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# Pain in Children With Central Nervous System Cancer: A Review of the Literature

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**E**ach year, more than 800 Canadian children aged 0–14 years old are diagnosed with cancer and approximately 135 children die as a result of cancer (Canadian Cancer Society & National Cancer Institute of Canada, 2008). In the United States, current statistics estimate that 10,700 children will be diagnosed with cancer this year (American Cancer Society, 2010). Cancer of the central nervous system (CNS) accounts for about 20% of new cases and 30% of cancer-related deaths in Canadian children (Canadian Cancer Society & National Cancer Institute of Canada, 2008). Throughout North America, brain and spinal cord tumors are the most frequent type of solid tumors in children younger than 15 (Stiller & Bleyer, 2004). The tumors are heterogeneous in nature based on numerous histologies, patterns of incidence, and etiologies. CNS tumors require a wide range of treatments, including surgery, radiation therapy, and chemotherapy, which lead to a variety of outcomes, ranging from cure to certain death (Ryan-Murray & Petriccione, 2002).

The intense treatment that children with CNS tumors undergo and the cancer itself are associated with distressing symptoms related to the various treatment modalities. Therefore, the focus of care for such children must be on managing their symptoms and improving their quality of life. One symptom that is burdensome for children with CNS cancer is pain. The Human Response to Illness (HRTI) model provides a suitable organizing framework to review the literature related to the symptom of pain in childhood CNS cancers because it addresses the multidimensional aspects of the pain experience. This article provides a comprehensive description of current literature about pain in children with CNS cancer.

## Pain in Children With Cancer

The International Association for the Study of Pain ([IASP], 2008) defines pain as “an unpleasant sensory

**Purpose/Objectives:** To explore the current state of the science regarding pain in children with cancer, with special attention to literature related to central nervous system (CNS) tumors. This review used the Human Response to Illness (HRTI) model as an organizing framework.

**Data Sources:** PubMed, CINAHL®, and Scopus™ databases.

**Data Synthesis:** The literature review is presented with the four components of the HRTI model, including the physiologic, pathophysiologic, experiential, and behavioral perspectives of the pain response related to childhood cancer and childhood CNS cancer. The person and environmental factors that may influence a child's pain response are described.

**Conclusions:** Children with cancer, including CNS cancer, continue to experience pain despite the improvements in knowledge related to pain. Pain assessment and management strategies must continue to evolve and improve for nursing professionals to provide a high level of care to this patient population. The HRTI model provides an appropriate framework to gain insight into the pediatric oncology nursing role in the assessment, management, and evaluation of pain from childhood cancers.

**Implications for Nursing:** Nurses play a vital role in pain assessment and management for children with cancer. The HRTI model can be used to identify areas of clinical practice, education, and research that require further improvements in relation to pain in children with CNS cancer.

and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. The inability to communicate verbally does not negate the possibility that an individual is experiencing pain and is in need of appropriate pain-relieving treatment. Pain is always subjective” (IASP, 2008, section 19). This definition is critically important for infants, preverbal children, and anyone else who cannot communicate because it recognizes behavioral and physiologic indicators as essential aspects of pain assessment (Stevens, 2007).