



# Palliative care in pulmonary medicine

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## ABSTRACT

Palliative care was initially developed for patients with advanced cancer. The concept has evolved and now encompasses any life-threatening chronic disease. Studies carried out to compare end-of-life symptoms have shown that although symptoms such as pain and dyspnea are as prevalent in patients with lung disease as in patients with cancer, the former receive less palliative treatment than do the latter. There is a need to refute the idea that palliative care should be adopted only when curative treatment is no longer possible. Palliative care should be provided in conjunction with curative treatment at the time of diagnosis, by means of a joint decision-making process; that is, the patient and the physician should work together to plan the therapy, seeking to improve quality of life while reducing physical, psychological, and spiritual suffering.

**Keywords:** Palliative care; Pulmonary medicine; Quality of life.

## INTRODUCTION

According to the World Health Organization, palliative care is “an approach that improves the quality of life of patients and their families facing problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.”<sup>(1)</sup>

The word “palliative” comes from the verb “to palliate” (from the Latin *palliatus*—covered in a cloak; to alleviate without curing). Therefore, palliative care means to relieve human suffering at any stage of their illness. The early introduction of palliative care can improve the functioning and quality of life of patients dealing with limitations imposed by various conditions, such as respiratory diseases. The inability to manage symptoms such as pain and dyspnea in patients with serious conditions, together with difficulties in communication during treatment, leads to a deterioration of the relationship between patients, families, and caregivers.<sup>(2)</sup>

In light of the concept of early introduction, we understand that the palliative and the curative approaches complement each other throughout the course of the disease. In the early stages, priority should be given to curative treatment. As the disease progresses and the condition of the patient deteriorates, symptom control becomes the main focus. Even at more advanced stages, treatments to slow disease progression can be provided, as long as they do not cause any further suffering. Bereavement is also part of the palliative care sphere; in bereavement care, family members facing the loss of a loved one are provided with support and comfort (Figure 1).<sup>(3)</sup>

In pulmonary medicine, the main focus of palliative care is the early detection of respiratory decompensation

and the promotion of interventions to prevent and relieve symptoms. In addition to alleviating the symptoms caused by disease progression, such interventions are aimed at reducing the numbers of emergency department visits and hospitalizations, as well as providing end-of-life support. An effective implementation of palliative care in pulmonary medicine would ideally rely on a multidisciplinary team (of physicians, physical therapists, nurses, psychologists, and social workers) with proper knowledge and training. Nevertheless, a good understanding by the attending physician alone is enough to define how the disease should be managed, with an emphasis on symptom control.<sup>(4)</sup> For example, one study showed that the prevalence of untreated symptoms (dyspnea, asthenia, and anxiety) is higher in patients with COPD than in those with cancer or heart failure.<sup>(5)</sup>

## A BRIEF HISTORY OF PALLIATIVE CARE

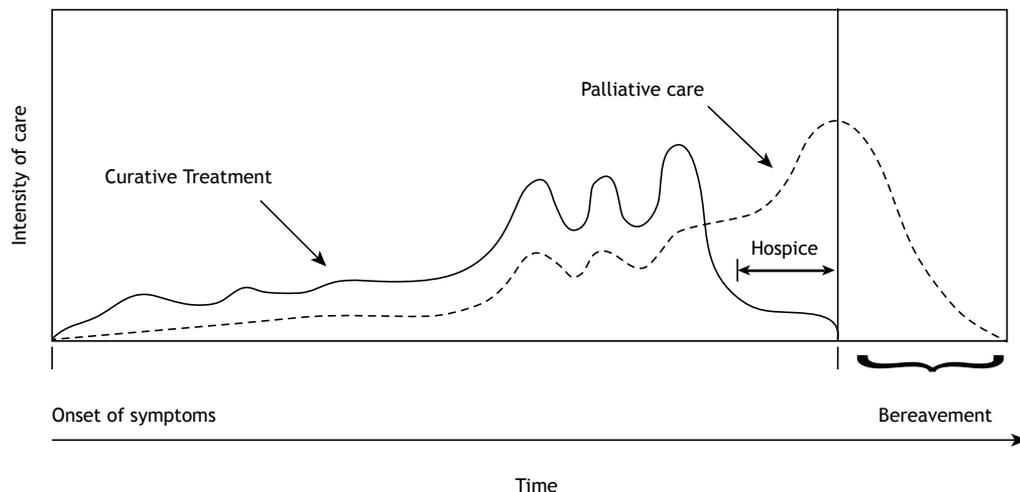
Palliative care became a formal area of expertise in medicine in the 20th century. However, practices focusing on the management of critical patients and end-of-life care are as old as medicine itself.

