EVIDENCE FROM NEAR-DEATH EXPERIENCE FOR THE EXISTENCE OF CONSCIOUSNESS OUTSIDE THE BRAIN

By

Marianne S Sheehan

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Stuart Z. Charmé, Ph. D.

and approved by

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Stuart Z. Charmé, Ph. D.
Capstone Advisor/Program Director

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ABSTRACT OF CAPSTONE

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Capstone Advisor/Program Director
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This paper discusses near-death experience in terms of evidence for consciousness existing outside the brain. The number of near-death experiences has significantly increased over the past few decades due to the advances in defibrillation and CPR techniques. This has made it possible to do prospective studies in hospitals in an attempt to correlate psychological, physiological and pharmacological causes for near-death experience. Four arguments for evidence of consciousness outside the brain are reviewed and examples from retrospective studies are given. They are the consistency, reality, paranormal and transformation elements. Retrospective studies provide evidence that near-death experiences have similar elements regardless of demographic data, but the details of the events are not verifiable. Prospective studies carried out in hospitals in Great Britain, America and the Netherlands can confirm through medical records and witnesses that cardiac arrest survivors have conscious experiences during unconsciousness when their brain is dysfunctional. Examples from these studies provide evidence that consciousness exits outside the brain. However, the dying brain hypothesis and the hallucination hypothesis are also looked at as an explanation for these experiences.
It is a beautiful day in the summer of 1998, the day before Maureen’s 45th birthday. While folding clothes in an upstairs room of her Victorian home, Maureen’s body, without warning, suddenly jolts backwards and hits the floor. For several weeks preceding this event, Maureen thought she felt an irregular heartbeat; however, it did not show itself on a recently conducted event monitor, so she obtained cardiac clearance with permission to maintain her usual activities. On this day, the irregular rhythm, ventricular fibrillation caused by a Long Q-T Syndrome, almost costs Maureen her life. Fortunately, her twelve-year-old daughter, Allison, is nearby and witnesses the fall. Allison instructs her younger brother, Christopher, to run downstairs and alert their grandmother as she called 911.

Though her body is lying unconscious on the floor where she fell, Maureen has an aerial view of her mother standing at the foot of the stairs holding the phone in her hand. She watches the EMT’s race up the steps with the town’s new defibrillator and listens as they discuss how to use it for the first time. From her overhead view, she also sees her friend Lisa enfolding Maureen’s children in her arms in the backyard. In the distance, she can hear her neighbor, Linda, trying to reach her husband at work to let him know of the emergency. After being shocked, she watches as her body is carried out of the house on a stretcher and down the front steps to the waiting ambulance.

Maureen feels calm and is now walking on the beautiful black sand of the Hawaiian beach she recently returned from with her family. Only now she is walking arm in arm with her deceased father of twenty years who is radiant and healthy instead of cancer ridden, as he was when she last saw him. He looks up to the sky and says, “Please don’t take her yet, she has young children.” Her father then lets go of her arm and
continues down the beach alone. Although she wants to go with him, she suddenly finds herself in an open space filled with bright light and she is floating on something like a cloud. It is noisy and chaotic, but as she looks over the edge of the cloud, she can see peaceful parks and the tops of people’s heads. She is much closer to the ground than she expected and feels that if she reached out she could touch what she sees. Off to the side she notices several doorways and goes through one. The door closes to a peaceful room with a long wooden table. There are others with her now: a woman with dark hair, an older man on one side and another nicely dressed man on the other. Here she notices that she can only look left and right, not down. One of the men says, “He is here.” Maureen sees the back of a man with long hair dressed in a white robe. As she sees his profile, she recognizes him as Jesus. Each person he looks at leaves the room. Though she wants him to look at her too, he will not. He communicates telepathically, and she knows she is not meant to stay. Her next memory is waking up in the hospital after being unconscious for twenty-four hours. Maureen had an intense Near Death Experience (NDE). Though she has short-term memory loss, even now, thirteen years later, Maureen can recall her NDE in vivid detail and emotions stir as she remembers being with her father.

Researchers have been collecting stories like Maureen’s for decades. The data on NDEs can be followed as far back as the late 1800’s, when Swiss geologist and mountain climber, Albert von St Galler Heim (1849-1937), had a mystical experience during a fall (Corozza 24). He collected stories of similar events from other climbers and soldiers who had been on the frontline and determined that 95% of the stories were alike. Other researchers studied Death Bed Visions (DBV), which showed many of the same characteristics as NDEs. In DBV, dying people see deceased relatives or religious
figures that come to assist them in the dying process. In 1975, Raymond Moody coined the term Near Death Experience in his book *Life After Life*, which was a collection of fifty interviews of people claiming to have had a NDE. Moody noticed twelve similar elements in the accounts. Some of the more common components are a feeling of peace, bright light, a dark tunnel, an encounter with deceased relatives, an out of body experience (OBE) and a non judgmental life review. Researchers agree, as in Maureen’s case, a NDE need not have all of the above characteristics and the sequence of the events is unique to each account.

In 1983 another researcher, Bruce Greyson created a 16-point quantitative questionnaire in an effort measure the intensity of NDEs. In the context of the questionnaire, he created four subgroups to type the experiences as being affective, cognitive, transcendental or paranormal. A score of seven or above constitutes a NDE. In his study, 15 was the mean score. Maureen had a total score of 18, scoring the highest in the transcendental and paranormal sections. This labeled her experience, according to the Greyson scale, as a transcendental type. Greyson defines the occurrences in this way, “Near-Death-Experiences are profound psychological events with transcendental and mystical elements typically occurring to individuals close to death or in situations of intense physical or emotional danger” (van Lommel 8).

While the above researchers feel that the results of their studies pointed to evidence of an afterlife, skeptics are not convinced. Moody claims to have talked with many NDE researchers around the world who he feels believe “in their hearts that NDEs are a glimpse of life after life” (151). He says, “These medical and scientific researchers have yet to show “scientific proof” that consciousness continues after we are physically
dead, so they refrain from going public with their true feelings about what happens when we die” (151). However, it is in the event of cardiac arrest that confirmable research is possible. As medical advances were made in the area of resuscitation by cardiac defibrillation in the 60’s, the number of people surviving heart attacks, life threatening cardiac arrhythmias, automobile accidents and other medical emergencies greatly increased. Gradually, people began to come forward to tell their tale. Those who have these experiences are convinced that consciousness continues after death and believe in an afterlife. Their belief reopened the controversy of whether consciousness is located exclusively in the brain (materialism) or whether the mind is something separate from the brain (dualism). Additionally, this progress makes it possible to do prospective studies on NDEs that make a strong argument for the possibility that consciousness is not located exclusively in the brain. If materialism is true, then consciousness ends with the death of the brain and survival of any part of the self after death is impossible. It is also possible that consciousness remains tethered in some way to a body, even in out-of-body experiences or NDEs. In this case, if all life functions of the body permanently cease, consciousness might also disappear. If consciousness can exist completely independently of a living brain and body, then the continuation of consciousness after the death of the body is at least a possibility. People who have NDEs are often left with a sense of complete certainty regarding this last possibility.

