

MEASURING ONCOLOGY NURSING-SENSITIVE PATIENT OUTCOMES: EVIDENCE-BASED SUMMARY

1. **Outcome:** Pain
2. **Category:** Symptoms
3. **Definitions**

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or is described in terms of such damage (International Association for the Study of Pain Subcommittee on Taxonomy, 1986).

Pain is whatever the experiencing person says it is, existing whenever he says it does (McCaffery, 1968).

Cancer **pain** is believed to have five dimensions, including sensory (pain intensity), affective (unpleasantness), behavioral (pain behaviors), cognitive (pain beliefs), and physiologic (impact on physical and social functioning) (Ahles, Blanchard & Ruckdeschel, 1983).

References for Definitions

Ahles, T.A., Blanchard, E.B., & Ruckdeschel, J.C. (1983). The multidimensional nature of cancer-related pain. *Pain, 17*, 277-288.

International Association for the Study of Pain Subcommittee on Taxonomy. (1986). Classification of chronic pain syndromes and definitions of pain terms. *Pain, Volume 3 (Suppl. 3)*, S1-S226.

McCaffery, M. (1968). *Nursing practice theories related to cognition, bodily pain, and man-environment*. Los Angeles: UCLA Student Store.

4. Integrative Reviews and Meta-Analysis

Reviews Related to Pain and Its Management

This list includes systematic reviews of pain with cancer that clearly identified their search strategy. All reviews were published since 2000. It does not include clinical articles, tutorials, or book chapters.

Allard, P., Maunsell, E., Labbe, J., & Dorval, M. (2001). Educational interventions to improve cancer pain control: A systematic review. *Journal of Palliative Medicine*, 4, 191–203. [PubMed Abstract](#)

Bell, R., Eccleston, C., & Kalso, E. (2004). Ketamine as an adjuvant to opioids for cancer pain [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

Devine, E.C. (2003). Meta-analysis of the effect of psychoeducational interventions on pain in adults with cancer. *Oncology Nursing Forum*, 30, 75–89. [PubMed Abstract](#)

Fellowes, D., Barnes, K., & Wilkinson, S. (2004). Aromatherapy and massage for symptom relief in patients with cancer [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

Martinez, M.J., Roque, M., Alonso-Coello, P., Catala, E., Garcia, J.L., & Ferrandiz, M. (2004). Calcitonin for metastatic bone pain [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

McNicol, E., Strassels, S., Goudas, L., Lau, J., & Carr, D. (2004). Nonsteroidal anti-inflammatory drugs, alone or combined with opioids, for cancer pain: A systematic review. *Journal of Clinical Oncology*, 22, 1975–1992. [PubMed Abstract](#)

Mundy, E.A., DuHamel, K.N., & Montgomery, G.H. (2003). The efficacy of behavioral interventions for cancer treatment related side effects. *Seminars in Clinical Neuropsychiatry*, 8, 253–275. [PubMed Abstract](#)

Nicholson, A.B. (2004). Methadone for cancer pain [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

Quigley, C. (2004). Opioid switching to improve pain relief and drug tolerability [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

Sze, W.M., Shelley, M., Held, I., & Mason, M. (2004). Palliation of metastatic bone pain: Single fraction versus multifactor radiotherapy [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software.

[PubMed Abstract](#)

Wiffen, P.J., Edwards, J.E., Braden, J., & McQueen, H.J.M. (2004). Oral morphine for cancer pain [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

Wootten, M. (2004). Morphine is not the only analgesic in palliative care: Literature review. *Journal of Advanced Nursing*, 45, 527–532. [PubMed Abstract](#)

Worthington, H.V., Clarkson, J.E., & Eden, O.B. (2004). Interventions for treating oral mucositis for patients with cancer receiving treatment [Cochrane review]. In *The Cochrane Library*, Volume 3, 2004. Oxford, UK: Update Software. [PubMed Abstract](#)

Reviews Related to Measurement of Pain

This list includes systematic reviews of measurement approaches to pain that clearly identified their search strategy. All reviews were published since 2000. It does not include clinical articles or tutorials.

Jensen, M.P. (2003). The validity and reliability of pain measures in adults with cancer. *Journal of Pain*, 4(1), 2–21. [PubMed Abstract](#)

Gordon, D.B., Pellino, T.A., Miaskowski, C., Adams McNeill, J., Paice, J.A., Laferriere, D., et al. (2002). A 10-year review of quality improvement monitoring in pain management: Recommendations for standardized outcome measures. *Pain Management Nursing*, 3, 116–130.

[PubMed Abstract](#)

5. Guidelines and Standards

Cancer Pain

American Pain Society. (2003). *Principles of analgesic use in the treatment of acute pain and cancer pain* (5th ed.). Glenview, IL: Author.