The term “hospice”, which is currently used to refer to the place where patients in palliative care are hospitalized, originated in medieval times, when it meant shelter for pilgrims. In 17th-century Europe, charitable institutions with entire wards reserved for patients with tuberculosis and cancer appeared. That is when the concept of what we currently call “hospice” originated.<sup>(6)</sup>

England played a prominent role in the development of palliative medicine. As early as the late 19th century, the English have shown their concern with caring for dying patients, as evidenced by the use of the Brompton cocktail (an elixir made of opioid, cocaine, and chlorpromazine) for controlling severe pain and the regular use of oral

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**Figure 1.** Evolution of palliative care in chronic diseases.

morphine in patients nearing the end of life at St. Luke's Home. It was at St. Luke's Home that nurse Cicely Saunders worked in the mid 20th century. In 1967, she founded St. Christopher's Hospice in London, giving rise to what is currently known as the modern hospice movement.<sup>(7)</sup>

In 1982, the WHO Coordinating Committee on Cancer set up a working group to establish policies aimed at relieving the pain of and providing hospice care to cancer patients. In 1986, the WHO published its first definition of palliative care, which was revised in 2002 to broaden the concept and make it applicable to all diseases. In 1987, England became the first country to acknowledge palliative medicine as a medical specialty, paving the way for other countries to do the same.<sup>(8)</sup>

### PALLIATIVE CARE GOALS AND DOMAINS

Several guidelines have already been proposed in an attempt to standardize palliative care practices. One of the most successful of these frameworks is the fourth edition of the Clinical Practice Guidelines for Quality Palliative Care. That document sets forth the following goals for palliative care planning<sup>(2)</sup>:

- To provide relief from pain and from other distressing symptoms
- To affirm life and to see dying as a natural process
- Not to hasten or postpone death
- To integrate the psychological and spiritual aspects into patient care
- To offer support to help patients live as actively as possible until death
- To offer support to help the family cope with the illness and their own bereavement
- To apply a multidisciplinary approach to address the needs of patients and their families, including bereavement counseling
- To enhance quality of life and positively influence the course of illness
- To enable better understanding of the illness and its clinical complications

In addition to defining the aforementioned goals, the document divides palliative care into eight domains, all of them centered on patient and family care (Chart 1).<sup>(2)</sup> Communication is yet another extremely important part of palliative care. Therefore, we decided to add it to the list as the ninth domain.

### COMMUNICATION

Clear and straightforward communication is crucial in the treatment of a life-limiting illness. Proper communication can relieve suffering and facilitate end-of-life care.<sup>(9)</sup> A study conducted at the University of Texas MD Anderson Cancer Center and the Toronto-Sunnybrook Regional Cancer Center established an effective protocol for breaking bad news in the field of oncology.<sup>(10)</sup> Their protocol is named SPIKES, an acronym for the six steps it comprises (Figure 2): S for setting, P for perception, I for invitation, K for knowledge, E for emotions with empathy, and S for strategy or summary. The SPIKES protocol consists of studying the case thoroughly, assessing the degree of perception of patients and families, giving the prognosis in simple and clear language, showing empathy during the conversation, and assessing what has been assimilated and devising care strategies.<sup>(10)</sup>

A study involving 115 patients diagnosed with lung cancer, breast cancer, prostate cancer, lymphoma, or melanoma showed that the use of the SPIKES protocol created communication that was more empathic, facilitating care planning and the delivery of bad news.<sup>(11)</sup>

### PALLIATIVE CARE IN VARIOUS LUNG PATHOLOGIES

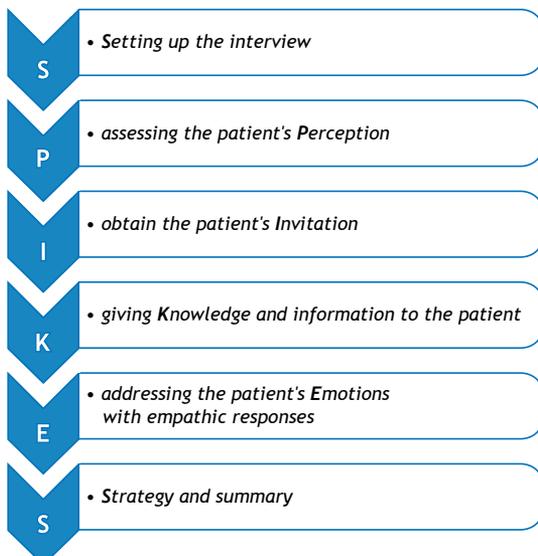
#### COPD

According to the WHO, there were 251 million cases of COPD in 2016. It is expected to be the third leading cause of death in the world in 2020.<sup>(12)</sup>

