

Chapter 6

Respiratory Symptoms**Overview**

People with HIV/AIDS are at risk for a variety of disease processes that compromise lung function or cause respiratory symptoms (see Table 6.1). In fact, pulmonary manifestations of AIDS are among the most frequent causes of death in HIV disease. Approximately 70% of patients with HIV will have at least one respiratory episode during the course of their illness, and at post-mortem the lungs are affected in about 90% of cases (Wilson, 2002).

Symptoms associated with lung involvement can be very disturbing to patients. Severe air hunger or a sensation of suffocation can lead to escalating feelings of fear, anxiety, and panic. Relief of symptoms can make a great deal of difference in the quality of life for people with HIV, even when the underlying disease is progressing.

As with all palliative care management, it is important to accurately assess the cause of distressing respiratory symptoms and explain the situation to the patient and family. In discussion with the palliative care team, including the patient and family, a management plan can be instituted which is individualised to the particular patient and should be subject to frequent review to ensure optimum quality of life for the patient.

Besides managing symptoms, a key element of palliative care in advanced HIV disease, when resources permit, is the diagnosis of treatable causes of symptoms. This chapter focuses on basic methods of managing the suffering and distress caused by common pulmonary symptoms in patients with HIV/AIDS. It offers approaches that are useful in relieving discomfort even when the underlying disease is not treatable.

Authors

Liz Gwyther

Vanessa Adams

Douglas Wilson

Dorothy Andreas Mandwa

At a GlanceTreatable Respiratory
Conditions

Dyspnoea

Cough

Pulmonary Secretions

Non-Cardiac
Chest Pain

Hiccup

Haemoptysis

Airway Obstruction

References

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Respiratory Symptoms

Table of Contents

Overview	75
Treatable Respiratory Conditions	77
Tuberculosis	
<i>Pneumocystis carinii</i> pneumonia	
Bacterial pneumonia	
Dyspnoea	81
Cough	84
Pulmonary Secretions	86
Non-Cardiac Chest Pain	87
Hiccup	87
Haemoptysis	89
Airway Obstruction	90
References	91

Treatable Respiratory Conditions

The cornerstone of effective symptomatic management of respiratory conditions in HIV/AIDS revolves around treatment of opportunistic infections and bacterial sepsis where this is possible. Tuberculosis (TB) and *Pneumocystis carinii* pneumonia (PCP) are two of the most important preventable or curable diseases in patients with HIV.

Table 6.1: Presenting Symptoms and Radiographic Findings of Common Pulmonary Manifestations of AIDS

	Lymphoma or Kaposi's Sarcoma	<i>Pneumocystis carinii</i> Pneumonia	Bacterial Pneumonia	Tuberculosis
Bullae/cavities		XX		X
Chest pain	XX	XX	XX	XX
Desaturation		XXX	XX	
Dyspnoea on exertion	X	XXX	XX	X
Fever	XX		XXX	XX
Haemoptysis	XX		X	XXX
Infiltrates	X	Bilateral / Patchy	Unilateral / lobar	Apical
Night sweats	XXX		X	XXX
Nodules	XX		Embolic	XX
Onset of symptoms	Gradual	Weeks / gradual	Acute	Acute or gradual
Pleural effusion	XXX	Rare	XX	X
Productive cough			XXX	XX

Key: X Occurs occasionally
XX Occurs commonly
XXX Occurs very frequently

Source: Carla Alexander, MD in Beehler, 2003.

Tuberculosis

HIV infection and TB are often seen together. TB is the commonest opportunistic infection in patients with HIV, especially in sub-Saharan Africa, and is often the sentinel illness of HIV. Conversely, HIV infection is the strongest risk factor for the progression of latent *Mycobacterium tuberculosis* infection to active TB, and for progressive primary TB in individuals with HIV who have recently acquired TB. Many patients are exposed repeatedly to this virulent pathogen and may be diagnosed with active tuberculosis several times during the course of their illness. In most countries in sub-Saharan Africa, more

than 50% of patients with TB will test positive for HIV. As many as 80% of TB hospital patients will be young adults with HIV co-infection (Wilson, 2002).

Effective TB control programmes are essential in the management of HIV disease. Early detection, effective treatment, and prevention of TB can greatly improve the prognosis for patients with HIV/AIDS. Because active TB can severely exacerbate immune suppression, effective antituberculous therapy can substantially restore immune function, and can return patients who were close to death to a good quality of life that lasts many months.

Assessment

TB often presents in atypical ways in people infected with HIV, including non-specific mid- and lower-zone opacifications, miliary (micronodular) infiltrates, pleural effusions, mediastinal and hilar lymph node enlargement, or extra-pulmonary manifestations.

