Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD)

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Health Policies and Standards Department

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ACKNOWLEDGMENT

The Health Policy and Standards Department (HPSD) developed this Standard in collaboration with the National Center for Organ Donation and Transplant (MOHAP) and Subject Matter Experts. We would like to acknowledge and thank these stakeholders for their dedication toward improving the quality and safety of healthcare services in the Emirate of Dubai.

Health Regulation Sector

Dubai Health Authority

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INTRODUCTION

The Health Regulation Sector (HRS) plays a key role in regulating the health sector. HRS is mandated by the Dubai Health Authority (DHA) Law No. (6) of the year (2018) with its amendments pertaining to DHA, to undertake several functions including but not limited to:

- Developing regulations, policies, standards, and guidelines to improve quality and patient safety and promote the growth and development of the healthcare sector.
- Licensure and inspection of both healthcare facilities and professionals and ensuring compliance with best practice.
- Managing patient complaints and assuring patient and physician rights are upheld.
- Governing the use of narcotics, controlled and semi-controlled medications.
- Strengthening health tourism and assuring ongoing growth; and
- Assuring management of health informatics, e-health and promoting innovation.

The Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD) aim to fulfil the following overarching Dubai Health Sector Strategy 2026:

- Pioneering Human-centred healthcare systems to promote trust, safety, quality and care for patients and their families.
- Make Dubai a model for accessible value-based health care.
- Make Dubai a lighthouse for healthcare governance, integration and regulation.

EXECUTIVE SUMMARY

Human Organ & Tissue Donation Services are considered one of the major and vital implementations in the world of health. These standards support saving lives through organ donation by identifying patients declared dead by Neurological Criteria (DNC Diagnosis) who might be eligible organ donor candidates. These guidelines describe a clear and comprehensive process for evaluating patients with permanent cessation of all brain functions due to structural and irreversible brain damage that characterizes the DNC Diagnosis. These standards are developed in line with the following applicable laws and legislations:

- Federal Decree-Law No. (25) of 2023 regarding Donation and Transplantation of Human Organs and Tissues,
- Ministerial Decree No. (19) for the year 2022 related to Death Diagnosis Criteria,
- UAE Federal Decree Law No. (4) of 2016 on Medical Liability.

KEY UPDATES

1. Definitions
    - "Cerebral Lesion" definition updated and renamed to "Devastating Brain Injury"
    - Comatose patients: GCS <8 → GCS ≤8; added not due to sedation or opioids, and includes ED (not only ICU)
    - CCSUD definition updated
    - CCSUC: clarified eligible roles (critical care nurse/physician/other trained staff)
    - DNC definition updated
    - Next of kin order updated: "children" → "offsprings (adult)"
    - Removed: Organ Procurement Organization (OPO) definition

2. Standard Two Healthcare Professionals Requirements
    - 6.2 updated: “healthcare professionals” → “Physicians.” Added requirement that they be privileged by the Hospital privileging committee.
    - 6.7 added requirement for certified training from accredited institutions and reference to proven experience and competencies.
    - Added 6.10. Mandatory documentation and compliance using the Hayat digital platform, including donor evaluation, consent, and organ retrieval.
3. Standard Three: Reporting Possible and Potential DNC Donors
    - 7.2.3 updated: added clarification “before the start of sedation or not sedated.”
    - 7.4 referral method added “by phone call and e-mail or Hayat platform.”
4. Standard Four: Assessment of Death by Neurological Criteria (DNC)
    - Added 8.9.5 Mandatory issuance of death notification following DNC confirmation and notification to NCDT and DHA via e-mail or Hayat platform.
5. Standard Five: DNC Declaration and Issuance of Death Certificate
    - 9.1.7 terminology updated. Added clarification: withdrawal occurs because medical therapies are no longer indicated since death has occurred.
6. Standard Seven: Family communication
    - 11.5 updated: breaking bad news now formally begins upon diagnosis of severe brain injury. Responsibility assigned to attending ICU physician or MRP.
    - 11.11 updated: family interview may now be conducted by team designated by NCDT, or a privileged doctor in alignment of DHA Clinical Privileging Policy.

7. Standard Nine: Organ and Tissue Donation Registry and Key Performance Indicators – Donation After Brain Death (DBD)
    - Added 13.1–13.5: introduced a formal governance framework: mandatory KPI reporting by all DHA-licensed facilities; requirement to appoint a Quality Representative and clear responsibilities for data collection, integrity, and performance monitoring
    - KPI technical details moved to Appendix 9 (KPI cards).
8. Appendices:
    - Appendix 1 “Potential Deceased Brain Death (DDB) Donors Referral Form”: added extra numbers (+971 54 233 1046 and backup +971 54 233 1039)
    - Appendix 3 “UAE Organ and Tissue Donation Process Management Protocol Standardized Procedures for Reporting Critical Cases and Referring Potential Donors”: updated workflow
    - Appendix 4 “Brain Functions Assessments Form DN”: renamed to “Death by Neurological Criteria Documentation Form”
    - Appendix 7 “Unified Consent Form” moved from Appendix 6
    - Appendix 8 “UAE Form for Withdrawal of Organ Viability Maintenance Equipment” from Appendix 7
    - Appendix 6 “Apnea During ECMO Treatment moved” from Appendix 8

ABBREVIATIONS

CCSU : Critical Care Support Unit.

CCSUC: Critical Care Support Unit Coordinator.

DBD : Donation after Brain Death.

DHA : Dubai Health Authority.

DNC : Death by Neurological Criteria.

ED : Emergency Department

EEG : Electroencephalogram.

ECMO : Extracorporeal Membrane Oxygenation

GCS : Glasgow Coma Scale.

ICU : Intensive Care Unit.

MRP : Most Responsible Physician.

MD : Medical Director.

NCDT : National Center for Donation and Transplantation

ORT : Organ Retrieval Team

DEFINITIONS

Devastating Brain Injury: any structural primary or secondary brain injury caused alone or in association with other complicating factors, which may cause death by neurological criteria. This also includes:

- Acute cerebral injury (brain trauma, anoxia, cerebral bleeding, stroke, etc.) that supervenes as a complication.
- Subacute or chronic disorders, such as brain tumours, when an acute transformation occurs, such as spontaneous or postoperative intracranial hypertension, haemorrhage, or cerebral oedema.

Clinical Privileging: process of granting a DHA-licensed healthcare professional permission to carry out specific duties as per health facility scope of practice and licensure. This involves the review of credentials and qualifications, training, competence, practical independence and experience, aligning to the needs of the Clinical Privileging Committee (CPC) which is the responsible entity to authorize or deny clinical privileges.

Comatose Patients: patient with Glasgow Coma Scale (GCS) of ≤ 8 upon admission to the healthcare facilities or during ED or ICU management, not attributed to sedation or analgesia (opioids).

Consent For Donation: legally valid from the eligible potential donor's next of kin for organ and tissue retrieval for the purpose of transplantation using the unified consent form, which may be executed through written or verbal communication

Critical Care Support Unit (CCSU): 24/7 operating unit within the healthcare facility's ICU, responsible for all organ and tissue donation matters, run by the critical care support unit director and coordinator/s. Formerly known as the Organ Donation Unit (ODU).

Critical Care Support Unit Director (CCSUD): an ICU physician that leads the CCSU, including all standard operating procedures required for the unit, that supervises the critical care support unit team and coordinators, and oversees implementation of all steps of the organ and tissue donation process. This position was previously known as the Organ Donation Unit Director.

Critical Care Support Unit Coordinator (CCSUC): Critical Care Nurse, critical care physician or other trained clinical staff assigned by the healthcare facility management, responsible for ensuring that all organ and tissue donation process steps occur as per legal regulations and protocols and all communications between the CCSU, DHA and the National Center for Donation and Transplant (NCDT) are performed in a timely manner to facilitate the organ and tissue donation and transplantation process. This role was previously known as the Organ Donation Unit Coordinator (ODUC).

Death by Neurological Criteria (DNC): death by neurological criteria, commonly called brain death, is defined as the permanent cessation of all brain functions, resulting from devastating brain injury, with a known cause of the brain injury by medical documentation and in the absence of pharmaceutical sedation and opioids.

Death Determination: is defined either by complete and terminal cessation of breath and heart activity, or by permanent termination of all brain functions. To fulfil the definition, three or more physicians will have to agree that this loss of function is definitive in accordance with the criteria

mentioned at the document and the Ministerial Resolution No.19, Concerning the Criteria for the Diagnosis of Death.

Donation after Brain Death (DBD): a human being declared dead by DNC and from whom organs, tissues or cells may be retrieved for the purpose of transplantation.

Neurological Advice: a process by which an external competent entity shall oversee and support a healthcare facility to meet the requirements of brain function assessment. The nominated hospital performing neurological adviser shall have sufficient and competent privileged healthcare professionals who are licensed by DHA or another health regulator in the UAE.

Human Organ and Tissue Services: organ and tissue donation and transplantation are services of retrieving an organ from one person (the donor) and surgically for the purpose of placing it into another (the recipient) who is in end stage organ, or tissue, failure.