**Chart 1.** Domains of palliative care.

Domain	Brief description
Structure of care	Based on patient/family goals of care and diagnosis/prognosis, as well as the incorporation of quality and safety
Physical aspects	Assessment and multidimensional treatment of physical symptoms such as pain, dyspnea, nausea/vomiting, fatigue, constipation, and definition of functionality in order to adjust medication
Psychological aspects	Assessment of psychological concerns and psychiatric diagnoses that include anxiety, depression, and grief, together with their respective treatments
Social aspects	Identification and resolution of social issues that afflict the patient/family
Spiritual, religious, and existential aspects	Assessment of spirituality to address spiritual concerns throughout the disease trajectory, promoting the exploration of hope, fear, and forgiveness
Cultural aspects	Cultural assessment as a source of resilience, linguistic competence emphasizing plain language and linguistically appropriate service delivery
End-of-life care	Control and documentation of the signs and symptoms of the death process. Focus on planning end-of-life care in advance, with ongoing discussion of goals of care
Ethical and legal aspects	Acknowledgment of the complexity of ethical issues and the importance of seeking support from ethical and legal counseling
Communication	Empathic communication that uses clear and straightforward language, respecting patient autonomy

Adapted from Narsavage et al.<sup>(2)</sup>

**Figure 2.** The SPIKES protocol. Adapted from Baile et al.<sup>(10)</sup>

The progression of COPD is marked by a gradual, clinical decline in respiratory capacity, progressive dyspnea, and exacerbations associated with an increased risk of death and worsening of the quality of life. Although the probability of dying during hospitalization for COPD exacerbation has decreased in recent years, it is still high, ranging from 23% to 80%.<sup>(13)</sup>

The American Thoracic Society/European Respiratory Society guidelines, published in 2015,<sup>(14)</sup> established the importance and benefits of including palliative care in the management of COPD. Although the guidelines underscore the importance of palliative care, a study carried out from 2004 to 2015 showed that only one in five patients with COPD in the United Kingdom received that type of care at the end of life.<sup>(15)</sup> The difficulty in establishing an accurate prognosis is certainly one of

the challenges to implementing palliative care. Indices that attempt to predict mortality for COPD patients can be found in the literature.<sup>(14)</sup> Among them are: the **B**ody mass index, airway **O**bstruction, **D**yspnea, and **E**xercise capacity (BODE) index and the **A**ge, **D**yspnea, and airflow **O**bstruction (ADO) index. However, those indices have low accuracy, mainly because they do not take into account other aggravating factors, such as cardiovascular disease.<sup>(16)</sup> Therefore, integrating palliative care into the treatment of COPD patients earlier has proven to be one of the best options for symptom control and improving quality of life, striking a balance between socioeconomic costs and psychological/emotional costs.<sup>(17)</sup>

### Interstitial lung diseases

Interstitial lung diseases (ILDs) are a group of heterogeneous disorders, classified according to their clinical, radiological, and functional findings. Examples of ILDs include idiopathic pulmonary fibrosis (IPF), hypersensitivity pneumonitis, sarcoidosis, nonspecific interstitial pneumonia, occupational diseases, organizing pneumonia, and the various forms of bronchiolitis.<sup>(18)</sup> All ILDs are associated with an intensification of symptoms such as cough, dyspnea, and fatigue, which leads to a deterioration of patient quality of life. As the disease progresses, the symptoms exacerbate and resemble those of patients with terminal lung cancer.<sup>(4,19,20)</sup>

In an assessment of the quality of life of patients with IPF,<sup>(21)</sup> the following three questionnaires were applied: The World Health Organization Quality of Life assessment instrument 100, the Beck Depression Inventory, and the Bath Breathlessness Scale. The assessment revealed that pain, fatigue, low self-esteem, and impaired mobility are more common among such patients, who are also more dependent on others for their activities of daily living and for the treatment of the disease, including the administration of medication.<sup>(21)</sup>

The most common symptoms in patients with ILD are dyspnea, fatigue, cough, anxiety, and depression. A systematic review showed that 68-98% of patients with ILD have dyspnea, 59-94% have cough, 25-65% have heartburn, and 10-49% have depression.<sup>(22)</sup> This review also showed a higher prevalence of symptoms such as sleep disorders, weight loss, fatigue, and anorexia among such patients.<sup>(22)</sup>

Despite the severity of ILD, patients still seem to have a limited understanding of the disease and its prognosis. In a survey of patients with IPF and their caregivers,<sup>(23)</sup> one of the participants reported "I was so relieved that the diagnosis wasn't lung cancer. I wasn't sure what idiopathic pulmonary fibrosis was, but I figured it couldn't be as bad as lung cancer."