American Pain Society. (2005). *Guideline for the management of cancer pain in adults and children*. Glenview, IL: Author.
[Guideline for the Management of Cancer Pain in Adults and Children](#)

American Pain Society Quality of Care Committee. (1995). Quality improvement guidelines for the treatment of acute pain and cancer pain. *JAMA*, 274, 1874–1880.

American Society of Anesthesiologists. (1996). Practice guidelines for cancer pain management. *Anesthesiology*, 84, 1243–1257.
[Practice Guidelines for Cancer Pain Management](#)

Jacox, A., Carr, D.B., Payne, R., Berde, C.B., Brietbart, W., Cain, J.M., et al. (1994). *Clinical practice guideline: Management of cancer pain*. U.S. Dept. of Health and Human Services Agency for Health Care Policy and Research (AHCPR) Publication No. 94-0592. [Clinical Practice Guideline: Management of Cancer Pain](#)

Panchal, S.J., Grossman, S.A., Benedetti, C., Boston, B., Cleeland, C., Coyle, N., et al. (2004). NCCN practice guidelines for cancer pain. Jenkintown, PA: National Comprehensive Cancer Network. [NCCN Practice Guidelines for Cancer Pain](#)

Pain in Older Adults

American Geriatrics Society Panel on Persistent Pain in Older Persons. (2002). Clinical practice guidelines: The management of persistent pain in older persons. *Journal of the American Geriatrics Society*, 50, S205–S224. [Clinical Practice Guidelines: The Management of Persistent Pain in Older Persons](#)

Herr, K., Titler, M., Sorofman, B., Ardery, G., Schmitt, M., & Young, D. (2002). *Evidenced-based guideline: Acute pain management in the elderly*. Iowa City, IA: University of Iowa. [Evidenced-Based Guideline: Acute Pain Management in the Elderly](#)

6. Table(s) of Tools to Measure Oncology Nursing-Sensitive Outcome: Pain

These tables include tools specifically designed to measure pain along any of the following three dimensions: (a) sensation (intensity), (b) affect, and (c) behavior. The table does not include items or subscales from other multi-dimensional symptom or health-related quality-of-life scales such as the Symptom Distress Scale, the Memorial Symptom Assessment Scale, European Organization for Research and Treatment of Cancer Quality-of-Life Questionnaire for Cancer, Short Form-36, or Functional Assessment of Cancer Therapy. Languages listed in the table indicate tools for which formal descriptions of translations are available in published literature or Web sites related to the tool.

Table 6A. Description of Tools

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
UNIDIMENSIONAL TOOLS						
Numeric Rating Scale (NRS)	<i>(no author identified)</i>	Intensity <i>Also can be used to assess</i> Pain relief Frequency Duration Unpleasantness or distress	1	6 point (0–5) or 11 point (0–10) Written form: horizontal or vertical versions Word anchors at the extremes (e.g., 0 = no pain, 10 = worst pain imaginable)	Single item	English Chinese French German Greek Hawaiian Hebrew Italian Japanese Korean Pakistan Polish Russian Samoan Spanish Tongan Vietnamese

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
Visual Analog Scale (VAS) or Graphic Rating Scale	<i>(no author identified)</i>	Intensity <i>Also can be used to assess</i> Pain relief Frequency Duration Unpleasantness or distress	1	10 cm line Written form: horizontal or vertical versions Word anchors at the extremes (e.g., no pain at one end, worst pain imaginable at the other) Graphic rating scale adds words or numbers between the extreme ends of the scale	Single item	English
Verbal Rating Scale (VRS) or Simple Descriptor Scale	<i>(no author identified)</i>	Intensity <i>Also can be used to assess</i> Pain relief Frequency Duration <i>Unpleasantness or distress</i>	1	List of adjectives describing different levels of pain Number varies (4–15). Example: No pain Slight pain Mild pain Moderate pain Severe pain Very severe pain Most intense pain imaginable	Single item	English

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
Faces Scale	Herr et al., 1998 Hicks et al., 2001 Wong & Baker, 1988	Intensity	1	Series of six to seven drawings representing facial expressions associated with varying degrees of pain Geriatric version available with more human looking faces.	Single item	English Catalan Chinese Dutch French German Hebrew Italian Persian Portuguese Spanish Swedish Thai Turkish
Finger Dynamometer	Wilkie et al., 1990	Pain intensity	1	Mechanical measure of physical force matching perceived pain intensity (0–12 kg)	Single item	English

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
MULTIDIMENSIONAL TOOLS						
Memorial Pain Assessment Card	Fishman et al., 1987	Intensity word descriptors VAS Pain relief Mood		Pain intensity: eight words describing pain intensity (no pain to excruciating) 100 mm VAS (least possible pain to worst possible pain) Pain relief: 100 mm VAS (no pain relief to complete pain relief) Mood: 100 mm VAS (worst mood to best mood)	Individual item scores <i>(No total scale score)</i>	English German
Brief Pain Inventory (BPI)	Daut et al., 1983	Experience of pain Location Intensity Pain medications Pain relief Interference with	BPI (long form) 32 BPI (short form) 9	Experience of pain: yes or no Location: body drawing Intensity:	Individual item scores <i>(No total scale score)</i> Mean pain intensity:	Arabic Cebuano Chinese Dutch English Filipino French

