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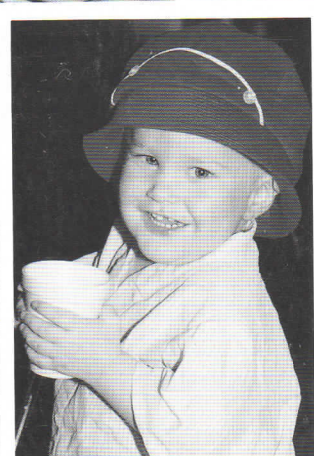
# PEDIATRIC ONCOLOGY NURSING



Near-Death  
Experiences of  
Children

Doxorubicin-Induced  
Cardiomyopathy

Detection and  
Treatment of Central  
Line Thrombus



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# Near-Death Experiences of Children

Melvin L. Morse, MD

**N**EAR-DEATH EXPERIENCES (NDEs) are spiritual events primarily reported by survivors of cardiac arrests, profound comas, and near fatal accidents. Their importance lies in documenting that the process of dying is spiritual and emotionally dynamic, even if patients appear to be unconscious. These experiences can be invaluable in empowering dying patients and their families to understand death and heal grief. If society can institutionalize the concept that the processes of dying are often joyous and spiritual, irrational use of medical technology for dying patients may be reduced, leading to substantial savings in health care costs. The current debate over whether NDEs imply an objectively real heaven or soul obscures the fact that they are as real as any other human emotion and ability.

## Literature Review

Since earliest times it has been known that people who are dying or who have a near brush with death report profound spiritual experiences.<sup>1,2</sup> Systematic collections of such experiences by scientists have been reported for more than 100 years,<sup>3</sup> although it was not until modern resuscitation techniques were developed that an explosion of such reports have appeared in the popular press and medical literature.<sup>4-8</sup> These experiences are described by Americans as involving a sense of leaving the physical body, entering into darkness, traveling in a tunnel like structure, and visiting or viewing a heavenly realm and/or being greeted by departed relatives. Frequently there is a perceived decision to return to the physical body.<sup>9</sup> These experiences are reported by survivors of clinical death as well as by persons facing eminent death who are otherwise healthy.<sup>10,11</sup> These experiences have

been described in children,<sup>12</sup> including a 3-year-old describing an experience that occurred at age 8 months.<sup>13</sup>

Models used to explain NDEs can be separated into two categories: (1) models that portray the experiences as confabulations or secondary falsifications after the fact, and (2) models that propose that the NDE is a real time event which occurs when it is subjectively perceived to occur. This classification helps to clarify whether the experience is a secondary response to other psychological or physiological processes, or a primary event to be understood as a unique neurobiological event.

The medical and psychiatric literature has often portrayed NDEs as being retrospective falsifications or fantasies of a mind struggling with psychological stresses, memory gaps, and religious and cultural expectations. It has been pointed out that the typical features of the experience, a long dark tunnel, bright lights, religious figures, and visions of beloved family members are common elements of a wide variety of hallucinations and can be replicated in the laboratory using hallucinogenic drugs.<sup>14</sup>

The psychiatric literature classically describes these experiences as being the result of the ego creating a reactive fantasy to the fear of death or knowledge of near death.<sup>15</sup> Noyes and Kletti<sup>16</sup> describe them as being a subset of a transient depersonalization syndrome. They found that conscious patients who suffered nearly fatal accidents described a syndrome of thinking that time was slowing down, a sense that events were not really happening and, in extreme cases, actually visualizing themselves as being out of their bodies and entering into a heavenly realm. Ring describes the NDE as occurring to fantasy-prone individuals who have suffered severe abuse or neglect as children.<sup>17</sup> Schnapper and Tosch describe the NDE as a variant of intensive care unit psychosis. They speculate that patients who have ICU psychotic events tend to repress the unpleasant aspects and shape the pleasant images to fit our current cultural expectation to have a NDE.<sup>18,19</sup> Cardiologist Rawlings also de-

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scribed patients who minimized or forgot hellish and negative aspects of their NDEs and suggested that recall bias occurs in favor of pleasant or heavenly images.<sup>20</sup>

