SYMPTOM RELIEF IN TERMINAL ILLNESS

World Health Organization
Geneva
Symptom relief in terminal illness

World Health Organization
Geneva
1998
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Preface

In 1984 WHO achieved the first international consensus on the use of drugs for cancer pain relief. The concept of the three-step analgesic ladder provided a simple, affordable, and scientifically sound approach that is applicable to the care of all terminally ill patients. The first edition of *Cancer pain relief* sold more than half a million copies in over 20 different languages; it has recently been published in its second (fully revised) edition and extended with a guide to opioid availability.\(^1\) More than 60 countries now have national policies on cancer pain management. Policies for rational implementation of cancer pain relief and palliative care, with concrete recommendations to governments and nongovernmental organizations, have been established.\(^2\)

Symptom relief in terminal illness has evolved from the report of the WHO Expert Committee on Cancer Pain Relief and Palliative Care,\(^2\) in recognition of the need for complementary guidelines on the management of symptoms other than pain. Health workers may apply these guidelines not only to patients with cancer, but also to those with AIDS and other chronic debilitating diseases.

A companion volume is currently in preparation, which will address the special considerations that apply to children with cancer.

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Acknowledgements

The World Health Organization wishes to thank Dr Robert Twycross and Dr Neil MacDonald for their extensive contributions to the contents of this manual. The Organization also acknowledges with gratitude the help provided by Professor Vittorio Ventafridda, Dr Alberto Sbanotto, and Ms Ruth Burnhill.
Introduction

Worldwide, tens of millions of people die every year as a result of terminal illnesses such as cancer and AIDS. Most of these deaths are in developing countries.

Many people with terminal illness suffer unnecessarily because they do not receive effective symptomatic treatment.

Symptom management requires an understanding of underlying causes. Symptoms in terminal illness are caused by the disease itself, either directly (e.g. intestinal obstruction due to cancer) or indirectly (e.g. decubitus ulcers due to debility); by the treatments given (e.g. adverse effects of anticancer drugs); or by a coexistent disorder (e.g. arthritis) that is unrelated to the main disease.

Symptom management is often empirical (i.e. based on experience and observation) and evolves constantly in response to new research and clinical trials. There is already a large body of knowledge that could transform the quality of life of terminally ill patients worldwide – the challenge is to apply that knowledge in everyday clinical practice.
General principles

Evaluation of the patient

Careful evaluation is the essential basis for symptom management and is the responsibility of both doctor and nurse. The evaluation should include not only physical problems but also psychological, social, and spiritual aspects. This approach helps to build a picture of the disease itself, of the patient as a whole, and, in particular, of the effects of the illness on the patient's quality of life.

The priorities of evaluation are:

- to identify the patient's main symptoms and concerns;
- to listen carefully to what the patient is saying;
- to believe what the patient is saying.

A detailed history should be taken, which should include specific questions about the main symptom(s) (see Box A.1). Supplementary

Box A.1 Routine questions to evaluate the nature and severity of a symptom

- How does the symptom affect the patient's life?
- How does the symptom affect the patient's physical function and mobility?
- What makes the symptom better? Any particular position, activity, food, or medicine?
- What makes the symptom worse?
- Is the symptom worse at any particular time of day or night?
information from the patient's relatives or caregivers is often invaluable.

The information obtained usually indicates one or more causes for the symptom(s) and provides a basis for effective treatment.

**Organization and communication**

Symptom relief requires *organization* and *communication*.

**Organization**

*Teamwork*

As in other areas of medical practice, palliative care requires co-ordination and cooperation among health workers, patient, and family.

*Planning*

Effective palliative care is based on planning and, as far as possible, anticipation of crisis. For example, regular examination of the mouth and skin identifies problems at an early, often asymptomatic, stage. Some problems are more likely to be treatable if detected early.

Each patient needs an individual treatment plan (see page 5), which should be understood by all concerned: health workers, patient, and family.

*Preparation*

Crises can often be prevented by careful planning. Health workers should make sure that the family is aware in advance of the problems that could occur and of how to deal with them.

**Communication**

*Explanation*

Patients and family should be informed about the likely cause(s) of the symptom(s) and what treatment options are available. Such information should be given clearly and concisely in words that are easy to understand.
Education
Health workers are trained mainly within hospitals and therefore tend to learn a hospital model of care. Palliative care, however, is often based in the home. Treatment plans should be adaptable for home use and must include education of patients and their families.

Psychological aspects
Psychological distress tends to make symptoms worse. For example, severe dyspnoea almost always causes anxiety, which in turn may worsen dyspnoea. Treatment must address both physical and psychological aspects of symptoms.

Principles of treatment

Relief of symptoms
Symptoms such as pain can often be relieved completely; others, such as dyspnoea, may be only partly relievable. When complete relief of symptoms is not possible, the aim of treatment is to help the patient move from a feeling of helplessness to a feeling of supremacy over the symptom. Practical advice and psychological support are crucial to achieve this objective.

Maintenance of independence
Patients need help and support to maintain independence for as long as possible. Physical limitations may be reduced by treatment and mobility aids. Disease-specific treatment (e.g. radiotherapy) may also be helpful, even if the illness is incurable. Such treatment should usually be given in combination with symptomatic treatment.

The treatment plan
A successful treatment plan requires accurate evaluation of the patient as described above and should consider non-drug methods and/or drug therapy. The two approaches are often used in combination (multimodality treatment).
Non-drug methods
Most symptoms can be improved by non-drug measures:

- explanation and reassurance;
- avoidance of factors that make the symptom worse and promotion of factors that make the symptom better;
- correction of biochemical abnormalities (e.g. hypercalcaemia, hyponatraemia);
- treatment of concurrent disease (e.g. chest or urinary tract infections, cardiac failure);
- identification and treatment of psychosocial problems and disorders (e.g. anxiety, depression, delirium);
- specific anticancer treatment (e.g. radiotherapy), which may be used to relieve symptoms even in patients with incurable disease.

Drug therapy
Drugs are the mainstay of management for many symptoms. Four principles underlie their use in terminal illness:

"By mouth"
Drugs should be given by mouth where possible.

"By the clock"
Drugs should be given at appropriate regular intervals to ensure continued relief of persistent symptoms. The timing of doses should take into account the pharmacology of the drug(s) and the metabolic state (functional state of liver, kidneys, etc.) of the patient.

"For the individual"
Drug doses should be adjusted to achieve maximum benefit with minimum adverse effects. The doses recommended in this book are for a "standard" adult of 60 kg body weight.
“Keep it simple”
Treatment should be as straightforward as possible to ensure that
the patient takes the right dose at the right time.

Before a new drug is prescribed, the patient’s other medication
should be reviewed to exclude the possibility of a drug interaction.

The patient’s medication should also be reviewed if symptoms de-
velop or worsen during treatment. Such symptoms may be caused or
exacerbated by a drug or by drug interaction, in which case the
relevant drug(s) may have to be changed or discontinued.
Anorexia and cachexia are common features of advanced cancer, generally occurring together as the “anorexia–cachexia syndrome”. Anorexia and cachexia are also common in patients with AIDS.

The anorexia–cachexia syndrome is progressive and results in severe asthenia (see Chapter 3) and, eventually, death. It is particularly common and severe in patients with cancer of the pancreas, lung, or colon.

In patients with anorexia–cachexia syndrome, there are disturbances in carbohydrate, fat, and protein metabolism. Endocrine dysfunction and anaemia are often present also.

Causes

Anorexia (see Box 1.1)

Some causes of anorexia are reversible, but it is important to recognize that progressive anorexia is also a natural part of dying.