In the last thirty years, I have witnessed extraordinary changes in medicine. Especially in my allied health field of Nuclear Medicine that evolved into the specialty of Nuclear Cardiology. In this area of diagnostic testing, cardiac patients, including cardiac arrest survivors, undergo myocardial perfusion imaging to help in diagnosis and
treatment of coronary artery disease, as well as, assist in determining the extent of
damage to heart muscle from cardiac arrest. Consequently, some of the cardiac arrest
survivors have shared the memory of their episode with me. This has sparked my interest
in researching NDEs. Not all, but many in the healthcare field have respect for patients
who have had a NDE. With the use of recent literature on NDE and surveys of
cardiologists and co-workers, I will explore common theories in support of the dualistic
belief that consciousness can exist outside the brain and those that support the
materialistic view of the dying brain hypothesis. Particular attention is given to
prospective studies done on cardiac arrest survivors that claim to show reliable evidence
that consciousness continues when the brain is dysfunctional.

The Near Death Experience Research Foundation reports the Gallup Poll’s statistics
in 1982 that 5% or 8 million Americans had a NDE. This number increased to 13 million
by 1992. Great strides have been made since the first attempt at a portable defibrillator in
1965; therefore, the automated external defibrillators (AED) that are now in use
significantly reduced the number of deaths attributed to cardiac arrest. The rise in NDEs
corresponds to the increase in the number of automated defibrillators in public places as
well as the effort to educate the public on CPR techniques. According to the IEEE
Spectrum website, one quarter of deaths in the developed world can be attributed to
cardiac arrest. The purpose of a defibrillator is to shock a heart that is in ventricular
fibrillation back into a healthy rhythm. As in Maureen’s case, this rhythm can lead to
asystole, otherwise known as a flat line or an absence of heart function. The following
are EKG examples of critical rhythms leading to asystole:
With the cessation of the heartbeat, consciousness is lost within seconds and measurable brain activity stops within 20-40 seconds. This defines clinical death and causes ischemic injury to begin affecting all of the body’s tissues and organs immediately. The following is a cross section Myocardial Perfusion image of an infarcted heart compared with a normal heart taken from the interesting case file of South Jersey Cardiovascular Diagnostic Center. Infarction is the result of dying cells from ischemic injury. In this case, the injury is caused by a cardiac arrest. As you can see the inferior wall of his heart is missing, signifying dead tissue in this area from a major medical event that will require a significant amount of recovery time.

Since the latest type of AEDs can be used by untrained bystanders, they are now located in most public places. The Spectrum website points out, “The AED’s widespread dissemination represents one of the greatest engineering success stories of the last few decades.” Also contributing to the decrease in deaths from cardiac arrest and the increase in NDE stories is the extensive cardio pulmonary resuscitation (CPR) education effort. The American Heart Association website states that CPR was developed in 1960, with the first effort at mass education taking place in 1972. The dates of these two life saving
techniques correlate directly with the increase in the number of people reporting having had a NDE.

Pin van Lommel, M.D., in his book *Consciousness Beyond Life*, indicates that before the year 2000 most of the research studies done on NDE were by retrospective methods (106). This means that the accounts were collected well after the experience. Collecting data in this way makes it very difficult to verify the medical conditions surrounding the event when it happened. This is true of many of the research by Melvin Morse, Raymond Moody, and Jeffrey Long and others. Each book contains a collection of compelling stories that could confirm without a doubt that NDE do happen. There is also no argument that the elements are similar regardless of age, race, sex or the medical cause of the NDE. The cultural or religious background however shows differences in how the experience is interpreted, but it is felt that the core-elements are the same. For example, in the west the dark region is described as a tunnel, but in Japan the dark region is described as a cave. Their research also shows that the experiencers feel profound, life changing aftereffects from the event, including a loss of the fear of death. The scientific and medical communities however may recognize the psychological power of such experiences but they also tend to look for alternative explanations for the experiences.

Susan Blackmore, in the preface of her book *Dying to Live*, comments that our culture likes to deny death, implying that the belief in an afterlife is the basis for whole religions. Most of us, she says, like the idea of an everlasting soul even though the idea is in conflict with science. Not only is this true of many religions, but across many cultures as well. The thought of consciousness surviving death is a comfort when we lose a loved one, as well as when considering our own mortality. Blackmore authored the dying brain
hypothesis to explain NDE; however, in her book she also breaks down the reasoning for
the belief that consciousness continues after death.

Blackmore offers a critique of the most common arguments that proponents of
the afterlife hypothesis present: consistency, reality, paranormal and transformation. The
first argument uses the consistency of NDEs as an argument as evidence for an afterlife.
This argument surmises that since there are so many similarities in the stories, then a
NDE must be “the soul’s journey out of the body and the tunnel is the passage” (5).
Radiation oncologist Jeffrey Long MD conducted one of the most extensive studies
validating the consistency of NDEs. Long’s book, Evidence of the Afterlife, presents
over 600 NDE accounts chosen from his collection of 1,300 on his Near Death
Experience Research Foundation website that went live in 1998. The stories are from all
over the world and represent all age groups, many races and various religions. Long
found that non-Western countries and Western countries are undeniably similar. As
people accessed his website and told their stories, he had them complete a scientifically
prepared questionnaire designed to sort out fraudulent reports. In order to attract
worldwide data, he worked with translators to make the website adaptable to many
languages. Through the study, Long defined nine lines of reasoning as proof of the
existence an afterlife. Included in his reasoning are many of the elements previously
mentioned as well as an account of a woman who, blind from birth, was able to see
during her event. He feels one of the most important lines of reasoning is consistency.
Long reports, “The remarkable consistency of NDEs around the world is evidence that
they are real events” (50). Blackmore does not dispute that consistency is present in
accounts of NDE. However, she points out that the consistency does not mean that the
experience necessarily offers a glimpse into an afterlife. On the contrary, she feels the consistency is more likely due to particular experiences that a human brain might produce in certain circumstances resulting in the familiar tunnel experiences or out of body experiences.