Although the prognosis of IPF can be as poor as that of some lung cancers, palliative care is not widely indicated in patients with the disease. A study involving 277 patients with IPF carried out at the University of Pittsburgh<sup>(24)</sup> revealed that 57.0% of patients died in a hospital setting and only 13.7% received end-of-life support from a team specializing in palliative care. Of the patients who died in the hospital, 34.2% were in the ICU. Therefore, patients with ILD have a guarded prognosis, especially in cases of acute decompensation, which can have various causes, such as exposure to aeroallergens, infection, and disease progression. These patients usually have severe hypoxemia and often require ventilatory support. The use of invasive mechanical ventilation is questionable because of the high mortality rate associated with it, ranging from 87.4% to 94.1% in patients with this condition.<sup>(25)</sup> However, the same study showed that the use of noninvasive ventilation (NIV) within the first 24 h after admission was able to reduce 30-day mortality. The early use of NIV is associated with a lower rate of endotracheal intubation, reduced complications, better survival rates, and increased numbers of hospital discharges.<sup>(25)</sup>

### **Cystic fibrosis**

Cystic fibrosis (CF) or mucoviscidosis is a serious hereditary condition that is passed on through an autosomal recessive inheritance pattern. In CF, an increase in mucus viscosity leads to an obstructive process that most commonly affects the lungs and the pancreas. That increase in viscosity blocks the airways in the lungs, facilitating bacterial growth (especially *Pseudomonas* sp. and staphylococci), which leads to chronic infection, lung injury, respiratory dysfunction, and death.<sup>(26)</sup>

Advances in the treatment of CF have led to a significant increase in the mean survival of patients, which increased from 14 years in 1969 to 40 years in 2013, making it a chronic illness of young adults. As a result, there has been a greater impact on family relationships and on the way patients make choices for the future (occupation, love life, parenthood, and infertility).<sup>(27)</sup>

The slow, prolonged deterioration of lung function, combined with pancreatic (endocrine and exocrine) and gastrointestinal tract dysfunction, leads to the appearance of the most common symptoms: headache, chest pain, chronic cough, dyspnea, and bronchorrhea. These patients spend, on average, 108 min a day on the administration of oral, inhaled, and injected medications.<sup>(28)</sup> The time spent dealing with unpleasant symptoms and administering medications to control them greatly affects their quality of life.<sup>(29)</sup>

In an attempt to assess patients with CF, 16 severity scores have been developed at different historical moments in the scientific understanding of the disease, such as the Taussig Score and the Simplified Cystic Fibrosis Scale.<sup>(30)</sup> Despite the evident severity of the condition, not many patients receive palliative care in the final stages of the disease.

In 2009, a study carried out in the United Kingdom<sup>(31)</sup> evaluated 40 patients with CF who died of respiratory failure. Of those 40 patients, 5 died after lung transplantation. Of the nontransplanted patients, 16 (45.71%) were in a palliative care program, 6 (17.14%) received no palliative care, and 13 (37.14%) experienced an abrupt transition from curative treatment to palliative care alone in the last two days of life.<sup>(31)</sup> Another study showed that patients with CF on a waiting list for lung transplantation were likely to die in the ICU under invasive ventilation, having had no discussion about end-of-life care.<sup>(29)</sup>

Because this patient population is young, there is great difficulty in indicating palliative care for symptom control. Although some centers already offer this service, it remains underutilized because the patient and the care team both have trouble accepting it.<sup>(29)</sup>

### **Pulmonary hypertension**

Pulmonary hypertension (PH) is a hemodynamic result common to various processes and mechanisms that lead to an increase in blood pressure in the pulmonary vascular territory, together with right ventricular overload and failure, culminating in heart failure.

The symptoms of PH are nonspecific and are mainly related to progressive dysfunction of the right ventricle. The symptoms are usually effort-induced and include shortness of breath, fatigue, weakness, angina, and syncope. As the disease progresses, the symptoms intensify and patients become more dependent on the aid of family members to perform their basic activities of daily living, which has a major impact on their quality of life. If the PH is secondary to systemic sclerosis, liver disease, or congenital heart diseases, the impact on patient quality of life is even greater.<sup>(32)</sup>

Patients with worse (New York Heart Association) functional classes and reduced cardiac exercise capacity have a higher risk of depression. In addition, the diagnosis of PH in and of itself causes great psychological and emotional frustration, manifesting as feelings of low self-esteem and helplessness.<sup>(33)</sup>

There is as yet no consensus on a definitive score that can predict mortality from PH. Nevertheless, some attempts have been made in that direction. The Registry to Evaluate Early and Long-term [Pulmonary Arterial Hypertension] Disease<sup>(34)</sup> calculated a score combining clinical and demographic data, functional class, vital signs, six-minute walk test results, brain natriuretic peptide (BNP) levels, echocardiogram results, lung function test results, and data on right heart catheterization. It revealed that, 7 years after diagnosis, 50% of the patients had died. It also showed that the high morbidity associated with PH has a dramatic effect on the quality of life of these patients.<sup>(34)</sup> Patients who have syncope, cardiac indices  $< 2 \text{ L/min/m}^2$ , BNP  $> 300 \text{ ng/L}$ , and mixed venous oxygen saturation  $< 60\%$  have a  $> 10\%$  risk of death at one year, even with optimized care.<sup>(32)</sup>

