eTABLE 3. CLINICAL GUIDANCE FOR PERFORMANCE OF THE COMPONENTS OF THE BD/DNC EXAMINATION

Examination Component[a]	How to Perform the Examination Component	Response Consistent with BD/DNC	Clinical Considerations
Coma	• Visual response is determined by assessing for a blink to visual threat, taking care during the technique not to create a wind wave, thereby inadvertently testing a corneal reflex. • Auditory response is tested with clapping and loud yelling of the person's name, assuming that the patient is hard of hearing at baseline and a loud stimulus is necessary.	• No evidence of arousal or awareness to maximal external stimulation (including noxious visual, auditory, and tactile stimulation)	• Drugs and metabolic derangements may cause reversible coma. Permanency must be established before performing a BD/DNC examination.
Motor responses of the face and limbs	• Apply deep pressure to all of the following: o the condyles at the level of the temporomandibular joints o the supraorbital notch bilaterally o the sternum o all 4 extremities, both proximally and distally • Insert a cotton swab on a stick in each nostril to perform "nasal tickle" testing.	• Noxious stimuli should not produce grimacing, facial muscle movement, or a motor response of the limbs other than spinally mediated reflexes. • Noxious stimuli above the foramen magnum should not produce any movement in the face or body. • Noxious stimuli below the foramen magnum should not produce any movement in the face but may elicit spinally mediated peripheral motor reflexes.	• The clinical differentiation of spinal responses from brain-mediated motor responses requires expertise. Consultation with an experienced practitioner is recommended if the origin of a response is unclear. Alternatively, if interpretation is unclear, ancillary testing is recommended. • Ancillary testing is recommended if a person has a pre-existing severe neuromuscular disorder, such as amyotrophic lateral sclerosis or a pre-existing severe sensory neuropathy. • Ancillary testing is not required if a person does not have all 4 limbs. Painful stimulation can still be provided centrally and on the torso as close to the termination of the limb as possible. • Severe facial trauma and swelling may preclude evaluation of facial motor response, so ancillary testing is recommended in this setting.
Pupillary reflex	• Dim the room light for several minutes before testing to maximize responsiveness • A bright (e.g., LED) light can be used • Shine a bright light into each of the person's eyes, looking for pupillary constriction and measuring the diameter of the pupils. Use of a magnifying glass may be considered.	• Ipsilateral and contralateral pupillary response should be absent in both eyes. Pupils in both eyes should be fixed in a midsize or dilated position. Constricted pupils (<2 mm) are not consistent with BD/DNC and suggest possibility of intoxication or locked-in syndrome.	• Pupils can be any shape (round/oval/irregular). • Corneal trauma or prior ophthalmic surgery may influence pupillary reactivity and preclude adequate evaluation, necessitating ancillary testing. • Ocular instillation of drugs (e.g., anticholinergic) may artificially produce transiently nonreactive pupils. • In the setting of anophthalmia or inability to see the pupils, ancillary testing is recommended. • Automated pupillometers may be a useful adjunct in the examination,[e87] as this may detect responsiveness not appreciated by the naked eye. However, automated pupillometers are not validated for use in isolation in BD/DNC. If performed, it must be consistent with no pupillary responses to light bilaterally. In some patients younger than 6 months, the pupillary border may not be formed sufficiently for an automated pupillometer to obtain an accurate measurement. • Any pupillary reactivity, whether to bright light or dimming of the ambient light, is not consistent with BD/DNC.
Corneal reflex	• Touch the cornea of each eye with a cotton swab on a stick at the external border of the iris, applying light pressure and observing for any eyelid movement. • Effective stimulus location is at the border of the iris; testing farther out on the sclera/conjunctiva is less sensitive.[e88]	• No eyelid movement should be seen, other than that directly caused by the stimulus.	• Care should be taken to avoid damaging the cornea. • In the setting of anophthalmia, severe orbital edema, prior corneal transplantation, or scleral edema or chemosis, ancillary testing is recommended.

Examination Component[a]	How to Perform the Examination Component	Response Consistent with BD/DNC	Clinical Considerations
Gag and cough reflexes	• Stimulate the posterior pharyngeal wall bilaterally with a tongue depressor or rigid suction device. • Stimulate the tracheobronchial wall to the level of the carina with deep endotracheal placement of a suction catheter.	• Absence of cough and gag.	• The efferent limb for the cough reflex includes the phrenic nerve, which may be injured in persons with high cervical cord injuries, so ancillary testing is recommended in this setting.
OCR and OVR reflexes	• OCR: Confirm integrity of the cervical spine and skull base, securing the endotracheal tube to prevent accidental dislodgement. • Rotate the head briskly horizontally to both sides. There should be no movement of the eyes relative to head movement. Testing vertically is optional. • OVR: Examine the auditory canal to ensure patency and the integrity of the tympanic membrane. Presence of a ruptured tympanic membrane does not negate the clinical testing. • Evaluate the head to 30° to place the horizontal semicircular canals in the correct vertical position. Irrigate with ≥50-60mL of ice water for at least 60 seconds using a syringe or a syringe attached to a catheter placed inside the canal. Test both sides separately, with a 5-minute interval between to allow the endolymph temperature to equilibrate.	• There should be absence of extraocular movements (i.e., the eyes follow the head movement exactly, staying mid-position the entire time). • Detection of any extraocular movements is not compatible with BD/DNC.	• If the OCR cannot be performed, but the OVR is performed bilaterally and there are no extraocular movements, ancillary testing is not required. • A fracture of the base of the skull or petrous temporal bone may obliterate the response on the side of the fracture, and ancillary testing is recommended in this instance. • Severe orbital or scleral edema or chemosis may affect the free motion of the globes, and ancillary testing is recommended in this instance. • In the setting of anophthalmia, ancillary testing is recommended. • If present, the OVR can lead to vomiting, posing a risk for aspiration.
Sucking and rooting reflexes	• Sucking reflex: A gloved finger is placed inside the baby's mouth. • Rooting reflex: The external surface of both cheeks and corners of the mouth are stroked with a finger.	• Sucking: The lips do not close around the finger and there is no rhythmic squeezing of the finger between the tongue and palate. • Rooting: No movement of the head.	• These reflexes are present at birth. • The rooting reflex extinguishes between 3 and 6 months of life. • The sucking reflex transitions from a primitive reflex to a voluntary movement around 4 months of life.

Abbreviations: BD/DNC = brain death/death by neurologic criteria; LED = light-emitting diode; OCR = oculocephalic reflex; OVR = oculovestibular reflex

[a]The oculocardiac reflex and/or atropine testing are not standard parts of the BD/DNC examination and need not be performed.