The diagnosis of TB in advanced HIV infection is an inexact science. Table 6.2 shows the sensitivity of commonly used TB case definitions. Although the standard for TB diagnosis is the detection in sputum of acid-fast bacilli (AFB), this test is negative in more than 40% of HIV-infected patients with culture-positive TB. On the other hand, mycobacterial culture may be prohibitively costly. Therefore, palliative care clinicians need to be aware of the protean clinical manifestations of HIV-associated TB.

Table 6.2: Sensitivity of Clinical Case Definitions for the Diagnosis of Pulmonary and Extra-pulmonary Tuberculosis in HIV-infected Patients With Tuberculosis Symptoms and Negative Sputum Smears

Case Definition	Number	TB Diagnosis		Sensitivity
		Confirmed	Response to Therapy	
Pulmonary ^a	83	64	10	89%
Lymphadenitis ^b	118	102	9	94%
Serositis ^c	36	25	9	94%
Constitutional ^d	11	4	0	36%

a/ Cough > 21 days; pulmonary opacification or nodular infiltrate on chest radiograph; PCP excluded; no resolution after treatment with a broad-spectrum antibiotic (except for patients with diffuse micronodular [miliary] infiltrate on chest radiograph who should be treated for TB immediately).

b/ Significant peripheral nodes (long axis ≥ 3 cm) **plus** fever $\geq 38^{\circ}\text{C}$ OR drenching sweats for >2 weeks; visceral nodes (mediastinal or abdominal nodes seen on imaging) **plus** fever $\geq 38^{\circ}\text{C}$ on 2 occasions OR drenching sweats for >2 weeks.

c/ Pleural effusion (lymphocytic exudate); pericardial effusion (effusion on ultrasound, **plus** fever $\geq 38^{\circ}\text{C}$ on 2 occasions OR drenching sweats for >2 weeks [aspiration reserved for patients with haemodynamic compromise]); ascites (lymphocytic exudate **plus** fever $\geq 38^{\circ}\text{C}$ on 2 occasions OR drenching sweats for >2 weeks).

d/ Wasting (body mass index of <18.5 or documented weight loss of $\geq 10\%$ body weight in a month) with fever $\geq 38^{\circ}\text{C}$ on 2 occasions OR drenching sweats for >2 weeks.

Source: Adapted from, Wilson, 2004.

Patients should be screened for TB if any of the following symptoms are described:

- Marked weight loss (>5% of body weight) over the past three weeks
- Drenching night sweats for more than two weeks
- Cough for more than three weeks
- Unusual fatigue

Recommended diagnostic tests include:

Sputum tests: Send three sputum samples for AFB. *If available*, sputum induction with an ultrasonic nebuliser and hypertonic saline can improve success in obtaining sputum from frail patients with a non-productive cough.

Chest radiograph: If the sputum smears are negative, obtain a chest radiograph, which should be studied closely for areas of opacification, nodularity, miliary infiltrates, pleural effusions and mediastinal adenopathy.

If available, consider the following:

Lymph node aspiration: Aspirate accessible peripheral lymph nodes (usually cervical) and send the material for AFB smear and cytology (caseous material and granuloma formation is very suggestive of TB).

Ultrasound scan: If the radiograph is normal, obtain an ultrasound scan of the abdomen and pericardial space.

Pharmacologic Management

Treating active TB disease is important both for the benefit of the person with HIV and for the protection of the family and caregivers. Refer to national guidelines for appropriate TB treatment.

Antiretroviral therapy should not be initiated until TB has been ruled out or treated for two months.

For patients on ART, pay attention to potential interactions between TB drugs and specific antiretroviral drugs. (See Chapter 12: Integration of Palliative Care with Antiretroviral Therapy as well as Appendix 2 and Appendix 3.)

Pneumocystis Carinii Pneumonia (PCP)

Assessment

PCP presents with dyspnoea evolving over a period of days, and non-productive cough. Constitutional symptoms are less prominent than with TB, and the chest radiograph usually shows bilateral opacification without lymphadenopathy or pleural effusion. Alternate causes for dyspnoea should be considered. Pulmonary thromboembolism is usually associated with abrupt onset shortness of breath, metabolic acidosis with Kussmaul respirations due to uraemia is often secondary to dehydration, and pneumothorax can complicate PCP.

Pharmacologic management

Empiric therapy: In a resource-limited setting, high dose co-trimoxazole can be given to patients with a typical history of breathlessness; hypoxemic patients will benefit from the addition of prednisolone.

See Table 6.3 for complete treatment recommendations for PCP.

