ABSTRACT

BACKGROUND AND OBJECTIVES: To outline best practices guidelines to control pain and dyspnea of cancer patients in an urgency setting.

CONTENTS: PI[C]O question, with resource to EBSCO (Medline with Full Text, CINAHL, Plus with Full Text, British Nursing Index), retrospectively from September 2009 to 2014 and guidelines issued by reference entities: Oncology Nursing Society (2011), National Comprehensive Cancer Network (2011; 2014) and Cancer Care Ontario (2010), with a total of 15 articles. The first stage for adequate symptoms control is systematized evaluation. Pharmacological pain control should comply with the modified analgesic ladder of the World Health Organization, including titration, equianalgesia, opioid rotation, administration route, difficult to control painful conditions and adverse effects control. Oxygen therapy and noninvasive ventilation are control modalities of some situations of dyspnea, where the use of diuretics, bronchodilators, steroids, benzodiazepines and strong opioids are effective strategies. Non-pharmacological measures: psycho-emotional support, hypnosis, counseling/training/instruction, therapeutic adherence, music therapy, massage, relaxation techniques, telephone support, functional and respiratory reeducation equally improve health gains.

CONCLUSION: Cancer pain and dyspnea control require comprehensive and multimodal approach. Implications for nursing practice: best practice guidelines developed based on scientific evidence may support clinical decision-making with better quality, safety and effectiveness.

Keywords: Cancer pain, Dyspnea, Nursing interventions, Urgency service.

INTRODUCTION

Globally, every year, there will be an additional 14 million new cases of people with cancer, and the expectation is that it will triple by 2030, also as a result of the survival. Survivors continue to experience significant limitations compared to all those without a cancer history. The presence of symptoms persists permanently, derived from the direct adverse effects of neoplasia, the treatment, the exacerbation and/or the development of new, recurrence-associated or a second cancer.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Delinear linhas orientadoras de boa prática no controle da dor e dispneia, de pacientes com doença oncológica em serviço de urgência.


CONCLUSÃO: O controle da dor oncológica e dispneia exigem uma abordagem compreensiva e multimodal. Implicações para a prática de Enfermagem: linhas orientadoras de boa prática, desenvolvidas com base na evidência científica podem suportar uma tomada de decisão clínica com maior qualidade, segurança e efetividade.

Descritores: Dispneia, Dor oncológica, Intervenções de enfermagem, Serviço de urgência.
Hospitals, particularly, the emergency service, continues to be one of the most used support systems. Symptoms have been studied separately. However, recent studies support the need for an integrative approach. Pain, dyspnea, fatigue, emotional stress arises simultaneously, and they are interdependent. This is where the designation of symptoms cluster comes from when two or more symptoms present an interrelation between, taking into account that they can share the same etiology and produce a cumulative effect on the person’s functioning. Pain gets a particular emphasis since it is an item present in all the multiple scales of symptoms assessment, besides being the most frequent reason to seek the emergency service, and the evidence also suggests that there is a predominance of improper analgesic control in this context. The incidence of the pain at the beginning of the illness trajectory is estimated at 50%, and it goes to approximately 75% in the advanced stages, which means that the survivor does not have to cope with it only as the immediate result of the treatment. In an advanced stage of the disease, dyspnea is one of the symptoms that take a particular relevance, often associated with pain (about 45%), representing a symptom cluster driver of greater anxiety and fatigue responsible for the demand for health care, making it crucial to have serious investments to control it. In this sense, the purpose is to highlight the guidelines for good nursing practice in pain and dyspnea control in patients with cancer in the emergency service.

**RESEARCH STRATEGY**

As a starting point, the following initial question was elaborated in PI[C]O format: What are the good practice guidelines (Intervention) in the control of pain and dyspnea (Outcomes) in patients with cancer (Population) in the ER Setting? The electronic database used focused on EBSCO (Medline with Full TEXT, CINAHL Plus with Full Text, British Nursing Index). The keywords were searched in the following order: [guideline OR practice guideline OR evidence-based practice OR randomized controlled trial] AND [symptoms dyspnea control OR dyspnea OR tachypnea OR cheyne-stokes respiration OR respiratory sounds OR chronic pain OR cancer pain OR breakthrough pain] AND [oncology nursing OR emergency care OR acute care OR palliative care]. The keywords were sought, retrospectively as of September 2009 to 2014, resulting in a total of 12 articles. In the inclusion criteria also encompasses the guidelines from reference entities on the subject: Oncology Nursing Society (2011), National Comprehensive Cancer Network (2014) and Cancer Care Ontario (2010). The exclusion criteria included all articles with unclear methodology, repeated in both databases (n=3), age below 18 years and date before 2009. In total, there were 15 articles, as shown in figure 1.

