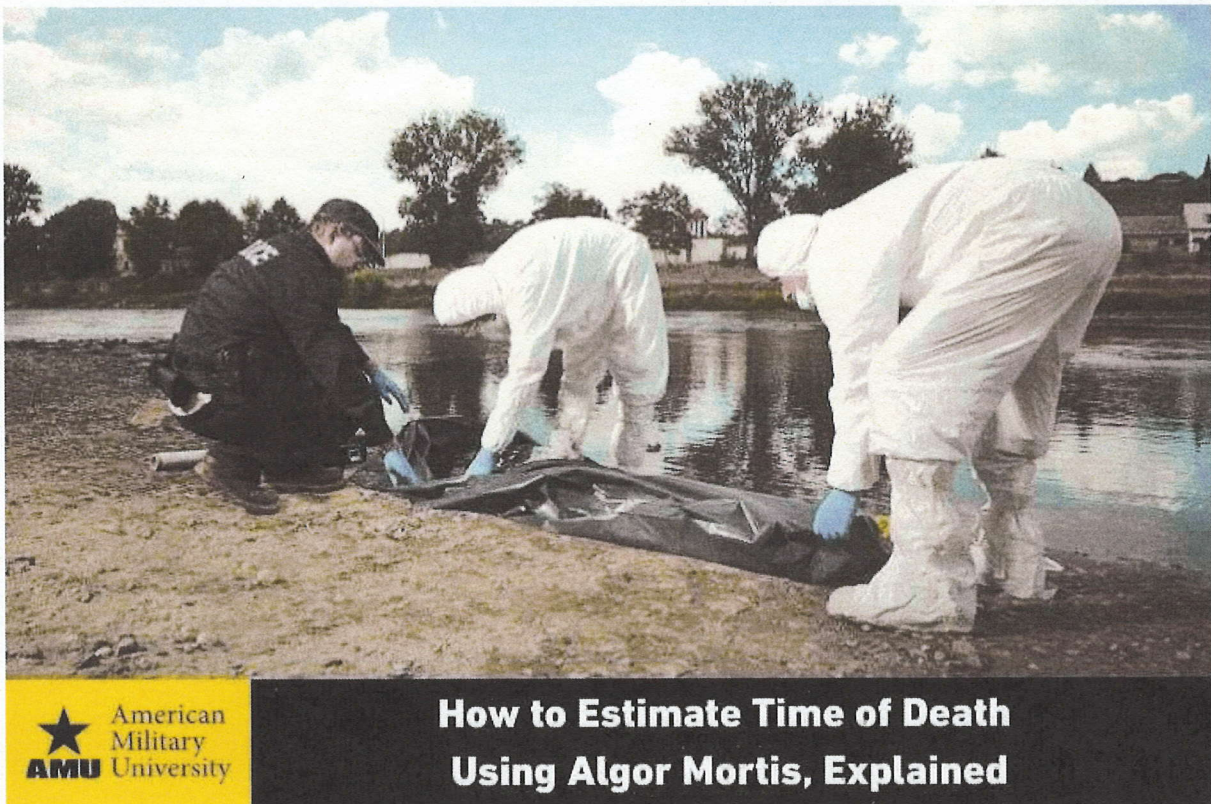


# HOW TO ESTIMATE TIME OF DEATH USING ALGOR MORTIS, EXPLAINED

Criminal Justice Blog | American Military University

By [Jennifer Bucholtz](#) | 08/13/2024



In any death investigation, determining the approximate time of death is a crucial element for investigators. It is particularly true in cases of deaths resulting from a criminal act or murder.

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Algor mortis refers to the change in the internal temperature of a human body after a person's heart stops beating. In the hours after death occurs, the body no longer circulates blood or generates heat. Additionally, the metabolic processes of the muscles and organs in the body begin to cease during the early postmortem period.

As a result, the internal temperature of the deceased person decreases in the hours following death until the body reaches the ambient temperature of the surrounding environment. The rate of decrease depends on several factors, but following the first hour after death, the body generally begins to cool by one to one and a half degrees per hour.

## OTHER POSTMORTEM INDICATORS HELP INVESTIGATORS DETERMINE WHEN SOMEONE'S DEATH OCCURRED

In addition to algor mortis, other post-mortem indicators such as rigor mortis and [livor mortis](#) can provide critical clues to investigators. Rigor mortis is the stiffening of the muscles after death, which occurs due to chemical changes in the muscle tissue. This process typically begins within a few hours postmortem and can help law enforcement investigators to estimate the [postmortem interval](#) (the time period that has elapsed since death).

