Palliative Care in Children With Cancer: Which Child and When?

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At a time of increasing interest in palliative care in pediatrics, pediatric oncology programs may be failing to deliver adequate palliation to children with cancer. In a recent study, parents of children who died on a pediatric oncology service reported that despite treatment at the end of life, their children’s suffering was not adequately relieved and that parents were more likely than caregivers to recognize their children’s suffering. Why do pediatric oncologists fail?

First, death in children from cancer is a rare event. Second, few prospective trials in the field of pediatric palliative care describe and quantify symptoms during cure-directed care or at the end of life. This leads to a lack of evidence-based practice and forces the clinician to use personal experience and trial-by-error medical care. Third, pediatric oncologists and those charged with developing pediatric palliative care programs must deal with the different physiologic and developmental stages encountered while caring for infants, children, and adolescents. Fourth, education is needed for pediatric oncology caregivers in many areas of palliative care. Finally, reimbursement issues surround the palliative care field and are a major hindrance in developing effective integrated palliative care teams. These factors have also made it difficult to perform palliative care research in children. When discussing palliative care in children with cancer, where few die but many suffer, a paradigm shift must occur that does not equate palliative care with end-of-life care. A model on how we might make the transition from symptom control that we should offer to every patient to end-of-life care is discussed. [J Natl Cancer Inst Monogr 2004;32:144–9]

Palliative care in pediatrics is gaining momentum. The American Academy of Pediatrics issued a policy statement that called for the “development of clinical policies and minimum standards that promote the welfare of infants and children living with life-threatening or terminal conditions and their families, with the goal of providing equitable and effective support for curative, life-prolonging and palliative care” (1). Palliative care in children with cancer is beset by a number of issues that are unique (2,3). The relative rarity of death and certain medical conditions in children creates uncertainty regarding prognosis, treatment, and outcome. The need to travel great distances to centers that care for these rare disorders removes the patient, parents, and siblings from family and community support at a time when it is needed the most. The low incidence of cancer in children hinders studies that describe the quality-of-life symptoms from which these children suffer and the best treatment for these symptoms. In addition, traditional palliative care focuses on end-of-life care and not on improving the quality of life that the majority of children who survive require. This leads to a lack of experienced providers, in both medical centers and the community, and forces many to practice by trial and error.

Developmental factors operating from infancy through late adolescence affect the metabolism of drugs and makes uniform dosing difficult. In addition, developmental differences lead to psychologic issues such as different emotional reactions to the disease and its treatment and different levels of understanding regarding the disease process and its outcome. The care team must consider this in planning age-appropriate care. Therefore, although we often state that children are not little adults, we must also recognize that an infant is not a child in grade school, who in turn is not an adolescent.

There is also a lack of adequate reimbursement for palliative care services. Although the adult Medicare model is not well suited to pediatric oncology, we have no relevant care models to guide us otherwise.

The issues mentioned above have led to relative inattention to the issues surrounding relief of symptoms in children diagnosed with cancer, no matter the outcome of the disease process, and have led to a dearth of evidence-based practice. This article focuses on several of these issues, examines the various symptoms of children treated with cancer, and develops a seamless care model that encompasses relief of symptoms as a major focus to improve the quality of life of these children regardless of whether the child survives or dies.

Incidence of Death and Cancer in Children

The first problem that pediatric oncologists face is that death in children in general, and in children with cancer in particular, is a rare event (4). Furthermore, cancer in children is not common. In the year 2000 there were 27 897 infants less than one year of age who died, and cancer was not among the 10 leading causes of death in that age group. In the same year, 25 745 deaths occurred in children and adolescents between the ages of 1 and 19 years. The five leading causes of death were accidents (6597 deaths), homicide (2158 deaths), cancer (2088 deaths), suicide (1901 deaths), and congenital malformations, deformities, or chromosomal abnormalities (894 deaths).