Delayed gastric emptying is common in advanced cancer and is often associated with early satiety and nausea. (Early satiety should be distinguished from true anorexia: patients with early satiety look forward to eating but feel full after a few mouthfuls.) Other causes of early satiety include small stomach size (e.g. after partial gastrectomy) and pressure on the stomach (e.g. as a result of gross hepatomegaly and/or ascites).
ANOREXIA AND CACHEXIA

Box 1.1 Causes of anorexia

*Situational*
- malodour of food during cooking
- too much food
- unpalatable food
- poorly fitting dentures

*Illness-related*
- nausea
- delayed gastric emptying
- sore mouth/throat
- sepsis
- pain
- fatigue
- dehydration
- constipation
- biochemical:
  - hypercalcaemia
  - hyponatraemia
- organ failure:
  - renal failure
  - liver failure

*Treatment-related*
- drugs
- radiotherapy
- chemotherapy

*Other*
- anxiety
- depression

Cachexia (see Box 1.2)
The severity of muscle wasting and weight loss in cachexia associated with terminal illness is much greater than would be expected from reduced food intake alone. Furthermore, the cachexia is not reversed by an increase in food intake.
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Box 1.2 Causes of cachexia

Illness-related
vomiting
diarrhoea
malabsorption
reduced food intake
loss of body protein:
    haemorrhage
    ulceration

Cancer-related
increased metabolic rate
abnormal metabolism
nitrogen trap
tumour products (e.g. cachectin)

Treatment-related
major surgery
intensive radiotherapy
intensive chemotherapy

Other
starvation
diabetes mellitus

The pattern of tissue loss is different from that of simple starvation (where muscle protein is preserved until fat stores are exhausted). Cachexia in terminal illness appears to be related to an inability to retain muscle protein. Anorexia exacerbates cachexia, but is not the main cause.

Evaluation

As with all symptoms, the first aim of evaluation is to identify the underlying cause. Many patients have irreversible anorexia and/or cachexia related directly to the underlying disease.

Several causes may be present in the same patient. Even if only one of these is reversible, the patient is likely to benefit. In some patients, cachexia contributes to dyspnoea (because of weakness of respi-
ratory muscles) and pain (because of reduced fatty cushioning of underlying bone).

Treatment

Non-drug measures

Food to enjoy
Anorexia is distressing to both patient and family — shared meals are important in all cultures. Relatives and caregivers often react by putting constant pressure on the patient to eat more. However, such “forced feeding” will not help the patient; it will only cause further distress.

It is far better to do everything possible to make mealtimes an enjoyable experience for the patient.

Food selection

- **Choice.** The patient should be asked what he or she would like to eat. Individual meals should be prepared if the patient’s usual diet is different from the hospital meals, and/or the family may be encouraged to bring in special foods that the patient enjoys.

- **Flavour.** Spices and flavourings are useful if the patient has a reduced sense of taste.

- **Preparation.** Patients often dislike bitter flavours. Red meat may be more palatable if served cold or marinated before cooking. Where acceptable, a small amount of alcohol may be added during cooking to reduce bitterness. Fish, white meat, or cheese may be given instead of red meat.

- **Nutrition.** In general, caregivers should not be too concerned about the nutritional value of meals. Enjoyment of food is more important.

Food presentation

- **Temperature.** Food should be served at the right temperature — food that is meant to be eaten hot should be served hot, not lukewarm.
SYMPTOM RELIEF IN TERMINAL ILLNESS

- **Attractiveness.** Food should be attractively presented, with a variety of colours and textures.

- **Size of portion.** Food should be served in small portions on small plates – patients with anorexia are intimidated, and sometimes nauseated, by the sight of large amounts of food.

- **Courses.** Only one course should be offered at a time – this is less daunting to the patient and ensures that food does not get cold.

- **Alcohol.** An alcoholic drink may be offered before and/or with meals if this is the patient’s usual custom.

**When to serve meals**

- **Small and often.** A small meal or snack every 2 or 3 hours may be easier to eat than larger meals at conventional mealtimes.

- **Time of day.** Patients often have more appetite in the morning, when they are physically rested.

- **Eating together.** If possible, the patient should eat with others – appetite is usually better when meals are eaten in company.

**Physical measures**

- **Position.** The patient will usually find it easier to eat sitting in a chair; where this is not possible, he or she should be helped to sit up in bed. Patients with dysphagia may require careful positioning of the head and assistance with eating.

- **Physical aids.** Patients with neuromuscular disorders may need large-handled spoons and forks, and non-spill cups.

**Drug therapy**

**Corticosteroids**
Corticosteroids improve appetite and energy in more than one-third of patients. However, their effect wears off after 3–4 weeks and they do not reverse the metabolic basis of anorexia–cachexia. Also, they
may have adverse side-effects (e.g. oral candidiasis, ankle oedema, anxiety, and insomnia).

Examples include dexamethasone (2–4 mg by mouth, once daily) and prednisolone (15–30 mg by mouth, once daily). Treatment should be stopped if there is no definite benefit after 7 days.

Progestogens
Progestogens are the first drugs to have a proven impact on anorexia–cachexia syndrome, but they are too expensive for general use. They must be administered in high doses (e.g. megestrol 160–800 mg per day). Progestogens are generally well tolerated but often cause fluid retention.

Prokinetic drugs
In patients with early satiety, a prokinetic drug such as metoclopramide may be helpful.

Artificial feeding
The term “artificial feeding” includes intravenous feeding and enteral feeding (feeding into the gut):

- Intravenous feeding is contraindicated in terminally ill patients. It does not improve weight gain, nor does it prolong life.

- Enteral feeding (nasogastric tube, gastrostomy, or jejunostomy) has a very limited place in terminal illness. It should be used only in patients who would clearly benefit.

Artificial feeding should not be used in moribund patients. At the end of life, it is normal for the appetite to decrease progressively, and eventually for the patient to want no further food. This needs to be explained to relatives and caregivers, who will need help to overcome their natural but inappropriate feelings of “feeding is caring”.
2. Anxiety

All patients with terminal illness become worried, anxious, or frightened at times. Such feelings may be recurrent and are often severe and persistent.

 Causes (see Box 2.1)

Anxiety is a normal reaction to the physical effects of the illness and its potential implications for the future, but some patients have a severe and prolonged reaction. The recognition that death is approaching may also cause feelings of regret, missed opportunities, and guilt, as well as fear of suffering and of what happens after death.

Patients are often afraid of hospitals and doctors, of investigations and test results, and of treatments and the effects of treatment.

Uncontrolled physical symptoms – especially pain, dyspnoea, and nausea – are important and often underestimated causes of anxiety.

Evaluation

Anxiety is not necessarily obvious. Patients may not express their concerns openly until they have developed a trusting relationship with a nurse or doctor.

Masked anxiety may be expressed psychologically and/or physically:

- *psychological features*:
  - irritability
  - insomnia
  - inability to concentrate
  - constant need for reassurance;
ANXIETY

- **physical features:**
  - palpitations
  - tremor
  - sweating
  - hyperventilation (often expressed as dizziness)
  - loss of appetite
  - nausea.

Box 2.1 **Causes of anxiety**

*Situational*
fears relating to illness/treatment
fears relating to imminent death
thoughts about the past/future
worries about family/finances
incomplete or conflicting information
  from health workers or family
loss of independence

*Illness-related*
pain
dyspnoea
nausea
weakness

*Treatment-related*
drugs:
  - neuroleptics
  - stimulants
  - corticosteroids
drug withdrawal:
  - alcohol
  - benzodiazepines

*Psychiatric*
depression
delirium
paranoia
Patients who are anxious may be depressed as well. Anxiety—depression is important to recognize because it usually responds well to antidepressant treatment, whereas treatment with benzodiazepines may be ineffective (see page 51).

