

## We've Come a Long Way: A Review of Cancer Pain Management

*In reviewing articles related to pharmacologic and nonpharmacologic cancer pain management in the archives of the Oncology Nursing Forum and its predecessor, the Oncology Nursing Society Newsletter, seeing the vast improvement in cancer pain knowledge, attitudes, and management was enlightening. However, comprehending the limited status of cancer pain management in 1973 was sobering.*

Some readers will be transported back to when they were new oncology nurses and practice standards now considered outdated were cutting edge. Others will be amazed that our current understanding is vastly different than what was then known. Current knowledge and research trajectories exist because of the dedication and hard work of colleagues who pioneered the specialty of oncology nursing 40 years ago.

In the mid-1970s, cancer pain management was in its infancy. Many patients, nurses, and physicians believed narcotics might contribute to an early death, the drugs would alter thought processes too much, and patients—even those dying from cancer—would become addicted. The most commonly used cancer pain medication in the hospice setting at that time was Brompton's cocktail, a combination of morphine or heroin, cocaine, alcohol, and a phenothiazine (Hospice World, n.d.). This review of the *Oncology Nursing Forum* (ONF) archive highlights how pharmacologic and nonpharmacologic management of cancer pain have changed over the years.

### Pharmacologic Management of Cancer Pain

In a presentation at the Oncology Nursing Society Second Annual Convention, Valentine (1977) reported on a double-blind randomized, controlled trial comparing methadone alone to methadone with cocaine or dextroamphetamine. The primary research questions were, "First, can an oral medication provide pain relief, second, and most important, does the addition of a [central nervous system] stimulant actually potentiate the action of a narcotic?" (Valentine, 1977, p. 1). All patients had received radiation, surgery, or narcotic analgesics other than methadone without relief. The investigators also noted that the medication was given on a regular basis, rather than PRN, on the notion that knowing when the medication would be given is reassuring to the patient and so a stable blood

level was maintained. Initial response was similar for all three arms within the first two days. Extending past the first few days, the findings supported the benefits of methadone and cocaine over the other combinations.

Twelve years later, Ferrell, Wisdom, Wenzl, and Brown (1989) conducted a study designed to determine the effects of controlled-release morphine. The investigators assessed whether quality-of-life (QOL) outcomes, pain, and functional status were better in patients receiving short-acting versus controlled-release analgesia. Data were obtained at two-week intervals over six weeks. A key finding was patients who received the controlled-release morphine had lower pain intensity scores than those who received the short-acting analgesia. Significant differences in QOL outcomes were found in 8 of 28 QOL items. Participants who had received controlled-release analgesia reported better adjustment to the disease, less distress from pain, improved relationships, greater strength, improved overall QOL, and decreased pain. In addition, participants receiving short-acting analgesia reported significantly less bowel problems and nausea. Implications from this study were patients should not sacrifice greater pain management because of treatable side effects such as constipation and nausea, and nurses were encouraged to be strong patient advocates in addressing pain management and side-effect prevention.

By the late 1990s, adequate medications for chronic cancer pain and clear treatment protocols were available to oncology nurses and physicians. Although great strides had been made, the issue of breakthrough pain, a sudden intense pain, began to receive more attention. Long-acting analgesics generally were used to treat pain symptoms, yet many patients reported breakthrough pain that could last for a few minutes to a few hours. An understanding of the intensity and frequency of breakthrough pain, treatment regimens, and patient use of breakthrough medications in the home setting was not clear. Ferrell, Juarez, and Borneman (1999) interviewed 369 patients and collected survey data to document breakthrough medication practices in home care. Seventy-six percent of patients received scheduled medications, 55% took the prescribed amount, 38% took less than was prescribed, and 7% took more than prescribed. For breakthrough pain, most patients (88%–92%) had orders for breakthrough medications, yet only 3% took the prescribed amount and 96% took less than what was prescribed (Ferrell et al., 1999). No rationale for taking less than prescribed was presented in that study. The authors concluded that better patient

education would improve breakthrough pain management.

The contribution of nursing research in the past 40 years to improve pain management has been extraordinary. However, increased knowledge alone does not address all issues related to adequate pain management. Understanding nurses' knowledge and attitudes about pain is important in addressing their analgesic decision-making skills. Myers (1985) examined 72 nurses' knowledge of and attitudes toward cancer pain management in relation to an educational intervention. A significant improvement in knowledge was observed from the pre- and postintervention test; retention at two weeks was stable. The belief that patients should be in pain prior to medicating dropped from 11% to 1%, belief that patients receiving around-the-clock medications were at risk for addiction decreased from 36% to 7%, and concern about sedation and respiratory depression decreased from 43% to 11% (Myers, 1985). Another study using cancer pain vignettes reported poor analgesic decision-making skills for 177 oncology nurses with an average of 10 years of experience (Sheidler, McGuire, Grossman, & Gilbert, 1992). The average number of oncology nurses who answered the four vignettes correctly was 26%; the average expected by chance alone was 25%. The investigators postulated four explanations for the inability of the nurses to make the correct choice: (a) inadequate pain management education in academic nursing programs, (b) inaccurate knowledge about analgesics and equianalgesic doses, (c) reference materials given to the nurses may not have been used appropriately, and (d) possible difficulty in performing medical calculations. Both studies demonstrated deficiencies enacting optimum pain management by oncology nurses.