Approximately 12 400 new cases of cancer are diagnosed each year in children and adolescents, and approximately 2000–2400 of these patients die yearly. The incidence of these cancers, as estimated from the Surveillance, Epidemiology, and End Results data, using the International Classification of Childhood Cancer groups (based on histologic type and primary site) for all races and both sexes in children between the ages of 0–14 and 15–19 years, is depicted in Fig. 1 (5). The rate of cancer in patients less than 20 years of age increased from 1975 until
about 1987 and since has remained constant at a rate of approximately 160 new cases per $1 \times 10^6$ per year. During the same period, the mortality in this population has steadily and substantially decreased from 50 to about 25 deaths per $1 \times 10^6$ per year. With this trend in the yearly incidence rates, the 5-year survival rate should continue to improve. Thus, as the population of children less than 20 years of age increases, it can be expected that more children will be diagnosed with cancer, whereas the percentage of these children who die from cancer each year will continue to decline. These demographics argue for a shift in the emphasis on end-of-life care to emphasizing palliative care in this population that will improve quality of life during treatment and for survivors. However, palliative care that improves the quality of life for children at end of life must be diligently pursued.

**Quality of Life in Children with Cancer Is Poorly Defined, Leading To Undertreatment**

For many years, the focus of pediatric oncology research was principally on the binary outcome: death or survival. As survival rates improved, attention turned to reducing the toxic effects of therapy. However, there are very few data looking at palliative care outcomes. Specifically, the literature is lacking prospective studies to define symptoms that could affect quality of life, its occurrence, and preventive and intervention strategies. In determining how best to develop effective palliative care strategies in children with cancer, we first must determine the incidence of the most common symptoms. In addition, it is imperative to distinguish between symptoms that occur at the end of life from those that occur in children with cancer during their treatment, whether they survive or not. Finally, it is important to differentiate the symptoms that are caused by the disease from those that occur from treatment.

**General Symptoms**

In trying to define the most prevalent symptoms in children with cancer, Collins and colleagues (6) used the Memorial Symptom Assessment Scale (MSAS) to prospectively assess children referred to Memorial Sloan-Kettering Cancer Center over a 12-month period. The study population consisted of 190 English-speaking children aged 10–18 years, of whom 160 patients consented to be tested and 159 completed the MSAS 10–18 using a 4–5-point scale. Greater than 35% of patients experienced clinically significant lack of energy, pain, drowsiness, nausea, cough, lack of appetite, and psychologic symptoms (sadness, nervousness, worrying, and irritability). The most distressing symptoms were difficulty in swallowing, mouth sores, pain, and insomnia. There is a marked difference in the number of symptoms between inpatients (12.7 ± 4.9 symptoms) versus outpatients (6.5 ± 5.7 symptoms). Children with solid tumors or who received recent chemotherapy experienced more symptoms. Finally, pain was reported in 84.4% of the inpatient group.

In a similar study, Collins and coworkers (7) studied children 7–12 years of age with a modified MSAS scale. This tool evaluated only eight symptoms, using a 3-point scale. One-third of children experienced lethargy, pain, or insomnia. Pain, insomnia, pruritus, worry, nausea, and sadness were the symptoms causing the distress in one-third of children who experienced these symptoms. Younger children experienced fewer symptoms than the older children described in Collins’s first study. The reason could be that Collins and colleagues only evaluated eight symptoms in children 7–12 years of age compared with 30 symptoms in their previous study. Although less precise, this instrument was easy to administer, and patients were able to complete the questionnaire without tiring. These studies are useful in identifying symptoms for which we should develop prevention and intervention strategies to improve quality of life during treatment.