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
BPI (<i>continued</i>)		daily activity (Long form includes demographic items)		0–10 NRS Pain medications: (open ended) Pain relief: 0%–100% NRS Interference: 0–10 NRS	arithmetic mean of four intensity items Pain interference: arithmetic mean of seven interference items	German Greek Hindi Italian Japanese Korean Norwegian Russian Spanish Swedish Taiwanese Vietnamese
McGill Pain Questionnaire	Melzack, 1975	Pain Rating Index Sensory Affective Evaluative Misc. Present Pain Intensity Pattern Location	25	Pain Rating Index: 20 sets of word descriptors—rank value based on position in word set Present pain intensity: 0–5 VRS Pattern: three sets of word descriptors Location: body drawing	Individual item scores (<i>No total scale score</i>) Pain Rating Index: sum of ranks values of all words chosen	Arabic Chinese Czech Danish Dutch English Finnish French German Greek Hungarian Italian Japanese Norwegian Polish Portuguese Slovak Spanish Swedish

Name of tool	Author/Year	Domains or Factors	# of Items	Scaling	Scoring	Language
McGill Pain Questionnaire–Short Form	Melzack, 1987	Pain Rating Index Sensory Affective Present Pain Intensity Location	18	Pain Rating Index: word descriptors rated 0 = none 1 = mild 2 = moderate 3 = severe Present pain intensity: 0–5 VRS 10 cm VAS Location: body drawing	Individual item scores <i>(No total scale score)</i> Pain Rating Index: sum of word descriptor scores	Croatian Czech Dutch English French German Hebrew Hungarian Italian Polish Portuguese Russian Slovakian Spanish Swedish
Pain-O-Meter	Gaston-Johansson, 1996	Intensity VAS Word descriptors Sensory Affective Location Duration	27	Pain intensity: 10 cm VAS Word descriptors assigned an intensity value (1–5) Location: Body chart of 79 locations Duration: “comes and goes” or “is continuous”	Individual item scores <i>(No total scale score)</i> Word descriptors: highest intensity score identified in each category (sensory and affective)	English

Table 6B. Psychometric Properties of Tools

A major review of reliability and validity of cancer pain measures recently was published in the Journal of Pain (Jensen, 2003) covering articles published from 1975–2001. It can be viewed at [PubMed Abstract](#). The following table summarizes research reports published from 2001–2004 that included data regarding at least one psychometric property of the scale.

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
Numeric Rating Scale (NRS)	<i>From Jensen (2003), pp. 5–6</i>	<p><i>Reliability:</i> <i>Test-retest (r = 0.78–0.93)</i></p> <p><i>Validity:</i> <i>Mostly strong associations with other pain measures</i> <i>Positively associated with analgesic use, pain interference, dyspnea, and number of other symptoms</i> <i>Negatively associated with treatment satisfaction and global quality of life (QOL)</i> <i>Pain affect NRS associated with maladaptive coping, emotional distress, and use of analgesics</i></p>	<i>Sensitive to changes in pain intensity associated with treatment of cancer and treatment of pain.</i>	Farrar (2000) reports that a two-point or 33% decrease in NRS score is clinically meaningful.	<p>Some concern regarding accuracy of retrospective ratings</p> <p>Support for distinction between pain intensity and pain affect (unpleasantness)</p>

