



Transplant Authority of Tamil Nadu **(Registered Society formed by Government of Tamil Nadu)**

Dr.R.Kanthimathy M.D.D.A
Member Secretary

Minutes of the Brain Death Committee Meeting Held On 20.05.2023

Brain Death Committee Meeting was organized by TRANSTAN on 20.05.2023, at TRANSTAN office, Tamil Nadu Multi Super Speciality Hospital, Chennai.

Dr. R. Kanthimathy welcomed and addressed the Brain Death Committee members - Prof. Raghavendran.R, M.B.B.S, M.Ch. (Neuro Surg.), Rajiv Gandhi Government General Hospital, Chennai, Prof. A. Mathiyash Arthur M.B.B.S, M.Ch. (Neuro Surg.), Government Thanjavur Medical College and Hospital, Thanjavur and Dr. Sridhar. N. M.B.B.S., M.D, FRCA. Lead consultant for Critical Care, Kauvery Hospitals, Chennai.

The following points based on THOA and G.O.-75 dated 03.03.2008 was discussed and the following recommendations were made by the brain death committee.

Sl. No	Agenda for discussion	Discussion and Committee Recommendations
1.	Prerequisites to diagnose Brain Stem Death	<ul style="list-style-type: none">• Evidence of irreversible brain injury of known etiology. Irreversible loss of consciousness and cessation of spontaneous breathing. • To exclude alcohol intoxication / depressant drugs / Narcotics / Muscle relaxants / primary hypothermia / hypovolemic shock / metabolic or endocrine disorder.
2.	<p>a) Time period to evaluate the patient for identification of clinical brain death in a patient.</p> <p>b) Time period – identification of clinical brain death to 1st apnoea test.</p> <p>c) If patient has already been clinically diagnosed / certified in another hospital</p>	<p>Minimum 6 hours from the time of admission in the hospital, where clinical examination for Brainstem death is done.</p> <p>Minimum 6 hours after identification of Clinical Brainstem death, if patient is already an inpatient of the hospital. In cases of Anoxic brainstem death, minimum 24 hours.</p> <p>Wait for minimum period of 6 hours after receiving the patient in the new hospital. During this 6 hours verify and validate the relevant records of the previous hospital through</p>

		TRANSTAN. If already certified in another hospital, repeat apnoea test or ancillary test after brainstem reflex testing and certify brainstem death. If not certified but only identified, then follow the complete protocol from the beginning.
3.	Bio chemical parameters and hemodynamic parameters, at the time of each Apnoea test or ancillary test.	<ul style="list-style-type: none"> • Mean arterial pressure - consistently >60 mm Hg. or Systolic pressure \geq 90 mmHg • Blood Glucose: 60 – 360 mg/dl. • Serum Sodium: 120 - 160 mEq/lit • Serum Potassium: 2.5 – 5 mEq/lit • pH: 7.3 – 7.45 • PaCo₂: 30 to 45 mm Hg • PaO₂: > 75 mm Hg • Core body temperature > 35°C or > 95°F
4.	Brain Stem reflexes to be tested and found absent	<ol style="list-style-type: none"> a. Pupillary size and light reflex b. Doll's eye movement c. Corneal reflex d. Gag reflex e. Cough reflex f. Bilateral Caloric testing g. Pain response to pressure over the supraorbital ridge.
5.	Guidelines for Apnoea Testing.	<p>Apnoea test to be performed only if the patient satisfies the above mentioned criteria.</p> <ul style="list-style-type: none"> • Preoxygenate with 100% oxygen for 10 to 15 min while on ventilator • Ventilator settings to be adjusted to allow PaCO₂ to rise to 40mmHg or more. ETCO₂ can be used as a guidance but should not replace pre & post arterial PaCO₂. • A baseline arterial blood gas before apnoea is mandatory • Disconnect from ventilator & oxygen at a flow rate of 5 lt/ min through a catheter placed in endotracheal tube is given for 8 -10 minutes. Observe for any spontaneous respiration. • Before connecting back to ventilator, arterial sample for ABG is taken. <p>Note: Alternatively a CPAP circuit/ Bains circuit for apnoeic oxygenation maybe used. But, patient should not be connected to mechanical</p>

		ventilator as even cardiac pulsations might trigger supportive breaths from ventilator. Apnoea test when patient is still connected to ventilator is not recommended.
6.	<p>Interpretation of Apnoea Test</p> <p>a. If 1st Apnoea test is positive.</p> <ul style="list-style-type: none"> • Time of Death <p>b. If indeterminate, time period to repeat apnoea test</p> <p>c. When to abort apnoea test</p> <p>d. If apnoea or ancillary test is negative, time period to repeat the test</p>	<ul style="list-style-type: none"> • <i>Positive test</i> <ul style="list-style-type: none"> - No respiratory efforts despite <ul style="list-style-type: none"> A. post apnoea PaCO₂ ≥ 60mmHg or B. post apnoea PaCO₂ increase by ≥ 20mmHg from baseline value. <p><i>Note: either one of A or B is sufficient. No need for both criteria to be simultaneously met.</i></p> • <i>Negative test</i> <ul style="list-style-type: none"> - Presence of respiratory effort. • <i>Indeterminate</i> <ul style="list-style-type: none"> - No respiratory effort but rise in PaCO₂ is insufficient and neither of the criteria A or B are met. <p>To repeat after minimum period of 6 hours in adults, 12 hours in paediatric patients (31 days to 18 years of age) and 24 hours in Term baby to 30 days of age.</p> <p>Time of ABG in which the arterial pCO₂ reached the target value in 2nd apnoea test.</p> <p>After 3 hours</p> <ul style="list-style-type: none"> - Hypotension, < 90 mmHg systolic - Cardiac arrhythmias - Hypoxemia, SpO₂ < 85%. - When aborted, apnoea test can be repeated after 3 hours, if haemodynamic parameters meet the guidelines. <p>Repeat after 24 hours if strong clinical grounds for brainstem death persists.</p>
7.	Ancillary tests:	