Wolfe and colleagues (8) examined retrospectively the symptoms that children experience at the end of life. They interviewed, over a 1-year period (September 1997 through August 1998), parents of children who died between 1990 and 1997. One hundred sixty-five families were identified, 143 were located, 107 agreed to participate, and 103 English-speaking parents were interviewed either by phone (98) or in person (5) to recall, through a questionnaire, the experiences of their child at the end of life. The average age of the children at death was 10.8 ± 6.7 years, and that of the parents at the time of the interview was 43.7 ± 7.7 years. Fifty-one percent of the children died at home, and of the 49% of children who died in the hospital, 45% died in the intensive care unit. The parents were asked whether their children experienced the following symptoms: fatigue, pain, dyspnea, poor appetite, nausea or vomiting, constipation, or diarrhea. The most common symptoms the parents reported were fatigue (nearly 100%), followed by pain, dyspnea, and poor appetite (all greater than 80%). Of all the symptoms, fatigue, pain, and dyspnea were by far the most common in causing a great deal of suffering at the end of life. Regardless of the seven symptoms that parents were asked about, palliative treatment was inadequate, because children continued to suffer. The two most common symptoms treated were pain (76%) and dyspnea (65%), with only 27% and 16% benefiting from the treatment. Less than 20% of patients with fatigue were treated, and very few were reported to derive benefit from the treatment.
Finally, of the seven symptoms screened for, only pain, dyspnea, nausea or vomiting, and diarrhea were mentioned in the patient’s chart, whereas the treatment team failed to recognize fatigue, poor appetite, and constipation. Despite the failure of the health care team to recognize or treat effectively symptoms at the end of life, the parents rated the care given by the oncologist (81%), nurse (90%), and psychosocial staff (77%) as good to excellent. Clearly, parent satisfaction is an inadequate indicator of quality palliative care.

Liben and Goldman reported that it is possible to effectively care for children with terminal illnesses at home (9). Goldman, in a letter to the editor regarding the article by Wolfe and colleagues, noted that they succeeded in improving the quality of life of children with cancer at the end of life when the children were treated at home (10). However, the majority of children in the survey of Wolfe and colleagues died at home without relief of their symptoms. Many factors can influence the end-of-life outcome. Whether home care is better than inpatient care must be prospectively studied before concluding which site is better for children facing end of life.

Fatigue

One of the more vexing and least successfully treated symptoms in children with cancer is that of fatigue or asthenia. This mirrors the experience of adults with cancer, with an estimated occurrence of approximately 80%. The causes of fatigue in adults are multifactorial and may include a variety of factors such as pain, anorexia, cachexia, anemia, narcotics and other drugs, endocrine effects, cytokines, tumor degradation products, and psychologic causes (11). Universally accepted standardized means of assessment of fatigue do not exist. A recently described measure of fatigue is the Brief Fatigue Inventory (BFI) (12). This survey uses a numeric scale (1 = no symptoms, 10 = most severe symptoms) and rates four major categories: present state of fatigue; usual level of fatigue; worst level of fatigue; and how fatigue interferes with general activity, mood, walking ability, normal work, relations with other people, and enjoyment of life. This was administered to community controls (n = 290) and patients (n = 305) at the M.D. Anderson Cancer Center. The researchers found that hemoglobin and albumin levels were correlated with severity of fatigue, with albumin proving to be the best predictor of fatigue. Finally, by using cutoff boundaries, their preliminary data revealed that 35% of patients had severe fatigue as defined by a score of 7–10.