The treatment of PH can be divided into invasive and noninvasive. The invasive modalities include atrial septostomy, right ventricular assist device implantation, and pulmonary artery denervation. Preeminent among the noninvasive modalities are specific drug therapies. Although not curative, they can improve quality of life and slow disease progression. Other important noninvasive measures include educating patients about the disease and psychological and spiritual support groups.<sup>(35-37)</sup>

## SYMPTOM MANAGEMENT IN PATIENTS WITH RESPIRATORY DISEASES

The most common symptoms presented by patients with lung diseases are dyspnea, cough, fatigue, cachexia, hemoptysis, physical pain, and psychological symptoms such as depression and anxiety.<sup>(3)</sup> Below, we briefly discuss the therapy for each symptom.

### Dyspnea

In addition to being directly correlated to respiratory failure progression, dyspnea also arises from the interaction of other physical factors (cachexia and asthenia), psychological factors (anxiety and depression), social factors, and environmental factors.<sup>(38)</sup>

The approach to dyspnea should include an objective assessment using scales, such as the Medical Research Council dyspnea scale (Chart 2), which establishes levels of exercise intensity that will trigger breathlessness, the Baseline Dyspnea Index, and the Chronic Respiratory Questionnaire.<sup>(39-42)</sup>

The initial management of dyspnea should focus on controlling the underlying cause. Optimizing the use of bronchodilators, controlling pleural effusion, achieving volume optimization, and using oxygen therapy should be prioritized, when indicated. Other important measures to reduce the perception of dyspnea are rehabilitation and NIV. Behavioral measures, such as keeping utensils and tools at waist level and avoiding carrying objects, serve as energy savers and reduce the dyspnea sensation.<sup>(43)</sup>

**Chart 2.** The Medical Research Council dyspnea scale.

Grade	Description
0	No dyspnea, except during strenuous exercise
1	Breathless when hurrying on level ground or walking up a slight grade
2	Walks slower or has to stop to catch their breath
3	Stops after walking 100 yards
4	Breathless after undemanding activities like dressing or undressing

Adapted from Papiris et al.<sup>(41)</sup>

If dyspnea persists at rest in spite of the implementation of these measures, making it impossible for patients to perform minimal effort activities such as brushing their teeth, an opioid can be added, morphine being the drug of choice. The initial dose of morphine varies, possibly starting at 5 mg p.o. every 4 h for patients without kidney failure (in the elderly, use this dose with caution and reduce it if there are side effects). Morphine reaches its peak serum concentration in less than 1 h, has a half-life of 2-3 h and action duration of 4 h. Higher doses may be needed in cases of disease progression or tolerance to the medication. If that is the case, the baseline dose can be increased by 25%, although one should always be cautious and try to prevent severe side effects, such as bradypnea and a reduced level of consciousness.<sup>(44)</sup>

Long-term opioid use is associated with clinical conditions such as the opioid use disorders included in the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders.<sup>(45)</sup> These disorders manifest as difficulty in controlling the use of, tolerance to, and physical dependence on these substances. In addition, the use of opioids can lead to cardiovascular and respiratory complications, as well as overdose and death. To prevent that, the Centers for Disease Control and Prevention issued the following recommendations<sup>(45)</sup>:

- Establish pain control or dyspnea goals and discontinue the use of the medication if those goals are not achieved.
- Explain the risks and benefits of opioid use to patients.
- Start therapy with an immediate-release opioid at the minimum effective dose.
- After opioid introduction, schedule weekly appointments to assess side effects and determine the optimal dose.

The most common side effects of morphine use are pruritus, drowsiness, and constipation. For constipation, the recommendation is to start concomitant use of stimulant laxatives at night and osmotic laxatives during the day. Preeminent among the stimulant laxatives are bisacodyl, 5-10 mg p.o.; picosulfate, 5-10 mg p.o.; and senna (*Cassia angustifolia* and *C. acutifolia*) 5-10 mg p.o. The most commonly used osmotic laxatives are lactulose up to 50 mL/day and polyethylene glycol up to 14 g/day.<sup>(46)</sup>

Dyspnea management should also include the management of acute dyspnea attacks. These attacks are more common in terminal cases and educating family members to recognize them can help in their control. The acronym COMFORT can be used for controlling an attack—**C**all for help; **O**bserve and treat possible causes; **M**edicare as per medical prescription; **F**an, that is, use a fan directed to the face; **O**xxygen therapy, when indicated; **R**elaxation; and **T**iming—assessing patient responses to each of these interventions.<sup>(47)</sup> A schematic diagram of the treatment of dyspnea in patients with chronic lung diseases is shown in Figure 3.