<p>a. When done</p>	<ul style="list-style-type: none"> a. Bilateral Facio - Maxillary injury b. Thoracic Injury c. High cervical cord injury d. Patient requiring high FiO₂ / high PEEP which precludes them being taken off ventilator for apnoea testing. e. When CNS examination could not be completed. <p>Note: Diagnosis of brain death is by clinical criteria. Ancillary tests are only a supplementary tool to diagnose brain death. Ancillary tests should never replace clinical diagnosis.</p> <p>If a complete set of clinical tests & apnoea test cannot be performed, then it is recommended to do the performable components of clinical brain death tests & if these are consistent with death by neurological criteria, ancillary tests can be done to confirm brain death.</p>
<p>b. Recommended ancillary test</p>	<ul style="list-style-type: none"> a. CT cerebral Angiography b. DSA of cerebral circulation c. MRI cerebral Angiography <p>Note: CT cerebral Angiography is the ancillary investigation of choice and is recommended.</p> <p>The four-point CTA criteria has been shown to have 100 percent specificity (ie.0 percent false positive rate) and 85 percent sensitivity (ie.15 percent false negative rate).</p> <p>The four vessels looked at in the 4- point scoring system are:</p> <ul style="list-style-type: none"> 1. Right Cortical branch of MCA - M4 segment 2. Left Cortical branch of MCA - M4 segment. 3. Right ICV 4. Left ICV <p>For each vessel that shows lack of contrast flow, one point is given. If all 4 vessels show no contrast, then it is a score of 4/4 that implies patient is brain dead.</p> <p>Score of 3/4 or less is negative for Brain death.</p>

	<p>c. Sequence of clinical & ancillary test</p> <p>d. Time of Death</p> <p>e. If ancillary test is negative, time period to repeat the test</p>	<p>Ancillary test is done minimum of 6 hrs after the first set of performable components of clinical brain death.</p> <p>If ancillary test demonstrates angiographic finding supporting the diagnosis of brain death, then a second set of clinically performable tests are to be done immediately after a positive ancillary test & if the clinical findings are consistent with diagnosis of brain death, the patient is declared dead.</p> <p>Time when the second set of clinical tests are done immediately after a positive ancillary test.</p> <p>Repeat after 24 hours if strong clinical grounds for brainstem death persists.</p>
11.	Certifying Doctors	<p>Team of 4 doctors must certify Brain Death</p> <ol style="list-style-type: none"> 1. RMP Incharge of the hospital in which brain stem death has occurred (Head of the Institution / RMO/ ARMO / Duty RMO). No clearance required from the Appropriate Authority. 2. Neurologists / Neuro Surgeon (If not available, surgeon or physician and Anaesthetist or Intensivist, empanelled by Appropriate Authority). 3. RMP nominated from the panel of names sent by the hospital and approved by Appropriate Authority (Physician, Surgeon or Intensivists). 4. RMP treating the deceased person. No clearance required from the Appropriate Authority.

Other points discussed:

1. Brain Death Certification and organ donation

- Identifying brain stem dysfunction, maintaining brain dead patients and brain death certification for the sole purpose of retrieving organs for transplantation



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should never be the reason for arriving at the diagnosis of brain death. Irrespective of whether the patient's family have consented for organ donation or not, it is mandatory to certify brain death in patients who meet the brain death criteria (GCS3/ on ventilator with no spontaneous respiratory effort/ fixed pupils/ neuroradiologic evidence of irreversible brain injury).

2. Methyl prednisolone, thyroxine are to be administered only after first positive apnoea test.
3. Brain death certification team should not be a part of retrieval and transplant team in any manner.
4. Counselling donor family should be done by the grief counsellor. Doctors involved with donor maintenance & brain death certification should not be in contact with donor or recipient family. The retrieval / transplant team of doctors should not be in contact with the donor family
5. The specialities that need to be empanelled with Appropriate Authority for Brain Death Certification was discussed. It was agreed that the following specialities must be empanelled.
 - Neuro physician
 - Neuro Surgeon
 - Anaesthesiologist / Intensivist
 - General Physician
 - General Surgeon
 - Paediatrician
 - Respiratory physician
 - Cardiologist

Dr. R. Kanthimathy thanked the members of Brain Death Committee for having attended the meeting and offering their valuable opinions and suggestions.

Member Secretary,

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