Nurses specializing in treating children with cancer have spearheaded the research in fatigue in children. The first manuscript on this topic is the study of Hockenberry-Eaton and colleagues (13), which used 11 focus groups at two children’s cancer centers in an attempt to evaluate fatigue in children with cancer. The participants were 29 patients with various tumors who were actively undergoing cancer treatment. Fourteen children were 7–12 years of age (43% girls), and 15 children were 13–16 years of age (67% girls). The descriptive terms for fatigue, causes of fatigue, and modalities that helped ameliorate the fatigue in this limited number of subjects were described. Adolescents, as one would expect, are more expansive in their terms, more concerned with socialization with peers, and more concerned that the symptoms are psychologic in nature rather than physical. Common to both groups, however, are themes of sadness, anger, and disinterest in physical activity; causes such as treatment and increased physical activity; and alleviating factors such as rest and “fun.” On the basis of some of the findings of Hockenberry-Eaton and Hinds (13–15), Davies et al. (16) developed questionnaires that led to describing three types of fatigue in children with cancer. They interviewed only 13 children with leukemia or lymphoma and 12 parents. The three types of fatigue are typical tiredness, treatment fatigue, and shutdown fatigue. Typical tiredness is distinguished by normal ebb and flow of energy that is lost but easily replenished. Treatment fatigue is characterized by energy loss that is greater than its replenishment, but the energy could be conserved and replenished. Finally, in shutdown fatigue, there is a profound and sustained loss of energy (energy that the patients tried to preserve to minimize any further loss). These three types were not mutually exclusive, but as expected, patients who had progressive disease complained more often of shutdown fatigue that contributed to their decreased quality of life. Treatment of fatigue is not described in any of the studies, and there is certainly a lack of evidence-based practice to rely on to develop adequate therapies, be they psychologic or pharmacologic. These studies are of a limited number of patients and are descriptive in nature. Measurement instruments that are appropriate for children and that are easy to administer need to be developed to evaluate fatigue in children with cancer and to perform prospective research studies on its incidence and treatment in children. Based on the above observations, Hockenberry et al. (17) designed and validated three instruments (one for patients aged 7–12 years, parents, and staff) to measure fatigue in children. These instruments will need testing in prospective studies to determine whether they accurately identify children with cancer who are experiencing fatigue.

Pain

Pain is the most studied and best understood of cancer symptoms, but as mentioned previously this symptom is not always controlled as well as the patient, family, and caregiver wish. Cancer pain may be caused by disease (e.g., tumor tissue involvement or central nervous system involvement such as pressure on nerve or spinal cord), treatment (postoperative pain, mucositis, neuropathy, gastritis), and procedures (18). Thus, careful assessment of the patient to determine the cause of pain and the modality that would be most suited to treat it, as well as diligent monitoring of the patient once treatment begins to evaluate the success of the treatment, is necessary to adequately alleviate this symptom. It is important to realize that there are many modifying factors that lead to pain in children and that identifying them helps in diagnosing and treating this symptom (19). These factors may be divided into three categories: cognitive (understanding, control, expectation, relevance, and pain control strategies), behavioral (overt action, physical restraint of patient, physical activities, and social activities), and emotional (anxiety, fear, frustration, anger, depression, guilt, and isolation). These modifying factors of the pain response should be considered in the treatment plan along with pharmacologic treatment.

Depression and Other Psychologic Symptoms

There are very few prospective studies to evaluate the occurrence of psychologic symptoms during treatment of children with cancer. The evidence to date would indicate that children
who are being treated for leukemia, lymphoma, Hodgkin’s disease, and other cancers experience the same percentage of psychological symptoms as their peers (20—22). Children treated for brain tumors or who have undergone bone marrow transplantation (21) exhibited more psychological symptoms than their peers (23,24). Children and parents may experience more psychological adjustment problems immediately after diagnosis, but 1 year from diagnosis these symptoms approach those of community controls (25). These studies include small numbers of patients from one or two institutions. What are lacking are large prospective studies of various types of cancer that use community controls matched for age, gender, and socioeconomic factors. Of greater clinical significance is the within-group variance. Who, among those with cancer, are at greater risk? What are the resilience factors?