Medical Director: DHA licensed healthcare professional who holds responsibility and oversight of medical services within a DHA licensed healthcare facility.

Most Responsible Physician (MRP): qualified physician who has a primary responsibility for the care of patients in the healthcare facility.

National Center for Donation and Transplantation (NCDT): federal centre under the Ministry of Health and Prevention responsible to regulate and coordinate organ and tissue donation and transplantation in the UAE.

Next of Kin: a person authorized to make decisions on behalf of the patient, in cases where the patient is incompetent, or the relatives up to the fourth degree available in the country or by telephone or computer visual and audio/sign language communication, based on the below order:

A. The father.

B. The mother.

C. The offsprings (adult).

D. The spouse.

E. The grandfather.

F. The siblings.

G. The paternal uncle and the full uncle is precedent to the half uncle.

Organ Retrieval Team (ORT): specialized group responsible for carrying out the surgical retrieval of organs from deceased donors. ORT ensures that organs are procured in alignment with medical protocols and legal standards.

Possible Death by Neurological Criteria (DNC) Donor: an individual of any age with a Glasgow Coma Scale score ≤ 8, before the start of sedation or not sedated, on mechanical ventilation, and experienced a devastating brain injury (anoxic encephalopathy, cerebral haemorrhage, stroke, traumatic brain injury, encephalitis and meningoencephalitis, central nervous system tumours).

Potential Death by Neurological Criteria (DNC) Donor: an individual of any age with Glasgow Coma Scale score ≤ 5, before the start of sedation or not sedated, on mechanical ventilation, and experienced a devastating brain injury (anoxic encephalopathy, cerebral haemorrhage, stroke, traumatic brain injury, encephalitis and meningoencephalitis, central nervous system tumours), or with new signs of progression to brain death, such as pupil dilation, absence of any brain stem reflex, and haemodynamic instability.

1. BACKGROUND

Organ donation not only saves lives but also creates opportunities to improve the quality of life for patients suffering from end stage organ failure.

Deceased individuals are assessed based on their age, their medical records, and the fulfilment of the medical criteria for donation dictated by the organ donation and transplantation authorities, as candidates for organ transplantation.

The criteria for the determination of death are based on a set of first-release consensus recommendations for the assessment and diagnosis of death, as per the international panel of worldwide experts. It is defined as complete and terminal cessation of heart, and breath or irreversible termination of all brain functions. The aim of the Ministerial Resolution No.19, Concerning the Criteria for the Diagnosis of Death is to standardize the diagnosis of death by neurological criteria and death by circulatory criteria on a national level, and support healthcare professionals in this field.

Currently, the demand for organs and tissues for transplantation is much higher than the available supply. Statistics show that Spain (Spanish Model) has the highest percentage of donors after death for every million globally in 2024, followed by the USA (USA Model), and other European countries (European Model). Although organ donation activity in the UAE has increased significantly in the last 4 years, the implementation and consolidation of best practices in organ and tissue donation suggested by these standards will contribute to the rise of this curve while more lives will be saved.

2. SCOPE

2.1. Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD) in DHA licensed healthcare facilities with ICU services

3. PURPOSE

3.1. To assure provision of the highest levels of safety and quality of Human Organs and Tissues Donation Services (for all Deceased Donors) – Donation after Brain Death (DBD) in Dubai Health Authority (DHA) licensed healthcare facilities.

3.2. To ensure the diagnosis of Death by Neurological Criteria (DNC) is consistently aligned with international best practices and UAE law.

3.3. To ensure the improvement of the diagnosis and reporting of DNC; to support organ donation and transplantation on a national level.

4. APPLICABILITY

4.1. DHA licensed health facilities with Intensive Care Units (ICU).

5. **STANDARD ONE:** HEALTHCARE FACILITY REQUIREMENTS FOR DONOR HOSPITAL

5.1. The healthcare facility shall meet the requirements as per the DHA Health Facility Guidelines (HFG) 2019, Part B – Health Facility Briefing & Design - Intensive Care Unit.

5.2. The healthcare facility providing ICU services shall have the following policies and procedures in place to cover all relevant donation steps, which include but are not limited to:

5.2.1. Potential donor identification and referral information -**Appendix 1**.

5.2.2. Potential donor evaluation.

5.2.3. Potential donor management.

5.2.4. Death Determination by Neurological Criteria.

5.2.5. Breaking bad news.

5.2.6. Operating theatre procedures.

5.2.7. Communication among ICU professionals, Critical Care Support Unit (CCSU), and the National Center for Donation and Transplant (NCDT) and Dubai Health Authority (DHA).

5.3. The healthcare facility providing ICU services shall have a CCSU.

5.4. The healthcare facility shall ensure it has an active morbidity and mortality committee in place supported by written terms of reference.

5.4.1. The morbidity and mortality committee shall maintain a registry with the names of the healthcare professionals involved in DNC assessment and diagnosis.

5.4.2. The healthcare facility's morbidity and mortality committee shall review the cases of DNC and provide recommendations for assessment and management whenever required.

5.4.3. The healthcare facility shall report the ICU mortality rate to DHA regularly, refer to standard ten.

5.4.4. The healthcare facility's morbidity and mortality committee shall review the death cases with a primary diagnosis of acute cerebral lesion, and not DNC diagnosis, as per **Appendix 2**, and provide recommendations for DNC diagnosis optimization as per the approved standards.

6. **STANDARD TWO:** HEALTHCARE PROFESSIONALS REQUIREMENTS

6.1. All healthcare professionals involved in the process of organ donation in Dubai shall hold an active DHA license as per the Professionals Qualification Requirements (PQR) and work within their scope of practice.

6.2. A minimum of three (3) DHA licensed Physicians privileged by the Hospital privileging committee will perform the brain functions assessment to diagnose DNC, aligned with the DHA Clinical Privileging Policy.

6.3. Healthcare professionals assessing and diagnosing DNC in adult patients shall be physicians from the following specialities:

6.3.1. Critical care

6.3.2. Neurology

6.3.3. Neurosurgery

6.3.4. Internal medicine

6.3.5. Anaesthesia

6.3.6. Other consultant/specialist physicians privileged to diagnose DNC can perform the assessment.

6.4. Healthcare professionals assessing and diagnosing DNC in paediatric patients shall be physicians from the following specialities:

6.4.1. Paediatric critical care

6.4.2. Paediatric neurology

6.4.3. Neurosurgery

6.4.4. Paediatric anaesthesia

6.4.5. Paediatric specialist

6.4.6. Other specialized physicians privileged to diagnose DNC in paediatric patients.

6.5. One of the three physicians must be a neuroscience physician (neurology/neurosurgery) to diagnose DNC.

6.6. It is strictly prohibited for transplant healthcare professionals or surgeons to take part in DNC diagnosis or obtaining consent for organ and/or tissue donation.

6.7. The Clinical Privileging committee or Medical Director of the healthcare facility shall privilege the healthcare professionals in alignment with DHA Clinical Privileging Policy who perform brain function assessment to diagnose DNC aligned with their education, certified training from accredited institutions (e.g., DTI NBRU), proven experience and competencies.

6.8. If the number of healthcare professionals permitted to perform brain function assessment to determine the DNC is less than three, neurological advice from an external healthcare professional permitted to perform brain death assessment should be requested.

6.8.1. Neurological advice shall only be undertaken once both hospitals have signed a memorandum of understanding. Neurological advice could also be granted by the NCDT from MOHAP.

6.8.2. The nominated hospital performing neurological advice shall have sufficient and competent privileged Healthcare Professionals who are licensed by DHA or another health regulator in the UAE, aligned with the DHA Clinical Privileging Policy.

6.8.3. Neurological advice shall be free from any conflict of interest that may affect the determination of DNC.

6.9. All healthcare professionals involved in the CCSU shall be trained and aware about the UAE organ donation process management protocol to standardize the critical care case notification and referral of possible deceased organ donors.

6.10. Documentation and compliance: all stages of the DBD process must be thoroughly documented using the Hayat digital platform, including donor evaluation, consent, and organ retrieval.

7. **STANDARD THREE:** REPORTING POSSIBLE AND POTENTIAL DNC DONORS

7.1. All healthcare facilities shall report possible and potential DNC donors., ensuring Continuity of Organ Donation and Transplantation Servies During Crises and Exceptional Situations.