The overwhelming “realness” of a NDE is a second argument used to support the afterlife theory. It states that since the experience feels so real it must be a “journey to the next world” (Blackmore 5). Experiencers feel that you would only know if you had been there, and, as a group, they do not question the existence of an afterlife. In their article, “Ernest Hemingway and the Near-Death Experience,” Vardamis and Owens relate Hemingway’s NDE while serving in the Red Cross in 1918 on the Piave River in Italy. Gravely wounded in an explosion, he was left with a torn right knee, shrapnel on his legs and feet and lacerations on his scalp. Hemingway was convinced that following the near fatal explosion “his spirit left his body, seemed about to begin a journey, but then returned” (203). While recuperating from his injuries, he described the experience in a letter to his parents. He said, “Dying is a very simply thing. I’ve looked at death, and really, I know. If I should have died, it would have been…quite the easiest thing I ever did” (203). The encounter felt so real that it stayed with him for the rest of his life and was a source of inspiration for some of his most famous works. For example, in A Farewell to Arms (1929) Lieutenant Frederic Henry has a similar battlefield experience and at the end of Snows of Kilimanjaro (1938) Harry Walden’s flight towards the peak of the mountain, “has a great deal in common with scientifically recorded accounts of NDE” (204). The authors of this article point out that it is unusual to have someone with such a gift for language to give detailed renditions of a NDE. Blackmore feels that as
“biological beings” our sense of what is real and imaginary is constructed by our minds and it is neither fixed nor always reliable. (262)

Paranormal elements in NDEs are another element that used to argue in favor of an afterlife. Supporters of the afterlife hypothesis contend that science’s inability to adequately explain elements of NDE means that they must “involve another dimension” (Blackmore 5). Some examples of paranormal elements include the OBE, vivid senses, being in an unearthly realm, seeing or sensing an un-earthly being and getting a glimpse into the future. In his book, Transformed by the Light, Melvin Morse, MD shares one of the stories he has collected in his research that, I think, is a nice example of paranormal elements of a NDE. The following, written by a 66-year-old-man, who remembers:

My wife and I had been told that she couldn’t have any more children. But then, in June 1959, I was involved in a serious pit accident at a coal mine. I was taken to the hospital and found to be dead on arrival. But somehow, I was revived and remained in a coma for a week.

While unconscious, I had a vision of walking along the sun’s rays and seeing a hand with a long white sleeve reaching down. I was almost touching the hand when I felt myself being pulled back, and I heard a voice say: ‘Don’t worry. You are going to be all right and your son will be all right.’

A few months later we learned my wife was pregnant and our son was born almost a year to the day after my accident (115).

This compelling story has a very similar feel to parts of Maureen’s story.

The hand of with the long white sleeve is comparable to Maureen seeing a man in a long white robe. He essentially was the un-earthly being that told both of them that it was not yet time for them to stay. Although Maureen did not have any glimpses into the future, she did feel that she had a complete understanding of the universe and, more importantly, her place in it. Blackmore feels, however, that discrepancies are found in the accounts when they studied more closely so the paranormal elements appear weak or
totally invented. For those reasons, she feels that these scientifically unexplainable elements should not be used as evidence for an afterlife.

Still, it is no wonder why an experience like this would not only be remembered indefinitely, but would also be life changing. This brings us to Blackmore’s last argument as evidence for the afterlife hypothesis, the transforming effects (5). People change profoundly in many positive ways following their NDE. The most common change is that an experiencer completely loses any fear of death. I can say that everyone I have come across in my work, that has told me of his or her NDE, expressed the same sentiment. However, researchers find that the transformations can be much more extensive such as personality changes, an increase in spirituality, being more intuitive and even realizing a greater intelligence. Morse, whose transformation study included interviews with 350 adults, 100 of which had NDE or some mystical experience as children, agrees that those who have a NDE are changed for life. One of the most intriguing stories he shares in his book is about a Swedish man named Olaf.

Olaf had a NDE when he stopped breathing during a tonsillectomy after he was administered an overdose of ether. At the time, he was fourteen years old and a poor student who was considered to have a learning disability. His experience included a sense of being dead, leaving the body and a feeling of forcefully crossing the barrier into another reality. He describes, “The boundary between life and death is a strange creation of our mind” (12). To the living, the boundary is horrifying and real, yet, on the other side, he realized it is insignificant. During the event he stood at a “bright orange light” that gave him universal understanding. He says, “My first impression was a total surprise. How could I exist in such a comfortable way, and how could I perceive and
think while being dead, and yet have no body” (12). Olaf went on to become an honors student and, as an adult, is a top engineer in research and development, holding many patents. The technical accomplishments he credits to trusting the intuition he calls his “cosmic gift” as the result of his NDE.

P.M.H. Atwater, nicely explains the differences in the various depths of the transformations people experience following NDEs in her book, Beyond the Light. She feels that the changes resulting from the event are exactly what the person needed. For example, someone who has a type A personality usually becomes mellower and begins to enjoy the simple things in life. On the other hand, someone who was an underachiever learns to be a more productive person, thirsting for knowledge and a chance to give back. She calls the NDE “one of nature’s more accelerated growth events, a powerful and complex dynamic that not only can foster psychological changes in both adults and children, but can cause physiological mutation the equal of species evolution” (19).

In the introduction to Beyond the Light, Melvin Morse tells us that Atwater was the first to suggest that the “electromagnetic field” that surrounds the average person is altered following a NDE. In his book on transformations, he gives the inability to wear a watch as an example of her electromagnetic theory. He included a question on his survey asking each person if they had difficulties with lights, electrical appliances or wearing a watch. He says he was surprised to find out “more that one-fourth of all adults who survived near-death as children said that they could not wear watches because they simply stopped running” (132). He offers a story from a man who said that he purchased three watches over the course of five years, none of which worked when he wore them. The participant was perplexed when they would begin to run, without repair, for his sons.
Another bought a two hundred dollar watch that would run while in his dresser drawer, but not when he wore it. Morse feels certain that the NDE makes slight changes the electromagnetic forces surrounding the human body and its cells. He concludes, “Those changes are more profound in the NDErs who have experiences of light” (159).

Blackmore feels that it is the fact of coming close to death that is responsible for some of the personal transformations that people report. It is not necessary to assume that a person’s consciousness literally left their body and went to another world. Coming close to death, she says, “Provokes the insight that the self was only a mental construction; that all the struggles, attachment and suffering of life depend on that artificial construction and that it can be let go” (263). This helps the NDEr live a life that is much fuller.