It was decided to follow the criteria approved by the Agency for Healthcare Research and Quality (AHRQ), expressed in the National Guideline Clearinghouse, with equally focus on oncology. At the same time, complying with the rational of the National Comprehensive Cancer Network, in which for a safe and consistent application in clinical contexts, are only acceptable evidence levels considered to be of high quality, that is, up to 2 shown in table 1.

**RESULTS**

First, the results referring to cancer pain are presented, subdivided in the initial assessment, pharmacological and

![Figure 1. Process of research and article selection, in the period from 2009/01/01 to 2014/10/09](image-url)
nonpharmacological treatment, delivery path and control of adverse effects, where it is also included the recommendations found regarding nurses' education, as shown in table 2.

Also, regarding dyspnea control, the good practice begins with a structured initial assessment, which allows determining the need for oxygen therapy or noninvasive ventilation, as well as the pharmacological and nonpharmacological strategies most appropriate, as shown in table 3. This way, it is possible to infer that, in spite of cancer pain and dyspnea present a close relationship, they require a specific and differentiated approach, with synergistic potential.

### Table 1. Levels of evidence adapted

<table>
<thead>
<tr>
<th>Levels</th>
<th>Types of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>High-quality evidence obtained from meta-analyses, systematic reviews of randomized clinical trials (RCT)</td>
</tr>
<tr>
<td>1b</td>
<td>Evidence obtained from at least one RCT</td>
</tr>
<tr>
<td>2*</td>
<td>Evidence obtained from case-control studies of high quality or cohort, with a very low risk of bias and a high probability of causal relationship</td>
</tr>
<tr>
<td>2b</td>
<td>Evidence obtained from at least one type of well-designed quasi-experimental study</td>
</tr>
<tr>
<td>3</td>
<td>Evidence obtained from well-designed non-experimental studies, with correlation studies or case studies</td>
</tr>
<tr>
<td>4</td>
<td>Evidence obtained from experts' opinion or recognized Identities/reputable authorities</td>
</tr>
</tbody>
</table>

### Table 2. Good practice guidelines for pain control of the person with cancer disease

<table>
<thead>
<tr>
<th>Assessment of cancer pain</th>
<th>Use self-assessment tools</th>
<th>Use hetero-assessment tools</th>
<th>Pharmacological treatment of cancer pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use self-assessment tools</td>
<td>Revista's faces pain rating scale</td>
<td>Pain assessment in advanced dementia</td>
<td>Mild pain (WHO Step I - NRS 1-3)</td>
</tr>
<tr>
<td></td>
<td>Wong-Baker faces pain rating scale</td>
<td>Observer scale</td>
<td>NSAIDS: ibuprofen (max dose: 3200mg) and ketorolac (15-30mg EV/6h) maximum of 5 days</td>
</tr>
<tr>
<td></td>
<td>Numerical rating scale</td>
<td>Portuguese version of the pain Behavioral Pain Scale</td>
<td>Protonic pump inhibitors or H2 receptor blockers in the treatment with NSAIDS Discontinue NSAIDS if the liver function increases 1.5 of the normal limit</td>
</tr>
<tr>
<td></td>
<td>Qualitative scale</td>
<td>Intensity</td>
<td>Paracetamol (max dose: 4g/day)</td>
</tr>
<tr>
<td></td>
<td>Edmonton symptom assessment scale</td>
<td>Frequency</td>
<td>NSAIDS: ibuprofen (max dose: 3200mg) and ketorolac (15-30mg EV/6h) maximum of 5 days</td>
</tr>
<tr>
<td></td>
<td>Brief pain summary</td>
<td>Type of pain (somatic, visceral, neuropathic pain or mixed)</td>
<td>Protonic pump inhibitors or H2 receptor blockers in the treatment with NSAIDS Discontinue NSAIDS if the liver function increases 1.5 of the normal limit</td>
</tr>
<tr>
<td>Assess the characteristics of the cancer pain</td>
<td>Pain duration and pattern (continuous/end of dose/irruptive)</td>
<td>Location and/or presence of irradiation</td>
<td>If inadequate control, use strong opioids in small doses: morphine (≤30mg/day), oxycodone (≤20mg/day) and hydromorphone (≤4mg/day)</td>
</tr>
<tr>
<td></td>
<td>Relief and exacerbation factors</td>
<td>Response to current and rescue analgesic scheme</td>
<td>Severe and unstable pain it is recommended fast absorption formulas</td>
</tr>
<tr>
<td></td>
<td>Existence of other associated symptoms</td>
<td>Existence of other associated symptoms</td>
<td>Non-opioid pain relievers should be used simultaneously with opioids in continuous pain</td>
</tr>
<tr>
<td></td>
<td>Interference in daily life activities</td>
<td>Interference in daily life activities</td>
<td>The regular dose of strong opioids may be increased in persons with continuous pain (no ceiling dose) Transdermal Fentanyl or buprenorphine are alternatives in the difficulty swallowing or grade 4 or 5 renal failure</td>
</tr>
<tr>
<td>Assess psychoemotional state</td>
<td>Degree of concern with the disease</td>
<td>Degree of anxiety</td>
<td>Tapentadol is a centrally acting opioid analgesic, recommended for neuropathic pain, with an initial dose of 50-100 mg PO, with a maximum dose of 500 mg/day every 12 hours</td>
</tr>
<tr>
<td></td>
<td>Previous diagnosis of depression and/or personality disorders</td>
<td>Presence of suicidal ideation</td>
<td></td>
</tr>
</tbody>
</table>
Pain and dyspnea control in cancer patients of an urgency setting: nursing intervention results