Table 6.3: Treatment for PCP

Treatment	Drug	Dose/route	Comments	Side Effects
First-line	co-trimoxazole	15/75 mg/kg/day PO or IV (in divided doses)*	Any grade of pneumonia	Rash GIT disturbance Bone marrow toxicity
Second-line	dapsone-trimethoprim	dapsone 100 mg PO daily and trimethoprim 300 mg PO	Mild to moderate PCP	Bone marrow toxicity Rash GIT disturbances Avoid in G6PD**
<i>If available, consider the following:</i>				
Second-line	pentamidine	4 mg/kg/day slow IV infusion	Severe PCP	Hypotension Hypoglycaemia Pancreatitis Cardiac arrhythmias
Third-line	clindamycin-primaquine***	clindamycin 450-600 mg PO 3 times/day and primaquine	Mild to moderate PCP	Maculopapular rash <i>C. difficile</i> diarrhoea Avoid in G6PD deficiency
Fourth-line	atovaquone	750 mg 2 times/day	Mild to moderate PCP	Rash GIT intolerance

* Typical adult dose: co-trimoxazole 80/400 mg 4 tablets 8 hourly

** G6PD: glucose-6-phosphate dehydrogenase

*** Available in South Africa on named patient basis only

Source: Wilson, 2002.

Bacterial Pneumonia

Assessment

Bacterial pneumonia presents with dyspnoea developing over one or two days with pleuritic pain and a productive cough. Severe bacterial sepsis from any site also causes other symptoms that must be managed, including breathlessness and tachypnoea, hypothermia or pyrexia, changes in the mental status (such as anxiety or stupor), tachycardia, hypotension, and oliguria.

Pharmacologic Management

Empiric therapy: Prescribe an appropriate antibiotic unless the sepsis is clearly a terminal event occurring in an otherwise moribund patient.

Intravenous access is often an issue in advanced HIV infection, but pneumonia responds well to oral treatment:

amoxicillin 500 mg PO 8 hourly

doxycycline 100 mg PO 12 hourly

may be added

For severe sepsis: Give ceftriaxone 1–2 g IM daily, mixed with 1 mL of 1% lidocaine to reduce pain at the injection site.

Hydration: If additional fluids are needed and cannot be maintained orally, use hypodermoclysis (isotonic fluids given subcutaneously using a butterfly needle).

Cardiorespiratory support: Admission to an intensive care unit for cardiorespiratory support is generally not appropriate in individuals with very advanced HIV disease who are receiving palliative care.

Dyspnoea

Assessment

Shortness of breath, or dyspnoea, is a common problem among patients with HIV/AIDS. Dyspnoea is a subjective sensation that patients describe as chest tightness, breathlessness, air hunger, inability to take a deep breath, a feeling of suffocation or smothering, or an inability to get enough air. The symptoms usually worsen with exertion and often limit the patient's activity. Dyspnoea induces feelings of anxiety, fear, panic, and fear of impending death.

The differential diagnosis of dyspnoea in AIDS patients includes pulmonary infections, pulmonary malignancies, pleural effusions, congestive heart failure, marked anaemia, and metabolic abnormalities. Malnutrition and weakness can lead to chronic respiratory muscle fatigue that also contributes to dyspnoea. Anxiety and fear can precipitate or worsen this symptom in combination with other aetiologies.

Management

Treating Reversible Causes

Relieving the discomfort of dyspnoea begins with appropriate medications such as antibiotics, diuretics, bronchodilators, or steroids (see Table 6.4).

Pulmonary oedema due to cardiomyopathy or renal failure: Treat the associated elevated jugular venous pressure with a diuretic, such as furosemide, together with fluid restriction. Large doses of furosemide (up to 500 mg daily) may be required in advanced renal failure.

Advanced pulmonary Kaposi's sarcoma (KS): Dyspnoea is often caused by extensive parenchymal lung involvement and pleural effusion, frequently associated with typical involvement of the hard palate that manifests as painless purple plaques found on careful inspection. KS is responsive to ART and/or chemotherapy, if available and if the patient is

Pleural effusions: Pleural exudates are usually due to TB, but para-pneumonia effusions, empyema, and pleural KS are also seen; transudates are usually due to cardiac failure or renal disease. *If available, consider the following:*

- Unless the cause for the pleural effusion is obvious, aspirate fluid to exclude an empyema that needs to be treated with antibiotics and drained through an intercostal tube.
- A large pneumothorax also requires intercostal drainage; smaller air collections can be removed by aspiration using a three-way tap.
- Thoracentesis may provide relief when patients have symptomatic effusions. Malignant effusions tend to re-accumulate rapidly, often within a few days, making repeated thoracenteses minimally beneficial. Thoracentesis also may contribute to protein depletion (two litres of malignant effusion may contain 80 grams of protein) and may increase loculation of fluid, which makes future pleurodesis less likely to be successful.
- Pleurodesis, and even pleuroperitoneal shunts, can reduce dyspnoea caused by large recurrent pleural effusions when the patient has an adequate life expectancy to justify the stress and discomfort associated with the procedure.