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
Visual Analog Scale (VAS) or Graphic Rating Scale	<i>From Jensen (2003), p. 5</i>	<i>Reliability: Test-retest ($r = 0.75-0.95$) Validity: Strong association with other pain intensity ratings (most $r > 0.70$) Significant association with performance status, diagnosis (cancer versus noncancer), setting, psychological distress, and QOL</i>	<i>Sensitive to changes in cancer pain intensity with treatment and time</i>	May be more difficult to understand and complete than other single item pain ratings	
	46 patients with cancer-related pain taking sustained release morphine (Quigley et al., 2003)	<i>Reliability: not reported Validity: Significant correlation between VAS pain intensity rating and Verbal Rating Scale (VRS) ratings of pain intensity at both peak and trough plasma concentrations of morphine</i>	<i>Sensitivity: no significant difference in VAS pain intensity rating between peak and trough plasma concentrations of morphine</i>		
VRS or Simple Descriptor Scale	<i>From Jensen (2003), p. 6</i>	<i>Reliability: test-retest Stable over minutes ($\kappa = 0.71$) Not stable during one-week period ($r = 0.55$) Validity: Strong association with other measures of pain intensity Significant correlations with survival, tumor size and stage, stage of disease, anxiety related to pain, analgesic use, and response to chemotherapy</i>	<i>Sensitive to changes in pain intensity with treatment</i>		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
Faces Scale	<i>From Jensen (2003), p. 6</i>	<i>Validity: Strong association with other ratings of pain intensity</i>	<i>Sensitivity: not reported</i>		Possible confusion between pain intensity and emotional response to pain
Finger Dynamometer	<i>From Jensen (2003), p. 7</i>	<i>Reliability: not reported Validity: Only moderately associated with other measures of pain intensity</i>	<i>Sensitivity: not reported</i>		
Memorial Pain Assessment Card (MPAC)	<i>From Jensen (2003)</i>	<i>Moderate to strong correlation among MPAC items Significant correlation with other measures of pain</i>	<i>Sensitive to effects of pain treatment and treatment of cancer</i>		
Brief Pain Inventory (BPI)	<i>From Jensen (2003), p. 7</i>	<i>Reliability: Coefficient alpha ranges (0.75–0.97) for intensity items; (0.78–0.91) for interference items Validity: Factors analysis shows that intensity items load on one factor and interference items load on one factor. BPI pain intensity items are associated with other measures of pain intensity, performance status, and pain interference.</i>	<i>Sensitivity: no studies reported sensitivity of intensity or interference items to effects of treatment.</i>	Useful in assessing effects of 1. Staff education/awareness program 2. Pharmacologic (analgesic) interventions 3. Patient education interventions BPI is appropriate for use with medical and surgical patients	Hwang et al. (2002) study used Chinese version of BPI. Tittle et al. (2003) study sample was > 90% male; interference with work item was not included.

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
BPI (<i>continued</i>)	37 inpatients with cancer pain (18 received educational booklet; 19 control) (Chang et al., 2002)	Reliability: coefficient alpha Pain severity = 0.89 Pain interference = 0.92 Validity: Factor analysis Significant correlation between pain severity and Eastern Cooperative Oncology Group (ECOG) performance status score Significant correlation between pain interference and ECOG performance status score.	Sensitivity: Pain intensity and interference decreased significantly two weeks after patients received the educational booklet; however, changes in pain intensity and pain interference did not differ significantly between the experimental and control groups.	with cancer, with the exception of the average pain item in surgical populations.	
	418 patients with cancer pain attending oncology clinics (207 before quality improvement [QI] project; 211 during QI project) (Fortner et al., 2003)	Reliability: coefficient alpha Pain severity = 0.88 Pain interference = 0.93 Validity: not reported	Significantly lower “worst pain” and “pain interference” after QI program versus before		
	103 women in remission from breast cancer after the end of radiation treatment (Gelinas & Fillion, 2004)	Reliability: coefficient alpha Pain severity = 0.88 Validity: not reported	Sensitivity: not reported		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
BPI (continued)	74 patients attending hematology/oncology clinic or hospitalized on hematology/oncology unit with cancer-related pain rated > 4 on 0–10 scale (Hwang et al., 2002)	Reliability: not reported Validity: Pain severity correlated with pain interference ($r = -0.40, p < .01$) Pain interference correlated with VAS rating of global quality of life Day 1 ($r = -0.56, p < .01$) Wk 1 ($r = -0.47, p < .01$) Wk 2 ($r = -0.57, p < .01$) Wk 3 ($r = -0.44, p < .01$)	Sensitivity: not reported		
	388 inpatients with cancer (229 medical, 159 surgical) (Tittle et al., 2003)	Reliability: coefficient alpha Medical patients = 0.95 Surgical patients = 0.97 Validity: All BPI pain ratings except “average pain” correlated with VAS ratings Medical ($r = 0.51-0.83$) Surgical ($r = 0.58-0.73$) BPI pain interference items correlated with VAS ratings of pain Medical ($r = 0.60-0.66$) Surgical ($r = 0.64-0.71$) All BPI pain ratings except “average pain” correlated with BPI interference items Medical ($r = 0.4-0.80$) Surgical ($r = 0.52-0.80$)	Sensitivity: not reported		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
BPI <i>(continued)</i>	64 ambulatory patients with cancer who had pain that required analgesics (Wells et al., 2003)	<p>Reliability: coefficient alpha Pain interference = 0.89 Moderate correlations among BPI pain severity ratings (least, average, worst, now) ($r = 0.35-0.82$)</p> <p>Validity: Worst pain correlated with pain interference ($r = 0.64$), pain-related distress ($r = 0.64$), and negative mood ($r = 0.24$)</p>	Sensitivity: not reported		
McGill Pain Questionnaire (MPQ)	<i>From Jensen (2003), pp. 10-11</i>	<p><i>Reliability:</i> <i>Consistent choice of word descriptors over one week</i></p> <p><i>Validity:</i> <i>Positive association with analgesic use and QOL</i> <i>Affective scale associated with psychologic distress</i></p>	<i>Sensitive to effects of cancer treatment</i>	<p>Word descriptors may be useful in categorizing pain types (nociceptive versus neuropathic) in conjunction with other pain ratings.</p> <p>Suggested that patients complete the questionnaire with an expert</p>	Mystakidou study used the Greek version of the McGill Pain Questionnaire.