Today, researchers are beginning to examine the use of analgesics in adults aged 65 years or older. A 2010 review found that physiologic changes in the older adult can affect pain management because of variations in absorption, distribution, metabolism, and elimination of medications (Brant, 2010). Issues of pharmacokinetic and pharmacodynamic changes related to physiologic changes because of aging were reviewed. In addition, Brant (2010) included studies specifically evaluating opioids in older

adults and noted key recommendations. Use of opioids in the older adult population is necessary, but awareness of differences in absorption, distribution, and elimination are important considerations in choosing the most appropriate medications.

## Nonpharmacologic Cancer Pain Management

Many nonpharmacologic methods of pain management such as heat, cold, position changes, distraction, and exercise have been used for years. However, the effectiveness of those methods was not well established. Barbour, McGuire, and Kirchhoff (1986) reported on a descriptive study designed to identify nonpharmacologic pain control methods and their effectiveness in patients with cancer. Patients reported change of position, avoiding activity, heat, and physical/emotional activity most frequently as nonpharmacologic methods of pain control. The greatest amount of pain control was provided by four methods: distraction, position change, massage, and heat. That study was one of the first to examine the use and effectiveness of nonpharmacologic methods of pain control.

Psychoeducational interventions are a mainstay of nonpharmacologic pain control methods. A meta-analysis of psychoeducational interventions for cancer pain (Devine, 2003) analyzed 25 intervention studies from 1978–2001. Three threats to validity (i.e., assignment to treatment condition, measurement reactivity, and presence of a floor effect) were major concerns in the meta-analysis. Analysis of aggregate results for all studies and higher-quality studies was reported to control for the threats to validity. The interventions with the greatest effect sizes (Cohen's *d*) were relaxation, guided imagery, music, or hypnosis (all studies,  $d = 0.65$ ; higher-quality studies,  $d = 0.49$ ;  $p < 0.05$ ); education (all studies,  $d = 0.36$ ; higher-quality studies,  $d = 0.4$ ;  $p < 0.05$ ); and support plus other content (all studies,  $d = 0.44$ ,  $p < 0.05$ ; higher-quality studies,  $d = 0.35$ , not significant). The meta-analysis identified research and clinical implications related to psychoeducational intervention for cancer pain. Implications for research are related to improving the methodology of sampling and measurement and clarity of the actual intervention. When using psychoeducational interventions

clinically, as with analgesics, nurses must remember that interventions with similar nomenclature may actually have significantly different content, and some interventions are unidimensional whereas others are multidimensional.

Current research is incorporating motivational interviewing with education to improve outcomes for patients with cancer pain. Thomas et al. (2012) reported on a randomized, controlled trial examining usual care (video on cancer), education (video and pamphlet on managing cancer pain), and coaching (video and pamphlet on managing cancer pain plus four 30-minute telephone sessions). No changes in well-being were observed across groups. However, differences were noted between the coaching group and the educational group in four of six subscales of the SF-36®. Of note, the differences from the control group for the same subscales were not statistically significant. A possible explanation is the statistically significant difference in Karnofsky Performance Scale scores; the control group and the coaching group were similar and the education group had lower scores ( $p = 0.03$ ).

Despite these advances, some patients continue to experience cancer pain. Because of continued pain or concerns about multiple medications, many patients have sought nontraditional (i.e., non-Western) methods of pain management, such as acupuncture. Hopkins Hollis (2010) reviewed published research on acupuncture as an adjunct treatment for cancer pain. Findings suggested efficacy of acupuncture; however, the level I (randomized, controlled trials) and II (quasiexperimental studies) evidence was lacking and causality could not be inferred from the data. The majority of the evidence was level 3–5 (prospective cohort and expert opinion suggesting benefits). Substantiation of acupuncture as an adjunct to analgesics requires completion of more well-designed randomized, controlled trials.

## Looking Forward

Knowledge about pain, pain treatment (pharmacologic and nonpharmacologic), and pain management has dramatically advanced during the past 40 years, due in no small part to members of the Oncology Nursing Society. Oncology nurses who asked questions, looked for remedies, and scientifically tested new approaches to improving

pain management have helped change the lives of individuals with cancer-associated pain. Although we have addressed major issues associated with cancer pain management, we have more to do. The perennial issue of translating research into practice remains. Groups of nurses, patients, and families exist who still lack full knowledge of available pain management resources or experience barriers to optimal pain management because of misperceptions about pain and its treatment.

As we move further into the 21st century, a new wave of theoretical and evidence-based researchers needs to continue the work. Ten years from now, on *ONF's* 50th anniversary, it will be interesting to see how continued research into pain measurement, research methodologies, tailored interventions, outcome measures, and translational methodologies have moved cancer pain management to an even higher level. The discipline of oncology nursing research has developed into a driving force for improved cancer symptom management; as research methodology has advanced, the quality of articles published in *ONF* has become superior enough that the former newsletter now

has the number 1 impact factor among nursing journals.

Judy A. Schreiber, RN, PhD, is an assistant professor in the School of Nursing at the University of Louisville in Kentucky. No financial relationships to disclose. Schreiber can be reached at [judy.schreiber@louisville.edu](mailto:judy.schreiber@louisville.edu), with copy to editor at [ONFEditor@ons.org](mailto:ONFEditor@ons.org).

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