Treatment

Non-drug measures

“A problem shared is a problem halved”

Patients must be given the opportunity to discuss their anxieties. One way of doing this is to routinely ask questions such as “How are you feeling today?” and “How have you been coping since we last met?”.

Detailed information about the patient’s fears and anxieties usually requires the development of a relationship based on trust and empathy (i.e. the ability to imagine how another person may be feeling).

The patient’s privacy and dignity should always be respected. Discussions should not be carried out within the hearing of others, and personal information should be treated as confidential between the patient and the caring team.

Openness between the patient and family should be encouraged. This is often difficult but can be helped by a health worker with good communication skills acting as an intermediary and facilitator.

Spiritual concerns such as fear of death and feelings of guilt are often difficult to deal with and may require the help of a trained counsellor.

Some forms of anxiety may respond to psychotherapy (e.g. cognitive, behavioural, supportive, or psychodynamic therapy).

Clear information

Fear of the unknown exacerbates anxiety. Terminally ill patients require clear information at every stage of their illness. All important issues and decisions should be discussed with the patient.

A feeling of loss of control over everyday events also increases anxiety. Patients need clear information to help them make decisions and to reduce uncertainties. They should be encouraged to con-
tribute to treatment plans and be given regular opportunities to make choices about everyday living (e.g. meals, clothes, etc.)

Optimum health care
Patients with anxiety associated with severe physical symptoms (particularly pain or dyspnoea) require relief from physical discomfort above all else.

Most importantly, doctors and other health workers must maintain a positive, friendly, professional approach to their work, regardless of personal problems and pressures. Patients immediately lose confidence and become anxious if a health worker appears to lack commitment or competence.

Drug therapy
Drugs may relieve, but do not cure, anxiety. They should be used in combination with the measures described above. The doses used are often smaller than those necessary in physically healthy patients.

Antidepressants
In patients with anxiety-depression, an antidepressant is the drug of choice (see page 50).

Benzodiazepines
Benzodiazepines are widely used in the treatment of anxiety. They can be classified according to their duration of action:

- short-acting (plasma half-life less than 5 hours);
- medium-acting (plasma half-life 5–24 hours);
- long-acting (plasma half-life more than 24 hours).

Short-acting benzodiazepines (e.g. triazolam, midazolam) are not usually prescribed for anxiety. A medium-acting or long-acting benzodiazepine should be used in most cases.

Medium-acting benzodiazepines
Medium-acting benzodiazepines include lorazepam, temazepam, oxazepam, and flunitrazepam. Typical doses for control of daytime anxiety are lorazepam 1–2 mg every 8–12 hours by mouth,
or temazepam 10 mg every 8–12 hours by mouth. Temazepam (10–60 mg) is a useful night sedative.

Temazepam has no active metabolites and is preferable to long-acting benzodiazepines in patients at risk of adverse effects (excessive sedation, incoordination, and/or delirium):

- elderly patients;
- patients with respiratory, hepatic, and/or renal disease;
- patients with hypoalbuminaemia;
- patients who are taking other psychoactive drugs or cimetidine.

Long-acting benzodiazepines
Diazepam is usually best given at night (2–10 mg by mouth). This avoids the need for a separate night sedative, and the anxiolytic effects are maintained during the following day. Additional doses (e.g. diazepam 2–5 mg) may be given during the day for excessive anxiety.

Diazepam and its active metabolites accumulate during the first few days of treatment and blood levels may not reach steady-state for 2 weeks or longer.

Principles of prescribing benzodiazepines

- If therapy is ineffective, the dose should be increased. If benzodiazepines are poorly tolerated (i.e. inadequate benefit with unacceptable adverse effects), an alternative class of drugs should be considered.

- The patient should be warned about adverse effects: sedation and/or confusion (patients should be warned not to drive or operate machinery) and additive effect with alcohol.

- Sudden withdrawal of benzodiazepines after long-term use may precipitate rebound anxiety. If treatment is to be discontinued, the dose should be reduced gradually over several weeks.
Antipsychotics
Phenothiazines may well be useful in patients who fail to respond to benzodiazepines. Haloperidol is the drug of choice, e.g. 2–5 mg initially and at bedtime thereafter. Thioridazine and chlorpromazine are useful alternatives with a greater sedative effect.

Propranolol
Propranolol (10–20 mg, maximum frequency every 8 hours) blocks the physical features of anxiety (e.g. sweating, tremors). The drug should not be used in patients with a history of asthma.

Special cases
Panic attacks
Panic attacks (episodic paroxysmal anxiety) are recurrent attacks of severe anxiety, palpitations, breathlessness, sweating, and dizziness. Most patients experience fear of dying during the attack or a feeling of losing control or “going mad”. Individual attacks may last for minutes to hours.

Episodic pain, depersonalization, or agitation may be the most prominent feature, in which case the diagnosis is easily missed.

During an attack the patient requires support and reassurance. After the attack has subsided, the patient should be reassured that panic attacks are self-limiting and not life-threatening.

Prolonged attacks may require intravenous midazolam or sublingual lorazepam. A tricyclic antidepressant should be used for long-term control.

Phobias
Terminal illness does not cause phobias directly, but pre-existing phobias may be worsened by hospital care and treatment. This is particularly true of the most common phobia, agoraphobia (fear of public places). Patients with claustrophobia have particular difficulty during procedures in confined places, such as during computed tomography (CT), magnetic resonance imaging (MRI), or radiotherapy.
A benzodiazepine may be helpful to cover short periods, but behavioural therapy and antidepressant therapy are usually necessary for long-term treatment.
3. Asthenia

The term “asthenia” means loss of energy, generalized weakness, and rapid tiring on exercise. It is a common symptom of terminal illness and is also part of the anorexia–cachexia syndrome (see page 8).

Causes (see Box 3.1)

Patients with advanced cancer or AIDS have abnormal muscle function, but the underlying cause is unclear. Reduced food intake may contribute, but correction of nutrition does not usually improve the situation. In moribund patients, progressive weakness is a normal part of the dying process.

Many of the causes of asthenia are potentially reversible. They may be related to the illness itself (e.g. prolonged inactivity causes disuse atrophy) or its treatment. Asthenia is a common adverse effect of radiotherapy and/or chemotherapy, but in such cases it usually resolves within 2 weeks of completing treatment.

Evaluation

Evaluation should focus on the severity of asthenia and its effects on the patient’s level of independence and psychological well-being. Specific effects should also be noted; for example, weakness of respiratory muscles may cause dyspnoea and difficulty in clearing secretions.

Patients with progressive generalized weakness are usually aware that death is approaching. This may cause anxiety, sadness, and/or depression.
**Box 3.1 Causes of asthenia**

*Illness-related*
- anorexia
- inactivity
- anaemia
- hyponatraemia
- hypoadrenalism
- organ failure:
  - renal failure
  - liver failure

*Cancer-related*
- advanced disease
- spinal cord compression
- hypercalcaemia
- neuropathy
- myopathy

*Treatment-related*
- major surgery
- intensive chemotherapy
- intensive radiotherapy
- drugs:
  - diuretics (hypokalaemia)
  - antihypertensive drugs
  - oral hypoglycaemic drugs

*Psychiatric*
- anxiety
- depression

*Other*
- infection
- dehydration
- malnutrition
- starvation
Treatment

As with all symptoms, reversible causes should be identified and treated where possible.

Non-drug measures

Regular exercise should be encouraged, as it helps to maintain muscle function and the patient's independence. However, over-exertion should be avoided and the patient should have one or more rest periods during the day.

Occupational therapy is useful, to show how routine activities can be performed with the least amount of effort; this helps the patient to be independent for as long as possible.