Livor mortis – or the settling of blood in the lower parts of the body after death – can also offer useful insights. The appearance and fixed nature of livor mortis can indicate whether the body has been moved after death, helping forensic medicine experts reconstruct the events surrounding the death.

Vitreous humor, the fluid in the eyeball, is another valuable source for determining time of death. Analyzing the potassium levels in the vitreous humor can provide a timeline of post-mortem changes to the body.

## THE FACTORS AFFECTING THE RATE OF BODY TEMPERATURE DECREASE

There are several factors to consider when an investigator uses the internal temperature of a body to help estimate a person's time of death. For instance, the ambient temperature of the environment in which a dead body is found may accelerate or decelerate the temperature loss process.

A human body left in a very cold outside environment will decrease in temperature faster than one left in a hot, humid location. This change is due to the larger gap between the body's temperature and the ambient temperature of the environment.

The physical makeup of an individual also affects the rate of the deceased's temperature loss. A body that is very muscular or obese will take longer to reach the surrounding ambient temperature. The insulating qualities of muscle tissue or fat as well as the additional skin surface area and the denseness of other body tissues slow the temperature loss.

Age influences the drop in body temperature after death as well. Infants and elderly persons generally lose body temperature more quickly than full-grown, middle-aged adults. This accelerated rate of temperature loss is typically a result of lower body fat levels and an overall smaller skin surface area.



# MORTIS

There are other methods that help an investigator to determine a time of death. If someone was battling an infection at the time of his or her death, for example, that person's internal body temperature may be several degrees higher than usual due to a fever. The feverish condition means that the body must drop additional degrees before reaching the surrounding temperature of its environment, which lengthens the algor mortis timeframe.

Thick clothing worn by a person at the time of death can act as an insulator to the body and extend the amount of time it takes for the internal temperature to drop. Conversely, if a body is nude or clad in minimal clothing, the loss in temperature will often be more rapid in the hours after death.

## ALGOR MORTIS CAN PROVIDE CRITICAL CLUES TO INVESTIGATORS

The use of algor mortis to assist in determining time of death provided crucial evidence in the case of [Nava Baker](#), a three-year-old child who died as a result of abuse. When medical personnel first arrived at the death scene, they found Nava's skin cold to the touch, indicating she had been dead for several hours. The mother's boyfriend claimed he'd been performing CPR on the child just prior to the medics arriving.

However, the low body temperature of the girl helped to prove that his statement was false. Both the boyfriend and Nava's mother were ultimately arrested for murder.

Investigators later learned that the two adults had subjected the child to long-term abuse, which ultimately caused her death. However, Nava's mother and her boyfriend did not immediately report the toddler's death to authorities.

Prior to calling 911, they took several hours to clean up and alter the scene of the crime in an attempt to mislead police. During that time, Nava's body temperature dropped several degrees, leaving a significant clue for law enforcement officials.

Algor mortis changes can be extremely helpful in determining the approximate time of a person's death, providing valuable evidence for crime scene investigators, forensic pathologists, and detectives. For example, as in the Baker case, algor mortis may also verify or refute the statement of a witness or suspect. Knowing how to estimate time of death using algor mortis is a crucial skill that cannot be overlooked in forensic investigations.

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The associate of arts in criminal justice is perfect for adult learners seeking foundational knowledge of the criminal justice system. It provides a solid introduction to criminal justice principles and practices.

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The curriculum includes courses in law, investigations, juvenile issues, and stress management. Courses such as "Criminal Law," "Criminal Investigations," and "Ethics in Criminal Justice" help students develop sensitivity, critical thinking, and problem-solving skills specific to criminal justice. Students also learn about the psychological aspects of criminal behavior and effective community relations strategies.

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Courses in this program include topics that involve criminal justice administration, public policy, and advanced criminological theory. The curriculum emphasizes leadership, strategic planning, and the application of advanced theories to practical problems. Some of the courses in this program include criminal justice ethics, police administration, criminal justice administration, advanced criminological theory and research design and methods.

For more details about AMU's criminal justice degrees, visit [our program page](#).