Real time models take the position of cardiologist Burche who stated that listening to the NDE, "as crude a tool as this may be," represents a unique opportunity to learn about the final few minutes of life, the time between clinical death and brain death.<sup>21</sup> These models localize the experience to the temporal lobes, especially the right temporal lobe, although there is dispute as to whether the experience represents normal functioning of the temporal lobe at the point of death<sup>22</sup> or is an artifact of temporal lobe dysfunction.<sup>23</sup>

For nearly 100 years, patients with temporal lobe tumors were noted to have vividly real hallucinations superimposed over ordinary reality. These included seeing people dressed in white and other spiritual visions.<sup>24</sup> Patients with temporal lobe seizures describe out-of-body experiences and religious feelings including those of mystical oneness with the universe.<sup>25</sup> Penfield and Rasmussen<sup>26</sup> conducted electrical stimulation studies of the deep right temporal lobe and related structures; they described patients as making extraordinary statements such as "Oh God, I'm leaving my body" and "I'm half in and half out." Such studies document that many of the elements of NDEs described by Moody,<sup>6</sup> including heavenly music, out-of-body states, fragments of life review, and vivid visual and auditory hallucinations superimposed over ordinary reality are capable of being reproduced by electrical stimulation of deep temporal lobe structures.<sup>27</sup>

Real time models depend on our ability to process memories, our sense of consciousness, and on being independent of neocortical processes, as in the reports of NDEs occurring in patients with isoelectric electroencephalograms.<sup>28</sup> Real time models emphasize that a large portion of our brain is devoted to creating and interpreting spiritual visions. There is a philosophical dispute over how to interpret NDEs, ranging from seeing them as artifacts of neuronal dysfunction, normal temporal lobe function, a possibly wasteful use of precious biological energy on meaningless hallucinations,<sup>29</sup> or caused by a protective neurotransmit-

ter which blocks the effects of ischemia while generating a pleasant dissociative hallucination.<sup>30</sup>

### **A Report of a Combined Retrospective/Prospective Case Control Study of Childhood Near Death Experiences**

The following is an account of a retrospective/prospective case control clinical study at one pediatric hospital of pediatric NDEs.<sup>31</sup> Patients were prospectively separated into a critically ill group of children surviving medical conditions with a greater than 10% chance of death, such as profound coma and cardiac arrest (group 1), and a control group of patients who were admitted to the pediatric intensive care unit (ICU), intubated and mechanically ventilated, but not expected to die from their medical conditions (group 2).

There were 30 critically ill patients eligible for group 1. One subject declined to be interviewed, and three were lost to follow-up, thus the total participants in group 1 were 26. Sixteen were retrospectively identified from chart reviews during the period of 1975 to 1985, and 10 prospectively identified from 1985 to 1992. Fourteen were female and 12 were male. Ages ranged from 6 to 16 years old. Diagnoses included 16 survivors of cardiac arrest and 10 survivors of coma with Glasgow coma scores less than 5. They included complications of renal failure (3), cardiac arrhythmias (3), complications of surgery (4), sepsis and meningitis (2), drug overdoses (2), tracheomalacia with respiratory arrest and secondary cardiac arrest (1), asthma (1), motor vehicle accidents (4), near drowning (5), and hyperosmolar coma (1).

The control patients were matched for age and gender to the critically ill patients. The 121 control patients in group 2 had conditions that included tension pneumothorax (4), head injury with Glasgow coma score greater than 5 (23), epiglottitis (9), asthma (6), cardiac surgery with cardiac bypass (19), elective surgery (20), drug overdoses including narcotic overdose (11), pneumonia (8), idiopathic hypotension (1), Guillain-Barre syndrome (2), diabetic ketoacidosis and coma (3), and near drowning (15). Seventy-two percent of parents of control patients an-



swered "yes" when asked "Did you think your child was likely to die?"

### Procedure

A formal interview with 16 open-ended questions was used. Examples of the questions include: What do you remember happened to you when you were in the hospital? What do you remember about the time you were unconscious (asleep, in the operating room)? and What happened next? Once the open-ended questions were asked, a second questionnaire of 19 items requiring "yes" or "no" responses was administered. An example of those questions is: Did you see a light?

The interviews were conducted primarily in the patients' home weeks to months after discharge. Several years had passed for two patients in group 1. The interviewers were aware of the patients' group assignment.