Drug therapy

Drug therapy for asthenia is limited. Corticosteroids or progestogens may be useful, particularly if the asthenia is associated with anorexia–cachexia syndrome.
4. Constipation

Constipation is a decrease in the frequency of defecation and/or physical difficulty in emptying the rectum effectively. The faeces are usually hard; defecation is painful and requires straining. A sensation of abdominal fullness is often present, and there may also be intestinal colic.

If neglected or inadequately treated, constipation soon leads to other symptoms and complications:

- anorexia;
- nausea;
- overflow diarrhoea and faecal incontinence;
- retention of urine;
- functional intestinal obstruction;
- delirium.

Causes (see Box 4.1)

Constipation is often caused by a combination of factors, most of which are reversible.

Patients who do not have access to the privacy of toilet facilities often postpone defecation, which in turn leads to constipation. This is likely in bed-bound patients, in whom the risk of constipation is further increased by inactivity.

Other high-risk patients include the elderly and those with advanced cancer, many of whom have reduced or disordered intestinal motility (due to autonomic failure) and reduced sensitivity of the anocolic reflex.
### Box 4.1 Causes of constipation

_Situational_
- lack of privacy
- incorrect positioning

_Illness-related_
- physical inactivity
- physical weakness
- reduced food intake
- dehydration

_Cancer-related_
- intestinal obstruction
- autonomic dysfunction
- hypercalcaemia

_Psychiatric_
- depression
- confusion
- delirium

_Treatment-related_
- opioids
- anticholinergic drugs:
  - phenothiazines
  - tricyclic antidepressants
- aluminium-containing antacids
- diuretics (hypokalaemia/dehydration)

_Other_
- hypothyroidism
- anorectal pain/discomfort:
  - anal fissure
  - haemorrhoids

Constipation is increased by anorexia (because of a reduction in dietary fibre) and by dehydration. Patients with recurrent vomiting are particularly likely to develop constipation because they have a low intake of both food and fluids.
Delirium is not a cause of constipation, but constipation in delirious patients often remains unrecognized until it has become severe. Conversely, constipation may precipitate delirium.

Patients who have local pain on defecation (e.g. anal fissure, haemorrhoids) are likely to postpone defecation, which of course only makes matters worse.

Patients with cancer may develop constipation as a result of intestinal obstruction (see Chapter 10), autonomic neuropathy (which leads to impaired intestinal propulsion), hypercalcaemia (which is usually due to substances released by the tumour rather than to bone metastases), or depression.

**Evaluation**

**Bowel pattern**

All patients should be asked about their present bowel pattern (frequency of defecation; volume and consistency of faeces) and whether there have been any recent changes.

**Rectal examination**

A rectal examination should be carried out if the patient has:

- persistent constipation;
- tenesmus (a sensation of fullness in the rectum, despite defecation); or
- leakage of liquid faeces.

The main aim of the rectal examination is to exclude faecal impaction (a large, hard mass of faeces in the rectum).

**Abdominal X-ray**

Abdominal X-ray confirms the presence and extent of retained faeces, but this is usually unnecessary. It does not differentiate between constipation and intestinal obstruction in the evaluation of the patient with an empty rectum.
Prevention

Constipation is often preventable, and this is particularly true of constipation caused by opioids. Whenever an opioid is prescribed, a laxative should be prescribed at the same time (unless there is a clear contraindication).

Bowel habit should be reviewed twice a week in all terminally ill patients. Constipation is easier to treat if it is identified early, and complications can be prevented.

Treatment

Complications (e.g. urinary retention, see page 99) should be identified first and treated as appropriate.

The aim of treatment of uncomplicated constipation is then to restore the patient to a pattern of defecation that relieves symptoms. Three comfortable evacuations per week are adequate in most patients.

Non-drug measures

Increased physical activity, high-fibre diet, and fluids may be helpful where appropriate. If partial bowel obstruction is present, however, the fibre intake should be reduced.

Whenever possible, the patient should be helped to the privacy of a toilet cubicle. In bed-bound patients a commode should be used. Bedpans should be avoided – they cause embarrassment and discomfort, and require the patient to assume a position that is unnatural and inhibits defecation, resulting in worsening of constipation.

Pain and vomiting predispose to constipation and should be treated as soon as possible to avoid further complications.

Faecal impaction may be associated with urinary retention, with or without overflow incontinence (see page 103).

Laxatives (see Table 4.1)

Laxatives are required for most patients. The main types are:
bulk laxatives (e.g. bran);
- lubricant laxatives (e.g. liquid paraffin);
- surfactant laxatives (e.g. docusate);
- stimulant laxatives:
  - mineral salts (e.g. magnesium hydroxide)
  - contact laxatives (e.g. senna, bisacodyl, phenolphthalein);
- osmotic laxatives (e.g. lactulose);
- rectal agents:
  - suppositories (e.g. glycerine, bisacodyl)
  - enemas (e.g. arachis oil, phosphate, citrate).

**Bulk laxatives**
Bulk laxatives are similar to dietary fibre: they act as an undigested residue which retains fluid, thereby increasing the volume of faeces. They also increase the bacterial content of faeces, which further increases the faecal volume (bacteria may account for as much as half of the total faecal mass).

Bulk laxatives are not often used in patients with terminal illness. They are effective only if the fluid intake is normal. If fluid intake is reduced, they can cause intestinal obstruction due to impaction of a large faecal mass in the colon.

**Lubricant laxatives**
Laxatives such as liquid paraffin act by lubricating the passage of faeces through the colon, rectum, and anus. They are particularly useful in patients for whom anal fissure or haemorrhoids make defecation painful.

Lubricant laxatives have several potential adverse effects:
- patients may find them unpalatable;
- absorption of fat-soluble vitamins is reduced during long-term use;
- leakage from the anus may occur;
- accidental aspiration may cause a lipoid pneumonia.
<table>
<thead>
<tr>
<th>Group</th>
<th>Examples</th>
<th>Starting doses</th>
<th>Mechanisms of action</th>
<th>Onset of action</th>
<th>Clinical notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk laxatives</td>
<td>Bran</td>
<td>4–8 g</td>
<td>Increase volume of faeces</td>
<td>2–4 days</td>
<td>Limited value in palliative care. Do not use if fluid intake is poor</td>
</tr>
<tr>
<td></td>
<td>Liquid paraffin (mineral oil)</td>
<td>10 ml</td>
<td>Lubricate passage of faeces. Faecal softener</td>
<td>1–3 days</td>
<td>Used in emulsion preparations. Potentially hazardous if used alone</td>
</tr>
<tr>
<td>Lubricants</td>
<td>Magnesium hydroxide</td>
<td>1.8–3.6 g</td>
<td>Active secretion of water and electrolytes from bowel mucosa</td>
<td>2–6 hours</td>
<td>Used in emulsion with lubricants</td>
</tr>
<tr>
<td>Osmotic laxatives</td>
<td>Lactulose</td>
<td>15 mg every night</td>
<td>Retain water in bowel by osmosis</td>
<td>12–24 hours</td>
<td>Second-line treatment for simple constipation</td>
</tr>
<tr>
<td></td>
<td>Sorbitol (30%)</td>
<td>30 ml every night</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See Box 4.2 on page 32.
Lubricant laxatives are best given as emulsions containing stimulant laxatives such as magnesium hydroxide or phenolphthalein. Such preparations carry a low risk of anal leakage and lipoid pneumonia.

**Surfactant laxatives**
Surfactant laxatives act as surface-wetting agents and increase fluid penetration of faeces. At high doses they also have a stimulant action.

**Stimulant laxatives**
Stimulant laxatives include mineral salts (e.g. magnesium hydroxide) and contact stimulants (e.g. bisacodyl). Their mechanisms of action are described in Table 4.1. These drugs may cause abdominal colic.