7.2. A possible DNC donor is an individual of any age who meets the following criteria:

7.2.1. Requires mechanical ventilation; and

7.2.2. Has experienced a devastating brain injury (anoxic encephalopathy, cerebral haemorrhage, stroke, traumatic brain injury, encephalitis and meningoencephalitis, central nervous system tumours); and

7.2.3. Glasgow Coma Scale (GCS) score of ≤ 8, before the start of sedation or not sedated.

7.2.4. Possible donors shall be notified within 12 hours for CCSU at the Health Facility and followed internally.

7.3. A potential DNC donor is an individual of any age who meets the following criteria:

7.3.1. Requires mechanical ventilation; and

7.3.2. Has experienced a devastating brain injury (anoxic encephalopathy, cerebral haemorrhage, stroke, traumatic brain injury, encephalitis, and meningoencephalitis, central nervous system tumours, etc); and

7.3.3. GSC score of ≤ 5, before the start of sedation or not sedated; or

7.3.4. Any new impairment of any brain stem reflex.

7.4. Potential donors shall be referred within 3 hours by phone call and e-mail or Hayat platform, using the referral forms for Potential DNC Donor- **Appendix 1 and 3**, to:

7.4.1. CCSU at the Health Facility, and

7.4.2. DHA Organ Donation Coordinator (ODT@dha.gov.ae; +97145027639)

7.4.3. NCDT team (TheOPO@mohap.gov.ae; For support: +971 4 230 1111; +971 54 233 1046; For Back up: +971 54 2331043)

7.5. Referral of potential donors shall include the following clinical evaluation:

7.5.1. Progress note/history of presenting illness (admission until referral):

a. Current Illness (cause of coma, admission day, GCS, death diagnosis performed, etc.).

b. Previous disease.

c. Previous surgeries.

d. Previous clinical treatments.

e. Current or previous cancer disease (kind, time, treatment).

f. Current or previous diagnosis of chronic diseases (kind, time, treatment).

g. Previous drug consumption (alcohol, tobacco, etc.).

7.5.2. Current clinical status:

a. Vital signs.

b. Current treatments (antibiotics, use of inotropes, continuous renal replacement therapy (CRRT), etc.).

7.5.3. Imaging exams: Brain and/or Chest CT Scan, Thorax X-ray, echocardiogram (ECG), abdominal ultrasound or other.

7.5.4. Laboratory results:

a. Complete blood count

b. Coagulation profile (PT/PTT/INR)

c. Electrolyte & renal profile (sodium/potassium/calcium/magnesium/creatinine/urea/eGFR)

d. Liver profile (total protein/albumin/total bilirubin/ALT/AST/ALP)

e. Pancreas profile (amylase/HbA1c)

f. Blood gases

g. ECG

7.5.5. Cultures (blood/urine/sputum/wound) and other cultures such as Cerebrospinal Fluid (CSF)

7.5.6. COVID-19 PCR

7.5.7. QuantiFERON-TB

7.5.8. Urine analysis

7.5.9. Biopsy reports, if done

7.6. ICU attending physician or Most Responsible Physician (MRP) must inform the donor's family about the suspected diagnosis of DNC and, when proven, the definitive diagnosis.

7.7. The CCSU shall maintain a donor registry of all possible and potential DNC Donors.

7.7.1. The CCSU shall maintain proper communication with DHA and NCDT.

7.7.2. The CCSU shall report the related KPIs regularly to DHA, as mentioned in this document.

7.7.3. The CCSU shall ensure that the assessment form and the DNC declaration are completed and signed regardless of the outcome of the assessment and shall ensure uploading those forms into the patient health record.

8. **STANDARD FOUR:** ASSESSMENT OF DEATH BY NEUROLOGICAL CRITERIA (DNC)

8.1. The clinical assessment shall be carried out as per the Ministerial Decision No. (19) of 2022 regarding Death Diagnosis Criteria.

8.2. The healthcare professional shall intensify patient management to maintain organ viability during the critical period of DNC diagnose.

8.3. Consent of the next of kin is not a requirement to perform the DNC assessment.

8.4. Prerequisite for DNC Assessment- **Appendix 4:**

8.4.1. Prior to requesting the assessment, the MRP, or deputy, shall ensure that all the pre-assessment conditions are met.

8.4.2. The pre-assessment conditions are:

a. The patient is in a state of deep coma due to a known reason.

b. The patient is dependent on mechanical ventilation and cannot trigger spontaneous respiration.

c. A duration of at least six hours has elapsed since the event leading to coma, and to state clearly the reason for DNC (traumatic brain injury, cerebral bleeding, etc.).

d. The patient is not in untreated cardiovascular shock.

e. Biochemical tests are not indicative of significant metabolic or endocrine derangements.

f. The patient shall be irresponsive to any form of stimuli, except for the presence of spinal reflexes.

g. Loss of brain stem reflexes with the possibility of having some minimal spinal cord reflexes.

8.5. Exceptions for DNC Assessment:

8.5.1. The patient's body temperature shall not be hypothermic, with an internal body temperature equal or greater than 36 degrees Celsius for diagnosing death resulting from complete and final cessation of all brain functions. If the body temperature is lower than 36 degrees, the patient shall be warmed to raise the temperature and allow for the metabolism of pharmacological agents.

8.5.2. The patient shall not be under the elevated influence of any sedatives, anxiolytics, hypnotics, narcotics, antiepileptics, muscle relaxants, central nervous system depressants or anti-depressants.

a. If the history is positive for ingestion/administration of any of the above agents, then the influence of such agents shall be excluded either by a laboratory test, ancillary test or awaiting five half-lives (the longest half-life from those mentioned in **Appendix 5**) from the last time an agent was ingested/administered after discontinuing the use of the drug, in the absence of acute liver or renal failure, and hypothermia before conducting the assessment.

b. To explore revert action of the agent (e.g. giving drug-specific antidote).

8.5.3. A toxicity test shall be performed in cases of road traffic accident, suspected medication toxicity, or cases of unknown loss of consciousness.

8.5.4. Exempt patients with significant metabolic/endocrine abnormalities.

8.5.5. Patients with clear evidence of decerebration or decortication posture.

8.5.6. In any case, if the healthcare professional has not established a clear exception condition, it is required to communicate with the NCDT for expert opinion.

8.6. The assessment of DNC shall be performed by filling and signing the Brain Functions Assessment Form -**Appendix 4**.

8.7. Death by Neurological Criteria has three essential findings: presence of coma, absence of brainstem reflexes, and presence of apnoea.

8.7.1. Two clinical examinations, separated by age-defined intervals, shall be carried out using the Brain Function Assessment Form of DNC -**Appendix 4**.

a. A minimum of three healthcare professionals shall perform the clinical examination.

b. First clinical examination: physician (1) and physician (2).

c. Second clinical examination: physician (3) with one of the above physicians, or physician (4).

8.7.2. If the first two clinical examinations are completed and all the tests have been completed without constraints, the apnoea test shall be performed, to verify the absence of brainstem reflexes, and to confirm DNC -**Appendix 4**.

8.7.3. Apnoea test shall be conducted once by two of the three healthcare professionals following the second physician assessment **-Appendix 4 and Appendix 6.**

8.7.4. The ancillary test is not mandatory, it is only performed if the clinical exam parts or apnoea test cannot be done, as stated in the Ministerial Decree No.19 of 2022 to diagnose death by brain criteria - **Appendix 4**.

8.8. If there is no possibility of completing the two clinical examinations or the apnoea test cannot be performed for any reason, then:

8.8.1. It is required to perform one of the ancillary tests, as stated in the Ministerial Decree No.19 of 2022 to diagnose death by brain criteria - **Appendix 4**.

8.8.2. One of the ancillary tests can likewise be used in case of insurmountable constraints and of uncertainty as to the interpretation of the presence of spinal reflexes and/or myoclonus before the apnoea test is performed, as per the Ministerial Decision No. (19) of 2022 regarding Death Diagnosis Criteria.

8.9. In paediatric age groups, it is recommended that the minimum criteria for the determination of DNC be the same as in adults, with:

8.9.1. Assessment of prerequisites.

8.9.2. Elimination of confounders; and

8.9.3. Performance of a clinical examination, including apnoea testing (age-appropriate hemodynamic targets shall be applied) and ancillary tests.

8.9.4. All healthcare facilities shall facilitate the reassessment of the DNC patient by the NCDT.

8.9.5. Following DNC confirmation, the healthcare facility shall issue the death notification and notify by e-mail or Hayat platform, the NCDT (TheOPO@mohap.gov.ae) and DHA (ODT@dha.gov.ae), aligned with the DHA Standards for Morbidity and Mortality.

9. **STANDARD FIVE:** DNC DECLARATION AND ISSUANCE OF DEATH CERTIFICATE

9.1. If a person declared dead by neurological criteria meets the criteria for organ donation, the process shall proceed as follows: **Appendix 3**.

9.1.1. The CCSU shall facilitate the availability of medical reports and tests of the DNC and to be shared with the NCDT.

9.1.2. If the patient was not a registered organ donor, a grace period of up to 48 hours shall be given to the family to respond about the decision on organ donation.

9.1.3. The unified consent form for organ donation is obtained by the NCDT from the next of kin in the presence of the MRP, or a deputy to proceed with the donation -**Appendix 7**.

9.1.4. The guardian of the person who fully or partially lacks legal capacity may reverse the donation without any restriction before removing the organ, part thereof,

or human tissue, by Federal Decree by Law No. (25) of 2023, concerning Donation and Transplantation of Human Organs and Tissues.

9.1.5. It is not permissible to request the return of what was removed or extracted after donating it in accordance with the provisions of this law by decree.

9.1.6. The CCSU shall facilitate the referral and transfer of the person declared dead by neurological criteria to the organ retrieval facility for organ retrieval and transplantation.

