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Academy of Medical Royal Colleges

A lay summary of the Code of Practice for the diagnosis and confirmation of death

Please note this is a summary of the Code only; full and authoritative guidance is within the Code itself.

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How do we know when someone has died?

When a person dies, a competent individual, usually a healthcare professional, will need to examine the person's body and confirm that they have died. Often it will already be obvious that they have died. But in other circumstances it may be less obvious. The examination by a healthcare professional ensures that every death is confirmed in an accurate, standardised and timely way.

Since the 1970s the Academy of Medical Royal Colleges (the Academy) has been providing doctors with criteria by which death can be diagnosed in an accurate, standardised and timely way. The updated 2025 Code of Practice from the Academy builds on these foundations. It provides doctors, other healthcare professionals, and other competent individuals, with the criteria they need to follow so that they can safely and respectfully diagnose and confirm death.

The 2025 Code clearly outlines three different sets of criteria for confirming that a person has died: *somatic, circulatory* and *neurological criteria*. Any one of these three sets of criteria can be used to confirm that the person has died. The set of criteria used will be the one most appropriate to the circumstances.

Somatic criteria are used following overwhelming and clearly visible physical trauma. They are also used when death is suspected to have occurred a considerable time beforehand – the person may then have clear signs that indicate death such as rigor mortis.

Circulatory criteria are used following cardiorespiratory arrest, most commonly in a care or community setting when death is expected, but also in cases of sudden and unexpected cardiorespiratory arrest where resuscitation has been unsuccessful. The criteria demonstrate that a person's circulation, breathing and brain function have permanently ceased. A stethoscope will be used to listen for heart and breath sounds. Sometimes the examination is supplemented by confirming the absence of heartbeat on an electrical trace of the heart, called an electrocardiogram or ECG.

Neurological criteria are used following a devastating brain injury in people in an intensive care unit who are not waking up and are not able to breathe. The criteria are used when the doctors suspect that the brain injury is so severe that brain function has permanently ceased. Neurological criteria are the least frequently used criteria to confirm death.

Who can use the diagnostic criteria to confirm death?

The UK law does not regulate who can diagnose and confirm death. However, there is one exception to this. In Scotland for the specific purpose of deceased organ and tissue donation a registered medical practitioner must diagnose and confirm death. In all other circumstances, there is no legal requirement that a doctor be involved.

This means that the confirmation of death can be, and frequently is, undertaken by a wide range of individuals. These individuals are most commonly healthcare professionals, including doctors, nurses, paramedics and other ambulance responders. In some circumstances non-healthcare professionals, such as police officers, might undertake the diagnosis and confirmation of death.

The Code does not specify who might be considered competent to diagnose and confirm death except when death is diagnosed using neurological criteria, which remains the responsibility of doctors owing to its rarity and complexity. However, the individual must have received the necessary training and approval to diagnose and confirm death using the criteria set out in the Code.

It may be useful to clarify that the diagnosis and confirmation of death is different from the medical certification of the *cause of death* which *is* legally required to be done by doctors.

What are the three sets of criteria to diagnose and confirm death?

The three sets of criteria for the diagnosis and confirmation of death described in the Code are: s*omatic, circulatory* and *neurological criteria*. Which set is used will depend on the circumstances.

Before using any of the criteria, the individual confirming death must be satisfied there are no appropriate actions which should be taken to try and save the life of the person.

Somatic Criteria

Somatic criteria are used following overwhelming physical trauma or when death is suspected to have occurred a considerable time beforehand. Humans have used these signs of death since ancient times and include rigor mortis, decapitation and decomposition. In most circumstances, it will be clear that many of the somatic criteria are met just by a physical inspection of the body. However, there may be other circumstances where it is less clear, or where it will only become clear with time. For this reason somatic criteria are most often used at the scene of an accident or if a person has been dead for a considerable length of time.

Circulatory Criteria

Circulatory criteria are the criteria most used for confirming death. The criteria demonstrate that a person's circulation, breathing and brain function have permanently ceased.

Before using circulatory criteria, the individual confirming death must be fully satisfied that resuscitation would not benefit the person. This is either because there is a prior, valid and documented decision not to attempt resuscitation or attempts at resuscitation have been made but have not been successful and resuscitation has stopped. Only if starting or continuing resuscitation is not appropriate can circulatory criteria be used.

Circulatory criteria require an examination of the person to confirm that there is no pulse, no heartbeat, no breathing and no consciousness over a minimum of five minutes. In some settings, for example in highly monitored environments like the emergency department or intensive care, the examination is supplemented by confirming the absence of heartbeat on ultrasound or direct measurement of the arterial blood pressure or by using an electrical trace of the heart called an electrocardiogram or ECG.

Neurological Criteria

Neurological criteria are used much less frequently than the other two sets of criteria. Each year over 600,000 deaths are recorded in the UK. Of these, only 1,500 people have their deaths confirmed using neurological criteria.