Pharmacological treatment of cancer pain

**Neuropathic pain**

- Antidepressants and anticonvulsants are considered first-line adjuvants
  - Carbamazepine (100 mg 2 x/day up to a maximum of 400 mg/day) attention only for pain in the head region up to 1200 mg/day
  - Gabapentin (100 to 300 mg in a single dose at night to reduce sedation, it can be titrated to a maximum of 900mg-3600/day divided in 2 or 3 intakes)
  - Pregabalin (start with a dose of 50mg 3x/day and increase to 100mg, up to a maximum of 600mg)
- Tricyclic antidepressants (amitriptyline) should be started at low doses 10-25mg/day up to 75mg
  - It must be titrated within 1 or 2 weeks to minimize side effects: sedation, dry mouth, and urinary urgency
- Associate dexamethasone for bone, visceral and neuropathic pain in acute situations (4 to 8mg 2 to 3 x/day)
- Ketamine in low doses can produce analgesia and modulate central sensitization, hyperalgesia, and tolerance to opioids

**Visceral pain**

(Malignant Bowel Obstruction)

- Octreotide subcutaneously or intravenously (0.1 to 0.2 mg 8/8h or 12/12h) to reduce gastrointestinal secretions
- Butylscopolamine and the steroids can be used in association, with food intervals and possible gastric intubation for decompression

**Breakthrough pain**

- Strong opioids are recommended for 1st line treatment
  - Opioid titration, the introduction of adjuvants and regular, timely intake are important control measures
  - For rescue therapy, it is recommended fast-acting opioids
  - Use the same fast-acting opioid and keep it in the long-acting formulation
  - The efficacy of EV morphine compared to transmucosal fentanyl is superior to the 15 minutes. At 30 minutes, there is no statistically significant difference
  - There is no equianalgesic dose for transmucosal fentanyl, thus it should start with low doses and be carefully titrated
  - Preferably select oral administration, it reduces the incidence of adverse effects
- Subcutaneous administration is simple and effective for morphine, being the first choice when oral or transdermal options are not available
- EV may be considered when subcutaneous is contraindicated: anasarca, clotting disorders, peripheral hypoperfusion, need for infusion of high volumes or doses

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Table 2. Good practice guidelines for pain control of the person with cancer disease – continuation