Non-Pharmacologic Symptom Management

Address anxiety and fear: Explore the patient's experience of dyspnoea and acknowledge his or her anxieties and fears. Reassure him that he will not die during an attack of dyspnoea. Breathing advice and exercises help the patient to gain a sense of control. Help the patient to adjust to the loss of physical activities and roles and adapt activities by pacing these to the patient's ability.

Rebreathing training: *If available,* advice from a physiotherapist is of value.

Air: For some dyspnoeic patients, cool temperatures and/or a fan blowing air in the face can also be helpful (see Table 6.5).

Positioning: Positioning is often critical for comfort and is usually determined by patient preferences. In some settings, people may find it helpful to lie on the side with the ‘good’ lung down to reduce ventilation-perfusion mismatch. However, when fluid or secretions are present, keeping the good lung up may facilitate drainage away from the healthier gas exchange surfaces. In any case, frequent repositioning can help limit dependent lung consolidation.

Other non-pharmacologic measures:

Symptoms of dyspnoea have been helped by a variety of techniques including relaxation techniques, massage, acupuncture, and guided imagery (see Chapter 18: Complementary Care and Chapter 15: Traditional Medicine).

Pharmacologic Symptom Management

Corticosteroids: Use corticosteroids to relieve bronchospasm and reduce symptoms associated with swelling around tumour masses or inflammatory response to infections such as PCP. With pulmonary infection, particularly PCP, cotrimoxazole is beneficial in treating the underlying process, but opioids and/or corticosteroids can effectively control discomfort, even if the patient has decided to forego the use of further life-prolonging antibiotics.

Opioids: Opioids can significantly reduce dyspnoea that persists in spite of treating the underlying disease or in end-stage disease.

Oral: In opioid-naïve patients, give 2.5–5 mg of oral morphine solution 4 hourly and titrate the dose upward to 10–20 mg if needed. If symptoms persist, add or increase anxiolytic medications such as lorazepam before titrating opioids much higher.

Rectal: Use morphine tablets or suppositories rectally at oral doses.

Subcutaneous: Give injectible morphine SC at approximately one third the oral dose (starting with 1–2 mg).

Note: Concerns about respiratory depression have sometimes limited the use of opioids, even in the presence of significant symptoms. As discussed in Chapter 4: Pain Management, current evidence indicates that as long as opioids are carefully titrated against symptoms of pain or dyspnoea, respiratory depression does not occur.

Benzodiazepines: Because severe dyspnoea is almost always associated with an understandable sense of anxiety, and at times panic, it can be helpful to initiate treatment with benzodiazepines along with the morphine. If symptoms persist or occur regularly, discomfort is best controlled by giving the medications at regular intervals around the clock.

lorazepam: small doses (usually beginning with 0.5 mg) PO or sublingually, 6–8 hourly
diazepam 5–10 mg PO stat and 2–5 mg as needed

If available, consider oxygen: Oxygen may be therapeutic if hypoxaemia is stimulating increased respiratory effort and contributing to fatigue. For normoxic patients, low flow oxygen (1–3 L/minute) may provide a beneficial sensation of air flowing through the upper respiratory tract and help reduce anxiety or fear associated with the feeling of being unable to get enough air.