Neurological criteria are only ever used when the treating doctors suspect that the person has died. The person will have suffered a devastating brain injury from which they won't recover. The injury is usually caused by head trauma, bleeding, or loss of blood flow to the brain, which deprives the brain of the oxygen and nutrients it needs to keep functioning. The injury will be so serious that they will be in an intensive care unit. They will need mechanical ventilation and other intensive care interventions just to keep their heart beating and oxygen going to their body. If the brain injury worsens, which can happen when the brain continues to be deprived of oxygen and nutrients, this can lead to permanent damage to essential areas of the brain. The most important of these areas is the lower part of the brain, called the brainstem. If the brainstem become so damaged that it permanently ceases to function, even though heartbeat, circulation and other organ functions can be artificially maintained, the person will have died. The person can never again wake up, have any form of awareness or consciousness associated with human life or have any ability to feel. Nor will they ever be able to breathe again.

Unlike the other two sets of criteria, neurological criteria can only be used by doctors, who will work in pairs to carry out a bedside examination of brainstem function. At least one of the doctors will be a consultant, normally a specialist in intensive care medicine. The examination will be performed twice. Close family members or friends are often asked if they would like to watch the pair of doctors carry out the second examination. Many families are reassured when they see, first hand, the clinical signs which confirm that their relative has died. If families choose to watch, they are always supported by healthcare professionals. Sometimes additional investigations may be required to support the diagnosis. When all the neurological criteria are met, it means that the person has died.

How does the Code define death?

The Code recognises that the UK is a religiously and culturally diverse country. There are many different beliefs in our society and across the world regarding the concept of death and practices around the time of death.

From a biological perspective death is a process rather than an event. In almost all circumstances a person's organs, tissues and cells stop functioning, and begin decaying, at different rates. Despite this, as a society, we need to define a point in this process where death can be confirmed in an accurate, standardised and timely manner. The responsibility for confirming this point has been reached has historically been given to doctors and other healthcare professionals.

Death entails the permanent loss of those essential characteristics which are necessary to the existence of a living human person: the capacity for consciousness and the capacity to breathe. In the UK, a definition of death based on the permanent loss of function in the brainstem has been medically accepted since 1979. The brainstem is essential for consciousness and breathing. Without a functioning brainstem neither consciousness nor breathing are possible.

When brainstem function is permanently lost, death has occurred. Although there are three sets of criteria — s*omatic, circulatory*, and *neurological* — this does not mean the UK has three definitions of death. All three establish the same thing, the permanent loss of brainstem function. The three sets of criteria are simply different ways to confirm it, in different situations or settings.

Although there is no law defining death in the UK, the permanent loss of brainstem function (previously termed brainstem death) is recognised by the common law as the definition of death. Additionally, the courts have repeatedly and explicitly accepted the Academy's Codes (and their predecessors) as providing authoritative criteria for diagnosing and confirming death.

Why can limbs still move after death has been confirmed using neurological criteria?

After confirming death using neurological criteria some limb movements can be present. These movements do not originate from the brain. Typically, the movements arise from nerve connections between the arms and legs and the spinal cord. They are known as spinal reflexes. We all have spinal reflexes, but a normally functioning brain suppresses all but the strongest of them. However, once the brainstem has permanently ceased functioning, there will no longer be any suppression of the spinal reflexes and they can become more prominent. It is therefore to be expected that these movements may occur. The movements can be spontaneous or might occur after stimulating part of the body.

The presence of these reflex movements does not indicate that there is any form of consciousness associated with human life, nor any brainstem function. They occur after death has been confirmed using neurological criteria because mechanical ventilation and other intensive care interventions that support heart and lung function are still ongoing. This means that there is oxygen and blood supply to parts of the body, such as the heart and spinal cord. The longer this support continues after the confirmation of death, the more likely some of these movements will appear and, potentially, the more exaggerated the movements will be.

Healthcare professionals should always explain to families and friends what these movements mean and that they do not originate from the brain. That is, that the person is dead, and the reflex movements do not indicate they are alive.

Explaining death using neurological criteria in simple terms

Usually, death occurs when the heart permanently stops beating and the person stops breathing. Following this, the brain, having been starved of blood and oxygen, also ceases to function.

However, in other circumstances, the brain may cease to function before the heart stops. This can happen if there is a devastating brain injury which is so serious that it causes the brain to permanently stop functioning. This might follow head trauma or bleeding or infection in the brain. If the person is on a mechanical ventilator, which will move air in and out of the lungs, the heart will continue to beat. However, the fact that the heart is beating does not mean that the brain is functioning or that the person is alive.