Twenty-two of 26 critically ill children described memories of being clinically dead. One patient accurately described her own resuscitation by medics and described a distortion of reality, saying that when she was floating over her body, her mother's nose appeared flattened and distorted "like a pig monster." In all other cases, the patients were oriented to time, place, and person and aware that they were critically ill but described another reality superimposed over the one they ordinarily perceived. They described themselves as being awake and alert while seemingly in coma, and felt the entire experience was real. In fact, one 6-year-old boy emphatically stated "It was real, Dr Morse, it was realer than real."

The content of the experiences was usually described as a fragment of a greater indescribable experience. One 8-year-old boy stated, "I have a wonderful secret to tell you. I was climbing a staircase to heaven. It was long and dark and I could see a light (that was heaven). I came back because my brother had already died and it wouldn't be fair (if I continued)." This is the entire description of his experience and all other questions were answered with "I don't know (or remember)." Another 6-year-old boy stated, "It was weird. I thought I was floating out of my body. And I could see a light. There were a lot of good things in it." Again, he could not further define what this light was or what he meant by

"good things" in it. A 5-year-old girl described the light: "It told me who I was and where I was to go." A 12-year-old-girl stated, "I learned that life is for living and that light is for later." This was her complete statement about her experience, only further stating that she was somewhere besides her own body, but couldn't say where else she was or what else happened to her.

One case strongly suggests that NDEs occur at the point of dying. A 14-year-old boy with documented Long QT syndrome (Romano Ward syndrome), sick sinus syndrome, and juvenile onset diabetes, experienced a pacemaker failure resulting in reoccurrence of ventricular tachycardia and fibrillation. He described floating out of his physical body and watching his own resuscitation from a corner of the room, surrounded by a soft white light. "(I could) see my hair all messed up. They cut off my clothes and hooked me up to IVs and stuff. I saw the nurses put some grease on me and then the doctor put paddles on my chest and pressed a button. I was sucked back into my body. That hurt. I have never hurt so much. Sometimes I still wake up at night and feel that hurt." Physicians and nurses involved in this case independently verified that within minutes of this patient's successful resuscitation, he regained consciousness and said, "You guys just sucked (or pulled) me back into my body."

Only four patients described a coherent experience which made sense when told from beginning to end. For example, one 5-year-old child had a cardiac arrest secondary to fulminant bacterial meningitis. She stated that she floated out of her physical body, and saw the doctors and nurses working on her. She rose up into the air and saw a man she thought was Jesus "because he was nice and he was talking to me." While in this heavenly realm she saw "the dead people, grammas and grandpas and babies waiting to be born." She said that "Jesus told me it wasn't my time to die" and she regained consciousness.

Most of the patients simply told fragments of an experience. All of their fragments, when taken together, give us an understanding of a core NDE, strikingly similar to those previously described in adults, yet different in important ways. There was a sense of being dead (21), seeing a light (18), separating from the physical body



(16), going through a tunnel (12), seeing dead relatives (10), seeing living teachers and relatives (6), seeing pets (6), seeing angels (9), seeing a godlike being (8), deciding to return to the body (12) and a sense of peace and joy (8). For example, one child described three distinct fragments of an experience. First, she could see her own body as doctors wearing green masks tried to start an IV. Then she saw her living teacher at her bedside, comforting her and singing to her (her teacher did not visit her in the hospital). Finally, three tall beings dressed in white that she identified as doctors asked her to push a button on a box at her bedside, telling her that if she pressed the green button she could go with them, but she would never see her family again. She pressed the red button and regained consciousness. This very mechanistic experience comes from a child raised in an agnostic family.

No control patient described any memories of being unconscious in the hospital, except for two patients having elective surgery who described being conscious during surgery. This awareness during surgery has previously been documented in the literature,<sup>32</sup> and a review of both of these patients' medications indicated that they may have been underdosed with amnestic agents. Other than these two patients, all other control patients simply said that they could not recall anything referable to the time they were sick, until they regained consciousness, which was usually when they were on the ward or at home.