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
MPQ (continued)	114 patients with cancer on a pain and palliative care. (Mystakidou et al, 2002)	<p>Reliability: Coefficient alpha = 0.0962. Correlations of the three pain scores in the instrument— Number of Words Chosen (NWC), Present Pain Intensity (PPI), and Pain Rating Index: Pretreatment—ranged from 0.42–0.92 Post-treatment—ranged from 0.28–0.91 Test/retest—using Pearson’s <i>r</i> value—ranged from 0.224 (NWC)–0.436 (PPI)</p> <p>Validity: Exploratory factor analysis—a two-factor solution (sensory, affective, and evaluative loading on one factor, and miscellaneous on the other) showed an acceptable fit to the data</p>	Sensitivity: Post-treatment scores were significantly lower than pre-treatment scores for all but one subclass.		

Name of Tool	Populations	Reliability and Validity	Sensitivity	Clinical Utility	Comment
MPQ (<i>continued</i>)	149 patients with lung cancer experiencing nociceptive or neuropathic pain (Wilkie et al., 2001)	Reliability: not reported Validity: 15 MPQ descriptor words differed significantly by pain type (nociceptive versus neuropathic)	Sensitivity: Nociceptive pain descriptors (four words) had 6%–11% sensitivity, 97%–100% specificity, and 91%–100% positive predictive value for nociceptive pain. Neuropathic pain descriptors (11 words) had 4%–53% sensitivity, 74%–99% specificity and 33%–63% positive predictive value for neuropathic pain.		
McGill Pain Questionnaire – Short Form	<i>From Jensen (2003), p. 11</i>	<i>Reliability: coefficient alpha = 0.91</i> <i>Validity: not reported</i>	<i>Sensitivity: not reported</i>		
Pain-O-Meter	<i>From Jensen (2003)</i>	<i>Validity: correlated with other measures of pain</i> <i>Correlated with anxiety, depression</i>	<i>Sensitivity: not reported</i>		

7. References Related to Specific Instruments to Measure Pain

Visual Analog Scale (VAS)

Quigley, C., Joel, S., Patel, N., Baksh, A., & Slevin, M. (2003). Plasma concentrations of morphine, morphine-6-glucuronide and morphine-3-glucuronide and their relationship with analgesia and side effects in patients with cancer-related pain. *Palliative Medicine, 17*, 185–190.

Faces

Coleman, E.A., Coon, S. K., Mattox, S.G., & O'Sullivan, P. (2002). Symptom management and successful outpatient transplantation for patients with multiple myeloma. *Cancer Nursing, 25*, 452–460.

Herr, K., Mobily, P., Kohout, F., & Wagenaar, D. (1998). Evaluation of the faces scale for use in the elderly. *Clinical Journal of Pain, 14*, 29–38.

Hicks, C., von Baeyer, C., Spafford, P., van Korlaar, I., & Goodenough, B. (2001). The Faces Pain Scale—Revised: Towards a common metric in pediatric pain measurement. *Pain, 93*, 173–183.

Wong, D.L., & Baker, C.M. (1988). Pain in children: Comparison of assessment. *Pediatric Nursing, 14*, 9–17.

Finger Dynamometer

Wilkie, D., Lovejoy, N., Dodd, M., & Tesler, M. (1990). Cancer pain intensity measurement: Concurrent validity of three tools—Finger dynamometer, pain intensity number scale, visual analog scale. *Hospice Journal, 6*(1), 1–13.

Memorial Pain Assessment Card

Fishman, B., Pasternak, S., & Wallenstein, S.L. (1987). The Memorial Pain Assessment Card. A valid instrument for the evaluation of cancer pain. *Cancer, 60*, 1151–1157.

Brief Pain Inventory (BPI)/Wisconsin BPI

Chang, M., Chang, Y., Chiou, J., Tsou, T., & Lin, C. (2002). Overcoming patient-related barriers to cancer pain management for home care patients. *Cancer Nursing, 25*, 470–476.

Daut, R.L., Cleeland, C.S., & Flanery, R.C. (1983). Development of the Wisconsin Brief Pain Questionnaire to assess pain in cancer and other diseases. *Pain, 17*, 197–210.

Fortner, B.V., Okon, T.A., Ashley, J., Kepler, G., Chavez, J., Tauer, K., et al. (2003). The Zero Acceptance of Pain (ZAP) Quality Improvement Project: Evaluation of pain severity, pain interference, global quality of life, and pain-related costs. *Journal of Pain and Symptom Management, 25*, 334–343.