**Pediatric Oncologists Are Poorly Trained in Palliative Care**

The American Society of Clinical Oncology (ASCO) surveyed pediatric oncologists regarding their attitudes and practices in end-of-life care (26). The questionnaire revealed that 93.2% of pediatric oncologists had fewer than 25 (median, eight patients) deaths in their practices during the preceding year. In addition, only 10% of respondents had formal training in palliative care, with most learning by trial and error or a role model. Despite this lack of experience and training, 91% of physicians rated their skills in the treatment of pain as “competent to very competent.” On a scale of 1 (not competent) to 5 (very competent), no symptom, including nausea, vomiting, constipation, and dyspnea, scored as high as fever neutropenia or pain. Thus, on a scale of 1–5, pediatric oncologists felt able to take care of clinical problems that were based on objective criteria (i.e., a thermometer, a complete blood count, a pain scale) but not those that lack objective instruments or rely on subjective complaints of patients. Fifty-eight percent of pediatric oncologists felt that they were less than competent in managing depression. Finally, 68.9% of pediatric oncologists reported a high anxiety level in managing difficult symptoms of the terminally ill child. Despite this, 66.0% of pediatric oncologists reported that they felt emotionally satisfied in taking care of children who were dying. The pediatric oncologists who felt that they failed also reported that they were less effective in obtaining adequate care for their patients. Pediatric oncologists listed a number of external forces giving the “most trouble” in affecting end-of-life care. These barriers to effective care were the family’s unrealistic expectations (47.5% of respondents), family denial (35.7%), family conflict (30.3%), patient’s unrealistic expectations (10.1%), and patient denial (7.6%). Refusal to take opioids (3.8%) and laws regarding opioids (1.7%) were the least problematic. A majority of pediatric oncologists reported that home- and hospital-based hospice services were less available than reported by adult oncologists in a similar ASCO survey. Pediatric oncologists reported a greater availability of psychosocial support compared with adult oncologists. Pediatric oncologists did not find insurance reimbursement problematic for palliative chemotherapy, radiation therapy, parenteral nutrition, or patient-controlled analgesic pumps, yet they did find economic barriers to unskilled home care and insufficient reimbursement for coordinating palliative care.

Choices of which factors influence the shift from curative to palliative care were ranked as follows: absence of effective therapy (93.4%), request by parent or patient to stop treatment (87%), patient’s poor performance status (75.2%), unrelenting pain or symptoms (65.7%), absence of phase I studies (52.8%), reluctance of parents to come to clinic (43.8%), and caregiving burden imposed on the family (41.6%).

The conclusion of the ASCO survey was that “Pediatric oncologists are working to integrate . . . palliative care services into the routine care of the seriously ill child, although barriers exist that make such comprehensive care a challenge.” (26).

**Spiritual Care**

There is increasing awareness of the importance of spiritual well-being in patients of all ages. However, at this time, operational definitions and reliable means of assessing spirituality in children are still emerging.

**Proposal for the Future**

There is no doubt that the time to develop effective palliative care models in pediatric oncology is here. However, the word palliation carries the stigma of terminal care for patients, families, and caregivers, when terminal care covers only a minority of children with cancer. This stigma makes it difficult to introduce palliative care at the time of diagnosis as espoused in the Institute of Medicine (IOM) report (3). In addition, the IOM report (page 359 and Appendix C) stresses that although pediatric quality-of-life instruments exist, they may be generic in nature or they may be disease and condition specific, but most are developed for well or chronically ill children. The authors suggest that such instruments may not be suitable for children with advanced disease and give suggestions for future directions in research. Thus, I propose that we emphasize palliative care as an important modality to improve the quality of life in patients and families when developing models for the care of the child with cancer. Such models have a number of goals. The first is organization of the care of the patients and their families that does not establish barriers between the treatment of the cancer and the goal to improve quality of life. In addition, the family can be encouraged to participate in paying attention to quality of life as part of a family-based care program. Second, the development of an organized care model would aid in research to develop evidence-based methods to improve quality of life in children with cancer, regardless of the outcome. In addition, such research should lead to refinement of these models to develop the most effective palliative care and quality of life for the children and their families. Third, the financial burden of such care could be assessed. Finally, education regarding effective methods to improve quality of life for those who care for children with cancer, as well as residents and medical students, would be facilitated and would remove such care from the anecdotal care that currently takes place in the majority of pediatric cancer centers.

The concept of quality of life should be introduced as soon as possible to the patient and the family. The emphasis must be on addressing the physical, psychosocial, and spiritual needs of the patient and family to maintain as good a quality of life during treatment as possible. At the beginning of treatment, the Pediatric Oncology team (pediatric oncologists, nurses, creative art/
successful, adequate reimbursement for palliative care services.

