MIDNIGHT LAW

Maintaining Safety and Confidence in the Diagnosis of Death using Neurological Criteria

BACKGROUND

- In the UK, human death is defined as the irreversible loss of the capacity for consciousness combined with the irreversible loss of the ability to breathe. Irreversible cessation of brainstem function produces this clinical state and death may be diagnosed using circulatory or neurological criteria.
- In law, irreversible loss of brainstem function is recognised as death.
- To maintain confidence and safety in the diagnosis of death using neurological criteria (DNC), it is essential that guidance endorsed by professional bodies is followed.

POINTS TO CONSIDER

- DNC requires the presence of an irreversible structural brain injury followed by the completion of two essential steps:

  1. Confirming the patient meets certain preconditions to ensure the clinical state is not treatable or reversible.

  2. Undertaking a series of clinical tests to confirm the absence of brainstem function.
- Whilst the tests in step 2 demonstrate absence of function, its irreversibility is dependent on the assessment in step 1.
- Step 1 requires the patient to be deeply comatose and apnoeic as a result of an irreversible brain injury of known aetiology, with any factor potentially contributing to the clinical state excluded.

CLINICAL TESTING

- Should not be undertaken:
  1. <6h after the loss of the last brainstem reflex

  2. <24h after the loss of the last brainstem reflex where the aetiology is primarily a hypoxic brain injury

  3. <24h after restoration of normothermia following therapeutic hypothermia.
- Two doctors each perform the clinical tests whilst being observed by the other.
- The time of the completion of the first set of tests is the legal time of death.
- Practical guidance and videos on how to perform the tests in adults, children, and neonates are available online.
- Families should be offered the opportunity to observe the second set of clinical tests.

PITFALLS

- Diagnostic caution is advised in the following groups:
  - Patients with any neuromuscular disorder
  - Patients who have received prolonged fentanyl infusions
  - Patients who have had a therapeutic decompressive craniectomy
  - Where the aetiology is primarily related to the brain stem or posterior fossa
  - Patients who received steroids for the treatment of space occupying lesions such as abscesses
- When uncertainty exists around the presence of confounding factors or ability to undertake the clinical tests the process should be paused, expert advice gained and consideration given to the use of ancillary investigations.

EXTRA CORPOREAL MEMBRANE OXYGENATION (ECMO)

- Drug sequestration in the extracorporeal circuit and difficulties in undertaking the apnoea test are challenging, but do not preclude DNC. Guidance describing how to conduct clinical testing whilst on ECMO has been published.

GUIDING PRINCIPLES

1. It is the duty of each of the two doctors to be satisfied with the aetiology, the exclusion of all potentially reversible causes, the clinical tests of brain-stem function and of any ancillary investigations; so that each doctor may independently confirm DNC.
2. The timing of the tests should be appropriate for the reassurance of all those directly concerned. If in doubt, wait and seek advice.

FURTHER READING

1. Academy of Medical Royal Colleges. A code of practice for the diagnosis and confirmation of death. Academy of Royal Colleges; 2008.
2. EWCA Civ 1092
3. Form for the Diagnosis of Death using Neurological Criteria (full guidance version).
4. Diagnosing death using neurological criteria. ODT Clinical 2018.
5. Pitfalls in the Diagnosis of Death Using Neurological Criteria. 2020.
6. The use of Cerebral CT Angiography as an Ancillary Investigation to support a clinical Diagnosis of Death using Neurological Criteria: a consensus guideline
7. Diagnosis of death using neurological criteria in adult patients on extracorporeal membrane oxygenation: development of UK guidance. 2019.

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