Atwater, however, whose work concentrates on the spiritual awakening in NDErs, feels differently. She says, “We as a species are always changing and NDE is a breakthrough in higher consciousness and the next stage of human evolution” (212). Atwater recognizes four types of experiences that correspond to the amount of change a person needs. Those who do not need a “shake up” in their lives feel the initial experience of just peacefulness and light. Someone who needs some inner cleansing may have an unpleasant type. She claims those who have repressed guilt would have this more hellish experience, as well as, those who need to learn to fight for themselves. In one example, an abused woman found the strength to change her situation for the better following her unpleasant NDE. The Pleasant experiences, Atwater feels, give those who want reassurance that they are loved, the self-validation they need. They are the ones who meet deceased family members or religious figures. Experiencers, who are ready for
some mind expansion, will have the transcendental type where they are exposed to “otherworldly dimensions” that can include “revelations of greater truths” (20). One person can experience multiple types of experiences at the same time. The enlightenment of the experience, Atwater says, comes from being bathed in the light.

An experience that people seem to interpret as a glimpse of an afterlife seems to produce personality changes that stay with these people for the rest of their lives. This is certainly true of Maureen, who had to give up a lucrative photography business, but readjusted by becoming an EMT. Maureen then decided to go into teaching and just this year, thirteen years following her NDE, she received her Masters degree in education focusing on inclusion in the classroom. Maureen acknowledged to me that she is definitely more patient now and takes things in stride. Her ability to keep things in perspective is helping her now as she and her husband are dealing with economic difficulties. Her strength has been inspirational to many in our small community.

Most of the examples offered by supporters of the afterlife hypothesis come from retrospective studies. Pim van Lommel feels that one of the major problems with retrospective studies is the self-selection of those interviewed. He points out, “The major failing of these interesting remarkable anecdotal evidence is that while they provide a clear picture of the various elements and aspects of the process of change, they offer no reliable figures on the incidence of the changes and the exact times when they occur” (48). A second problem he sees is that there is no indication of how much time between the NDE and the interview has passed and in some instances, it could be decades. The stories in retrospective studies, accumulated through advertisements, lectures and the internet, makes one wonder who was left out of the study and why they did not feel
compelled to come forward. Some of the more recent prospective studies confirm the accounts within days. Pim van Lommel says recent prospective research meet stricter scientific criteria and produces results that are more reliable. Eliminating the self-selection process results in a lower incidence of NDE.

He points out that during a cardiac arrest in a hospital setting, a patient’s heartbeat, brain activity and respiration are monitored. Upon successful resuscitation, the patient is interviewed promptly to see if they remember anything from the arrest. If they admit to a NDE, the details of that occurrence are confirmed, in order to verify that the experience happened at a time when they were considered to be either clinically dead or in a coma. As stated before, clinically dead means without a heartbeat, respiration or brain activity. Patients typically have a loss of body reflexes, fixed and dilated pupils, loss of gag reflexes and their EEG shows signs of brain stem failure within seconds. The medical community generally accepts that no experiences should be happening at the time of clinical death, and no memories should be created.

The first prospective study, published in 2001, to focus exclusively on cardiac arrest patients took place in the United Kingdom at Southampton General Hospital over a one-year period. The study, done by Parnia, Waller, Yeates and Fenwick, had the common purpose to try to understand the features, causes and the incidence of NDEs among cardiac arrest survivors. In the resuscitation effort of cardiac arrest patients in the hospital setting, a standard protocol is used; therefore, the medical circumstances surrounding the event are easier to explore. In addition, “the mental state of cardiac arrest survivors is the closest model to that of a dying brain” (150). During this period, all survivors of cardiac arrest from the medical, emergency and coronary care units of
Southampton General hospital were interviewed shortly after their episode, following consent from the patient and permission from the healthcare staff. They were simply asked if they had any memory recall of their period of unconsciousness. Out of the 63 survivors only 7 (11.1%) had some memory. According to the Greyson NDE scale, only four met the criteria for NDE, but the other three did have elements of feelings of peace or seeing deceased relatives, just not enough to score seven or above on the Greyson scale.

The study was too small to have any statistical significance; however, they did reach some interesting conclusions. First, it was clear that cardiac arrest NDEs had the typical elements and occurred at similar rates as in other studies. The patients felt as though the experiences happened during unconsciousness and they found nothing to conclude that the NDE were due to medication or electrolyte imbalances. The NDE experience group actually had higher oxygen levels in their blood than the control group that did not have a NDE. Since this is indicative of oxygen levels in the brain, they felt that, in the cardiac arrest model, “cerebral anoxia may not be an important causative factor in these experiences” (154). Some of the patients did seem to obtain information that they should not have been able to obtain during unconsciousness, suggesting, “in this cardiac arrest model, the NDE arises during unconsciousness, when the brain is dysfunctional and the patient is deeply comatose” (154). Dr. Fenwick states in a lecture given in 2004 at the International Association for Near-Death Studies Annual Conference, “That is important because neuroscience maintains that conscious experience is not possible during physical unconsciousness” (7)
Other prospective studies have produced similar results with a range of NDE incidence falling between 10-20%. The largest study was the Dutch study published in 2001 by van Lommel, van Wees, Meyers and Elfferich. Their goal was to establish the cause of the NDE as well as to gauge the factors that affect the “frequency, depth and content.” It included 344 consecutive cardiac arrest survivors from the coronary care units of 10 hospitals ranging over a period of four months to four years. For the majority of patients, it was their first myocardial infarction. They indentified sixty-two survivors (18%) that had some recollection, forty-one (12%) that qualified as a NDE. These patients were interviewed within five days of the event. The occurrence did not seem to be related the duration of unconsciousness or cardiac arrest or to the administration of medication. However, those with the deepest NDE died within thirty days of the incident, suggesting that the closer to death a person is, the deeper the experience. They did a comparison study of the demographic, medical, pharmacological and psychological data following resuscitation of those who reported NDE and those who did not. None of these factors seemed to influence the frequency of the experience.

In the study, they relate an interesting veridical OBE told by a coronary-care-unit nurse, regarding a 44-year-old cyanotic, comatose man, who was brought into the unit by ambulance. Following his admission, he was resuscitated and ultimately needed intubation. Finding that he had upper dentures in his mouth, his nurse removed the false teeth and inadvertently placed them in the drawer of the crash cart. After about an hour, the patient’s rhythm was restored; however, he was still intubated and comatose but able to be transferred to the intensive care unit. The nurse met the patient again, about a week later, after he regained consciousness and was back on the cardiac floor. When she came
to his room to administer his medication, he said, “That nurse knows where my dentures are. Yes, you were there when I was brought into the hospital and you took my dentures out of my mouth and put them onto that cart, it had all these bottles on it and there was this sliding drawer underneath and there you put my teeth” (2041). He was correct in his rendition of the account, shocking everyone. The nurse was especially impressed since she specifically remembers removing the dentures during the resuscitation effort when he was comatose. Furthermore, he was able to describe precisely, those who were present at the time and the room where the resuscitation took place. The man said that he was trying hard to communicate to the medical staff that he was still alive and to continue with their efforts but was unsuccessful. Similarly, a female patient I met at work recently shared a similar experience during her cardiac arrest. While she could see and hear everything that was going on, she was unable to articulate that she was still alive. She told me that she was worried they would stop the resuscitation too soon and bury her alive.