## Discussion

Our study suggests that there is a core NDE which is inexorably intertwined with the processes of dying. It involves (1) a sensation of being dead yet conscious, (2) separating from the physical body, (3) hearing and seeing events surrounding the physical body, (4) entering into darkness, (5) entering into a tunnel (or staircase or sidewalk), (6) seeing relatives and comforting images including pets and living teachers, (7) entering into a loving light, and (8) often perceiving a decision to return to the body. It was independent of medications, hypoxia, hypercarbia, psychological stress or the perception that one was dying.

We have studied 400 Japanese NDEs in adults and children and found the same core experience. A 4-year-old Japanese boy who

nearly died of pneumonia stated that he believed that he had died, left his physical body, and came to the edge of a dark river. He could see his living playmates on the other side, waving to him to go back (to life). This experience includes a sense of being dead, separation from the physical body, seeing living playmates, and some sort of decision to return to life. The dark tunnel is replaced by a dark river.<sup>33</sup>

The specific images in the core experience vary according to the age, culture, sex, and personal circumstances of the child. For example, a 10-year-old girl who survived a cardiopulmonary arrest during spinal surgery was reported by Serdahely as stating that the experience was peaceful. She remembered a white-blue light at the end of a tunnel and a lamb which was loving and gentle that led her back to her body. Her parents reported that she had a favorite lamb music box as a 2-year-old.<sup>34</sup> Children often see living teachers as opposed to the dead relatives described in adult NDEs, and often report only incoherent fragments of experiences as opposed to the coherent detailed narratives often described by adults.

Unlike ordinary memories or dreams, NDEs do not seem to be rearranged or altered over time. We studied 100 adults who had NDEs as children, and found that they described the same typical childhood experience of brief fragments, teachers, and animals as opposed to the more involved 15-element adult type NDEs.<sup>35</sup> We reinterviewed 10 of our subjects 5 to 10 years after their initial interview and found that their recall of the experiences had not changed over time.

Curley documented that children tell nurses about NDEs and that the typical timing of such memories are either during or immediately after resuscitation.<sup>36</sup> Von Lummel, in a multicenter prospective case control study in Holland, has preliminary data that describes 15% of critically ill patients as having NDEs involving the previously described core cluster.<sup>37</sup> A review of his entry criteria confirms that the closer one is to death, the more likely an NDE is to be reported. Most of his study population who didn't have NDEs would have been control patients in our study. Owens et al, while reporting that NDEs occur to patients whose medical records do not verify clinical death, describe those patients who



do survive clinical death as having a unique transcendent quality to their NDE.<sup>38</sup>

The scientific evidence clearly suggests that NDEs occur when they are subjectively perceived as occurring, at the point of death. As such, they must represent the best objective evidence of what it is like to die, regardless of which neurotransmitters or anatomical structures mediate the experience. They are as real as any other human experience, as real as math or language.

There is no evidence that these experiences represent pathology or dysfunction.<sup>4</sup> They can be easily distinguished from schizophrenic hallucinations.<sup>39</sup> NDEs are predominantly positive and lack the paranoid ideation, distortions of reality, negative imagery, olfactory elements, and aggressive and hostile elements of drug-induced hallucinations or other transient psychoses.<sup>40,41</sup> They represent an acknowledgment of reality whereas ICU psychosis usually represents a denial of reality.<sup>42</sup> They occur to people in excellent mental health<sup>35</sup> and they have a similar capacity for fantasy as well as repressed anxieties as the typical population.<sup>43</sup> To explain NDEs as depersonalization or regression into the psychological state before ego differentiation ignores the clinical experiences of the subjects which are experienced with intact ego identity or reports from infants or 2-year-olds<sup>44</sup> who theoretically have not yet undergone ego differentiation.

There is already a rich anecdotal literature on counseling adults who have had NDEs. Although no specific articles before this one have discussed counseling the child and family of a child who has had an NDE, the same principles

apply.<sup>45-50</sup> An adaptation of those principles follows:

- (1) Recognize that critically ill and comatose children are often aware of their surroundings and can hear and see through mechanisms not yet physiologically explained. The child should be spoken to as if conscious, and all procedures should be explained to the child. Parents should be encouraged to be at the bedside and speak to and touch the child.
- (2) As the child recovers, allow him/her the opportunity to express fears and anxieties, and to ask questions. Listen attentively to any reports. It is essential that any health care provider who works with dying patients be comfortable dealing with paranormal phenomena in an open and non-judgmental fashion. Parents and family may be concerned about the mental state of children who have death-related visions. They should be reassured that such experiences are common, normal, and not the result of medications, high fevers, or brain pathology.
- (3) Avoid labeling either the death-related vision or the patient who has one. Give patients information about the experiences if asked, but remember that these experiences usually generate their own sense of meaning. Often the less said, the better, until the family and child have a chance to assign their own meaning to the experience.
- (4) Simply listening to and validating the experience is most helpful in my experience.