**Osmotic laxatives**
Osmotic laxatives are sugars that are not digested in the small intestine. When they reach the large intestine they have several effects that help to relieve constipation. Their main effect is retention of water in the small intestine, which increases the volume of faeces entering the large intestine. In the large intestine, osmotic laxatives are degraded by bacteria to organic acids, which in turn stimulate peristalsis.

Some patients find the sweet taste of osmotic laxatives unacceptable and may also experience a sensation of abdominal fullness.

**Rectal agents**
Rectal agents (suppositories and enemas) have several uses:

- treatment of faecal impaction;
- additional treatment for patients who are not adequately relieved by oral laxatives;
- alternative treatment for patients who cannot tolerate oral laxatives;
- rectal emptying in patients with spinal cord compression.
Suppositories

- Glycerine is a hydrophilic softening and bulking agent; it may also directly stimulate rectal peristalsis.

- Bisacodyl is a contact stimulant laxative that can be given by mouth (see above) or per rectum. Rectal preparations have a faster action (less than 1 hour compared with 6–12 hours).

Enemas

- Arachis oil enemas are useful to soften impacted faeces. They should be retained overnight if possible.

- Saline enemas (phosphate or citrate) stimulate peristalsis directly. These salts may be partially absorbed.

Cisapride
Cisapride (10 mg every 6 hours or 20 mg every 12 hours, by mouth) promotes coordinated activity of both the small and large intestine. In combination with a laxative, it is a useful treatment for patients with intestinal dysmotility, e.g. irritable bowel syndrome.

Principles of laxative prescribing
The principles of prescribing laxatives are the same as those of rational prescribing in general:

"By mouth"
Laxatives should be given orally wherever possible.

"By the clock"
Laxatives should usually be given regularly once or twice a day (not occasionally).

"For the individual"
The dose should be adjusted in each patient so that it relieves constipation without causing adverse effects (i.e. abdominal colic, diarrhoea, and faecal incontinence).
"Keep it simple"
The dose of one preparation should be optimized before another preparation is prescribed.

It is usually best to start with a stimulant laxative. A five-step plan is proposed for the management of uncomplicated constipation (see Box 4.2). Doses should be reviewed once or twice a week.

Practice points

Colic. If a stimulant causes colic, the dose should be reduced or divided into smaller, more frequent doses. If this fails to relieve the problem, the stimulant should be stopped and an alternative laxative prescribed. If colic persists, the patient must be reassessed to exclude intestinal obstruction (see pages 64–66).

Box 4.2 Five-step treatment plan

The following recommendations apply to patients with uncomplicated constipation. Intestinal obstruction and faecal impaction must first be excluded.

1. A stimulant laxative should be given first (e.g. standardized senna tablets 15 mg once or twice daily).
2. If this is ineffective, the dose should be increased (e.g. standardized senna tablets up to a maximum of 22.5 mg every 4–12 hours).
3. If this is still ineffective, an osmotic laxative may be added, e.g. lactulose syrup (3.3 g per 5 ml) 15–30 ml by mouth once or twice daily.
4. If there is still no effect, or if there are unacceptable side-effects, the osmotic laxative should be replaced with an emulsion of magnesium hydroxide in liquid paraffin (10–30 ml once or twice daily).
5. Finally, if the above treatment fails, a bisacodyl suppository (10–20 mg) should be added, followed by a saline (phosphate or citrate) enema 2 hours later if there is no response. This should be repeated every day for 3 days if necessary.
**Diarrhoea.** If diarrhoea occurs during treatment, the patient should be reassessed (including rectal examination) to exclude faecal impaction (see below) and intestinal obstruction. Laxatives should be stopped for 24 hours and then restarted at one-half to three-quarters of the original dose.

**Faecal impaction**

Treatment depends on whether the faeces are soft or hard:

- Impaction with soft faeces should be treated with a bisacodyl suppository (10–20 mg), followed by a saline enema 2 hours later.

- If the faeces are hard, an arachis oil enema should be given in the late evening and retained overnight, followed by a bisacodyl suppository (10–20 mg) in the morning and a saline enema.

If spontaneous defecation does not occur, the faeces may have to be removed by digital manipulation. This procedure requires premedication with a benzodiazepine (e.g. lorazepam 2 mg by mouth or by intravenous injection; or midazolam 2 mg by mouth or by subcutaneous injection).
Chronic cough is debilitating. It deprives the patient of rest and sleep, causes anxiety to both patient and family, and may increase pain.

The cough reflex

A cough is an explosive expiration that expels mucus and other matter from the trachea and main bronchi. The cough reflex is triggered when receptors in the upper or lower respiratory tract are activated by various stimuli (e.g. mucus, foreign body, bronchoconstriction, dryness, or structural distortion of the airways).

The receptors send messages via the vagus nerve to "cough centres" in the brain stem. The cough centres then generate the reflex motor response that results in a cough.

Causes (see Box 5.1)

Common causes of cough include smoking, asthma, chronic bronchitis/emphysema, respiratory infections, aspiration, and left ventricular failure.

Sputum retention occurs mainly in weak, dehydrated patients, particularly those on anticholinergic drugs (which cause the mucus to be sticky).

Cough is a common adverse effect of angiotensin-converting enzyme inhibitors (ACE inhibitors), which are widely used for the treatment of hypertension and heart failure. The cough often resolves spontaneously during treatment.

Postnasal drip (discharge from the nasopharynx, which drips into the oropharynx) is a common cause of cough and is often due to sinusitis.
Box 5.1 Causes of cough

*Environmental*
dry air
tobacco smoke
pollutants

*Illness-related*
dehydration
oesophageal reflux
respiratory infection:
  upper respiratory tract
  lower respiratory tract
aspiration

*Cancer-related*
primary/secondary tumour:
  upper respiratory tract
  lower respiratory tract
  pleura
  pericardium
  diaphragm
lymphangitis carcinomatosa
tracheo-oesophageal fistula

*Treatment-related*
chemotherapy fibrosis
radiation fibrosis
angiotensin-converting enzyme (ACE) inhibitors

*Other*
smoking
postnasal drip
asthma
chronic obstructive pulmonary disease:
  chronic bronchitis
  emphysema
left ventricular failure
inhalation of foreign body
referred stimuli:
  ear wax
Evaluation

The patient should be assessed to determine the underlying cause of the cough. The cough may be either “wet” (productive of sputum) or “dry” (non-productive). The three main types of cough are:

- wet cough and patient able to cough effectively;
- wet cough but patient too weak to cough effectively;
- dry cough.

Many patients with cough also have dyspnoea, which often provides diagnostic clues (see page 52).

Treatment (see Box 5.2)

The underlying cause of the cough (and dyspnoea, if present) should be treated, e.g. with diuretics for heart failure, antibiotics for infection, or bronchodilators for bronchospasm. If the cough is thought to be due to anticholinergic drugs, these should be stopped or reduced if possible.

Non-drug measures

- *Nebulized saline* (2–5%) may help to moisten a dry, irritated throat or to loosen tenacious secretions before chest physiotherapy.
- *Chest physiotherapy*:
  - breathing exercises and postural drainage are effective in patients with excessive pulmonary secretions;
Box 5.2 **Treatment regimen for cough**

The following regimen is appropriate for *patients with a wet cough who are able to cough effectively* (see text):

1. Give simple linctus and improve general hydration.
2. Start regular chest physiotherapy.
3. If these measures are ineffective, prescribe an opioid (e.g. codeine linctus 15–30 mg every 4–6 hours; morphine solution 5–10 mg every 4–6 hours; or dextromethorphan 2–50 mg every 4–6 hours).