9.1.7. If the person declared dead by neurological criteria does not meet the criteria for organ donation or if the next of kin does not give consent for the organ donation, then the artificial-sustaining therapy will be withdrawn, as medical therapies are no longer indicated and will be terminated since death has occurred, in compliance with Article No. (10) Point 2 of the UAE Federal Decree Law No. (4) of 2016 on Medical Liability **- Appendix 8.** Assessment and the consent not being granted by the next of kin shall be clearly documented in the patient's medical record and maintained.

9.1.8. The healthcare facility shall train the ICU physicians in effective communication and breaking bad news skills. ICU physicians shall ensure compliance with the directions set out in these standards and relevant legislation to avoid violations and legal implications.

9.2. Issuance of the death certificate:

9.2.1. The death certificate shall be issued after the DNC declaration is duly signed and as per the following:

a. If the consent for organ donation is obtained after the consultation with NCDT, it is issued within 6 hours before proceeding to the operating room for organ retrieval.

b. If the organ donation is declined the death certificate is issued after the withdrawal of all artificial-sustaining support.

10. STANDARD SIX: POTENTIAL DONOR MANAGEMENT

10.1. Healthcare facilities shall have a donor management protocol implemented in all critical care units (ICU, PICU, stroke/cardiac unit, etc.)

10.2. The healthcare facility shall train the physicians and nurses of critical care units on donor management protocols.

10.3. The possible and potential donors shall be managed with the same principles of intensive care based on international best practices.

10.4. The management of a potential donor shall be carried out as per the Donor Management Protocol by the National Center for Organ Donation and Transplantation, MOHAP.

10.5. Effective potential donor management includes, but is not limited to, the following:

10.5.1. Early and aggressive volume replacement.

10.5.2. Use of vasopressors, if necessary, to maintain hemodynamic stability.

10.5.3. Lung-protective treatment and ventilation.

10.5.4. Control of electrolytes and metabolic disorders.

10.5.5. Hormonal therapy.

10.5.6. Hypothermia prevention and treatment.

10.5.7. Infections screening and therapy.

10.5.8. Blood transfusion, if necessary.

10.5.9. Diabetes insipidus.

10.6. Critical care physicians shall manage potential donors with two main goals: improving the overall suitability for donation and enhancing the viability of organs and tissues.

11. **STANDARD SEVEN:** FAMILY COMMUNICATION

11.1. Healthcare facilities shall have a breaking bad news protocol implemented in all critical care units (ICU, PICU, stroke unit, etc.).

11.2. The healthcare facility shall train the ICU physicians and nurses on effective communication skills regarding the family and next of kin.

11.3. The healthcare facility must have a private, separate room, preferably in the ICU or nearby, where breaking bad news, explaining DNC and the consent for donation are done.

11.4. The CCSU shall facilitate communication between the family, ICU team, and NCDT.

11.5. The breaking bad news shall begin upon diagnosis with the communication of brain injury severity, and the poor prognosis by the attending ICU physician or MRP and be maintained on an ongoing basis with the family.

11.6. The communication of bad news continues when the death is declared and must be performed by the attending ICU physician or MRP, taking into account the family's needs and respecting culture, religion, and any other specificities.

11.7. Before delivering bad news, it must be ensured that the patient has been declared dead based on neurologic criteria as stipulated by the Ministerial Decision No. (19) of 2022 concerning the Criteria for the Diagnosis of Death.

11.8. The DNC declaration and breaking bad news are medical liabilities and shall be done independently of the patient's eligibility for organ and tissue donation.

11.9. If there are no family members available in the UAE, contact the coordinators of the NCDT for support in finding an authorized family member outside of the UAE (For support: +971 4 230 1111; +971 54 233 1046; For backup: +971 54 2331043).

11.10. An effective and empathic family communication for delivering the bad news must have the following elements:

11.10.1. Adapt the message to the family's level of understanding.

11.10.2. Show respect to beliefs of any kind.

11.10.3. Involve the family in the process.

11.10.4. Be concise.

11.10.5. Use open questions.

11.10.6. Review the family's understanding.

11.10.7. Summarize the key points and establish a plan of action.

11.11. The family interview for organ donation will only be conducted by a team designated by NCDT or a privileged doctor in alignment with DHA Clinical Privileging Policy- **Appendix 3**.

11.12. Family interview for organ donation must be performed after the breaking bad news of the death and after the family understands the DNC and is ready.

11.13. ICU team, multidisciplinary team (social worker, psychologist), and CCSU shall provide maximum and continuous family support.

11.14. If relatives of UAE Residents have migration backgrounds:

11.14.1. Overcome language barriers through an official translator.

11.14.2. Choose a family contact person.

11.14.3. Clarify cultural and religious needs, as needed.

12. **STANDARD EIGHT:** ORGAN & TISSUE RETRIEVAL IN HOSPITALS WITH RETRIEVAL SERVICES

12.1. Healthcare facilities that perform Organ and Tissue Retrieval shall have retrieval, packaging and transportation policies and procedures in place.

12.2. The healthcare facility shall train all healthcare professionals involved in the organ retrieval policies and procedures regarding organ and tissue retrieval, packaging and transportation.

12.3. All healthcare professionals involved in the procedures of Organ and Tissue Retrieval in Dubai shall align with the DHA Clinical Privileging Policy and work within their scope of practice.

12.4. Involved agents and responsibilities:

12.4.1. Organ Retrieval Team (ORT): specialized group responsible for carrying out the surgical retrieval of organs from deceased donors. ORT ensures that organs are procured in alignment with medical protocols and legal standards.

12.4.2. Operating room nursing team: participates in various activities during the retrieval process, such as preparing the donor for organ and tissue retrieval, supporting the ORT, and providing the necessary instrumentation.

12.4.3. Critical Care Support Unit Coordinator (CCSUC) of the donor hospital:

a. Oversees the entire process, from preparing logistics before the retrieval begins and transferring the donor.

b. Is responsible for ensuring organs and tissues reach their final destination in optimal condition.

c. Is also responsible for the family's well-being and information during the retrieval process.

12.4.4. CCSUC of the retrieval centre:

a. Participates and coordinates the logistics for the movement of the retrieval team, which may or may not coincide with the transplant centre.

b. The retrieval centre is also responsible for providing the necessary resources for the retrieval.

12.4.5. Critical care nursing team: Participates in preparing the donor for transfer to the operating room.

12.4.6. NCDT shall make sure that all necessary documentation for organ retrieval is completed before the procedure:

a. Death certificate.

b. Consent to Donate a Deceased Person Organs and Tissues.

c. Donor information dossier for each team.

d. NCDT authorization for organ and tissue retrieval.

12.5. The organ and tissue retrieval concludes with the careful reconstruction of the body according to the law and ethical principles, and then its delivery to the family (including transfer to the wake location and notification to the funeral home; in judicial cases, notification of the completion of retrieval to the court).

12.6. Coordination of the retrieval centre shall ensure all additional documentation for organ retrieval is completed after the procedure:

12.6.1. Medical report of organ and tissue retrieval specifying organs and tissues that were retrieved and the procedure's summary.

13. STANDARD NINE: ORGAN AND TISSUE DONATION REGISTRY AND KEY PERFORMANCE INDICATORS – DONATION AFTER BRAIN DEATH (DBD)

13.1. All DHA licensed facilities providing Human Organs & Tissues Donation Services (Deceased Donor) – DONATION AFTER BRAIN DEATH (DBD) services are required to report the indicators specific to the scope of the services.

13.2. Each facility providing the services shall assign a quality representative who will be responsible for reviewing the data from departments and reporting the Key Performance Indicators (KPIs) to DHA.

13.3. The quality representative must consider the following in data collection:

13.3.1. Assure staff awareness of the KPIs and data collection lead(s) are adequately skilled and resourced.

13.3.2. Create a data collection plan based on strong methodology and available resources.

13.3.3. Assure adequate data collection systems and tools are in place.

13.3.4. Back up the data and assure protection of data integrity.

13.3.5. Assure continuous review of service performance and implementation of improvement plans

13.3.6. Reporting shall be on an annual basis to monitoringkpis@dha.gov.ae.

13.4. Quality representatives shall report to DHA the following measures as outlined in **Appendix 9.**

13.4.1. Percentage of ICU staff with certified training on the DHA Standards for Human Organs & Tissues Donation Services, and relevant policies and procedures.

13.4.2. Identification of All Possible Death by Neurological Criteria (DNC) Donors in the ICU.

13.4.3. Percentage of Death Declaration by Neurological Criteria

13.4.4. Percentage of Referral of Potential Death by Neurological Criteria Donor.

13.4.5. Unexpected cardiac arrest.

13.5. Meetings of the Donor Hospital Committee (Morbidity and Mortality Committee) shall be aligned with the requirements as elaborated in DHA Standards for Morbidity and Mortality.

13.6. To effectively monitor and enhance the performance of services, all DHA licensed facilities providing Human Organs & Tissues Donation Services (Deceased Donor) – DONATION AFTER BRAIN DEATH (DBD) shall have additional internal quality monitoring and improvement measures that cover quality, clinical outcomes,

operational efficiency, and patient satisfaction serving as measurable benchmarks for success and progress.