### Other instances of and strategies to treat dyspnea

#### Psychological symptoms

Anxiety can aggravate shortness of breath, and some patients can experience concurrent attacks of panic and dyspnea. Therefore, symptoms of anxiety should be actively investigated and treated from the first contact with the patient, and medication and psychological support should be offered when necessary.<sup>(48)</sup>

Therapy with selective serotonin reuptake inhibitors can be offered to patients with dyspnea attacks accompanied by anxiety or panic attacks. These inhibitors have a direct effect on the brain area that controls dyspnea perception and can be used as an adjunct medication. An example of this type of medication is sertraline (starting dose of 12.5-25.0 mg/day, which can be adjusted up to 50 mg/day). There is no consensus in the literature about the prolonged use of benzodiazepines; further studies are needed to evaluate their safety and efficacy.<sup>(48,49)</sup>

Psychosocial symptoms, which usually appear at the diagnosis of dyspnea, can intensify during exacerbations and at the end of life. Care planning is essential to control symptoms such as depression and anxiety. In addition, clear communication between the

care team and patients/families is key to facilitating understanding of the therapeutic options. The care team should be able to understand the spiritual issues and suffering that patients/families are facing and offer support so as to help relieve their psychological discomfort.<sup>(50)</sup>

#### Supplemental oxygen therapy

The use of supplemental oxygen is indicated for hypoxemic patients (those with an SpO<sub>2</sub> < 92%), aiming to relieve their symptoms and improve their quality of life. However, there is no robust evidence of its benefits for non-hypoxemic patients. Therefore, the patient response to oxygen therapy should be assessed on the basis of symptom improvement and not long-term outcomes.<sup>(51)</sup>

#### NIV

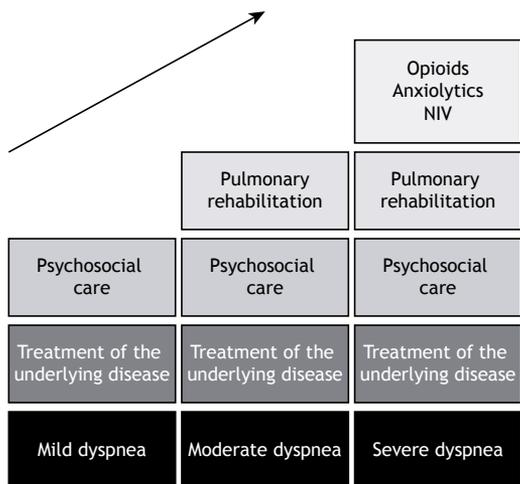
Physicians should be judicious in their use of NIV, the objective of which should be to relieve dyspnea and provide comfort to patients. The use of NIV can provide patients with more time to spend with their families, which often allows them to say their goodbyes. In cases in which the instructions for advanced life support have not previously been defined, NIV can buy time for patients to understand the diagnosis and for clinicians to define the prognosis, giving due consideration to proportional care and preventing invasive measures that can prove ineffective or even lead to dysthanasia.<sup>(52)</sup> There are specific situations in which NIV should not be used, such as in cases of facial deformities or skin lesions that can prevent a comfortable fit of the face mask and reduce the level of consciousness.<sup>(53)</sup>

#### Cachexia

Cachexia can be caused by changes in intestinal habits, endocrine disorders, metabolic disorders, malabsorption, sleep disorders, and psychological disorders. These factors must be actively investigated and addressed. After the risk factors have been corrected, nutritional counseling, diet adaptation, nutritional supplementation, and appropriate hydration should be provided.<sup>(54)</sup>

Palliative nutrition should be implemented according to the palliative care phase. In the early stages, calories, proteins, and nutrients should be offered orally, the objective being to prioritize quality of life. Food and nutrient restrictions should be avoided. In the final stages of life, the psychosocial support provided to patients and families should be intensified in order to reduce their discomfort.

Although enteral feeding or parenteral nutrition should be considered in order to minimize family conflicts caused by patients reduced oral intake, it can lead to complications such as infections and changes in bowel habits. Feeding tubes can be used in the early stages when disease-modifying treatment predominates over palliative care. When that relationship is reversed, enteral feeding is no



**Figure 3.** Dyspnea treatment. NIV: noninvasive ventilation.

longer advisable. To minimize the discomfort of patients and families, nutritional status and weight should not be monitored in the final stages of life.<sup>(55)</sup>

### Hemoptysis

Hemoptysis is quite common in patients with lung cancer, bronchiectasis, or pulmonary cavitations. The treatment primarily targets the underlying cause: antibiotic therapy in cases of infectious exacerbation; and palliative chemotherapy and radiation therapy in cases of lung cancer.