Table 6.4: Treating Potentially Reversible Causes of Dyspnoea

Cause of Dyspnoea	Physical Signs	Treatment Options	Route
Bronchospasm	Wheezing Decreased air movement Nonproductive cough	Bronchodilators – adrenergic eg salbutamol Corticosteroids	Inhaled, PO Inhaled, PO, SC,
Congestive heart failure	Inspiratory rales Oedema Elevated JVP Orthopnoea	Diuretics Cardiac medications Morphine <i>If available, oxygen</i>	PO, IV, SC As appropriate PO, SC, IV, PR Inhaled
Bacterial pneumonia	Productive cough with changing sputum Localized rales or consolidation Fever, chills	Antibiotics Expectorants Cautious hydration Morphine for pain/dyspnoea <i>If available, oxygen</i>	PO, IV PO PO, IV, SC PO, SC, PR Inhaled
<i>Pneumocystis carinii</i>	Nonproductive cough Hypoxemia, pain, dyspnoea	Antibiotics Corticosteroids	PO, IV PO, SC,
Tuberculosis	Fever, Cough	Antibacterial drugs	PO, IV
Pleural effusions	Dullness and decreased air movement in lower lung field with radiographic or ultrasound confirmation	Thoracentesis <i>If available, consider:</i> Pleurodesis (early) if malignant etiology Pleuroperitoneal shunt	
Extrinsic airway compression	Stridor – especially inspiratory Severe shortness of breath Risk factors, such as neck or mediastinal malignancy	Corticosteroids Benzodiazepines, Opioids, or Barbiturates for anxiety or sedation (see text) <i>If available, consider:</i> External radiation Airway stent	PO, SC, PO, SC, PR PO, SC, PR PO, IV, PR
Intrinsic airway obstruction	Worsening dyspnoea Distal absent breath sounds or localized wheezing Risk factors, such as scarring or bronchogenic cancer	<i>If available, consider:</i> Airway stent Bronchoscopic laser treatment Internal radioisotope application Airway stent	
Copious airway secretions	Diffuse rhonchi, especially over upper airways Ineffective or absent cough	Anticholinergic drugs Antihistamines Dehydration	PO, SC, PO
Pulmonary embolism	Sudden onset of dyspnoea Risk factors for venous thrombosis	Anticoagulation – heparin or <i>if available, low molecular weight heparin</i> Warfarin	IV, SC SC PO

Source: Adapted from Beehler, 2003. Table 6.5: Treating Dyspnoea Symptoms.

Table 6.5: Treating Dyspnoea Symptoms

Treatment	Indication	Dose	Frequency	Route
Fan or cool air toward face	Dyspnoea with or without hypoxemia	As tolerated	PRN or continuously	Topical
Morphine* (oral)	Dyspnoea	If opioid naïve, 3–5 mg, titrate up to 20 mg as needed If on opioids for pain, one sixth to one tenth of daily dose	4–6 hourly and/or PRN 2 hourly PO, SL; 12 hourly PR PRN 2 hourly	PO, SL, PR
Morphine* (parenteral)	Dyspnoea	Parenteral dose is 1/3 of oral or rectal dose. If opioid naïve, 1–2 mg, titrate up as needed If on opioids for pain, one sixth to one tenth of daily dose	4–6 hourly and/or PRN 2 hourly	SC, IV
Corticosteroids	Bronchospasm, COPD, PCP, Malignancy	Prednisone 20–60 mg Dexamthasone 4–16 mg	Daily Once daily or divided doses	PO PO, SC, IV
Bronchodilators Adrenergic Anticholinergic	Bronchospasm Airway obstruction COPD	Metered dose inhaler eg salbutamol or nebulizer or oral salbutamol	2–12 hrs and/or PRN 4 hourly	Inhaled aerosol, PO
If available:				
Oxygen	Hypoxemia	2–5 liters/min	PRN or continuously	Inhaled
Lorazepam**	Anxiety	0.5–1 mg Titrate up to 2 mg if needed	4–8 hrs or PRN 4 hourly	PO, IV, SI

*May substitute equianalgesic doses of other opioids (see text)

**May substitute equivalent doses of other benzodiazepines

Source: Adapted from Beehler, 2003.

Cough

Assessment

Cough is a common symptom in AIDS. Coughing may result from pulmonary infection with secretion production, chronic bronchitis, bronchospasm, tumours in the airways, restrictive lung diseases, aspiration, post-nasal drip, drugs such as the angiotensin-converting enzyme inhibitors, unrecognized oesophageal reflux with aspiration, or inhaled irritants.

When cough is nonproductive, bronchospasm and reflux should be included in the differential diagnoses. A history of COPD, smoking, or asthma is helpful in making the diagnosis of bronchospasm, but it can occur with no relevant history. Physical signs include a prolonged expiratory phase of respiration, use of accessory muscles, decreased air movement, and wheezing which may be elicited only on forced expiration.

Cough is a crucial clue to TB, but can also be caused by post-nasal drip secondary to chronic sinusitis, bronchiectasis, and esophageal reflux. Patients should be asked about the presence of mucous in the pharynx suggesting post-nasal drip.

Management

Treating Reversible Causes

Respiratory infections: Treat infections using appropriate anti-infective agents.

Sinusitis or bronchiectasis: Treat chronic sinusitis or bronchiectasis with a course of amoxicillin and metronidazole. *If available*, give with inhaled aqueous nasal beclomethasone spray, *if available*.

Bronchospasm: Cough from bronchospasm often responds to bronchodilators including salbutamol with either inhaled or systemic corticosteroids. In patients who are moving little air with each breath, systemic corticosteroids and frequent nebulization of bronchodilators may help. If symptoms improve and tidal volumes increase, hand-held metered dose inhalers may be effective.

Esophageal reflux: *If available*, a trial of H₂ receptor antagonists or proton pump inhibitors may be appropriate.