In patients with dry cough and those who are too weak to cough effectively, the aim of treatment is comfort. Treatment is the same as for wet cough in stronger patients, but chest physiotherapy is usually inappropriate.

- chest pounding and vibration should generally be avoided because in some patients they may worsen lung function by causing atelectasis (lung collapse), hypoxia, and/or bronchoconstriction.

- *Aspiration* helps to remove sticky secretions in the upper airways, but it may cause reflex bronchoconstriction.

- *Positioning*: whenever possible, the patient should be in the upright position to ease expectoration (coughing of sputum).

**Drug therapy**

Useful drugs include:

- demulcents;
- opioids;
- local anaesthetics;
- bronchodilators;
- corticosteroids.
**SYMPTOM RELIEF IN TERMINAL ILLNESS**

**Demulcents (soothing syrups)**
Demulcents such as simple linctus (sucrose syrup) are often helpful. They work by forming a protective barrier over pharyngeal sensory receptors. Demulcents may be used alone or as a base syrup in opioid cough mixtures.

**Opioids**
Opioids act on receptors in the cough centre. Codeine and morphine are both commonly used for the treatment of cough.

If the patient is already receiving morphine (or any other opioid), it is better to increase the dose to control the cough than to prescribe a second opioid (i.e. codeine). As with pain medication, regular dosing “by the clock” is essential for optimum control of cough.

Dextromethorphan is a non-analgesic opioid that is widely used as a cough suppressant. The dose range is 10–30 mg every 4–8 hours.

**Local anaesthetics**
Local anaesthetics may be given as lozenges, which are useful for the relief of cough due to pharyngeal irritation. Alternatively, they may be delivered by nebulizer directly into the respiratory tract. This method is especially useful in patients with bronchial tumours. Recommended doses are 2% lidocaine (5 ml) or 0.25% bupivacaine (5 ml). Resuscitation facilities should be available, especially for the first dose, because the treatment may cause bronchospasm.

Local anaesthetics may inhibit the gag reflex, which increases the risk of aspiration into the lungs. Food and thick drinks should be avoided for about 1 hour after each nebulizer, but it is safe to allow sips of water to rinse away the taste of the anaesthetic.

**Bronchodilators**
Bronchodilators (e.g. salbutamol, ipratropium bromide, theophylline) relieve bronchoconstriction (a stimulus to cough) and facilitate expectoration.

**Corticosteroids**
Corticosteroids may help if the cough is due to compression of a bronchus by cancer/tumour. They act by reducing peri-tumour oedema, thereby reducing bronchial compression.
6. Delirium and dementia

Definitions

There are two main types of cognitive impairment in terminally ill patients: delirium and dementia. Both involve impairment of short-term memory, judgement, and thinking.

Delirium and dementia may well exist together in terminally ill patients, but it is generally important to distinguish between them (see Table 6.1). Delirium has an acute or subacute onset and is often reversible, whereas dementia develops gradually and is usually irreversible.

The onset of cognitive impairment causes distress not only to the patient but also to the patient's family.

Features of delirium

Delirium usually develops acutely and, except in the last days of life, is usually reversible. Failure to treat the underlying cause of delirium

<table>
<thead>
<tr>
<th>Onset:</th>
<th>Delirium</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course:</td>
<td>Acute or subacute</td>
<td>Chronic</td>
</tr>
<tr>
<td></td>
<td>Fluctuating (often worse at night)</td>
<td>Progressive</td>
</tr>
<tr>
<td>Speech:</td>
<td>Incoherent</td>
<td>Limited content</td>
</tr>
<tr>
<td>Awareness:</td>
<td>Aware and anxious</td>
<td>Unaware and unconcerned (in late disease)</td>
</tr>
<tr>
<td>Hallucinations:</td>
<td>Common</td>
<td>May be present (in late disease)</td>
</tr>
</tbody>
</table>

Table 6.1

Differences between delirium and dementia
SYMPTOM RELIEF IN TERMINAL ILLNESS

is likely to result in deterioration and, in some cases, premature death.

Disorientation is invariable – patients do not understand clearly where they are or what is happening, and often regard others with fear or hostility. Hallucinations and paranoid delusions are common, attention span is limited, and short-term memory is impaired. Many patients are agitated (i.e. mentally and physically restless); others are withdrawn but internally distressed by hallucinations and delusions.

The level of consciousness usually fluctuates and sleep patterns are disrupted: the patient tends to be awake at night and drowsy during the day.

Features of dementia

Dementia is a problem mainly of elderly patients. It usually starts gradually with short-term memory impairment. The patient tries to compensate for this and so conceal it from others.

In contrast with delirium, the patient continues to relate to the surrounding environment, but has increasing difficulty in understanding, interpreting, and responding to external stimuli – or may simply ignore them.

Causes (see Box 6.1)

Causes of delirium

Delirium is precipitated by a wide range of disorders, many potentially reversible.

Acute intoxication with alcohol may cause delirium, as may other drugs of abuse (e.g. cocaine, cannabis, amphetamines, hallucinogenic drugs). Severe delirium is a feature of alcohol withdrawal and is likely in hospitalized alcoholic patients. Intoxication with, or withdrawal from, prescribed opioids or psychotropic drugs (e.g. benzodiazepines, methylphenidate, and phenothiazines) may also cause delirium.
**Box 6.1 Causes of delirium**

**Illness-related**
- pain
- dehydration
- biochemical:
  - hypercalcaemia
  - hyponatraemia
  - hypoglycaemia
  - hyperglycaemia
- organ failure:
  - kidney failure
  - liver failure

**Cancer-related**
- intracranial tumour
- paraneoplastic

**Treatment-related**
- psychotropic drugs
- anticholinergic drugs
- H₂ receptor antagonists
- corticosteroids
- chemotherapy
- drug withdrawal:
  - alcohol
  - nicotine
  - psychotropic drugs

**Other**
- urinary retention
- infection
- pyrexia
- hypoxia
- vitamin deficiency:
  - thiamine (Korsakov psychosis; beri-beri)
  - nicotinic acid (pellagra)
- vitamin B₁₂ deficiency
- head injury (subdural haemorrhage)
Other important causes include raised intracranial pressure due to intracranial tumour or intracranial haemorrhage; and haematological disorders such as severe anaemia, vitamin B₁₂ deficiency, and coagulopathy.

Delirium in dying patients is often related to a combination of organ failure, biochemical disturbance, and/or infection.

**Causes of dementia**

By contrast with delirium, most cases of dementia are irreversible because they are associated with loss of brain tissue. The three main causes are Alzheimer disease, multi-infarct dementia, and AIDS-related dementia. The underlying terminal illness is usually not the cause of dementia (except in AIDS), but it may precipitate or worsen the symptoms.

**Evaluation**

The main aim of evaluation of the patient with cognitive impairment is to exclude reversible causes (e.g. faecal impaction or a distended bladder – both of which may cause agitation and distress).

Dementia commonly presents with anxiety or depression rather than with overt cognitive impairment. Conversely, an older patient with physical and mental slowing due to depression may be misdiagnosed as having dementia.

Delirium, dementia, anxiety, and depression may present as a mixed syndrome. The aim of evaluation is to identify, in each patient, the presence and underlying causes of delirium and dementia, and the presence and severity of anxiety and depression.

Inappropriate treatment may be harmful or even dangerous. For example:

- if early delirium is misdiagnosed and treated with an antidepressant, the patient may deteriorate dramatically;
- if a patient with anxiety and dementia is given a benzodiazepine, this may further reduce his or her ability to respond appropriately to environmental stimuli.
Evaluation of mental state

When cognitive impairment is suspected, a systematic evaluation should be carried out, for example by using a standard questionnaire (e.g. Mini-Mental State Examination). It is important to determine whether the patient is experiencing misperceptions, illusion (misinterpretations), delusions (usually paranoid), or hallucinations.