In emergent cases of hemoptysis, the following therapeutic options should be considered:

- nebulized tranexamic acid, 500 mg diluted in 5 mL of saline solution 0.9% administered 3 times a day for 5 days<sup>(56,57)</sup>
- bronchoscopic instillation of cold saline and adrenaline<sup>(58)</sup>
- bronchial arterial embolization, which has a success rate of 70-100% and is mainly indicated when conventional surgery is precluded by the advanced stage of the disease<sup>(59)</sup>

In irreversible cases, the use of dark-colored sheets and clothes can alleviate patient embarrassment.<sup>(59)</sup>

### Cough

Cough is highly prevalent in patients with lung diseases, especially at the end of life. It can affect more than 65% of patients with lung cancer and 70% of patients with COPD.<sup>(60)</sup> Although it is a natural reflex, it can have a significant impact on quality of life and lead to complications such as muscle pain, rib fracture, urinary incontinence, asthenia, and sleep disorders.

Before a cough is alleviated, a patient clinical history should be taken in order to find its main causes. A cough can be an adverse effect of medication or can be caused by conditions such as rhinosinusitis, respiratory infection, lung disease, asthma, COPD, and gastroesophageal reflux.<sup>(61)</sup> If the cough persists after treating its underlying cause, the following medication can be used: low doses of weak opioids such as codeine (30 mg p.o., every 6 h); antitussives, such as levodropropizine (60 mg p.o., 3 times a day); and anticholinergics, such as inhaled ipratropium bromide.<sup>(62)</sup> If the patient is already on morphine, the baseline dose may be increased by 25% to achieve cough control. Patients with IPF can show a reduction in cough with the use of thalidomide (100 mg p.o., once a day), although that drug is not approved for use in Brazil.<sup>(63)</sup>

The GABA analogs gabapentin and pregabalin can also be used to control chronic cough. Although neither has been usually prescribed for that purpose, there are studies that show benefits of their use in the management of cough. The initial dose of gabapentin is 300 mg/day p.o. (up to 900 mg/day in 2-3 doses) whereas that of pregabalin is 75 mg/day p.o. (up to 300 mg/day in two doses).<sup>(64)</sup>

### Bronchorrhea

Bronchorrhea is defined as the production of more than 100 mL of pulmonary secretion per day. Mucus is responsible for keeping the respiratory system hydrated and contains defensive factors against various pathogens. However, the excessive accumulation of mucus leads to airway obstruction and increases the risk of infection.

The main pharmacological approaches to bronchorrhea include inhaled ipratropium bromide, anticholinergics, atropine 1% (1-2 drops sublingual, 3-4 times a day), corticosteroids, and antibiotic therapy in extreme cases.<sup>(65)</sup>

### Pain

The International Association for the Study of Pain<sup>(66)</sup> defines pain as an unpleasant sensory or emotional experience associated with actual or potential tissue damage. More than 50% of patients with an advanced-stage disease experience pain. Nevertheless, the concept of "overall pain" goes beyond physical suffering to encompass the psychosocial, spiritual, and family factors that can contribute to the persistence of the symptom.<sup>(66)</sup>

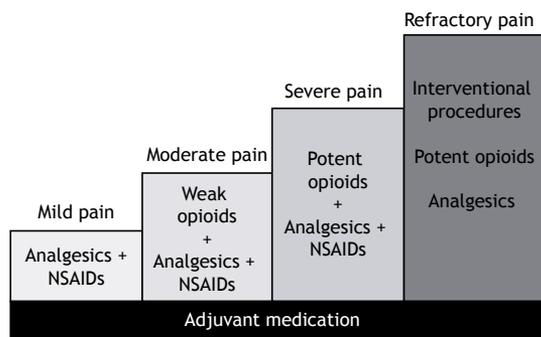
Differentiating between neuropathic pain and nociceptive pain is crucial when treating pain. Neuropathic pain can be defined as a tingling or itching sensation and altered skin tone or tenderness, caused by injury to the nervous system. Patients with lung cancer can experience pain due to the tumor infiltrating the bone after radiation therapy, chemotherapy toxicity, or damage to the nerve during surgery.<sup>(67)</sup> The treatment of neuropathic pain begins by establishing a diagnosis and eliminating the causal factors, such as relieving root compression and withdrawing triggering medications. Pharmacological options include the use of antidepressants, calcium channel ligands (gabapentin and pregabalin), and topical lidocaine.

Nociceptive pain is more localized and can be experienced as a throbbing or cramping sensation. The treatment should follow the recommendations of the WHO pain ladder.<sup>(68)</sup> It starts with simple analgesics, which can then be replaced with weak opioids and, finally, potent opioids such as morphine and methadone (Figure 4).<sup>(68)</sup> Chart 3 presents a summary of the management options for all the symptoms described in this article.