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APPENDIX 1: POTENTIAL DECEASED BRAIN DEATH (DBD) DONORS REFERRAL FORM

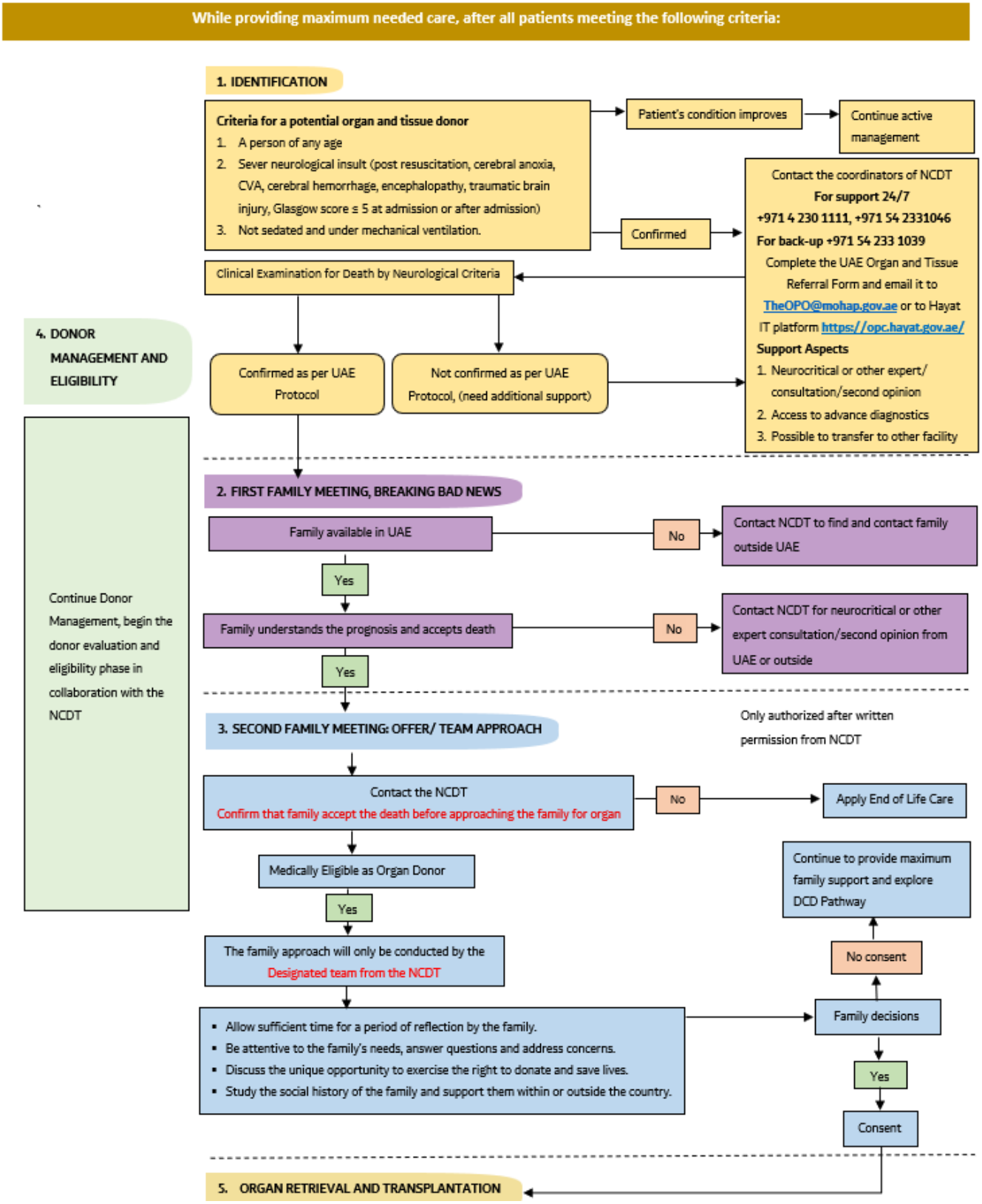
Potential Deceased Brain Death (DBD) Donors Referral Form				
The individual meets the following criteria for being a potential organ donor: 1. A person of any age 2. Has experienced a severe neurological insult (post resuscitation, cerebral anoxia, CVA, cerebral haemorrhage, encephalopathy, traumatic brain injury, Glasgow scale ≤5), not sedated and under mechanical ventilation				
Referral Date			**Referral Time**	
Referring Hospital			**Location/Unit**	
Patient Name			**MRN**	
Nationality			**Gender**	☐ **Male** ☐ **Female**
Date for Birth		**Age**	**ICU Admission Date**	
Police Case	☐ **Yes** ☐ **No**		**Blood Group**	
Cause of Brain Injury				
Other, please specify				
Next of Kin Available	☐ **Yes** ☐ **No**		**Outside**	☐ **Yes** ☐ **No**
Next of Kin Name				
Next of Kin Relationship				
Next of Kin Contact Number				
MRP Name				
MRP Contact Number				
CCSU Coordinator Name				
CCSU Coordinator Contact Number				
Please complete the form and send it back to The National Center for Regulating Donation and Transplantation of Humans Organs and Tissues at the following email **TheOPO@mohap.gov.ae** For any clarification please contact the hot line number **+971 4 230 1111; +971 54 233 1046** **For Back up: +971 54 2331039.**				

APPENDIX 2: DEATHS WITH ACUTE CEREBRAL LESION ICD- 10 CODES

Trauma	S02	Fracture of Skull and Facial Bones
	S061	Traumatic Cerebral Oedema
	S062	Diffuse Brain Injury
	S063	Focal Brain Injury
	S064	Extradural Haemorrhage
	S067	Intracranial Haemorrhage with Prolonged Coma
	S068	Other Intracranial Injuries
	S069	Intracranial Injuries Unspecified
Cerebrovascular Accidents	I60	Subarachnoid Haemorrhage
	I61	Intracranial Haemorrhage
	I62	Other Non-Traumatic Intracranial Haemorrhage
	I63	Cerebral Infarction
	I64	Stroke Not Specific as Stroke or Infraction
	I65	Occlusion And Stenosis of Precerebral Arteries
	I66	Occlusion And Stenosis of Cerebral Arteries
Cerebral Damage	G931	Anoxic Brain Damage
	G935	Compression of Brain
	G936	Cerebral Oedema
Cerebral Neoplasm	C71	Malignant Neoplasm of the Brain
	D33	Benign Neoplasm of the Brain
Infections	G00-G0	Meningitis
	GO6.0	Intracranial abscess and granuloma

APPENDIX 3: UAE ORGAN AND TISSUE DONATION PROCESS MANAGEMENT PROTOCOL

STANDARDIZED PROCEDURES FOR REPORTING CRITICAL CASES AND REFERRING POTENTIAL DONORS



APPENDIX 4: BRAIN FUNCTIONS ASSESSMENTS FORM DNC

Death By Neurological Criteria Documentation Form Affix patient ID sticker

Please write patient details below in addition to ID sticker

Name:				**Medical Record number:**		
Age: _____	**Sex:**	☐ **Male**	**Nationality:** _____	**Blood group**: _____	**Weight:**___**Kg**	**Height:**___**cm**
		☐ **Female**				
Hospital Name:				**Date of admission (DD/MM/YYYY):**		

First Exam	**First physician**		**Second physician**	
I. PRECONDITIONS:				
1. Clinical or neuroimaging evidence of acute Central Nervous System (CNS) catastrophe that is compatible with irreversible loss of brain function.	☐ Yes	☐ No	☐ Yes	☐ No
2. ≥ 6 hours have passed since the initial insult. *	☐ Yes	☐ No	☐ Yes	☐ No
3. Coma with no spontaneous respiration.	☐ Yes	☐ No	☐ Yes	☐ No
II. EXCLUSIONS:				
1. Hypothermia (core temperature ≤ 36°C).	☐ Absent	☐ Present	☐ Absent	☐ Present
2. Sedation or muscle relaxants (blood test or hospital record shall indicate absence of significant levels of sedative drugs, muscle relaxants or intoxication).	☐ Absent	☐ Present	☐ Absent	☐ Present
3. Systolic blood pressure <100 mmHg (despite vasopressors).	☐ Absent	☐ Present	☐ Absent	☐ Present
4. Significant metabolic or endocrine causes of coma. (suggested sodium ≤ 155 mmol/L or mEq/L).	☐ Absent	☐ Present	☐ Absent	☐ Present
III. CLINICAL ASSESSMENT:				
1. Absence of any cerebrally-mediated response to auditory and tactile noxious stimulation, peripherally and in the cranium. (does not include spinal reflexes)	☐ Absent	☐ Present	☐ Absent	☐ Present
2. Absence of brain stem reflexes:				
a. Pupils response to bright light	☐ Absent	☐ Present	☐ Absent	☐ Present
	☐ Untestable		☐ Untestable	
b. Corneal	☐ Absent	☐ Present	☐ Absent	☐ Present
	☐ Untestable		☐ Untestable	
c. Oculocephalic (contraindicated when C-spine unstable)	☐ Absent	☐ Present	☐ Absent	☐ Present
	☐ Untestable			
d. Oculovestibular (tympanic membranes must be intact) (50 ml adults 20 ml in children ice-cold water 0°C)	☐ Absent	☐ Present	☐ Absent	☐ Present
	☐ Untestable		☐ Untestable	
e. Gag	☐ Absent	☐ Present	☐ Absent	☐ Present
	☐ Untestable		☐ Untestable	
f. Cough	☐ Absent	☐ Present	☐ Absent	☐ Present
	☐ Untestable		☐ Untestable	

UAE Federal Law No.5/2016 article 15.2: death is determined by a committee of 3 physicians including 1 specialized in neurological disease.