**From moderate to severe refractory pain (WHO step IV – NRS 7-10)**

- Invasive techniques are recommended for severe pain
  - Related to the innervation zones of nerve plexuses;
  - No response to opioid rotation;
  - With need for administration of higher doses of opioids;
- Significant adverse effects with conventional methods
  - Not recommended in coagulopathy, immunosuppression and life expectation of fewer than 6 months
- The spinal pathways (epidural and subarachnoid) allows the neuroaxis blockade. In epidural, it is only necessary 20-40% of the systemic dose for equianalgesic. For the subarachnoid route, it should be used 15% of the opioid systemic dose
  - The effectiveness of local administration of anesthetic agents is higher than in subcutaneous administration
  - Morphine and local anesthetics, such as bupivacaine are the most recommended
  - Performed with a supplementation of strong opioid (equivalent to 10-15% of the usual total dose) of the same drug, but always for quick action
  - Oral or intravenous
  - Methadone has a variable half-life. Therefore titration is recommended during 5-7 days
  - For equianalgesic purpose, the full dose of opioids for 24 hours should be computed
  - Take into consideration when it is not possible to achieve a satisfactory balance between pain relief and adverse effects
- Start with a lower dose than the one calculated by the equianalgesic tables
  - Start only with transdermal opioids in pain reasonably controlled

**Titration**

- Oral or intravenous
- Injection is indicated for quick pain control
- For equianalgesic purpose, the full dose of opioids for 24 hours should be computed
- Take into consideration when it is not possible to achieve a satisfactory balance between pain relief and adverse effects
- Start with a lower dose than the one calculated by the equianalgesic tables
- Start only with transdermal opioids in pain reasonably controlled

**Rotation of opioids**

- Antidepressants and anticonvulsants are recommended first-line adjuvants
- It is recommended the inclusion of anticonvulsants in neuropathic stabbing pain (like shock) under opioids:
  - Carbamazepine (100 mg 2 x/day up to a maximum of 400 mg/day) attention only for pain in the head region up to 1200 mg/day
  - Gabapentin (100 to 300 mg in a single dose at night to reduce sedation, it can be titrated to a maximum of 900mg-3600/day divided in 2 or 3 intakes)
  - Pregabalin (start with a dose of 50mg 3x/day and increase to 100mg, up to a maximum of 600mg)
- Tricyclic antidepressants (amitriptyline) should be started at low doses 10-25mg/day up to 75mg
  - It must be titrated within 1 or 2 weeks to minimize side effects: sedation, dry mouth, and urinary urgency
  - Associate dexamethasone for bone, visceral and neuropathic pain in acute situations (4 to 8mg 2 to 3 x/day)
  - Ketamine in low doses can produce analgesia and modulate central sensitization, hyperalgesia, and tolerance to opioids

**Pharmacological treatment of cancer pain**

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**Delivery path**

- Preferably select oral administration, it reduces the incidence of adverse effects
- Subcutaneous administration is simple and effective for morphine, being the first choice when oral or transdermal options are not available
- EV may be considered when subcutaneous is contraindicated: anasarca, clotting disorders, peripheral hypoperfusion, need for infusion of high volumes or doses

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Continue...
Table 3. Good practice guidelines on dyspnea control of the person with cancer disease

| Dyspnea assessment | Use the acronym O, P, Q, R, S, T, U, and V | Onset: Beginning, frequency, and duration
|                   |                            | Provoking / Palliating: relief and exacerbation factors
|                   |                            | Quality: description
|                   |                            | Region / Radiation: existence of association with other symptoms
|                   |                            | Severity: intensity
|                   |                            | Treatment: therapeutic regimen, efficacy, and adverse effects
|                   |                            | Understanding: understand the attributed etiology
|                   |                            | Values: dyspnea control objective

Assess psychoemotional state
Assess the existence of other comorbidities
Use assessment tools that include dyspnea: Edmonton Symptom Assessment Scale, Hospital Anxiety and Depression Scale (HADS), Modified Dyspnea Index (MDI)
Rule out the causes of undetected dyspnea requiring pericardiocentesis, pleurodesis, thoracentesis, bronchoscopy, transfusion support or antibiotic therapy
Use oxygen therapy with arterial blood gas with no hypoxemia or SpO₂> 90 is not recommended in refractory dyspnea
In situations of hypoxemia associated with hemoglobin <10 g/L, chronic obstructive pulmonary disease or exacerbated smoking habits, oxygen therapy can be provided, preferably through nasal mask up to 2L/min
The temporary use of non-invasive ventilation (CPAP and BiPAP) may be recommended to relieve serious, reversible conditions.