Additionally, van Lommel and his team conducted a longitudinal study. They interviewed the NDErs and the control group who did not have a NDE at two and eight years post arrest in order to investigate the aftereffects. The results of this part of the study show that the aftereffects are actually greater at the eight-year mark, suggesting that it takes time for the full effect of the experience to be incorporated into daily life and recognized by others. It is important to keep in mind that the first priority after cardiac arrest is to get well. Lifestyle changes may not begin until after a lengthy recuperation process. Maureen can be used as an example again as she had several years of memory loss following her cardiac arrest. The brain recovers slowly from ischemic injury, so it
took about a year for those memories to come back. Maureen’s husband recently shared with me that she had a very difficult time readjusting during this period. Van Lommel points out that in the area of change, cultural differences may play a part in how easily the NDE is integrated. Since our Western society is not as comfortable with spiritual experiences as other cultures, the adjustment period for NDErs can be a lengthy and lonely time.

While skeptics feel that coming close to death is enough to bring about change in a person’s life, van Lommel disagrees. Although all patients in the study had positive changes, he feels the results of the longitudinal portion of his prospective study, show that the life changes of those who had a NDE during cardiac arrest stayed with them significantly longer than those who did not have a NDE. The table in Addendum I indicates that eight years later the NDErs maintained changes in the areas involving care and concern for others, commitment to family, concerns with material possessions, decline in church attendance, an increase in spirituality, less fear of death and an increase in the belief of an afterlife (See Addendum I) (van Lommel 68).

Dr. Fenwick, in his 2004 lecture, discussed Bruce Greyson’s American prospective study that included 1,595 patients who were admitted to the cardiac care unit at the University of Virginia Hospital. Compared with other studies, the average age of patients who had a NDE in Greyson’s study was younger. Greyson’s research team showed that, although some patients had a NDE without cardiac arrest, that group reported an event ten times less than those who arrested. In addition, their experiences were not as cognitive and contained fewer perceptions of bright light. Fenwick points out the study confirms the more serious the illness, the greater the incidence of the patient
having a NDE. He quotes Greyson who says, “The paradoxical occurrence of heightened, lucid awareness and logical thought processes during a period of impaired cerebral perfusion raises particularly perplexing questions for our current understanding of consciousness and its relation to brain function” (10).

A prior student of Dr. Fenwick’s, Penny Santori, PhD., carried out her own perspective study of NDEs. Her aim was to study the incidence and phenomenology of NDE in the Welsh intensive care unit where she worked. Santori wanted to see if she could confirm the materialistic theories of anoxia, hypercarbia or drug administration as an explanation of NDE. Her study included 39 cardiac arrest patients that she interviewed herself, of which 18% reported a NDE, of those only 5% had an OBE. Santori hid brightly colored symbols on the top of the cardiac monitors, in an attempt to confirm the OBE, but they were not noticed. However, one of the patients, who did have a detailed OBE, gave a very accurate account of the resuscitation process. In comparison, the non-NDE group made many essential mistakes while trying to describe what went on during their own resuscitation. As in other perspective studies, there were more incidences of NDE among cardiac arrest survivors. Santori did a comparison of NDE and hallucinations caused by sedatives and painkillers. She found that the hallucinations were much more confused and less likely to be remembered afterward. In addition, these patients knew they were hallucinating, whereas, the NDErs, “remained adamant that their experience was real” (4).

Some speculate that the number of NDEs is actually higher than the gallop poll reports, since many people are reluctant to speak of the incident for fear of ridicule. Even with all of the recent literature, many physicians avoid discussions about NDE. In a
recent survey of Registered Nurses in the Cardiac Rehabilitation department of the small community hospital that I work for, the overwhelming majority felt that the medical community was unsupportive of these patients. NDEs have a profound affect, not only on the people who have the experience, but also, on the ones they confide in. In the same survey, the nurses themselves reported that they have heard many stories, as I have, over the years and agree that the NDE has a lasting positive influence on the patients. They also expressed that listening to the accounts had a positive influence on their lives as well. One of the nurse practitioners I work with, who previously was a coronary care unit nurse, admitted to hearing many stories from patients when they regained consciousness. This led her to be cautious about her actions and words while assisting during codes and she wished her co-workers would be as well. The other nurse practitioner was an intensive care unit nurse. While none of her patients shared a NDE, she made the observation that when a family keeps vigil for a dying relative, the patient would not actually let go until the family left the room, so she frequently encouraged them to take a break.

The physicians I polled, however, do not feel that they are influenced at all by their patient’s accounts. Nor do they realize that a NDE can result in some profound changes to their patients. One went so far as to say that if someone tries tell him of a NDE he just changes the subject. Research shows that, especially in a hospital setting, the numbers of NDEs are underreported. If a patient has a NDE but encounters a judgmental reaction from their physician or nurse, they are less like to share their story. NDErs do not want such a moving event devalued in any way. Raymond Moody brings this point home in his book, *The Light Beyond*, as he relates an account he witnessed at a lecture on
NDE by Dr. Michael Sabom. An angry cardiologist in the crowd stood up, announced that he had been practicing medicine for thirty years, and resuscitated hundreds of people. He said, “I’ve never talked to a patient who had one of these near-death experiences” (85). Before anyone could react, a man sitting behind the doctor replied, “I’m one of the people you saved and I’ll tell you right now, you’re the last person I would ever tell about my NDE” (85). Only one of the physicians in the practice that I work for said that they had some training on NDE in medical school. According to van Lommel, however, that trend seems to be changing.

Susan Blackmore opposes the dualist theory of consciousness being separate from the brain. She offers alternative explanations for each of the elements of NDEs: the experience of the tunnel, the out of body experience, the life review experience, the encounter with a spiritual world, and the dramatic personal after-effects. Moreover, she observes that many of these individual elements can occur in other circumstances that do not involve a brush with death. Most scientists agree that cardiac arrest is not the only circumstance under which someone can encounter elements of a NDE. They have occurred under the influence of certain drugs, during mystical experiences, during meditation, isolation and during times of serious illness. The differences with the NDE elements that occur under these other conditions are important. They generally lack the consistency and lucidity of a NDE following a serious illness or cardiac arrest, there is rarely a visit with a deceased family member, and lasting effects are almost nonexistent.