Discussion with the family usually clarifies whether the diagnosis should be delirium (normal cognitive function until recently) or dementia (long history of progressive cognitive impairment). A long history of cognitive impairment with sudden recent deterioration suggests dementia complicated by delirium.

All patients should be assessed for the presence of anxiety and depression (see Chapters 2 and 7).

Treatment

Successful treatment of the patient with delirium or dementia depends on accurate evaluation and correct diagnosis. It is most important to exclude reversible disorders that may have precipitated delirium.

Non-drug measures

The patient with delirium or dementia must be treated with courtesy and with respect. It is essential to relieve the patient's anxiety and to control misperceptions. These objectives can be achieved by attention to communication, daily routine, and physical safety.

Communication

Every procedure and event should be carefully explained in simple terms that the patient will understand. Any personal problems – including hallucinations and delusions – should be openly discussed with the patient.

Daily routine

The aim is to maintain a daily routine that is familiar, safe, and comforting. The patient's sense of orientation can be helped by the use of a
large-print calendar, visible wall clock, and night-light. The regular presence of a family member or close friend should be encouraged.

**Physical safety**
In general, patients should be allowed as much freedom of movement as possible without being a danger to themselves or others. Usually, however, they need to be accompanied, and this is essential if they go outside the ward or home.

Restraints should not be used in agitated patients. Drugs are more humane and are almost always effective. Bedrails are dangerous; it is safer to use a mattress on the floor.

**Drug therapy**
Drug therapy should be reviewed to identify drugs that could be causing or contributing to cognitive impairment:

- The dose of psychoactive drugs should be reviewed and reduced if possible.
- Recent drug orders should be checked for errors in prescription or administration.
- Central nervous system (CNS) stimulants (e.g. methylphenidate, dexamfetamine) should be stopped.
- If the patient is receiving high doses of morphine and has signs of CNS irritability (e.g. myoclonus), an alternative opioid (e.g. hydromorphone or methadone) should be considered, if available.

As always, specific treatment of the underlying cause is the first priority where possible.

Symptomatic relief of delirium involves use of neuroleptic drugs (e.g. haloperidol, chlorpromazine, levomepromazine) or benzodiazepines, either by mouth or by injection. As a general rule, the dose of a drug is usually reduced when switching from oral use to injection, because drugs are more bioavailable when given by injection.
As in other areas of symptom relief, when a drug is prescribed the dose should be adjusted to achieve the desired effect without causing unacceptable adverse effects.

In general, sedatives and psychoactive drugs should be avoided in dementia because they tend to make matters worse. The main exception to this rule is haloperidol (see below).

**Warning:** The combination of an opioid with a neuroleptic and/or benzodiazepine may occasionally cause profound sedation and slow respiration. This risk must be balanced against the need to relieve the distress of the patient (and family). As always, the dose must be adjusted carefully according to the effects of previous doses.

**Haloperidol**
Haloperidol is the drug of choice for agitated patients. The usual starting dose is 1–2 mg by mouth or by subcutaneous injection, repeated as needed. A regular bedtime dose or 12-hourly regimen is often helpful. Doses as high as 30 mg over 24 hours are occasionally required.

**Chlorpromazine**
Chlorpromazine may be used if a sedative effect is required. The usual starting dose is 10–50 mg by mouth or by intramuscular injection (chlorpromazine is irritant and should not be given by subcutaneous injection). The dose may be repeated every hour until the patient is settled, after which a regular dose may be given every 8–12 hours.

**Levomepromazine (methotrimeprazine)**
Levomepromazine has greater sedative effects than chlorpromazine and, in ambulant patients, often causes postural hypotension. The drug is most useful in bed-bound patients during the last days of life. The starting dose for the agitated patient is 10–25 mg, repeated every hour if necessary until the patient is settled. For maintenance treatment, a dose every 12 hours is usually sufficient.
Benzodiazepines

If the patient has delirium and death is imminent, the sedative effect of a benzodiazepine may be welcome. If, on the other hand, the patient with delirium is expected to return to a normal mental state, the disorienting effect of a benzodiazepine may delay recovery.

Examples include lorazepam (0.5–2 mg every 6–8 hours by mouth, sublingually, or by subcutaneous injection) or oxazepam (5–20 mg by mouth every 6 hours).

Midazolam is a short-acting, rapidly effective benzodiazepine. The starting dose is 2–5 mg by subcutaneous or intravenous injection, followed by 1–4 mg/hour by continuous subcutaneous infusion.
7. Depression

Depression should not be confused with sadness. Sadness is a normal reaction to the knowledge that one has a terminal illness. Depression is a specific illness and is abnormal.

Depression occurs in 5–10% of patients with terminal illness, but it is reversible and should not be accepted as an inevitable consequence of cancer, AIDS, or any other terminal illness. Patients must be allowed to feel sad and to grieve but they should not have to endure untreated depression at the end of their lives.

Causes (see Box 7.1)

Situational causes are very similar to those of anxiety (see page 14). Depression and anxiety commonly coexist.

Patients at greatest risk include those with uncontrolled physical symptoms (especially pain) and those who have a biological predisposition (personal or family history of depression). Patients with cancer of the pancreas are at particularly high risk of depression.

Evaluation

In patients who are not terminally ill, diagnosis of depression is facilitated by physical features, e.g. sleep pattern, fatigue, constipation, and anorexia. In terminally ill patients these physical features are common whether or not depression is present. Diagnosis of depression therefore relies mainly on psychological features:

- depressed mood for at least half of the time, for at least 2 weeks;
- loss of interest in people or activities that would normally bring pleasure;
Box 7.1 Causes of depression

*Situational*
- inability to share feelings:
  - lack of confiding relationship
  - conspiracy of silence
  - social isolation
- fears relating to illness/treatment
- thoughts about the past/future
- worries about family/finances
- incomplete or conflicting information
- loss of independence

*Illness-related*
- persistent symptoms:
  - pain
  - discomfort
  - anxiety

*Cancer-related*
- hypercalcaemia

*Treatment-related*
- radiotherapy
- chemotherapy
- antihypertensive drugs
- benzodiazepines
- phenothiazines
- corticosteroids
- amphotericin B

*Other*
- genetic predisposition
- hypothyroidism

- social withdrawal;
- loss of interest in personal appearance;
- expressionless face;
- poor concentration;
DEPRESSION

- frequent crying;
- hopelessness (feeling that there is no point in trying to make something out of what remains of life);
- wanting to be dead already;
- guilt;
- feelings of worthlessness and loss of self-esteem;
- suicidal thoughts, which may result in suicide attempts or pleas for euthanasia.

Depression versus delirium

Depression may be difficult to distinguish from early delirium because both disorders may be characterized by social withdrawal, poor concentration, and restricted thought content. Furthermore, some depressed patients appear to be anxious or agitated, which causes further diagnostic confusion.

Treatment

Non-drug measures

Patients should be encouraged to talk about their feelings. They should be helped to understand that depression will lessen with open discussion, control of physical symptoms, and, if necessary, an antidepressant.

Relatives are often perplexed by the patient's depressed mood and their initial reactions may fail to provide the help that the patient needs. With the patient's permission, the condition should be explained to the relatives so that all involved have a shared understanding of the situation.

Psychological therapy

Cognitive–behavioural therapy can often relieve mild or moderate depression as effectively as antidepressant drugs. It has no adverse effects and is generally acceptable to patients. The treatment must be administered by trained mental health workers.
Drug therapy

**Antidepressants**

Antidepressants are required for most cases of severe depression (e.g., depression associated with suicidal thoughts) and for depression that has failed to improve despite psychotherapy (if available) and support from family and clinical staff.

