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Understanding what brain-death is

The diagnosis of brain-death must be made by senior doctors in the appropriate specialised areas such as neurologists, anaesthesiologists, or intensive care specialists and none of these specialists should, in no way, be associated with the potential use of the patient's organs.

BY SYLVESTER ONZIVUA

Prince Alwaleed bin Khaled was born on April 18, 1989 and his life changed forever in 2005 when, at the age of 15, a devastating car accident left him with severe brain damage and other critical injuries in several parts of his body. He was studying at a military academy in London at that time when he was involved in the car crash. What was supposed to be the start of a bright, promising future became a two-decade-long battle between life and death for the Prince.

The crash caused severe cerebral hemorrhage that left him in an induced coma and he was to spend more than 20 years on life support at King Abdulaziz Medical City. After the accident, he was kept alive with a ventilator.

He became known as the "Sleeping Prince of Saudi Arabia." His father decided to keep him alive as long as possible, hoping to see him wake up one day.

Despite getting some of the best medical care in the world from American, Spanish, and Saudi specialists and countless prayers, Prince Alwaleed remained in a coma and he never fully woke up again.

He only responded occasionally

with minimal movements that kept his family's hope alive. His father became a symbol of unconditional love and undying faith, given that over the years, he refused to give up on his son, rejecting calls to withdraw life support.

During the 20-year-long coma, the Prince suffered ups and downs in his health state, with a couple of occasions when it looked possible that he would regain consciousness. The last one was in 2020, when his family posted a video where the prince was lifting his fingers in response to a woman's greeting. At one point he also managed to lift his hand and this gave his family hope.

For his father, every small sign from the Sleeping Prince felt like a divine message of hope that one day his beloved son might open his eyes again. But, this never happened. The Sleeping Prince stayed in coma for 20 years, and passed away on July 19, 2025 at the age of 36 years.

His death brought about a quiet end to a long painful chapter of unwavering hope, patience, and fatherly devotion and the Prince's life became a rare and powerful story of hope, heartbreak and a father's endless devotion.

Most probably, the Prince Alwaleed suffered brain-stem death. The brain stem is that part of the brain that connects the spinal cord with the "main"

brain and contains areas that control breathing, blood pressure and alertness. Without the functioning of the brainstem there cannot be cognitive or affective life and no social interaction with the environment.

The capacity to breathe is a function of the brainstem and cessation of breathing is a critical manifestation of a non-functioning brainstem. Once spontaneous breathing ceases, the heart cannot continue to function for long and blood circulation then stops.

Brainstem death is a point at which someone is declared legally dead and his or her organs can then be harvested and transplanted in patients who would benefit from them. In 1967, the first heart transplants were performed when hearts were harvested from beating hearts of brain dead donors.

The ability to transplant organs from one human being to another is one of the greatest achievements of modern medicine. The first transplant was of a kidney from a living donor into her identical sister in 1954. The first liver transplant was in 1963, the pancreas in 1966, and the heart in 1967.

In the 1960s, many organs were har-

vested from corpses whose deaths were certified when the persons stopped breathing and the heart stopped pumping blood. But these organs were often found to be in poor state, owing to the short time of oxygen deprivation. With the development of the concept of brain-stem death, the heart-beating corpses became the most common source of donor organs from the early 1970s up to date.

Laws and standards have now been developed to diagnose brain-stem death. Death, in a nutshell, has been defined as either the irreversible cessation of circulatory and respiratory functions or irreversible cessation of all of the entire brain. The concept of "whole brain death", if taken literally, would mean that detection of any activity by any means would prevent a diagnosis of death.

In 1976, brainstem death was defined as a separate entity and the definition was the complete and irreversible loss of the functions of the brainstem and this definition has been found to be simple, reliable and robust. In hospital settings, the diagnosis of brain death is not technically diffi-

cult and can be made on purely clinical grounds. The purpose of the examination is to establish the irreversible loss of brain-stem function.

The diagnosis of brain-death must be made by senior doctors in the appropriate specialised areas and include neurologists, anaesthesiologists, or intensive care specialists and none of these specialists should, in no way, be associated with the potential use of the patient's organs for transplant purposes.

The diagnosis of brain-stem death is made in three phases; the first is to ascertain the cause of the coma and to establish that there is irremediable structural brain death. The brain damage is deemed irremediable when all attempts to restore its functions have failed.

The second step is to exclude all possible causes of reversible brain-stem injury such as hypothermia, drug intoxication or severe metabolic disturbances. The third and final step is to demonstrate the total loss of the functions of the brain-stem and the fact that the patient cannot breathe, however strong the stimulus.

The brain-stem is deemed to function if a person's eyes respond to light shone into them or blinking of the eyes or grimacing when pressure is applied just above the eye socket. When the brain stem is not irreversibly damaged, a person's eyes will also move when ice-cold water is introduced into his or her ears by way of syringing.

A person will also cough or gag when an object such as a catheter is introduced into the person's throat. The ability of the patient to breathe spontaneously is also assessed. These tests must be confirmed twice.

Breathing and blood pressure

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Explainer. The brain stem is that part of the brain that connects the spinal cord with the "main" brain and contains areas that control breathing, blood pressure and alertness. Without the functioning of the brainstem there cannot be cognitive or affective life and no social interaction with the environment.

Part of the brain that connects the spinal cord.