Non-Pharmacologic Symptom Management

Spice drinks help to relieve some of the many unpleasant symptoms experienced by patients with HIV/AIDS. Cinnamon, ginger, and honey are used to soothe the throat and relieve coughing. To prepare the drinks:

Cinnamon: Add one-quarter teaspoon of cinnamon powder to a cup of clean boiled water (about 150–200 mL). Add sugar or honey to taste. The drink is ready for use.

Ginger: Add one teaspoon of crushed ginger roots or powder to a cup of clean boiling water. Cover and leave for 5–10 minutes. Add sugar or honey to taste and the drink is ready. Drink as desired.

Honey, ginger, and cinnamon: Add one teaspoon of ginger powder or cinnamon powder to 150 mL honey and stir. Take 5–10 mL of the mixture 4-hourly for 5 days.

Pharmacologic Symptom Management

There are several drugs for suppressing cough to prevent exhaustion or control an irritating, nonproductive cough (see Table 6.6), including:

Opioids can be used to suppress cough. Increase doses, as necessary, by carefully titrating effectiveness in cough suppression against side effects.

Codeine and, *if available*, pholcodeine, are first-line antitussives.

Start anti-tussive doses of codeine at 10–20 mg 4 hourly. Upward titration is frequently needed. Total daily doses higher than 240 mg have dose limiting side effects; convert to the equivalent oral morphine dose before titrating higher.

Equivalent antitussive doses of pholcodeine are 2/3 of the codeine dose.

Morphine

Oral: Begin with low doses of oral morphine (2–5 mg) every four hours).

Parenteral: If parenteral doses are necessary, give approximately one-third of the oral morphine dose SC at the same dose frequency.

If available, consider the following:

Nebulized lidocaine can sometimes provide rapid relief for an irritating, nonproductive cough.

Nebulize 3 mL 2% lidocaine solution (without epinephrine) 3–4 times daily as needed.

Note: Because of the risk of decreasing the sensitivity of the gag reflex with this anaesthetic agent, advise patients to avoid eating or drinking after treatments for at least an hour, although sips of water are usually tolerated within minutes. Use lidocaine cautiously in patients with asthma, as there is some risk of inducing bronchospasm.

Dextromethorphan is related to opioids and has a central antitussive effect with little sedative effect.

Table 6.6: Cough Suppression

Medication	Initial Dose	Frequency	Route
Codeine	10–20 mg	4–6 hourly	PO
Morphine (oral)	1–3 mg	4 hourly PO 12 hourly PR	PO, PR
Morphine (parenteral)	1 mg	4 hourly	SC
Lidocaine (1-2% soln)	3 mL	4–6 hourly	Inhaled aerosol

Source: Adapted from Beehler, 2003.

Pulmonary Secretions

Assessment

Secretions associated with pulmonary infections or chronic bronchitis can produce troubling symptoms for patients, particularly as their increasing weakness and fatigue make coughing exhausting and less effective. For patients who are still able to cough effectively, interventions should be directed at helping to reduce the exertion required to bring up secretions.

During the terminal stages of life, patients may be more comfortable if bothersome secretions in the trachea, larynx, and pharynx are reduced. Even if patients are not alert enough to suffer distress caused by airway secretions, the airway sounds associated with dying ('death rattle') may be profoundly disturbing to family, friends, and caregivers. Management includes pharmacological and non-pharmacological measures, as well as explanation to the relatives.

Management

Treating Reversible Causes

Treating respiratory infections can reduce the secretions.

Non-Pharmacologic Symptom Management

Postural drainage: Chest physiotherapy appropriate to the patient's condition is valuable in managing respiratory secretions. This usually involves positioning the patient to encourage postural drainage and 'clapping' on the back to loosen secretions. Teach caregivers this technique and encourage them to make a special effort to avoid flat or supine positions that allow pooling of secretions in the pharynx or larynx, and to reposition the patient frequently.

Rehydration: Dehydration can increase sputum viscosity and exacerbate difficulties with expectoration. Systemic hydration—orally, subcutaneously (by hypodermoclysis), or intravenously—is the most effective solution to this problem.

Pharmacologic Symptom Management

Use an antisecretory drug to reduce production of respiratory secretions:

hyoscine butylbromide 20 mg stat and
20–40 mg 8 hourly PO

or

hyoscine butylbromide 20 mg every 24 hours
by subcutaneous infusion; titrate up to 160
mg over 24 hours

If available, consider humidified oxygen. Inhaled oxygen is a helpful comfort measure to reduce symptoms of upper airway drying when oxygen is being administered. But there is little effective hydration and thinning of pulmonary secretions with airway humidification or use of saline aerosols.