***Note**: **Recommended time interval between first and second examinations in various age groups**

Adults: minimum of 30 minutes ** Infants (above 60 days – 1 year) 24 hours

Children (above one year) 12 hours ** neonate (7 days – 60 days) 48 hours

First exam	Date	Time	Name	Signature	License number
First physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MMAM/PM			
Second physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MMAM/PM			

Death By Neurological Criteria Documentation Form

Affix patient ID sticker

Please write patient details below in addition to ID sticker

Name:			**Medical Record number:**		
Age: ___	**Sex:** ☐ **Male** ☐ **Female**	**Nationality:** _____	**Blood group:** _____	**Weight:**__**Kg**	**Height:**__**cm**
Hospital Name:			**Date of admission (DD/MM/YYYY):**		

Second Exam	**Third physician**		**First or Second physician**	
I. PRECONDITIONS:				
1. Clinical or neuroimaging evidence of acute Central Nervous System (CNS) catastrophe that is compatible with irreversible loss of brain function.	☐ Yes	☐ No	☐ Yes	☐ No
2. ≥ 6 hours have passed since the initial insult.*	☐ Yes	☐ No	☐ Yes	☐ No
3. Coma with no spontaneous respiration.	☐ Yes	☐ No	☐ Yes	☐ No
II. EXCLUSIONS:				
1. Hypothermia (core temperature ≤ 36°C).	☐ Absent	☐ Present	☐ Absent	☐ Present
2. Sedation or muscle relaxants (blood test or hospital record shall indicate absence of significant levels ofsedative drugs, muscle relaxants or intoxication).	☐ Absent	☐ Present	☐ Absent	☐ Present
3. Systolic blood pressure <100 mmHg(despite vasopressors).	☐ Absent	☐ Present	☐ Absent	☐ Present
4. Significant metabolic or endocrine causes of coma.(suggested sodium ≤ 155 mmol/L or mEq/L).	☐ Absent	☐ Present	☐ Absent	☐ Present
III. CLINICAL ASSESSMENT:				
1. Absence of any cerebrally-mediated response to auditory and tactile noxious stimulation, peripherally and in the cranium. (does not include spinal reflexes)	☐ Absent	☐ Present	☐ Absent	☐ Present
2. Absence of brain stem reflexes:				
a. Pupils response to bright light	☐ Absent ☐ Untestable	☐ Present	☐ Absent ☐ Untestable	☐ Present
b. Corneal	☐ Absent ☐ Untestable	☐ Present	☐ Absent ☐ Untestable	☐ Present
c. Oculocephalic (contraindicated when C-spine unstable)	☐ Absent ☐ Untestable	☐ Present	☐ Absent ☐ Untestable	☐ Present
d. Oculovestibular (tympanic membranes must be intact) (50 ml adults 20 ml in children ice-cold water 0°C)	☐ Absent ☐ Untestable	☐ Present	☐ Absent ☐ Untestable	☐ Present
e. Gag	☐ Absent ☐ Untestable	☐ Present	☐ Absent ☐ Untestable	☐ Present
f. Cough	☐ Absent ☐ Untestable	☐ Present	☐ Absent ☐ Untestable	☐ Present

UAE Federal Law No.5/2016 article 15.2: death is determined by a committee of 3 physicians including 1 specialized in neurological disease.

***Note**: **Recommended time interval between first and second examinations in various age groups**

Adults: minimum of 30 minutes ** Infants (above 60 days – 1 year) 24 hours

Children (above one year) 12 hours ** neonate (7 days – 60 days) 48 hours

Second exam	Date	Time	Name	Signature	License number
Third physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MM AM/PM			
First or Second physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MM AM/PM			

Note: First or Second physician could be replaced by fourth doctor if applicable.

Death By Neurological Criteria (DNC) Documentation Form Affix patient ID sticker

Please write patient details below in addition to ID sticker

Name:			**Medical Record number:**		
Age: ___	**Sex:** ☐ **Male** ☐ **Female**	**Nationality:** _____	**Blood group**: _____	**Weight:**_Kg	**Height:**_cm
Hospital Name:			**Date of admission (DD/MM/YYYY):**		

APNEA TEST:

a. Must be performed in the presence of two physicians and done once only.
b. If inconclusive and patient remains hemodynamically stable, may continue for longer period (5 -10 minutes).
c. If not doable due to hemodynamic instability or aborted, the reported ancillary test will be sufficient.

A. Prerequisites		
1. Core temperature ≥ 36°C	☐ Yes	☐ No
2. Systolic BP > 100 mmHg (with or without vasopressor agents)	☐ Yes	☐ No
3. Arterial pCO2 40 +/- 5 mm Hg (5.3 +/- 0.7 kPa) (In patient with normal baseline PCO2)	☐ Yes	☐ No
4. Arterial pO2 greater than 90 mm Hg (12 kPa)	☐ Yes	☐ No
5. Expose chest and abdomen	☐ Yes	☐ No
B. Apnea testing checklist		
1. Pre-oxygenate with 100% O2 for 10 minutes. Increase the inspired fraction of oxygen (FI02)without changing the ventilation rate PaO2 >200 mm Hg (26.7 kPA)	☐ Yes	☐ No
2. Disconnect patient from ventilator and deliver 100% FiO_2 into the trachea via a cannula atthe level of the carina. (6 L/min adults, 1.5-2 L/min children)	☐ Yes	☐ No
*Abort the apnea test, immediately reconnect the ventilator and take arterial blood gas sample ifany: a. Systolic BP < 90 mmHg or cardiovascular collapse despite vasopressors b. Oxygen desaturation (<85% for >30 seconds) c. Significant cardiac arrhythmia d. d. Respiratory movements are observed	**Apnea test aborted:** ☐ Yes	☐ No
3. Check arterial blood gases at 8-10 minutes and every 5 minutes thereafter if necessary.Reconnect the ventilator when either:	☐ Yes	☐ No
a. pCO2 ≥ 60 mmHg (8.1 kPa) adults or ≥ 50 mmHg (7.6 kPa) children		
b. pCO2 is ≥ 20 mmHg (2.7 kPa) above the patient's known baseline (in patient with high baseline PaCO2)	☐ Yes	☐ No

1. **ABG at baseline:**	2. **ABG at 10 minutes or shorter if aborted[1]:**	3. **ABG at 5 minutes (optional)[2]:**
DD/MM/YYYYHH:MM AM/PM	DD/MM/YYYY HH:MM AM/PM	DD/MM/YYYY HH:MM AM/PM
pH _____	pH _____	pH _____
PaCO2_____mmHg	PaCO2_____mmHg	PaCO2_____mmHg
PaO2_____mmHg	PaO2_____mmHg	PaO2_____mmHg
	[1]Please specify:_____minutes	[2]Refer to point b at the top of thispage

C. Apnea confirmed: absent respiratory movements over ≥10 minutes of observation.				☐ Yes	☐ No
APNEA TEST completed by	**Date**	**Time**	**Name**	**Signature**	**License number**
First physician	DD/MM/YYYY	HH:MM AM/PM			
Second physician	DD/MM/YYYY	HH:MM AM/PM			

**UAE Federal Law No.5/2016 article 15.2: death is determined by a committee of 3 physicians including 1 specialized in neuro logicaldisease.

***One of the four clinical exams separated by mandatory waiting time for age (see footnote) to be completed by a specialist inneurological disease.
****The final declaration needs to be signed by all three physicians who performed clinical examinations and apnea test.
*****First or Second physician could be replaced by fourth doctor if applicable.