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## ABOUT THE AUTHOR

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Jennifer Bucholtz is a former U.S. Army Counterintelligence Agent and a decorated veteran of the Iraq and Afghanistan wars. She holds a bachelor of science in criminal justice from Northern Arizona University, a master of arts in criminal justice from the City University of New York, and a master of science in forensic sciences from National University. Bucholtz has an extensive background in U.S. military and Department of Defense counterintelligence operations. Bucholtz has also worked for the Arizona Department of Corrections and Office of the Chief Medical Examiner in New York City. She is currently an adjunct faculty member and teaches courses in criminal justice and forensic sciences. Additionally, she is a sworn civilian investigator for the El Paso County Sheriff's Department and host of AMU's investigative podcast [Break the Case](#).

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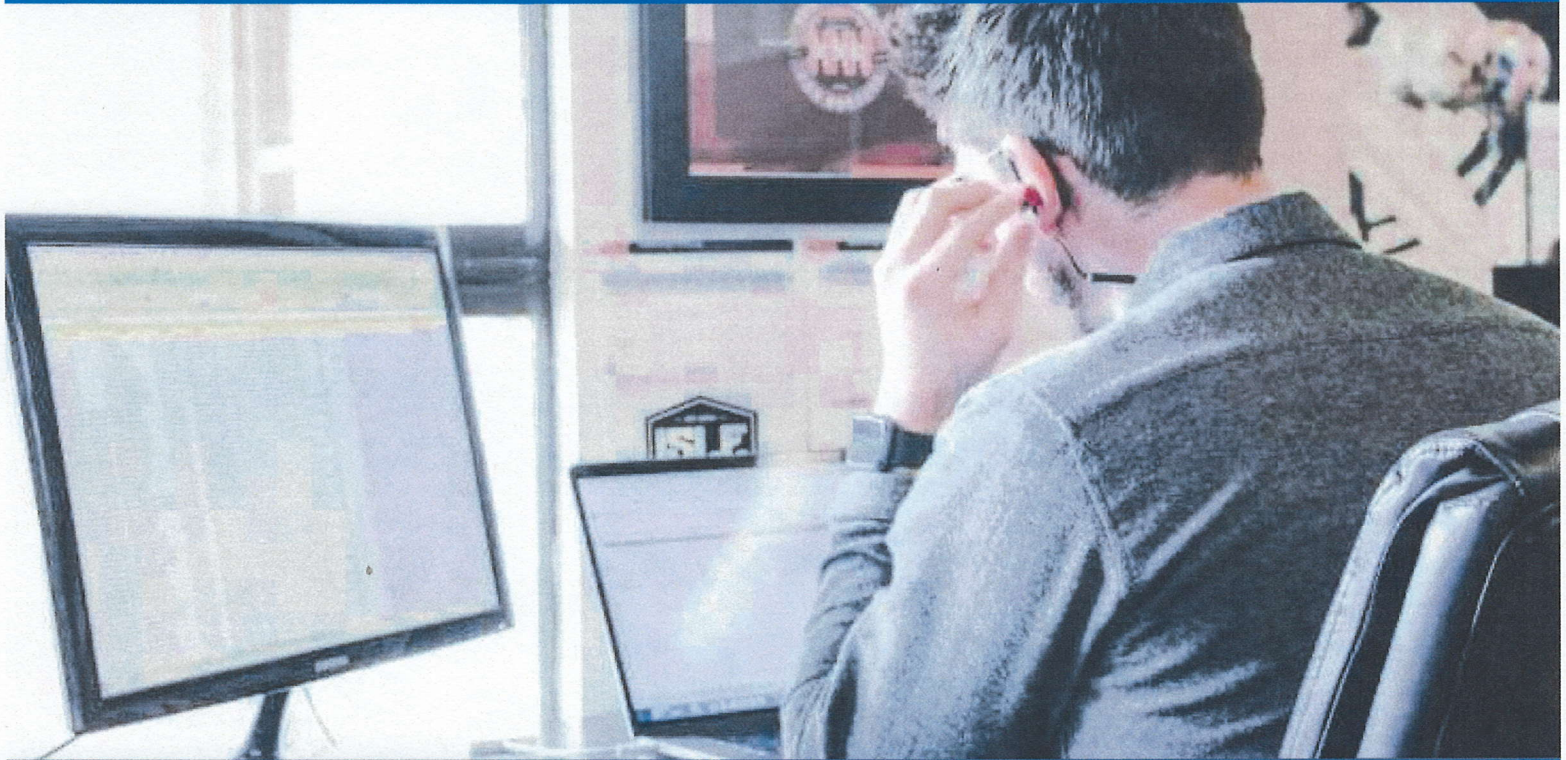
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