As stated previously, NDE experiences over time and worldwide have similar elements. Those that believe in the dying brain hypothesis feel that this is because the human body, with its entirely similar make up of systems, hormones and brains, should
have similar experiences when those systems fail. Blackmore gives an extensive look at what happens to the human brain when it dies. By using physiological and psychological processes, she tries to explain each element of the NDE that I will try to summarize.

Anoxia in the brain caused by the failed circulatory system is the most common theory for the tunnel and light experiences. Blackmore quotes Sigel who claims that the light at the end of the tunnel that people see is “false perception which have their roots in excitation of the Central Nervous System” (71). The enveloping warmth, personal presence and meeting of the minds felt within the light is just a process of the visual cortex, rather than the transition between life and the afterlife. The peace, joy and bliss is caused by the brain’s own drugs, endorphins, which is a chemical produced in the brain that acts as neurotransmitters, neuromodulatores and hormones (107). Endorphins are released in the cerebro-spinal fluid that bathes the cells of the brain and spinal cord during times of stress. They stimulate the adrenal cortex located above the kidneys and are responsible for the release of adrenaline during times of stress giving us the fight or flight syndrome. These endorphins may also cause temporal lobe and limbic system seizures that give the effect of a life review by evoking memories and sense of timelessness. Memories are part of the appearance of deceased relatives. The OBE, she explains, could just be the brain’s way of adjusting to the confusion of the event as it struggles to reconstruct a body image and new model of reality.

In spite of the fact that NDE have been reported without any biological circumstances, such as in the fear of death, lack of oxygen is given a great deal of credit. Blackmore points out that regardless of the conditions surrounding death, the brain will eventually get little or no oxygen. Since all brain cells and neurons require oxygen in
order to function properly, hypoxia or anoxia could be a trigger for some of the components of NDE. Blackmore explains that neurons in the brain either excite or inhibit the brain cells and that the brains stability is controlled by inhibition. She says, “With anoxia affecting large area of the brain we would therefore expect to get general or global disinhibition and hence random excitation of whole brain areas” (65). Oxygen is supplied to cells, whether in the brain or elsewhere in the body, by an intricate set of blood vessels called arteries. Arteries take the oxygenated blood away from the heart to the rest of the brain, and then small capillaries feed oxygen to the tissues and cells. When circulation fails and the oxygen level is depleted, the cells and neurons of different areas of the brain will be affected at different speeds depending on their proximity to the blood vessels. Blackmore says that is the, “the ‘watershed’ regions of the cortex which are the furthest from the arteries that are the most vulnerable” (63). The disturbance in this area of the brain could explain the tunnel and light effects of NDE. The hippocampus, which is important for memory, is affected very quickly, therefore, the first reaction is to restore circulation and prevent permanent brain damage in someone who is unconscious. The fact that memory is so quickly affected could be an explanation of the life review element, which she describes as “a few memories in the middle of a hallucination” (201). The region most resistant to anoxia is the area responsible for autonomic functions that can keep the body alive for a long while after becoming unconscious. In order to explain the differences in the type of experience, Blackmore points out that activated cells will be affected quickly. She explains, “the person’s state of mind, or the task they were engaged on at the time, may affect their experience” (63). Furthermore, when circulation fails, a build up of carbon dioxide occurs because the unoxyginated blood in not moved back
through the lungs for oxygen exchange. A build up of carbon dioxide is said to have similar effects of NDE. People have reported feeling wonderful, seeing bright lights, experiencing life reviews and complete understanding and harmony with the universe.

Depending on the circumstances, anoxia comes on at different speeds. In the event of fast anoxia due to sudden blackout, there may be no experience. A very slow anoxia that can take place in carbon monoxide build up or from high altitudes, mental confusion and fatigue will occur. Intermediate anoxia, as in near drowning, Blackmore feels, is the common trigger for NDE. She acknowledges that this is a difficult theory to prove since you cannot subject people to different forms of anoxia just to see what happens. However, she argues that NDE may be more frequent, “with the heart still working for a while and some oxygen still available in the circulating blood” (55).

Greg Stone in his critique of Blackmore’s *Dying to Live* on the Near Death Experience Research foundations website, feels that she contradicts her own explanation with this theory since she also states that NDEs can occur when anoxia is not a factor. He feels that she offers no scientific evidence to support her theory and just uses it as a way of dismissing consciousness or spirit being separate from the brain. He says, “Dying to Live arrives at the essence of the Afterlife Hypothesis, the separation of spirit and body, then ignores its significance” (4).

Blackmore feels that all NDE, mystical experiences and anything felt to be spiritual are products of the brain and she makes her argument clear:

> There is no soul, spirit, astral body or anything at all that leaves the body during NDEs and survives after death. These, like the very idea of a persisting self, are all illusions and the NDE can be accounted for without recourse to any of them. If so, then we should not expect people during NDEs, to have access to any information other than that already available to them through perfectly normal means (114).
She believes that the details described as correct, in many of the research studies, are not the kind that are easy to check out later. For example, a description of what a person is wearing in another room, or who was standing where and talking to whom (114). She says Moody recognizes that the stories cannot always be confirmed, except by the dying person or a few close friends, and do not constitute proof. She feels the information described, “probably while the brain is functioning even if only poorly, comes from prior knowledge, fantasy and lucky guesses and the remaining operation senses of hearing and touch” (115). Memory, she says, is a reconstruction of what actually happened. Versions of the story change over time. Her alternative is that when retelling the story, friends do not correct the incorrect details. When patients describe in detail the hospital procedures used to resuscitate them from cardiac arrest, she feels, it is based on either prior knowledge or from learning about it after the fact, and then recalling it as if they saw the resuscitation years later when the interview actually takes place.

One of the most important elements of the NDE is the out of body element. Many feel that the accounts of OBE are highly suggestive of the separation of mind and body. Blackmore offers that OBE are just creations of the brain and that ‘me’ is just an illusion. During stable consciousness, she says, “there is a central model of ‘me’ in the world, or a ‘me now’ model” (173). However, when this model breaks down, ‘illusions of reality’ comes into play as in the OBE when the brain struggles to rebuild the body image and the surroundings. Information from memory can accomplish this rebuilding seeming to make the experience very real.
Prospective study researchers feel that they have proved otherwise. Santori and van Lommel have confirmed the OBE of several of their patients. Both witnesses and medical records verified the incidents described. They also showed that the descriptions of the resuscitation effort by non-NDErs did not match up with what was recorded. A very small percentage of patients in all prospective studies actually have a NDE. Pim van Lommel points out that if our brains are identical and NDE are just the results of what happens to the brain when it is dying, then the number of people having a NDE during cardiac arrest should be significantly higher. He feels this proves that the dying brain hypothesis is not correct. However, he admits his study could not explain “Why some do, but most do not experience a lucid and enhanced consciousness when there is no sign of brain function during cardiac arrest” (112).