### ETHICAL ISSUES

When planning the care of patients with a limited life expectancy, we are faced with certain ethical issues. Those issues are often accompanied by conflicts between the care team and patients/families about what type of care is most appropriate.

In recent decades, medicine has been transitioning from medical paternalism, a practice that was almost exclusively centered on the wills of physicians, to an approach in which patient autonomy is gaining ever



**Figure 4.** Pain management ladder. NSAIDs: non-steroidal anti-inflammatory drugs. Adapted from Riley et al.<sup>(68)</sup>

more ground in the planning of care.<sup>(69)</sup> This is what is called “joint decision-making”; that is, a process in which the care team, patients, and families exchange information, desires, and life values, which are then used as the foundation for defining treatment goals. Such collaboration is a determinant of the best outcomes.

One example of that evolution is the passage of the “Mário Covas” Act,<sup>(70)</sup> in the state of São Paulo, Brazil, according to which patients have autonomy and the right to reject painful or extraordinary treatments aimed at prolonging life. Resolution 1805/6 of the Brazilian Federal Council of Medicine,<sup>(71)</sup> although not

**Chart 3.** Management of symptoms in patients with lung diseases in palliative care.

<b>Dyspnea</b>
Psychological support Disease-focused treatment Behavioral measures Morphine 5 mg p.o. q4h (elderly and CKD: start at ¼ of the dose) The COMFORT strategy Oxygen therapy for hypoxemic patients Noninvasive ventilation
<b>Cough</b>
Investigate and treat gastroesophageal reflux, sinusitis, asthma, and COPD Codeine 30 mg p.o. q6h Levodropropizine 60 mg p.o. q8h Inhaled ipratropium bromide Gabapentin 300 mg/day up to 900 mg/day (in 3 doses) Pregabalin 75 mg/day up to 300 mg/day (in 2 doses)
<b>Bronchorrhea</b>
Inhaled ipratropium bromide Atropine 1% in saline, 1-2 drops q8h Corticosteroids Antibiotics in case of infectious exacerbation
<b>Pain</b>
Simple analgesics: dipyron and paracetamol Tramadol 50 mg p.o. q8h Morphine 5 mg p.o. q4h (elderly and CKD: start at ¼ of the dose) Neuropathic pain: start gabapentin or pregabalin
<b>Hemoptysis</b>
Bronchiectasis + altered lung structure: start antibiotic therapy Lung cancer: evaluate the need for hemostatic radiation therapy/chemotherapy Inhaled tranexamic acid 500 mg in saline solution 0.9%, 5 mL q8h Bronchoscopy Bronchial arterial embolization Irreversible cases: use dark blue sheets and clothes
<b>Anxiety attacks</b>
Investigate anxiety symptoms Sertraline 25-50 mg/day p.o. Benzodiazepines: weak evidence Address psychosocial suffering
<b>Cachexia</b>
Nutritional assessment Investigate and treat changes in metabolism, sleep, and bowel habits Preferably oral diet Artificial routes of nutrition in special situations

CKD: chronic kidney disease; and COMFORT: **C**all for help; **O**bserve and treat possible causes; **M**edicare as per medical prescription; **F**an directed to the face; **O**xygen therapy, when indicated; **R**elaxation; and **T**iming, assessing patient response to each of these interventions.<sup>(47)</sup>

an act of law, states that physicians are allowed to limit or suspend treatments that prolong the life of patients in the terminal phase of a serious or incurable disease, always respecting the will of patients or their legal representatives. We believe that a joint decision-making process that gives voice to patients and families after providing them with information and understanding can optimize care and progressively distance us from the reality of dysthanasia experienced on a daily basis by patients in the ICUs and inpatient wards throughout Brazil.

### BARRIERS TO PALLIATIVE CARE

The main barrier to implementing palliative care is the discomfort felt by the care teams in having open discussions about end-of-life care with their patients. This happens mainly because many patients with advanced lung diseases have uncertain short-term prognosis.<sup>(72)</sup> Other barriers identified are the limited number of healthcare professionals trained

in palliative care, as well as the ethnic, cultural, and ethical issues involved.<sup>(5)</sup>

### FINAL CONSIDERATIONS

Palliative care has been gaining ground in recent years. Learning how to treat patients who are experiencing pain, dyspnea, spiritual pain, and social suffering because of their lung diseases, not only at the end of their lives, can have a huge impact on how they face their disease and care. When such learning translates into proper care, there is usually less physical and emotional stress, especially in the last hours of life. As a result, the grief that unfolds is more appropriate. All of these aspects can also facilitate patient transfers when hospice care is indicated.

Given that there is still a well established tendency to perform aggressive, invasive procedures in patients in the final stages of life, the timely introduction of palliative care can improve quality of life, reducing suffering, minimize unnecessary social costs, and ultimately humanize care.

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