DBCD pathway that doesn't fit either category cleanly.

06 · WHY THE MIX VARIES

Law, culture, and how the ICU works

Three things drive the variation. The first is law: Germany has not legislated for DCD, so the pathway simply does not exist there. The second is culture: in countries where families resist the routine withdrawal of life-sustaining treatment, controlled DCD is harder to deliver, because it depends on a clinical culture in which withdrawal is a normal end-of-life decision.

The third is infrastructure, and it is arguably the most decisive. DCD is operationally demanding. It needs trained coordinators in every hospital, rapid in-theater access, and protocols the procurement and clinical teams have practiced. The high-DCD countries have invested in all three over the last fifteen years. Countries that have only legislated, but not built the infrastructure, do not see the gains.

07 · THE 2024 NUMBERS

A record year, mostly thanks to DCD

Worldwide, 2024 was a record year. 173,727 solid-organ transplants were performed, up from about 157,000 in 2023 — the highest total ever reported to the WHO–ONT Global Observatory. Roughly 28 percent of all deceased donation worldwide was DCD, and that share is what drove the year-on-year growth. Spain

reached 53.9 deceased donors per million population, the highest in the world, and the United States reached 49.7.

The notable counter-trend was the United Kingdom, which recorded a 7 percent decline in deceased donors over its 2024–25 reporting year — the first such decline in the post-pandemic period, and one that has prompted serious examination inside the UK system of what went wrong after a decade of growth.

08 · THE BOTTOM LINE

Both pathways are needed

Neither brain-death donation nor circulatory-death donation, on its own, can meet the global need for transplantable organs. The countries that run the largest, most successful programs are the ones that have built both, and the two pathways are best understood as complementary rather than competing — each suits the clinical course of a different group of patients.

The work of the next decade is less about choosing one pathway over the other and more about closing the gap between the countries that have both pathways running and the much larger number of countries that have neither.

DISCLOSURE

This synthesis was prepared with the assistance of generative artificial intelligence. Source materials were limited to open-access peer-reviewed publications, government and registry websites, and other publicly available databases. Every reference cited in this article was independently reviewed, verified against its primary source where available, and curated by the WOD Collaborative. The AI tool was used for drafting, restructuring, and consistency checking; all factual claims, attributions, and editorial decisions remain the responsibility of the WOD Collaborative.

MAY 2026