Next, we will look at the evidence that NDE are hallucinations resembling those produced by use of particular drugs. Researchers supporting each side of the discussion use the argument that some drugs classed as psychedelics and anesthetics can mimic the effects of NDE. On the one hand, if NDE can be brought on with the use of drugs, then they may have nothing to due with death or afterlife, but rather, an illusion generated by the brain. Some feel this suggests that consciousness must be located exclusively in the brain. Therefore, NDEs are just a product of the brain and not evidence of an afterlife or that consciousness exists separately from it. Proponents of NDE as evidence of an afterlife, however, disagree. They feel that the effects of drug use and anesthesia are not comparable to NDE.

One common argument against the idea that the mind exists separately from the brain are that NDE are just hallucinations that can be brought on by certain drug use or
general anesthesia, for example, Ketamine use. Ketamine is a common drug used for anesthesia as well as for recreational experimentation. According to the Center for Substance Abuse Research (CESAR), Ketamine was developed in 1962 as a fast acting general anesthetic. By 1970, the FDA approved it for human use. Ketamine is classified as a nonbarbiturate disassociative anesthetic to be used in diagnostic and surgical procedures. This class of drug, known to distort one’s perception of sight and sound, also brings on feelings of detachment from the environment and one’s self. The illegal use of Ketamine began in the late 1970s and early 1980s. The CESAR website states, “One of the most dangerous effects of Ketamine is the helpless and confused state the user may be put into after use of the drug.” The site lists physical side effects for all users and I have listed them in the following table comparing them to the elements of a NDE. Though there are exceptions to every rule, I feel the conventional effects of Ketamine use do not correspond with the common elements of a NDE. In fact, they appear to be in opposition to each other.

### Comparison of Ketamine and NDE

<table>
<thead>
<tr>
<th>Effects of Ketamine</th>
<th>Elements of NDE</th>
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<tr>
<td>Flashbacks</td>
<td>Awareness of being dead</td>
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<tr>
<td>Amnesia</td>
<td>Feeling of Peace</td>
</tr>
<tr>
<td>Impaired motor function</td>
<td>A vision of light</td>
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<tr>
<td>Delirium (hallucinations or disorientation)</td>
<td>Meeting with deceased relatives</td>
</tr>
<tr>
<td>Dramatic increase in heart rate (tachycardia)</td>
<td>OBE</td>
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<tr>
<td>Loss of touch with reality (derealization)</td>
<td>Non-judgmental life review</td>
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<tr>
<td>Loss of coordination</td>
<td>Mental Clarity</td>
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<tr>
<td>Sense of invulnerability</td>
<td>A barrier or point of no return</td>
</tr>
<tr>
<td>Muscle rigidity</td>
<td>Decision to return</td>
</tr>
<tr>
<td>Aggressive or Violent Behavior</td>
<td>Transformation</td>
</tr>
</tbody>
</table>

Ornella Corazza in her book, *Near Death Experience: Exploring the Mind Body Connection*, relates that users of Ketamine, “after the initial impression of dying and
leaving the body, describe entering new realities, meeting other beings such as angels, deceased loved ones and unknown figures, more rarely God,” which is similar to descriptions of NDE. Corazza did a study using 36 recreational Ketamine users ranging in age for 21-45 men and women of various backgrounds whose Ketamine experiences rated above seven on the Greyson NDE scale. Some of the effects were time becoming meaningless, visions, life review, understanding the universe sense of peace and joy, unity with the universe, meeting with God, ESP, vivid senses and OBE.

Corazza admits that there were flaws in her study. The number of participants was small, only 36 and she failed to determine if the users were on any other substances in conjunction with Ketamine. Some of the stories she publishes do seem to have elements of NDE; however, the elements considered proof for the afterlife, consistency and transformative effects, are missing.

Another researcher, Chris Carter, in his book Science and the NDE feels that the consistency of NDEs is the most impressive factor. He argues, “In contrast, hallucinations are highly idiosyncratic and varied whose contents, are determined largely by set exceptions and attitudes and settings.” (185) Carter reports another study done by an Anesthetist Barbara Collier. Her study included 131 surgical patients given Ketamine. The study showed that the Ketamine patients experienced strange, vivid dreaming, depersonalizations and other sensory disturbances like color distortions, kaleidoscope patterns and images of monsters. She concluded, “The similarities with NDE are limited to floating outside the body” (192).

Maybe there are more similarities than just floating outside the body. Ornella Corazza quotes a story of one thirty-two year old female user who had a life review
experience on Ketamine. She found herself in the family house at the age of 16, her father staring at her: “Suddenly the vision stopped on the face of my father and I have heard a voice saying, ‘have you seen the eyes of your father?’ Therefore, I looked deeply into his eyes and I saw lots of sorrow and disappointment about my behavior. It surprised me a lot, because I had completely forgotten about the event. I wasn’t a good daughter at that time and this has left me with many regrets.” Her father passed away two years after that vision, but the experience did help her make an effort to mend their relationship.

However, I feel that these examples are few. Corazza’s study, as she said herself was flawed. In Collier’s larger group, only 37% found the experience worth repeating. It is important to note that there is a big difference with the population of Collier’s and Corazza’s group. All of Collier’s people were undergoing a medical procedure with no premeditated expectations of having an experience. Corazza, however, did the study on recreational drug users who were looking for the effects.

In a recent conversation I had with a nurse anesthetist, she revealed that she did not use Ketamine anymore because of the strange visions people have. Her example was that patients report seeing bizarre, random things like pink elephants. I asked her if she was familiar with NDEs, and she was. However, she said no patient had ever expressed to her that they had an experience anything like that while under anesthesia. The most common description was that of having a pleasant dream without elements of a NDE.

It is interesting to note that Susan Blackmore had an OBE that resulted in her earning a PhD in Parapsychology in her effort to explain it. Finding no reproducible results in to prove that consciousness can leave the body, she became a staunch materialist. Pim van Lommel, on the other hand, was a materialist who changed his tone
after his prospective research was complete. This seems to indicate that even the study of NDE can have a significant effect on people. Atwater has had her own NDEs and subsequently spent her career researching the phenomenon. She is a testament to the lifelong effects of NDE.