Gelinas, C., & Fillion, L. (2004). Factors related to persistent fatigue following completion of breast cancer treatment. *Oncology Nursing Forum, 31*, 269–278. [Oncology Nursing Forum](#)

- Hwang, S.S., Chang, V.T., & Kasimis, B. (2002). Dynamic cancer pain management outcomes: The relationship between pain severity, pain relief, functional interference, satisfaction, and global quality of life over time. *Journal of Pain and Symptom Management, 23*, 190–200.
- Palangio, M., Northfelt, D.W., Portenoy, R.K., Brookoff, D., Doyle, R.T., Dornseif, B.E., et al. (2002). Dose conversion and titration with a novel once-daily, OROS osmotic technology, extended-release hydromorphone formulation in the treatment of chronic malignant and non-malignant pain. *Journal of Pain and Symptom Management, 23*, 355–368.
- Serlin, R.C., Mendoza, T.R., Nakamura, Y., Edwards, K.R., & Cleeland, C.S. (1995). When is cancer pain mild, moderate, or severe? Grading pain severity by its interference with function. *Pain, 61*, 277–284.
- Tittle, M.B., McMillan, S.C., & Hagan, S. (2003). Validating the Brief Pain Inventory for use with surgical patients with cancer. *Oncology Nursing Forum, 30*, 325–330. [Oncology Nursing Forum](#)
- University of Texas M.D. Anderson Cancer Center. (2005). Symptom assessment tools. Retrieved April 11, 2005, from [Symptom Assessment Tools](#)
- Wells, N., Murphy, B., Wujcik, D., & Johnson, R. (2003). Pain-related distress and interference with daily life of ambulatory patients with cancer with pain. *Oncology Nursing Forum, 30*, 977–984. [Oncology Nursing Forum](#)

McGill Pain Questionnaire

- Melzack, R. (1975). The McGill Pain Questionnaire (MPQ): Major properties and scoring methods. *Pain, 1*, 277–299.
- Mystakidou, K., Parpa, E., Tsilika, E., Kalaidopoulou, O., Georgaki, S., Galanos, A., et al. (2002). Greek McGill Pain Questionnaire: Validation and utility in cancer patients. *Journal of Pain and Symptom Management, 24*, 379–387.
- Wilkie, D.J., Huang, H., Reilly, N., & Cain, K.C. (2001). Nociceptive and neuropathic pain in patients with lung cancer: A comparison of pain quality descriptors. *Journal of Pain and Symptom management, 22*, 899–910.

McGill Pain Questionnaire–Short Form

- Melzak, R. (1987). The Short-Form McGill Pain Questionnaire. *Pain, 30*, 191–197.

Pain-O-Meter

- Dola Health Systems. (n.d.). The Painometer[®]. Retrieved April 11, 2005, from [The Painometer](#)
- Gaston-Johansson, F. (1996). Measurement of pain: The psychometric properties of the Pain-O-Meter, a simple, inexpensive pain assessment tool that could change health care practices. *Journal of Pain and Symptom Management, 12*, 172–181.

8. Summary of key evidence that nursing and other relevant interventions influence pain and noted gaps in current evidence base. This section is based on findings and conclusions from the integrative reviews published on cancer-related pain since 2000 (see Section 4).

- **Assessment/Measurement**

- No recent systematic reviews are related to prevalence and pattern of pain in cancer.
- Single-item measures: Visual Analog Scale (VAS), Numeric Rating Scale, and Verbal Rating Sale are valid and reliable measures of cancer pain intensity.
 - Mechanical VAS and graphic ratings scales have been used less frequently but also have sufficient evidence of reliability and validity.
 - No one scale consistently shows greater sensitivity to changes in pain than the others.
 - VAS rating scales have shown higher failure rates among older adults and those taking greater amounts of opioids.
- Multidimensional measures: The Memorial Pain Assessment Card, the Brief Pain Inventory, and McGill Pain Questionnaire have demonstrated good reliability and validity and are sensitive to effects of treatment.
 - Less research has examined the psychometric properties of the McGill Pain Questionnaire–Short Form in patients with cancer.
- Instruments that need further psychometric testing to confirm reliability and/or validity in cancer populations
 - The Faces scale (with adults) has some evidence of validity, but no studies reported sensitivity in cancer pain.
 - The Pain-O-Meter has some evidence of validity, but no studies reported sensitivity in cancer pain.
 - Research is needed to evaluate validity of measures of pain location in people with cancer.
 - Psychometric properties of measures of pain frequency and duration need to be studied.
- The Finger Dynamometer has not been shown to be reliable or valid.
- Proxy measures of pain are not reliable or valid.
 - Physicians tend to underestimate patients' cancer pain.
 - Family members tend to overestimate patients' cancer pain.
- Instruments used in other pain populations but not studied in oncology populations
 - *Descriptor Differential Scale*
Gracely, R.H., & Kwilosz, D.M. (1988). The Descriptor Differential Scale: Applying psychophysical principles to pain assessment. *Pain*, 35, 279–288.