In both circumstances, it is when the brain permanently ceases to function that marks when the person has died. This is because the brain is essential to who we are as a human person. It allows us to be conscious. Consciousness gives us our capacity to be awake, to think, to feel, to be aware and to have experiences. Unlike other organs it cannot be replaced by a machine or by a transplant. Not only is the brain essential for consciousness; it is also essential for breathing. If your brain permanently ceases to function, you will not be able to take any breaths. The part of the brain that is required for consciousness and breathing is the lower part of the brain, called the brainstem, and as said above, if we lose the capacity to breathe, the heart will stop.

Neurological criteria are only ever used when the doctors in intensive care strongly suspect the person has died. This is because the doctors can see signs suggesting that the person's brainstem has permanently ceased functioning. The CT scan of the brain will show such devastating brain injury that the doctors can see that the brain is swelling and crushing the brainstem. If there is no treatment and the damage is permanent, then the brainstem cannot recover and the person will have died.

Additionally, there will be clinical signs that the brainstem has stopped functioning. Doctors have well recognised and accepted ways of testing brainstem function. The tests are carried out at the bedside on intensive care. Doctors will examine and test to see if they can observe any sign of brainstem function. This will either confirm or refute their suspicion that death has occurred. One of the tests involves shining a bright light in the person's eyes to see if the pupils get smaller. Responsivity to light is a basic brainstem

function. Other tests look for the blink reflex, or the ability to cough or gag or the ability of the person's brainstem to control balance. In addition and most importantly, the person will be temporarily taken off the mechanical ventilator to prove that they cannot breathe for themselves.

To be certain of the results, the set of tests are always carried out twice. Families are often given the opportunity to observe the second set of clinical tests. Many families find it reassuring to see for themselves the clinical signs which confirm that their relative has died. If families choose to do observe the tests, they will be supported by healthcare professionals.

How does loss of brain-stem function differ from other conditions causing coma and loss of consciousness?

When brainstem function stops permanently, the loss of consciousness is permanent. In other conditions causing coma, the loss of consciousness may be reversible and incomplete. The damage in these conditions is usually in other parts of the brain and not in the brainstem. Also, with other types of coma, the brainstem continues to have some function such as blinking and coughing, and the person retains the ability to breathe.

One area of confusion involves people in a vegetative state, also known as unresponsive wakefulness syndrome. Even though they may not recover, these people are not dead because they have persisting brainstem function, notably some aspects of consciousness like sleep and wake cycles. They can also breathe. Similarly, babies born with anencephaly (born without most of the brain) have some brainstem function and therefore will not satisfy neurological criteria by the nature of their condition alone.

What makes doctors on intensive care suspect that a person on a ventilator has died?

Although the level of oxygen in the person's body and thus their heartbeat are maintained by the ventilator (which pushes air in and out of the lungs), doctors and nurses will recognise signs that the person may have died. Most often the person's pupils stop reacting to light or their blood pressure and heart rate change. Also, the person's lack of response to various types of stimulation may lead doctors and nursing staff to suspect that permanent loss of brainstem function may have occurred. CT scans and, where required, other investigations, will demonstrate devastating brain injury affecting the brainstem.

Have errors ever been made in the diagnosis of death?

Every human endeavour involves the possibility of error. The commitment of the Academy and the wider healthcare profession is that we learn from any errors so that they do not happen again.

Maintaining safety and confidence in the diagnosis of death is the highest priority in the updated 2025 Code. The Code builds on nearly fifty years of guidance provided by the Academy and is informed by similar guidance published by other countries. In children less than two years of age, where the brain is less developed, additional safety checks are incorporated into the criteria. Where necessary, the Code has been strengthened to ensure that any lessons from the extremely rare cases of misdiagnosis, which have occurred in the UK and elsewhere in the world, were incorporated.

The errors that have occurred have most often been due to a failure to fully follow the criteria in the Code or the equivalent international guidance. That is why the Code is essential to maintaining an accurate, standardised and timely diagnosis and confirmation of death.

Communication around the time of death

Not only must death be diagnosed and confirmed in an accurate, standardised, and timely manner, but it must also be communicated clearly and respectfully. The death of any individual, at any age, and in any circumstance, is a major event for their family and friends. Additionally, the place and time of death often holds special significance. The death of a loved one may create anxiety, concern, or conflict within a family or between a family and healthcare professionals.

Healthcare professionals should never assume that the age of the patient, the suddenness or otherwise of the death, the cause of death, or the apparent proximity of the relationship between the patient and family and friends will affect anyone in a consistent or predictable manner. Instead, healthcare professionals need to always be aware of the unpredictable nature of the impact of death on family and friends and strive to communicate in an empathic and sensitive manner.

A particular ambition of the updated Code was to better support healthcare professionals' communication with patients, their families and the public. This is reflected by the inclusion of a new section in the Code on communication. While publications and resources are already available which cover the details of communication around the end of life, the focus in the new communication section is on giving some pragmatic guidance to healthcare professionals on good communication in the period around when the diagnosis and confirmation of death occurs.

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