NSAIDS = non-steroid anti-inflammatory drugs; NRS = Numerical rating scale.
DISCUSSION

Pain assessment is considered the first step for an effective pain control that includes instruments of self and hetero-assessment that provides a more measurable dimension, where the person's statement is the gold standard in data collection. Pain characteristics, its influence on the psychoemotional state, on daily life activities, the existence of other comorbidities and/or adverse effects, previous or current cancer treatments, the analytical data and image related to the etiology of the pain are fundamental aspects in a comprehensive analysis of the person with cancer pain.

There are several studies proposing the selection of an analgesic regimen to manage cancer pain based on the intensity as described in the WHO modified analgesic ladder, which emphasizes the oral pathway as the preferred, regular prescription scheme and fixed time for pain control. The rescue doses should be added in episodes of intense pain, which appear despite the regular doses. The guidelines stress the importance of addressing the psycho-social stress, palliative intervention, and nonpharmacological strategies, being the latter aspects less valued in the protocols.

Opioids have different pharmacokinetic properties, as the speed in crossing the biological barrier, the passive and active diffusion, and yet being subject to genetic polymorphism of the individual. The success in the opioid rotation is approximately calculated by more than 50%14 which is considered to be a useful technique in pain control that must meet the principles of equianalgesic dose10,11,13.

Neuropathic, bone, visceral and breakthrough pain are difficult to control, and it is recommended the association of adjuvants6-10,13. Breakthrough pain has an oscillating prevalence between 19 and 95%, with significant impact on quality of life, being a painful condition difficult to control. At the same time, it is recognized the importance of oncology specialist nurses to increase the success of pharmacological interventions, notably through a battery of questions to establish the distinction between breakthrough and uncontrolled baseline pain, on the initial assessment8,11.

In the control of adverse effects, the risk of opioid-induced respiratory depression is the most feared by healthcare professionals. Jarzyna et al.15 recommends regular monitoring of the state of consciousness of the person, observing the individual,

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Table 3. Good practice guidelines on dyspnea control of the person with cancer disease – continuation

<table>
<thead>
<tr>
<th>Pharmacological strategies</th>
<th>The use of bronchodilators and/or diuretics in pulmonary stasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight dyspnea (ESAS 1-3)</td>
<td>Opioids, with a careful titration</td>
</tr>
<tr>
<td>Moderate dyspnea (ESAS 4-6)</td>
<td>With no previous opioids 5mg of fast-acting PO morphine every 4 hours, with 2.5mg of rescue in case of refractory dyspnea after 2h</td>
</tr>
<tr>
<td>Severe Dyspnea (ESAS 7-10)</td>
<td>With no previous opioids 3mg of SC morphine every 4 hours, with 1.5mg of rescue in case of refractory dyspnea after 1h</td>
</tr>
</tbody>
</table>

Nonpharmacological strategies

<table>
<thead>
<tr>
<th>Control and dissociation of respiratory times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective cough assisted training</td>
</tr>
<tr>
<td>Positioning to reduce the work of breathing</td>
</tr>
<tr>
<td>Apply cold therapy to stimulate the trigeminal nerve</td>
</tr>
<tr>
<td>Consider the need to adopt healthy lifestyles</td>
</tr>
<tr>
<td>Psychoemotional support</td>
</tr>
<tr>
<td>Manage the anxiety of the patient/caregiver/family, exploring the meaning of dyspnea for the person, the disease and life expectation</td>
</tr>
<tr>
<td>Relaxation and visualization exercises</td>
</tr>
<tr>
<td>Consider adjustments in eating habits and water intake</td>
</tr>
<tr>
<td>Education for self-management of the therapeutic regime</td>
</tr>
<tr>
<td>Referral to other services/health professionals: pain care clinics, functional and respiratory rehabilitation, supportive care, mental and psychiatric health</td>
</tr>
</tbody>
</table>

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8,11.
tensity of the baseline pain and control exacerbations, improving comfort, well-being, reducing the level of anxiety, pain, and dyspnea that are results impacted by nursing care22. At the same time, the manifestation of a symptom rarely occurs in isolation, so both the assessment and the treatment require a comprehensive and multi-modal approach. The combination of two or more symptoms experienced at the same time can generate high levels of stress, which when undervalued or undertreated, can lead to the onset of burden symptoms. In this sense, the literature recommends the establishment of good practices guidelines for the symptomatic control, developed based on scientific evidence, for a more sustainable decision-making, where the nurse incorporates research results in his/her practice11,12.

REFERENCES