- *Pain Behavior Checklist*
Kerns, R.D., Haythornthwaite, J., Rosenberg, R., Southwick, S., Giller, E.L., & Jacob, M.C. (1991). The Pain Behavior Checklist (PBCL): Factor structure and psychometric properties. *Journal of Behavioral Medicine, 14*, 155–167.
- *University of Alabama at Birmingham (UAB) Pain Behavior Scale*
Richards, J.S., Nepomuceno, C., Riles, M., & Suer, Z. (1982). Assessing pain behavior: The UAB Pain Behavior Scale. *Pain, 14*, 393–398.
- *Checklist of Nonverbal Pain Indicators*
Feldt, K.S. (2000). The Checklist of Nonverbal Pain Indicators. *Pain Management Nursing, 1*, 13–21.
- *Neuropathic Pain Scale*
Galer, B.S., & Jensen, M.P. (1997). Development and preliminary validation of a pain measure specific to neuropathic pain: The neuropathic pain scale. *Neurology, 48*, 332–338.
- *West Haven-Yale Multidimensional Pain Inventory*
Kerns, R.D., Turk, D.C., & Rudy, T.E. (1985). The West Haven-Yale Multidimensional Pain Inventory (WHYMPI). *Pain, 23*, 345–356.
- Several pain measures, including the Numeric Rating Scale, Brief Pain Inventory, and McGill Pain Questionnaire, have been translated and tested in multiple different languages.
- Correlates of pain include inadequate analgesic use, interference with ability to carry out normal activities, reduced functional status, interference with sleep, disruption in enjoyment or quality of life, psychological distress, anxiety, depression, mood, and performance status.

- **Collaborative Medical/Drug Interventions**

- **Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)**
 - Treatment of cancer pain with NSAIDs is more effective than with placebo. Little evidence exists, however, to suggest that any one of the NSAIDs is superior to another. Insufficient evidence is available for the WHO recommendation of combining an NSAID with a “weak” opioid for moderate pain. Insufficient evidence suggests that increasing NSAID dose improves pain relief or increases drug side effects.
- **Opioids**
 - Evidence supports the use of morphine to reduce cancer pain. No difference has been documented in pain relief achieved with sustained-release versus immediate-release formulas

- Methadone has a similar analgesic efficacy and side-effect profile as morphine. Most studies, however, have been single-dose comparisons or examined short-term use. Long-term use of methadone in cancer pain needs further investigation.
- Only anecdotal evidence supports the effectiveness of methadone or fentanyl as alternatives to morphine in palliative care.
- Opioid switching to improve pain control and/or decrease side effects is supported by only anecdotal reports and uncontrolled studies.
- Patient-controlled analgesia (PCA) and continuous infusion of opioid analgesics are equally effective for mucositis pain in cancer. Less opioid is used and the duration of analgesia is shorter with PCA administration.
- **Adjuvant Medications**
 - Insufficient evidence exists regarding the benefits and harms of ketamine as an adjunct to opioids for cancer pain.
 - Evidence does not support the use of calcitonin for pain from bone metastases (no decrease in analgesic consumption, no decrease in complications, no improvement in QOL or survival).
- **Other Medical Interventions**
 - Single-fraction radiotherapy is as effective as multifraction radiotherapy in relieving pain resulting from metastatic bone disease.
- **Nondrug Interventions**
 - **Physical Modalities**
 - Massage interventions, with or without aromatherapy oils, resulted in short-term improvements in pain (immediately after massage to 24 hours after massage). Long-term effects of massage interventions on pain have not been determined.
 - **Cognitive-Behavioral**
 - These strategies vary in acceptance to individual patients
 - Behavioral methods are not all equally effective for pain. Those with the most support in reducing acute cancer-related pain include hypnosis, distraction, and relaxation interventions.
 - Relaxation-promoting cognitive-behavioral interventions (relaxation, relaxation with guided imagery, hypnosis, music) have a moderate to large effect on pain (effect size, $d = 0.65$). These strategies have been effective in decreasing pain shortly after treatment, but long-term effects are unknown.

- Relaxation plus other treatments (distraction, massage, problem solving, positive affirmations, cognitive-reappraisal, goal setting, counseling) examined collectively have little effect on pain (effect size, $d = 0.07$). Effect sizes in individual studies, however, ranged from $d = -0.26$ to 0.51 . Additional carefully conducted randomized trials of these interventions are necessary to draw conclusions regarding their effectiveness.
 - Supportive counseling plus other content (discussion of coping strategies, positive reframing, and information about pain and its treatment) have a small to moderate effect on pain (effect size, $d = 0.44$).
- **Educational Interventions**
- Interventions to educate healthcare professionals temporarily improve knowledge and attitudes but have not resulted in an improvement in patients' pain. Effect of educational interventions on professionals' long-term knowledge have not been assessed.
 - Interventions to educate patients can increase knowledge and temporarily improve pain (increase pain relief, decrease pain intensity). Improvements in pain have been documented immediately after the education and as many as eight weeks later.
 - Educational interventions for patients have a small to moderate effect on pain (effect size, $d = 0.36$).