Non-Cardiac Chest Pain

Assessment

The pleural surfaces are supplied with an extensive network of sensory nerves and often are exquisitely sensitive to inflammatory or invasive disorders. Deep breathing or coughing usually causes sharp and aggravated pleural pain. Airway inflammation can cause discomfort in the anterior retrosternal chest, and it is thought that pulmonary hypertension also can cause a nonspecific discomfort anteriorly over the hilar regions. Sharp or aching chest wall pain can be caused by bone metastases, rib fractures, or muscle injuries (occasionally from coughing). Pain from the diaphragmatic surface is referred to the shoulder tip.

Management

Treating Reversible Causes

Reversible causes of chest pain may include respiratory infection such as PCP and pleural effusion.

Pharmacologic Symptom Management

Most pain in the lungs and chest wall responds well to pain medications given according to the WHO guidelines for managing pain (see Chapter 4: Pain Management). Start with anti-inflammatory drugs alone, such as aspirin, ibuprofen, or diclofenac. If stronger drugs are needed, use weak opioid plus paracetamol preparations. If higher doses of opioids are needed, give routine doses of morphine and titrate upward as needed while continuing standard doses of anti-inflammatory drugs around the clock.

Hiccup

Assessment

Persistent hiccup is not unusual in terminally ill AIDS patients, and can be a distracting and distressing symptom. The interruption of normal activity in patients with intractable hiccup can cause depression, sleep deprivation, decreased oral intake, and weight loss. Suspected causes of hiccups include phrenic nerve or diaphragmatic irritation by tumour, gastric distension, gastro-oesophageal reflux, and severe oesophageal candidiasis. Drugs such as benzodiazepines, corticosteroids, and barbiturates have been reported to precipitate hiccup.

Management

Treating Reversible Causes

Reducing gastric distention: Several options are available.

Give metoclopramide 5–20 mg PO, PR, or SC 3–4 times/day.

Give dimethicone, an antacid.

As a last resort, insert a nasogastric tube transiently to decompress the stomach.

Treating gastric reflux: Give an H₂ receptor antagonist such as ranitidine, or, if reflux persists and availability allows, a proton pump inhibitor such as omeprazole.

Treating oesophageal candidiasis: Give fluconazole (see Chapter 7: Gastrointestinal Symptoms).

Non-Pharmacologic Symptom Management

Pharyngeal stimulation: A number of interventions activate a neural ‘gating’ or blocking mechanism including: drinking from the ‘wrong side’ of a cup, which requires hyperflexion of the neck; two heaped spoonfuls of sugar, two glasses of liqueur, or a glass of cold fluid rapidly ingested; massage of the junction between soft and hard palate with a cotton bud; or nebulised saline over five minutes.

Elevation of pCO₂: The hiccup reflex in the brain stem can be inhibited by rebreathing from a paper bag or breath-holding, which raises the pCO₂ level.

Pharmacologic Symptom Management

Pharmacological treatment is aimed at muscle relaxation or central suppression of the hiccup reflex. See Table 6.7 for the most commonly used treatments.

Table 6.7: Treatment of Hiccup

Medication	Dose	Frequency	Route
Metoclopramide	5–20 mg	3–4 times/day	PO, PR, SC
Chlorpromazine	10–25 mg	Usually at night as doses required are sedating, PRN or routinely for prophylaxis	PO, PR
Haloperidol	5–10 mg	Up to 8 hours	PO, SC
Valproic acid	200 mg	8 hourly	PO,
Baclofen	5–20 mg	8 hours	PO
Nifedipine	10 mg sr or 10 mg nr	2 times daily up to 4 times daily	PO or SL
Midazolam	3–10 mg	PRN as a 1-time bolus	SC
Midazolam	1–5 mg/hr	Continuous infusion after bolus if necessary	SC

Source: Adapted from Beehler, 2003.

Haemoptysis

Assessment

Coughing up blood or bloody sputum can be a frightening experience, but usually is not life-threatening. It may at times be difficult to determine whether or not the source of bleeding is in the lungs. Nasal, pharyngeal, and upper oesophageal blood may also ooze into the upper airways and be coughed up.

The most common pulmonary causes of haemoptysis are infections, such as bronchitis or tuberculosis, and neoplasms. In most cases, blood in the sputum can be managed by treating the underlying infection or suppressing the cough to reduce the irritation and shear forces within the airways caused by vigorous coughing.

Management

Treating Reversible Causes

If bleeding is associated with low platelets or a coagulopathy, it may be possible to reduce bleeding in the lungs by treating the hematological abnormalities. But there may be times at the end of life when the underlying disorders are not reversed easily, or when treatment would only serve to prolong the dying process. In these situations, the most important therapy may be to suppress cough and prepare the patient and family for the results of persistent bleeding.