***Note: Recommended time interval between first and second examinations in various age groups**

Adults: minimum of 30 minutes ** Infants (above 60 days – 1 year) 24 hours

Children (above one year) 12 hours ** neonate (7 days – 60 days) 48 hours

Death By Neurological Criteria Documentation Form

Affix patient ID sticker

Please write patient details below in addition to ID sticker

Name:			**Medical Record number:**		
Age: ___	**Sex:** ☐ **Male** ☐ **Female**	**Nationality:** _____	**Blood group**: _____	**Weight:_Kg**	**Height:_cm**
Hospital Name:			**Date of admission (DD/MM/YYYY):**		

ANCILLARY TEST(S): NOT MANDATORY. If required, minimum one of the following tests shall be done.			**Report attached**
1. **EEG (full brain death protocol, see last page)**	☐ No reactivity (>2 uV) to intense somatosensory or audiovisualstimuli.	DD/MM/YYYY	☐ Yes ☐ No
2. **Absence of brain circulation by any of:**			
2.1. Cerebral angiogram	☐ No flow	DD/MM/YYYY	☐ Yes ☐ No
2.2. Nuclear medicine cerebral blood flow study (technetium 99M SPECT)	☐ No flow	DD/MM/YYYY	☐ Yes ☐ No
2.3. Transcranial Doppler	☐ No flow	DD/MM/YYYY	☐ Yes ☐ No
2.4. CT cerebral angiogram (see appendix)	☐ No flow	DD/MM/YYYY	☐ Yes ☐ No

Final Declaration	**Date**	**Time**	**Name**	**Signature**	**Licensenumber**
First physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MMAM/PM			
Second physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MMAM/PM			
Third physician ☐ An intensivist ☐ Neurologist ☐ Neurosurgeon ☐ Others specify:	DD/MM/YYYY	HH:MMAM/PM			
Fourth physician (if applicable)	DD/MM/YYYY	HH:MMAM/PM			

***Note: Recommended time interval between first and second examinations in various age groups**

- Adults: minimum of 30 minutes ** Infants (above 60 days – 1 year) 24 hours
- Children (above one year) 12 hours ** neonate (7 days – 60 days) 48 hours

Death By Neurological Criteria Documentation Form Affix patient ID sticker

Please write patient details below in addition to ID sticker

Name:			Medical Record number:		
Age: _____	Sex: ☐ Male ☐ Female	Nationality:	Blood group: _____	Weight: ____ Kg	Height: ____ cm
Hospital Name:			Date of admission (DD/MM/YYYY):		

Appendix

Electroencephalography

- A minimum of 8 scalp electrodes should be used.
- Interelectrode impedance should be between 100 and 10,000 Ω.
- The integrity of the entire recording system should be tested.
- The distance between electrodes should be at least 10 cm.
- The sensitivity should be increased to at least 2 μV for 30 minutes with inclusion of appropriate calibrations.
- The high-frequency filter setting should not be set below 30 Hz, and the low-frequency setting should not be above 1 Hz.
- Electroencephalography should demonstrate a lack of reactivity to intense somatosensory or audiovisual stimuli.

Neurology 2010;74:1911–1918.

Types and Techniques of CTA

A standard CTA acquisition uses a multislice CT scanner to acquire a helical scan (120 kV, 200 mA) from cervical vertebra C2 to vertex timed to chase the bolus of contrast as it passes through the intracranial vessels. Intravenous contrast medium (40-120 mL) is administered in an antecubital vein or a central venous catheter with a power injector, followed by 30 mL of an isotonic saline (rate: 3-5 mL/s). CT acquisition is timed to start 5 seconds after opacification of the common carotid artery of more than 150 Hounsfield units. Axial images reconstructed with a maximum of 2.0-mm increments. Thinner slices and multiplanar reformats may also be reconstructed. For delayed phase CTA [5,6], a repeat acquisition started 55-60 seconds after starting the first scan, using the same parameters as in first scan. The delayed phase acquisition is used to confirm persistence of lack of intracranial contrast over a longer duration. The standard 1- or 2-phase CTA is limited as it provides a static volume of brain vessels images performed during 1 or 2 specified time points (snapshot views). The predetermined time point used is often unreliable in these patients due to the abnormal or delayed flow.

Can Assoc Radiol J. 2017 May;68(2):224-228.

4-point CTA score		
Vessel	**Lack of Opacification**	
Right cortical segment of middle cerebral artery	Yes	No
Left cortical segment of middle cerebral artery	Yes	No
Right internal cerebral vein	Yes	No
Left internal cerebral vein	Yes	No
AJNR Am J Neuroradiol 2009;30:1566e70. Can Assoc Radiol J. 2017 May;68(2):224-228.		

7-point CTA score		
Vessel	**Lack of Opacification**	
Right pericallosal segment of middle cerebral artery	Yes	No
Left pericallosal segment of middle cerebral artery	Yes	No
Right cortical segments of the middle cerebral artery	Yes	No
Left cortical segments of the middle cerebral artery	Yes	No
Right internal cerebral vein	Yes	No
Left internal cerebral vein	Yes	No
vein of Galen	Yes	No
Am J Neuroradiol 1998;19:641e7. Can Assoc Radiol J. 2017 May;68(2):224-228.		

***Note: Recommended time interval between first and second examinations in various age groups**

- Adults: minimum of 30 minutes ** Infants (above 60 days – 1 year) 24 hours
- Children (above one year) 12 hours ** neonate (7 days – 60 days) 48 hours

APPENDIX 5: LIST OF COMMONLY USED DRUGS AND A FIVE-FOLD HALF-LIFE THAT CAN BE CONSIDERED WHEN MAKING A DECISION ABOUT DEATH BY NEUROLOGICAL CRITERIA

	Drug	**Half life**	
Opioids	Fentanyl	3.3-4.1 hours	↑CPBS, Aged, Prem; ↔Child
	Oxycodone	2.1-3.1 hours	
Sedatives	Dexmedetomidine	2 hours	
	Diazepam	30-56 hours	↑Aged, LDL, ↔ Hth
	Lorazepam	9-19 hours	↑LD, Neo, RD; ↔ Aged, CPBS, AVH; ↓Burn
	Midazolam	1.3-2.5 hours	↑Aged, Obese, LD; ↔ Smoking
	Pentobarbital	15-50 hours	
	Phenobarbital	81-117 hours	↑LD, Aged; ↓Child; ↔ Epilepsy, Neo
	Thiopental	8-10 hours	
	Propofol	2.3-4.7 hours	A much longer terminal t1/2 was reported following prolonged IV infusion.
	Zolpidem	1.7-2.1 hours	↑Aged, LD; ↔RD; ↓Child
Other	Baclofen	2.8-4.7 hours	
	Bupropion	10-11 hours (7.9-18.4)	↑Aged, LD; ↔Alcohol

APPENDIX 6: APNEA DURING ECMO TREATMENT

Clinicians should adhere to the following protocol for apnoea testing on ECMO:

1. Preoxygenate by using 100% FiO2 on the ventilator and through the membrane lung.
2. To achieve an adequate increase in PaCO2 level, either titrate exogenous CO2 into the ECMO circuit or adjust the sweep gas flow rate to 0.2–1 L/min.
3. Sample ABG measurements from both the patient's distal arterial line and the ECMO circuit post oxygenator for patients on VA ECMO.

   Patients cannulated centrally, via the right carotid artery or via the right axillary artery, should have the distal arterial sample obtained from the left upper extremity or lower extremity.

   Patients cannulated through the femoral artery should have the distal arterial sample obtained from the right upper extremity.

   PaCO2 and pH levels from both locations are required to meet BD/DNC criteria for the apnoea test to be consistent with BD/DNC. This ensures that independent of the mixing point, the PaCO2 and pH levels in the cerebral circulation meet BD/DNC criteria.

   For patients on venovenous ECMO, sample ABG measurements only from the patient's distal arterial line.
4. Avoid hypotension during apnoea testing on ECMO by increasing ECMO flows, intravenous fluid administration, or vasopressor/ionotropic support.

Reference: Pediatric and Adult Brain Death/Death by Neurologic Criteria Consensus Guideline, Report of the AAN Guidelines Subcommittee, AAP, CNS, and SCCM (2023) 'Pediatric and Adult Brain Death/Death by Neurologic Criteria Consensus Guideline', *Neurology*, 101(24), pp. 1112–1132.

APPENDIX 7: UNIFIED CONSENT FORM

إقرار الموافقة على التبرع بأعضاء وأنسجة شخص متوفى

Consent to Donate a Deceased Person Organs and Tissues

التاريخ Date	الوقت Time	رقم الملف الطبي Medical Record No.	رقم الملف بالمركز EOTC File No.

المعلومات الخاصة بالمتوفى Deceased person Information

الاسم / Name	
رقم الهوية / جواز السفر /ID/ Passport No	
تاريخ الميلاد/ D.O.B	
الجنسية/Nationality	
اسم المنشأة الصحية التي حدثت فيها الوفاة The Name of the Healthcare Facility Where the Death Occurred	

معلومات الشخص الذي أبدى الموافقة على التبرع بأعضاء وأنسجة المتوفى المذكور أعلاه

The Person Authorized to Consent for Organs & Tissues Donation of the deceased mentioned above

	صلة القرابة Kinship		الاسم:	Name:
☐	الأب - Father		تاريخ الميلاد:	D.O.B:
☐	الأم - Mother		رقم الهوية/الجواز:	ID/ Passport No:
☐	الأولاد -Offspring		صالحة لغاية:	Valid to:
☐	الزوج أو الزوجة - Spouse		مصدرها:	Issuing Place:
☐	الجد - Grandfather		البريد الالكتروني:	E-mail:
☐	صلة القرابة من الأخوة: Siblings		رقم التلفون:	Telephone No.:
☐	العم العصبة. ويقدم العم الشقيق على العم لأب The Uncle by Consanguinity. Priority shall be given to the full brother uncle than the uncle of paternal.		العنوان:	Address:
	في حال الاختلاف بين الأقارب في ذات درجة الترتيب يعتد برأي الأكبر سنا ويتساوى الذكر والأنثى Whenever disagreement in the decision amongst the relatives of the same degree of kinship occurs, the decision of the eldest is considered, and both male and female are equal.		الجنسية:	Nationality:

☒ وفقًا لقانون دولة الإمارات العربية المتحدة (مرسوم بقانون اتحادي 25 لسنة 2023 في شأن التبرع وزراعة الاعضاء البشرية والانسجة)، أعلن أنا المذكور أعلاه وأنا بكامل قواي العقلية وبدون أي إكراه مادي او معنوي بأنني موافق على التبرع بأعضاء وأنسجة قريبي المتوفى المذكور أعلاه، وذلك لزراعتها لأي مريض مناسب حسب ما تراه الجهات المختصة في هذا المجال.