9. Recommendations

Practice

- Use National Comprehensive Cancer Network (2004) or American Pain Society (2005) guidelines for general screening, evaluation, and treatment of cancer pain.
 - Screen for the presence of pain every time a patient is seen.
 - Quantify pain intensity using the Numeric Rating Scale, Verbal Rating Scale, or Faces scale.
 - If pain is present, a formal pain assessment must be performed.
 - Dosing guidelines are provided for NSAIDs, opioids, and adjuvant medications.
 - Reassessment of pain must be performed at specified intervals.
 - Psychosocial and educational support must be offered to patients.
 - Nonpharmacologic cognitive and physical modalities are recommended as adjuncts to analgesics.
- Use other guidelines cited in section 5 for specific issues related to pain management as appropriate (analgesic use, quality improvement, pain in older adults).
- Core indicators are recommended for quality improvement in pain management.
 - Pain intensity is documented at frequent intervals using a numeric or verbal rating scale.
 - Pain is treated using regularly administered analgesics as part of a multimodal approach.

- The intramuscular route of administering analgesics is not used.
- Pain is controlled to a degree that facilitates function and quality of life.
- Patients are adequately informed and knowledgeable about pain management.

Education

- All patients with cancer should receive routine education about pain and its management.
- All cancer care providers need ongoing education about the management of cancer-related pain.

Research

- Recommendations for research regarding nursing interventions for pain
 - Tests of nursing interventions should use a randomized controlled design to provide stronger evidence of effectiveness.
 - Within-study comparisons of psychoeducational interventions are needed.
 - Many published studies of nursing interventions have used small sample sizes. Statistical advisement should be obtained to ensure adequate sample size and power.
 - Attention should be given to describing subject characteristics in reports of research findings.
 - Duration of effects of nursing interventions on pain needs to be studied.
 - Studies are needed to assess and compare the long-term effects, side effects, and cost-effectiveness of non-drug interventions.
 - Multimodal interventions need to be studied to identify their effective components.
 - Research is necessary to document patient preferences for pain treatment types when more than one has been demonstrated as effective.
 - Effects of nursing interventions for pain need to be studied in specific cancer pain syndromes (bone pain, neuropathic pain, etc.).
- Recommendations for research regarding pain measurement in cancer
 - Current measures need to be evaluated in diverse populations.
 - Instruments used in chronic pain populations and in patients who are cognitively impaired should be evaluated for use in oncology populations.
 - Researchers need to study whether multiple-item measures of pain intensity provide any additional benefit over single-item measures.
 - More research is needed to assess patients' preference for specific measures of pain.
 - Farrar (2000) suggested that a change in pain intensity of 30% or two points on the 0–10 Numeric Rating Scale is clinically meaningful. Instruments should be evaluated to assess sensitivity to this change.

10. Web Sites

National Comprehensive Cancer Network (<http://www.nccn.org/>)

Cancer Symptoms.org (<http://www.cancersymptoms.org/pain/index.shtml>)

Guidelines Clearinghouse (<http://www.guidelines.gov/>)

American Cancer Society (<http://www.cancer.org/>)

For other systematic reviews conducted prior to 2000 or reviews related to management of nonmalignant pain, search the Cochrane Library at <http://www.cochrane.org/reviews>.

11. Current Research Related to Pain

ONS Foundation-Funded Research (<http://www.ons.org/research/funding/Projects/index.shtml>)

“Attitudinal Barriers to Pain Management in the Icelandic Population,” Sigridur Gunnarsdottir, MS, RN, University of Wisconsin-Madison

“The Cancer Pain Experience of Israeli Elders,” Catherine F. Musgrave, DNSc, RN, University of Pennsylvania

“Negotiation of Cancer Pain Treatment Among African Americans,” Salimah H. Meghani, MSN, RN, CRNP, University of Pennsylvania

“Effects of a Neuropathic Pain Algorithm on Patient and Nursing Outcomes (NP),” Ellen M. Lavoie Smith, MS, APRN-BC, AOCN[®], Dartmouth-Hitchcock Medical Center

“A Multifaceted Approach to Promoting Evidence-Based Cancer Pain Assessment and Management in a Comprehensive Cancer Centre,” Doris Howell, PhD, RN, University Health Network Princess Margaret Hospital

“Utilizing Evidence-Based Guidelines to Integrate Psychosocial Skills Training for Management of Cancer-Related Pain in Hospitalized Adults,” Marilyn Kile, MSN, RN, CS, APRN, AOCN[®], Good Samaritan Health Systems Cancer Center,

National Institutes of Health-Funded Research (<http://crisp.cit.nih.gov/>)

International Cancer Research Portfolio (<http://www.cancerportfolio.org/>)

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Last updated: March 21, 2005