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# Commentary

## Near-Death Experiences of Children

Ida M. Martinson, PhD, FAAN

Near death experiences (NDEs) are of special interest to us because death is something for which we cannot practice or prepare in a systematic way. As we read this fascinating account of children's NDEs, we must keep in mind the complexity of our brain and how information is encoded on the brain cells. Emotion has an internal awareness and an external display. The release of emotion at times seems to be an almost reflex-like expression of a particular state. For example, we may have a feeling of sorrow; should this sorrow be sufficiently intense, it may lead to uncontrollable weeping and sobbing. Although studies on animal emotions show parallels between human and animal emotions, human emotions are more complex and respond to a richer array of inputs. (There are similarities in brain structure of the human and of animals.)

I remember working with cats as a doctoral student in physiology. As an electrode touched one specific part of the cat's brain, the cat would snarl with its hair standing upright. Each time that specific spot of the cat's brain was touched, the same reaction resulted. It amazed me at the time that such a response could be stimulated. There is a close connection between physiological stimulation and an emotional response. In this case with cats, the close connection was consistent and predictable. That connection was similar to this study's observation that certain kinds of stimulus to the temporal lobe produced particular kinds of mental response, such as out-of-body experiences.

The author of this study in commenting on real time models indicates that there is a dispute as to whether NDEs are "artifacts of neuronal dysfunction" or "normal temporal lobe functions." He concludes by noting no evidence to support the former interpretation. However, his conclusion is based on exclusively psychological evidence. It may be that a careful investigation of physiological and neurological processes might suggest otherwise. For instance, one could hypothesize that a decrease in oxygen in the temporal lobe induces certain kinds of mental response such as seeking light at the end of a tunnel. This may account for the fact "the closer

one is to death, the more likely a near-death experience is to be reported." This may also account for my own experience though it does not qualify as a NDE. As I recovered from anesthesia three different times with years in between, twice after a C-section and once after a D & C, I had the same experience of being caught going back and forth between three islands and never being able to land.

Our brain cells are amazing. Memory is a profound aspect of the mind. Whatever we hear and see is embedded in our brain cells. What triggers the release of that coded information? Memories can exist for years, and thus appear to depend on some kind of permanent cellular changes. It is as though there is permanent structural change of the neurons, rather than the product of a continuing neuronal activity. Recent memories tend to be more unstable than older ones. Reflections such as these would help account for the different images and connections that are reported by different populations.

Cultural expectations inform our visions. In a country in the Far East, a pediatric nursing faculty member tells of a young 8-year-old who was very ill with cancer. The parents believed the illness was the work of the devil and thought that their child was filled with the devil. Therefore, they would not come and visit the child. The child told the nurse about seeing the devil above his bed in the hospital. That child was not having an NDE as is reported in the study, nevertheless, it may be related. This child believed in what he was seeing. It was a real time experience for him, just as for the children in this study.

The study argues that the process of dying may be more pleasant than we ordinarily think, and that this has implications for our use of medical technology and death experience expectations. This raises important issues for nursing. For instance, on the basis of the study it is not clear what percentage of children report NDEs. Because it is not possible at this time to predict who may experience an NDE, it is important that expectations for their occurrence not be built up in patients, particularly among children who are most vulnerable at this point.

The clinical application is obvious. It is that nurses and parents should be encouraged to listen to their child as the child recovers from a crisis, whether resulting from anesthesia or a head injury or because of our highly technical medical care, from treatments that bring a child close to death in order to cure the child. Children are attuned to their bodies and need to be supported in the expression of their experiences. We do not need to start teaching NDEs so that this becomes an expectation to which one is expected to conform. Moreover, even if all people might have dreams, some people recall their dreams after waking while others do not. Either way is just fine. In other words, we should be ready to listen if someone has something to say, but we need not ask leading questions.

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