☐ According to UAE (Federal Law No. (25) of 2023 concerning the Human Organ & Tissue Donation & Transplantation) , I aforementioned signed , with fully aware of and of my own free will (without any physical

or moral coercion) granting consent to donate organs and tissues of my deceased relative mentioned above, in order to transplant them to any suitable patient (s) as deemed by the competent authorities in this field.

☐ **I authorize the burial of my deceased relative in UAE** ☐ **أصرح بدفن قريبي المتوفى المذكور أعلاه داخل الدولة**

☐ **I wish to repatriate the body of my deceased relative to Home Country** ☐ **أرغب في إعادة جثمان قريبي المتوفى إلى الوطن الأم**

Remarks:	**ملاحظات:**

Authorized Person Signature:		**توقيع الشخص المخول بالموافقة :**

The Witnesses-الشهود

Name الإسم	**Relationship صلة القرابة**	**Identification No. رقم الهوية**	**Signature التوقيع**

The authorized coordinator for the consent of donating organs and tissues: (Assigned by the National Organ Transplant Committee to approach deceased family for organ donation)	**Name:** الاسم:	المنسق الذي حصل على الموافقة بالتبرع بالأعضاء والأنسجة: (المعتمد من قبل اللجنة الوطنية لزراعة الأعضـــاء لمقابلة ممثلي عائلة المتوفي، للحصول على الموافقة بالتبرع بالأعضاء والأنسجة)
	Signature: التوقيع:	

*** Please attach copy of the authorized relative ID/ Passport who signed this Consent form** *الرجاء ارفاق نسخة من هوية/ جواز سفر الشخص الموقع بالموافقة على هذا الإقرار

P.O.BOX 1853 • دبي المتحدة العربية الإمارات .DUBAI, UNITED ARAB EMIRATES • فاكس 2301929 4 971+ FAX • هاتف 1000 230 4 971+ TEL
ص.ب
www.moh.gov.ae

APPENDIX 8: UAE FORM FOR WITHDRAWAL OF ARTIFICIAL-SUSTAINING SUPPORT

Patient name:	**Hospital:**
Date of Birth:	**Gender:**
Nationality:	**Health Record No.:**
Diagnosis:	

This document is to confirm that the above-named patient is declared dead. Hence, the artificial-sustaining support will be withdrawn, and medical therapies are no longer indicated and will be terminated since death has occurred.

Treating/ Most Responsible Physician
Name:
Signature and stamp:
Date and time:

APPENDIX 9: KPI cards

1. Percentage of ICU staff with certified training on the DHA Standards for Human Organs & Tissues Donation Services, and relevant policies and procedures	
Main Domain:	Structure
Subdomain:	Effectiveness
Indicator Definition:	Availability of internal policies and procedures that cover all relevant donation steps and as per DHA Standards, which include but are not limited to: 1. Potential donor identification and referral. 2. Death Determination by Neurological Criteria. 3. Potential donor evaluation. 4. Potential donor maintenance. 5. Breaking bad news. 6. Family approach. 7. Operating theatre organization. 8. Communication between ICU professionals, CCSU and EOTC; and 9. Organ packaging and transportation (if applicable). Training ICU staff on the Standards for Human Organs & Tissues Donation Services, policies, and procedures promotes better practice.
Calculation:	Numerator: number of ICU staff who have completed certified training on DHA Standards for Human Organs & Tissues Donation Services, and relevant internal policies and procedures. Denominator: total number of ICU professionals.
Target:	70%
Methodology:	Numerator/denominator x100
Measuring Unit:	Percentage of ICU staff with certified training
Reporting Frequency:	Reporting to authority: once a year
Desired Direction:	Higher is better
Rationale:	Training ICU staff ensures adherence to DHA Standards, improving overall practice and ensuring that all steps of the donation process are

	handled appropriately and efficiently.
KPI Source:	DHA Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD)
2. Identification of All Possible Death by Neurological Criteria (DNC) Donors in the ICU	
Main Domain:	Process
Subdomain:	Efficiency and effectiveness
Indicator Definition:	Percentage of patients with cerebral lesions admitted to the ICU who are identified and reviewed by CCSUC within 12 hours of meeting the clinical criteria and a notification is sent to CCSU at the health facility. Clinical criteria for identification of critical care cases who are possible organ donors: • Comatose patients: A patient with GCS of ≤ 8 upon admission to the health facilities or during ED or ICU management, not caused by sedation and opioids. • Devastating brain injury: Any cerebral lesion potentially causing (or being a cofactor of or complication) brain death in the ICU. This also includes as per the definitions and ICD 10 codes (Appendix 1). • Look for other markers of bad prognosis in sedated patients, such as pupil dilation, hemodynamic deterioration, and new loss or absence of any brainstem reflex.
Calculation:	Numerator: number of comatose patients with devastating brain injury admitted to the ICU meeting the criteria for identification who are identified and notified by the CCSUC within 12 hours of meeting the clinical criteria. Denominator: total number of comatose patients with devastating brain injury admitted to the ICU meeting the criteria for identification of critical care cases.
Target:	100%
Methodology:	Numerator/denominator x100

Measuring Unit:	Percentage of identified possible donors
Reporting Frequency:	Reporting to authority: once a year
Desired Direction:	100% is expected
Rationale:	Timely identification of possible donors is critical to maximizing the number of organ donors and reducing donor loss.
KPI Source:	DHA Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD)
3. Percentage of Death Declaration by Neurological Criteria	
Main Domain:	Process
Subdomain:	Effectiveness and continuity of care
Indicator Definition:	Percentage of patients with devastating brain injury declared dead by neurological criteria (DNC) through filling the Death by Neurological Criteria Documentation Form.
Calculation:	Numerator: number of patients with devastating brain injury declared dead by neurological criteria. Denominator: total number of deaths of patients with devastating brain injury.
Target:	50%
Methodology:	Numerator/denominator x100
Measuring Unit:	Percentage of DNC deaths
Reporting Frequency:	Reporting to authority: once a year
Desired Direction:	-
Rationale:	Metric of effectiveness. Accurate and timely death declaration by neurological criteria is crucial for identifying potential donors and ensuring correct diagnoses, benefiting both donation numbers and families.
KPI Source:	DHA Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD)

4. Percentage of Referral of Potential Death by Neurological Criteria Donor	
Main Domain:	Process
Subdomain:	Effectiveness
Indicator Definition:	Percentage of potential DNC donors who are referred to: • CCSU at health facilities in Dubai. • DHA organ donation coordinator; and • NCDT As per the criteria as soon as possible and not exceeding 3 hours. Clinical criteria for referral of critical care cases who are potential DNC donors: • Intubated and devastating brain injury (ICD 10 codes, Appendix 1) and GCS ≤ 5 off sedation or new impairment of brainstem reflex.
Calculation:	Numerator: number of potential DNC donors referred to NCDT or CCSU within 3 hours, since the patient presents clinical triggers. Denominator: total number of potential DNC donors meeting the criteria for referral.
Target:	100%
Methodology:	Numerator/denominator x100
Measuring Unit:	Percentage of referred potential DNC donors
Reporting Frequency:	Reporting to authority: once a year
Desired Direction:	Higher is better
Rationale:	Metric of process effectiveness. Referring potential donors promptly is essential to begin the donation process and optimize opportunities for organ recovery.
KPI Source:	DHA Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD)
5. Unexpected cardiac arrest	
Main Domain:	Outcome
Subdomain:	Maintenance

Indicator Definition:	Percentage of potential DBD donors who suffered an unanticipated cardiac arrest while in the ICU. It highlights the importance of proper handling by ICU personnel to prevent cardiac arrest and the subsequent loss of potential donors.
Calculation:	Numerator: Number of potential DBD donors who suffered an unanticipated cardiac arrest before and during BD diagnosis and before family approach Denominator: Total number of potential DBD donors
Target:	≤3%
Methodology:	Numerator/denominator x100
Measuring Unit:	Percentage of unanticipated cardiac arrests among potential DBD donors
Reporting Frequency:	Reporting to authority: once a year
Desired Direction:	Lower is better
Rationale:	Metric of process effectiveness. Preventing unanticipated cardiac arrest is crucial for maintaining donor viability and reducing loss of potential donors.
KPI Source:	DHA Standards for Human Organs & Tissues Donation Services (Deceased Donor) – Donation after Brain Death (DBD)