ETHICS • LEGAL • CRITICAL CARE

# Organ *Donation* & Transplantation

Brain death determination, donor management, OPO collaboration, and family support — a tested NCLEX domain blending ethics, prioritization, and physiologic management.

UAGA FEDERAL LAW | BRAIN DEATH CRITERIA | DONOR HEMODYNAMICS | FAMILY SUPPORT

## 1 📘 Definition & Overview

- **Organ donation** = the gift of organs (heart, kidneys, liver, lungs, pancreas, intestines) or tissues (cornea, skin, bone, heart valves) for transplantation into another person.
- **Two donor types:** *Living donor* (kidney, lobe of liver/lung, bone marrow) and *Deceased donor* after either **brain death** or **cardiac/circulatory death (DCD)**.
- **Governed by federal law:** Uniform Anatomical Gift Act (UAGA) + the Required Request Law — every hospital **must** notify the OPO of imminent or actual death.
- **One donor** can save up to **8 lives** through organs and enhance up to **75+ lives** through tissue donation.

### 🏥 Key Players

**OPO** (Organ Procurement Organization) — initiates & manages donation conversation.

**UNOS**

(United Network for Organ Sharing) — runs the national matching list. The

**nurse does NOT approach the family about donation**

— that is the OPO's specially trained role (called *decoupling*).

## 2 🔄 The Donation Process — Step by Step

From identification of a potential donor to organ recovery, every step is time-sensitive and protocol driven.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| **Identify** | **Notify OPO** | **Declare Brain Death** | **OPO Approaches Family** | **Consent & Match** | **Donor Maintenance** | **Recovery & Transplant** |
| Imminent death or brain-death criteria recognized | Mandatory federal call — within 1 hour | 2 physicians, neither on transplant team | Decoupled from medical team | UNOS ABO/HLA matching | Hemodynamic & perfusion support | Organs procured in OR & transported |

**⏱ Critical Timing**

Brain-death testing requires the patient be **normothermic (≥36 °C)**, **off sedation**, and **free of metabolic disturbance** before reflex testing — these confounders *invalidate* the exam.

## 3 🧠 Brain Death Criteria — Recognize the Cues

Brain death = irreversible cessation of **all functions of the entire brain, including the brainstem.** Brain death IS legal death, even though the heart still beats on the ventilator.

| The Triad | What you'll see / test |
|---|---|
| **1. Coma (unresponsive)** | GCS = 3 • No response to noxious stimuli (deep pain) • No spontaneous movement (spinal reflexes may persist — that's OK) |
| **2. Absent brainstem reflexes** | Fixed/dilated pupils • No corneal reflex • No oculocephalic ("doll's eyes") • No oculovestibular (cold caloric) • No gag • No cough |
| **3. Apnea** | Apnea test positive — no spontaneous breaths when $PaCO_2$ rises ≥ 60 mmHg off ventilator |

🚨 **Confirmatory Tests (when exam is unreliable)**
Cerebral angiography (no flow) • EEG (electrocerebral silence) • Transcranial Doppler • Nuclear perfusion scan.

## 4 Priority Nursing Interventions

Once brain death is declared and consent given, your job pivots to **preserving organ perfusion** until recovery in the OR. Think ABCs of the donor.

- A • B **Maintain ventilation & oxygenation:** $SpO_2$ > 95%, $PaO_2$ > 100 mmHg. Continue mechanical ventilation, suction PRN.
- C **Hemodynamic support:** SBP > 100, MAP > 60–70. Titrate vasopressors (dopamine, norepinephrine, vasopressin) per OPO protocol.
- F • E **Fluid & electrolyte balance:** Strict I&O. Watch for diabetes insipidus (massive dilute UO > 300 mL/hr) — replace with DDAVP & hypotonic fluids.
- T **Thermoregulation:** Keep temp ≥ 36 °C (96.8 °F) — warming blanket, warmed IV fluids. Hypothermia worsens coagulopathy & arrhythmia.
- L **Labs:** Hgb > 10, Hct > 30%, glucose < 180 (insulin drip PRN), ABGs, electrolytes Q4–6 h.
- SAFETY **Do NOT initiate donation conversation** — call the OPO. Federal law requires their involvement.
- PSYCH **Family support:** emotional presence, clear explanation of brain death, allow visitation, support cultural/spiritual needs.
- DOC **Document meticulously:** all interventions, vital signs, family communication, time of death pronouncement.

### The "Rule of 100s" — Donor Targets

| | | | |
|---|---|---|---|
| Systolic BP | > 100 mmHg | Urine Output | > 100 mL/hr |
| $PaO_2$ | > 100 mmHg | Hgb (close to) | > 10 g/dL |

## 5 💊 Pharmacology — Donor Maintenance

### Norepinephrine / Dopamine — VASOPRESSORS

**MOA:** α/β-adrenergic stimulation → ↑ BP & organ perfusion.

**Watch:** Tachydysrhythmias, peripheral ischemia. Titrate to MAP > 60–70.

### Vasopressin / DDAVP (Desmopressin) — ANTIDIURETIC

**MOA:** Replaces ADH lost when posterior pituitary fails — controls *diabetes insipidus*, very common in brain death.

**Watch:** Massive UO of pale, dilute urine; rising serum $Na^+$ (hypernatremia); rising serum osmolality.

### Insulin (drip) — HORMONAL

**MOA:** Controls hyperglycemia from steroid + stress + dextrose fluids; goal glucose < 180.

**Watch:** Hypoglycemia, hypokalemia.

### Methylprednisolone — CORTICOSTEROID

**MOA:** Reduces pro-inflammatory cytokines that damage transplantable organs.

**Watch:** Hyperglycemia, infection risk.

### Levothyroxine / T3 — HORMONAL

**MOA:** Replaces thyroid hormone often deficient after brain death; supports cardiac function.

**Watch:** Tachycardia, hypertension if over-replaced.

### Broad-spectrum Antibiotics — ANTI-INFECTIVE

**MOA:** Prophylaxis to prevent organ contamination prior to recovery.

**Watch:** Allergies, renal/hepatic dosing.

## 6 ⚠ NCLEX Test Traps

Where students lose easy points — these are the patterns the test writers *love*.