Fenwick quotes Greyson’s view on NDE following the completion of his prospective study that found a connection between the seriousness of the illness and the likelihood of the survivor having a NDE. Greyson explains:

Rational explanations of the phenomenon, however, do not fully account for the remarkable similarity, coherence and consistency of the corpus of NDE reports. Nor do they explain the powerful persistence of these experiences in memory and the profound transformations that follow what appear to be transcendent encounters. As of yet no adequate theory exists to explain the vividness, the consistency of the elements and the psychological power of NDE (10).

The research is both extensive and confusing and the results of most of the studies seem to suggest that there is much more work to be done before an answer can be reached. The prospective studies on cardiac arrest patients did not confirm the widely accepted physiological, psychological or pharmacological explanations for NDE. Instead, they found that only a small number of cardiac arrest patients have NDE, which, to these researchers, raises questions about dying brain theory. Pim van Lommel feels that if NDE were caused by the processes of the brain as it suffers from oxygen deprivation due to loss of circulation when the heart stops, then there would be a higher percentage of cardiac survivors having these experiences. His team was not able to come up with a reason for who did or did not have these experiences. One could claim that the small percentage of NDE in cardiac arrest survivors could be an argument against the possibility of an afterlife. They did mention that there is a strong likelihood that the
number of NDE is actually higher, however, people are still reluctant to admit to having them.

Since cardiac arrest is such a sudden event, there is no time to have the experience that death is imminent, as there would be in the event of a horrific automobile accident, so the psychological reasoning in this instance does not apply. The administration of drugs during the cardiac arrest could be verified and no correlation between drug administration and the incidence of NDE could be made.

However, they did find that the more serious the illness or the closer to death the patient came, the more complicated the resuscitation was. These patients reported the deepest NDE. They also found that NDEs happen more frequently in patients under 60 years of age. This, van Lommel says, could be due to the effects of dimethltryptamine (DMT), a naturally occurring substance in the body. The production of DMT is activated by the pineal gland that converts serotonin into DMT when the body is under stress. It is thought to be released by the death of cells and its effects have a strong resemblance to the elements of NDE and could be responsible for the enhance consciousness during the event. He explains, “Zinc is essential to the synthesis of serotonin and related substances such as DMT” (119). Since levels of zinc drop in our body as we age, this may be the key to the age factor of NDE. The research in this area is just developing, but van Lommel feels that it may be worth following. Although this theory is a biological process that could make the argument for the dying brain hypothesis, these researchers were using it as a way of distinguishing why some did and others did not have a NDE following a cardiac arrest. The age factor could also be due to older patients being more
physically compromised in the first place and, therefore, less able to survive cardiac arrest.

Maybe the question of consciousness being part of the brain or existing separately from it will never be adequately answered. After all, the subjects in each study came back, so how do we know that the experience would not have eventually ended?

Ornellla Corazza makes a sensitive and relevant observation of our society today. She says, “This fast paced world of rapid communication, transportation and busy lives, dissociates us from our spiritual nature and that of the world around us” (9). The result of this fast-paced world is the need to have two different forms of consciousness for the two different lives that we lead and serves as a way to keep the connection between mind and body.

If no conclusion is agreed upon, does that make the research useless? I do not think so. The vast amount of retrospective literature on NDEs that recount the many stories of meeting deceased friends and relatives, I feel, offers hope and helps people through both the mourning process and the dying process. Also, it has had a significantly positive impact on the expansion of hospice and palliative care programs whose timeline follows closely with that of the increase in NDEs. For some people, the possibility of our consciousness continuing after our body is gone makes it easier to make the decision to allow the terminally ill, whether it is ourselves or loved ones, to be a DNR patient (do not resuscitate). If an Advanced Directive was not in place prior to being put on artificial life support, knowledge of NDE accounts may help in making the decision to turn the life support off. Moody points out in his article “Near Death Experiences in Ancient Greek Philosophy”, the Greek philosophers were the first men to attempt to apply reason to the
questions concerning the afterworld. Consolation was one of the main reasons for the inquiry into life after death. Moody says, “They figured that finding strong rational arguments for life after death world console the grieving and cheer up the dying” (7).

I do not feel that there is definitive evidence to support an afterlife theory completely. My own personal belief, though, has always leaned to the more spiritual side and I understand the concept of consciousness existing separately from the brain more readily than there being no spirit at all. I do find prospective studies to be more objective and verifiable. Susan Blackmore’s theories are interesting and complex. Most likely, the biological processes she uses to explain various elements of the NDE do play a role especially, in triggering the event. However, the profound transformations of NDErs that increase with time shown in the longevity study done by van Lommel’s group are not explained easily. I found the increase in spirituality, but a decrease in church attendance eight years following the NDE particularly interesting since many of the stories I read did not involve religious figures, but rather a non judgmental being of light that showed unconditional love and gave them universal understanding of their relationship with others, as well as the nature of themselves. The ability of some NDErs to describe in detail their own resuscitation during an OBE is very compelling and cannot be accounted for as a brain event involving the reconstructions of memories. There are no comparable experiences in the minds of most NDErs to draw from to explain the knowledge of what was going on when their brains were so seriously compromised.

In his introduction van Lommel says, “As a doctor you are all but forced to reflect on the emotional, philosophical and physiological aspects of life and death” (11). In this statement, he captures the attitude of the majority of healthcare workers, including
myself. There are many ethical issues in the medical field. In order to face these on a daily basis, whether deciding treatment methods, end of life alternatives or simply lending an ear, you have to decide where you stand. We can choose how much of any one given theory we believe. Some need to keep an emotional distance and choose to believe that all consciousness ends when the body is no longer functioning. Others feel that consciousness goes on and offer this view to give emotional support to the families and patients to whom they give care. The current evidence can be looked at from many angles to support whatever you need to believe. The researchers themselves are very critical of each other’s work, but some are trying to find a way to connect the science of NDEs with their spiritual significance. I feel this is the most important role for research as it not only helps the experiencers find acceptance and understanding of their new outlook on life, but also benefits other patients and families dealing with end of life issues.

Though the work can be repetitive, my minor role in healthcare as a Nuclear Medicine Technologist is still both challenging and rewarding. The patients and their stories, if you choose to listen, can be very enlightening. I for one will continue to keep an open mind and be a supportive listener.
## Life Changes After a Cardiac Arrest

<table>
<thead>
<tr>
<th></th>
<th>With NDE At 2yrs.</th>
<th>Without NDE At 2yrs.</th>
<th>With NDE At 8yrs.</th>
<th>Without NDE At 8yrs.</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>Understand purpose of life</td>
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<td>Wanting to help others</td>
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<td>What matters in life</td>
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<td>Fear of death</td>
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<td>-16</td>
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<td>Belief in life after death</td>
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</table>

(van Lommel 68)

### Addendum I
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