A proposed model for palliative care in children with cancer. This model, although not based on hard data, assumes that all the components of quality-of-life care are integrated with the family. Children with good prognosis have a much greater chance of cure (thicker arrow) compared with those with a poor prognosis (thinner arrow); however, palliative care is essential in both models (arrows of equal weight). Children in both prognostic categories may eventually need end-of-life care (represented by thicker and thinner arrows); end-of-life care is equal to palliative care (double arrow). This model assumes that the concept of palliative care is introduced as close to diagnosis as possible and is integrated into the care of the patient and family. The eventual goal, whether the child or adolescent lives or dies, is to improve the patient’s and family’s quality of life. child life specialists, social workers, psychologists, learning consultants, nutritionists, physical therapists, and spiritual advisor) should be the primary caregivers, with input from others when needed. If, for example, the patient is experiencing pain, nausea, vomiting, or fatigue, pediatric oncologists may need consultation with the Palliative Care service to manage the patient. However, if the patient is at the end of life, care of the patient and family should be managed by a Palliative Care service with input from the Pediatric Oncology team. The Palliative Care service would be comprised of experts in the management of the symptoms that occur because of treatment or at the end of life. Because of reimbursement issues, it will be difficult to duplicate many of the services that already exist within the Pediatric Oncology team, and many of these services will need to be shared, but at a minimum the Palliative Care team should include a physician, a nurse, and a religious or culturally appropriate spiritual advisor. The emphasis of care, which hopefully would gain acceptance by the patient and family, is that in children with cancer, palliative care does not mean end-of-life care, although in the child facing the terminal phases of an illness, end-of-life care must include palliative care to improve quality of life. With this approach, and with an emphasis on quality of life, which in reality should include palliative care, it is hoped that patients and their families would accept early intervention to improve quality of life as part of the care plan.

With the model proposed in Fig. 2, although not based on hard data, we can develop a continuum of care for the child with cancer. This continuum proposes that there are three categories of patients with cancer: 1) good prognosis, 2) poor prognosis, and 3) end-of-life care. Each category has palliation (physical, psychosocial, and spiritual) as an essential ingredient and results in improved quality of life for the patient. Also, if patients will eventually need end-of-life care, the philosophy of quality of life would have already been ingrained in the care of the patient and would ease the patient into effective end-of-life care by the Palliative Care team. For this model to gain acceptance and be successful, adequate reimbursement for palliative care services, whether performed by pediatric oncology or palliative care services, must be available. Payment must be applied to the care provided and not to the person who supplies the specific service. Thus, if a pediatric oncologist performs palliative and oncology care, reimbursement should be commensurate with the time expended for both services.

**CONCLUSION**

The following barriers exist that prevent adequate palliative care for children with cancer: relative rarity of cancer and death in children; different developmental stages of children ages 0–19 years; lack of evidence-based medicine that defines prospectively the symptoms, and their causes in children with cancer, that affect quality of life during active treatment and at the end of life; lack of understanding of how the individual symptoms affect one another; lack of effective treatment for some of these symptoms (especially fatigue); little education in medical school and residency programs on effective modalities to improve the quality of life of children with cancer; and lack of adequate reimbursement for home palliative care that will result in improved quality-of-life care. The only way to overcome these barriers is to educate those charged with caring for these children and to pursue research and advocacy with the same fervor that has been dedicated to studies on curative therapies by large pediatric research cooperatives such as the Children’s Oncology Group. A final word of caution must be introduced: Even with outstanding outcomes research, it must be remembered that each family and patient handles adversity differently. It is our task to attend to these diverse signals, whether they are personal, psychosocial, cultural, or spiritual, and to modify our approach accordingly. The ultimate outcome is the comfort and well-being of our patients and their families.

**REFERENCES**


NOTES

Editor’s note: SEER is a set of geographically defined, population-based, central cancer registries in the United States, operated by local nonprofit organizations under contract to the National Cancer Institute (NCI). Registry data are submitted electronically without personal identifiers to the NCI on a biannual basis, and the NCI makes the data available to the public for scientific research.

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