| ✗ COMMON WRONG PICK | ✓ CORRECT ANSWER |
|---|---|
| The nurse approaches the family to ask about organ donation. | Nurse **notifies the OPO**; the OPO coordinator (decoupled from care team) approaches the family. |
| "The patient is technically still alive — the heart is beating." | **Brain death IS legal death.** Ventilator & vasopressors maintain organ viability, not life. |
| The transplant surgeon performs the brain-death exam. | Two physicians who are **NOT** part of the recovery/transplant team must independently declare brain death (conflict-of-interest rule). |
| "The family must pay for the donor's ICU care during procurement." | The family is **NOT** charged for any organ-recovery–related costs — the OPO covers them from declaration of brain death forward. |
| Spinal reflex movement in the donor proves brain death is wrong — stop the protocol. | **Spinal reflexes can persist** in brain-dead patients (Lazarus sign, triple flexion). They do NOT indicate brain function. |
| Massive dilute urine output — slow the IV fluids. | This is **diabetes insipidus** from posterior pituitary failure. Give **DDAVP/vasopressin** and replace fluids; do not restrict. |
| "Open-casket funeral isn't possible after donation." | An open-casket funeral **IS possible**. Donation respects the body, with surgical incisions covered by clothing. |
| "My patient signed a donor card, but the family says no — so we can't proceed." | In most states, **first-person authorization** (donor card / state registry) is legally binding; the family cannot override it. Always escalate per |

| | |
|---|---|
| | OPO and policy. |

## 7 🧭 NCJMM Clinical Judgment Framework

Apply the NCSBN Clinical Judgment Measurement Model to a potential-donor scenario.

**STEP 1**

### Recognize Cues

GCS 3, fixed/dilated pupils, absent gag & cough, apnea on ventilator, severe TBI on imaging, normothermic & off sedation.

**STEP 2**

### Analyze Cues

Cluster points to **brain-death criteria**; rule out reversible causes (drugs, hypothermia, metabolic).

**STEP 3**

### Prioritize Hypotheses

1. Brain death pending confirmation. 2. Risk for hemodynamic collapse. 3. Risk for diabetes insipidus. 4. Family grief.

**STEP 4**

### Generate Solutions

Notify OPO • support BP/perfusion • monitor UO & $Na^+$ • prepare for confirmatory testing • prepare family for OPO conversation.

**STEP 5**

### Take Action

Call OPO per policy • titrate vasopressors to MAP > 60 • give DDAVP for DI • warm patient • document & emotionally support family.

**STEP 6**

### Evaluate Outcomes

SBP > 100, UO 100–300 mL/hr, temp ≥ 36 °C, $Na^+$ within range, family understands brain death, OPO engaged.

## 8 📚 Patient & Family Education

- **Brain death is real death.** The heart beats only because the ventilator pushes oxygen — it is not "life support that might be turned off later."
- **No cost to the family** for any care related to organ recovery once brain death is declared.
- **Open-casket funerals are possible** — donation is respectful and incisions are not visible.
- **Most major religions** (Christianity, Judaism, Islam, Hinduism, Buddhism) **support** donation as an act of generosity. Encourage clergy involvement when desired.
- **No upper age limit** for donation. Even patients with some chronic illness can often donate tissues.
- **Donor designation:** driver's license, state registry, advance directive — encourage the family to share their loved one's wishes.
- **Living donation** options exist for kidney, partial liver, lung lobe, and bone marrow.
- **Donor and recipient identities** remain confidential unless both choose to connect through the OPO later.

## 9 🧠 Memory Boosters & Mnemonics

### D • O • N • A • T • E

- **D** — **Declare** brain death — 2 physicians, NOT on transplant team
- **O** — **OPO** notification is mandatory federal law
- **N** — **Nurse stays out** of the donation conversation (decoupling)
- **A** — **Avoid hypotension** — MAP > 60 protects organs
- **T** — **Thermoregulate** — keep temp ≥ 36 °C
- **E** — **Emotional support** & meticulous **documentation**

### Brain Death Triad — "C • A • A"

- **C** — **Coma** — unresponsive to deepest stimuli (GCS 3)
- **A** — **Absent** brainstem reflexes (pupil, corneal, gag, cough, doll's eyes, cold caloric)
- **A** — **Apnea** — positive apnea test ($PaCO_2$ ≥ 60, no breaths)

### Pattern Recognition Tips

- ★ **Massive dilute UO + rising $Na^+$** in brain-dead donor → think *Diabetes Insipidus* → DDAVP/vasopressin
- ★ **"Should I ask the family about donation?"** → answer is almost always *"Notify the OPO"* first

**Spinal reflex movement** in brain-dead patient → does NOT indicate brain function — keep going

**"Rule of 100s"** for donor targets → SBP, UO, $PaO_2$ all > 100; Hgb close to 10