Managing Mild or Moderate Haemoptysis

An expectorant, and control of bronchospasm if present, may be helpful.

Coughing can usually be suppressed with opioids (see Table 6.6).

Start with codeine or dihydrocodeine
10 mg 4 hourly.

Titrate the dose upward when appropriate
(max total daily dose 240 mg).

Move up to oral morphine 3–5 mg 4 hourly,
if needed.

If parenteral doses are necessary,
approximately one-third of the oral dose of
morphine can be given subcutaneously.

If available, an oral haemostatic agent such as tranexamic acid may be effective in controlling mild or moderate haemoptysis and often a single dose (250–500 mg) is effective.

Managing Severe or Massive Haemoptysis

Malignancies and severe infections rarely erode from air spaces into large vessels, but the result can be devastating when this occurs. Massive bleeding can impair respiratory function, obstruct airways, and exsanguinate the patient.

Massive haemoptysis is a palliative care emergency but does not warrant conventional life-saving interventions. In most terminally ill patients, the most appropriate response is to focus on relieving suffering. Bronchial artery embolization or bronchoscopic interventions are possible for severe haemoptysis, but these approaches probably have limited value in terminally ill patients.

There may have been warning signs indicating the possibility of a large bleed, and professional and family carers should discuss the management of this event. In patients who have a strong possibility of significant hemorrhage, it is helpful to keep dark towels at the bedside to help lessen the visual trauma of large amounts of blood for the patient and family members.

Benzodiazepines and/or opioids: Symptoms may require rapid administration of these drugs. In situations where injectible drugs are not available, give:

increased dose of morphine solution (20–40 mg)

and

lorazepam 2–4 mg SL or diazepam 10 mg PO or PR

If available, consider the following:

Give midazolam IV or SC starting with 2–4 mg.

Titrate quickly upward to 10–15 mg to reduce the patient's awareness and fear, not necessarily to render the patient unconscious.

Larger doses of midazolam may be needed if blood clots appear to be obstructing the airway and leading to impending asphyxiation.

In these settings, it may be helpful to add parenteral morphine (5–10 mg IV or SC).

Airway Obstruction

Assessment

Patients who have airway obstruction from endobronchial masses or extrinsic compression often experience worsening dyspnoea and increasing anxiety. These symptoms may be accompanied by signs of stridor, decreased intrathoracic air movement, wheezing, or cyanosis.

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Reducing swelling: Corticosteroids may help reduce swelling and inflammation at any time in the progression of the disease.

Start with dexamethasone at high doses (12–16 mg).

Titrate downward to a maintenance dose of 1–2 mg daily.

If available, consider the following:

Reducing obstruction: If the disease is identified early enough, interventions including external radiation therapy, bronchoscopic laser treatment, airway stent placement, or internal radioisotope application may provide at least temporary symptomatic relief.

Non-Pharmacologic Symptom Management

There may be no effective therapeutic options when airway compromise is advanced. Treatment should then focus on controlling the symptoms of fear, anxiety, and dyspnoea.

Pharmacological Symptom Management

Symptoms of severe respiratory distress and/or panic can be anticipated as airway obstruction progresses. At this point it may be necessary to use continuous sedation to prevent suffering. It is essential to discuss this option carefully in advance with the patient and family, since the patient is likely to die without awakening.

Benzodiazepines and opioids: Address symptoms with increasing doses of benzodiazepines such as lorazepam and opioids.

Start with lorazepam 1–3 mg PO 4–6 hourly and

morphine 5–15 mg PO (or if available, 2–5 mg parenterally) 2–4 hourly.

Titrate doses upward as needed.

If available, consider the following: If lorazepam is insufficient to sedate a frightened, anxious patient who is struggling to breathe, midazolam can be carefully titrated to sedation with a loading dose of 3–15 mg IV or SC, usually given at a rate

not greater than 1–2 mg per minute. Sedation can be maintained with a continuous infusion of midazolam IV or SC, or routine doses of longer-acting benzodiazepines. Morphine can be added SC to help suppress the sensation of severe dyspnoea.

Barbiturates/phenobarbital: It is often helpful to add barbiturates to maintain sedation and reduce required doses of benzodiazepines. Phentobarbital 100–200 mg can be administered PO, PR, SC, or IV every 3–4 hours as needed. Phenobarbital doses of 60–120 mg can be given by similar routes every 6–12 hours.

Doses of drugs need to be adjusted frequently and the patient may require extraordinarily high doses of medications (5–15 mg/hour of midazolam) to maintain comfort as the airway obstruction progresses. However, with careful attention to the details of dosing, continuous sedation and a peaceful death are possible.

References

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