The aim of antidepressant therapy is to relieve depression without causing unacceptable adverse effects.

**Choice of antidepressant**

The tricyclic antidepressant amitriptyline is the drug of first choice for most patients. It is inexpensive, effective, and widely available. The starting dose is 10–25 mg by mouth at bedtime, increasing every 3–7 days to 50–70 mg. A few patients need higher doses (up to 150 mg at bedtime).

Amitriptyline often causes troublesome anticholinergic effects (blurred vision, dry mouth, constipation, urinary retention). Antidepressants with less anticholinergic activity should be considered in patients who already have, or who are at risk of developing, these problems. Examples include imipramine, desipramine, dosulepin (dothiepin), or one of the more expensive selective serotonin reuptake inhibitors (SSRIs).

In patients with a history of depression, previous response to (and tolerance of) antidepressants should be taken into account before treatment is prescribed.

**Monitoring of treatment**

The antidepressant effect of amitriptyline (and most other antidepressants) may not be apparent for 2–3 weeks after the start of treatment. By contrast, sedation and anticholinergic effects are immediate. In view of this delayed antidepressant effect, amitriptyline 50–70 mg at bedtime should be continued for at least 2 weeks. If depression is not relieved after this time, the dose should be increased in steps of 25 mg, up to a maximum of 150 mg.
This approach is successful in about three-quarters of patients, in whom treatment should be continued indefinitely provided that it remains well tolerated.

If severe anticholinergic effects develop and/or depression persists, the drug should be stopped and replaced by one of the alternative antidepressants mentioned above.

Patients who fail to respond to antidepressants must receive specialist psychiatric consultation.

Benzodiazepines
Benzodiazepines may make depression worse. However, alprazolam may be useful in patients with mixed anxiety–depression if they require night-time sedation and cannot tolerate the anticholinergic effects of antidepressants. *It must not be used alone to treat severe depression.* Alprazolam must not be discontinued abruptly after long-term use, nor may it be readily replaced by other benzodiazepines. The usual starting dose is 0.25 mg at night, and the maximum maintenance dose is 2 mg every 8 hours.
8. Dyspnoea

Dyspnoea is an unpleasant awareness of breathing. The patient speaks of breathlessness or difficulty in breathing. Most types of dyspnoea are associated with tachypnoea (rapid breathing) and/or hyperpnoea (increased depth of breathing).

The sensation of dyspnoea is mediated by centres in the brain stem. These can be stimulated via:

- receptors in the medulla and carotid bodies, which respond to chemical changes in the blood ($P_{CO_2}$, $P_{O_2}$, and pH);
- receptors in the respiratory muscles, which provide information on muscle work load;
- receptors in the lungs (in the airways, around blood vessels, and in the lung parenchyma), which are sensitive to distortions of lung anatomy, inflammation, oedema, and changes in pulmonary vascular pressures.

**Causes** (see Box 8.1)

Dyspnoea is often due to several causes in the same patient. At least one of these causes may be partly or wholly reversible.

Almost all patients with dyspnoea at rest are anxious. Severe dyspnoea is frightening to both patient and family. Fears such as “Will I choke to death?” or “Will I suffocate?” are common. The resulting anxiety makes the dyspnoea worse:

\[
\text{dyspnoea + lack of understanding + fear} \rightarrow \text{anxiety} \rightarrow \text{increased respiratory rate} \rightarrow \text{worsening of dyspnoea}
\]

Pain worsens dyspnoea, partly through increased anxiety and partly through limitation of respiratory movements.
Box 8.1  Causes of dyspnoea

_Situational_
acute anxiety (see text)

_illness-related_
pain
anaemia
asthenia
pulmonary embolism
chest infection
abdominal distension:
  massive ascites
  massive hepatomegaly

_Cancer-related_
obstruction of bronchus
replacement of functional lung tissue by cancer
lymphangitis carcinomatosa
superior vena cava obstruction
pleural effusion
pericardial effusion

_Treatment-related_
pneumothorax
pneumonectomy
chemotherapy fibrosis
radiation fibrosis

_Other_
asthma
chronic pulmonary airways disease:
  chronic bronchitis
  emphysema
left ventricular failure
myocardial infarction
cardiac arrhythmia
metabolic acidosis
fibrosing lung disease
inhalation of foreign body
hyperthyroidism
Evaluation

The following questions will help identify the cause of dyspnoea:

- Are there any clues in the patient's medical history?
- Is the patient anxious?
- Is the dyspnoea made worse by exercise? Dyspnoea due to a physical cause is always increased by walking or other exercise. If dyspnoea is present at rest and is not affected by exercise, anxiety is likely to be the main cause.
- Does the patient have evidence of cyanosis, anaemia, or asthenia?
- Did the dyspnoea start suddenly? If so, consider:
  - pulmonary embolism;
  - cardiac cause (arrhythmia, left ventricular failure, myocardial infarction);
  - lung collapse secondary to obstruction or pneumothorax;
  - bronchospasm (asthma, allergic reaction).
- Is the dyspnoea episodic? If so, consider:
  - bronchospasm;
  - anxiety;
  - multiple pulmonary emboli.
- Is there increased venous pressure in the neck, a gallop rhythm, or a murmur? If so, consider:
  - congestive heart failure;
  - pericardial effusion;
  - obstruction of the superior vena cava;
  - pulmonary tumour masses.

Peak expiratory flow rate

The peak flow meter is a simple and inexpensive device that can be used at the bedside to identify and assess bronchospasm. The meter should be used both before and after a standard dose of inhaled, β-agonist (e.g. salbutamol) to measure the effect of treatment.

Wheeze is commonly absent in terminally ill patients with bronchospasm, particularly if there is a history of heavy smoking, chronic
bronchitis, or asthma. The peak flow meter can be used to diagnose bronchospasm in such patients.

Investigations

One or more of the following investigations may be helpful:

- chest X-ray;
- haemoglobin;
- ECG.

A ventilation–perfusion lung scan is occasionally useful in patients with suspected pulmonary embolism. Other investigations (e.g. spirometry and blood gases) may be distressing to the patient and are not often required.

Treatment

Treatment of underlying cause

As with all symptoms, it is essential to identify and treat the underlying cause(s) of dyspnoea if possible. Examples of specific reversible causes and their treatments include:

- **Obstruction by tumour (upper airways, bronchus, or superior vena cava):** radiotherapy (hormone therapy or chemotherapy for sensitive tumours).

- **Carcinomatous lymphangitis:** trial of corticosteroids, e.g. dexamethasone 8 mg/day for 7 days; if beneficial, a maintenance dose of 2–4 mg/day may be given.

- **Bronchospasm:** bronchodilators.

- **Cardiac failure:** diuretics and other drugs may be given as appropriate.

- **Chest infections:** antibiotics and chest physiotherapy.

- **Pleural effusion(s):** pleural aspiration (a chest drain and/or pleural closure may also be necessary).

- **Gross ascites:** abdominal paracentesis.
Symptom relief in terminal illness

- **Anaemia:** blood transfusion (transfusion should be considered only if the haemoglobin is less than 8 g/dl).

**Pain relief**

Pain relief is also important. Pain may limit chest expansion, which contributes to dyspnoea. It also causes anxiety, which further increases dyspnoea.

**Non-drug measures**

*Explanation and reassurance*

Dyspnoea causes anxiety, which in turn worsens dyspnoea. Medical and nursing staff should encourage patients to voice their fears. Calm explanation is essential and patients should be reassured that breathlessness in itself is not dangerous.

*Activity and environment*

Simple measures such as correct positioning and avoidance of stairs may be helpful. A back-rest offers positional support for bed-bound patients.

Many patients with dyspnoea have a feeling of being “closed in”. This can be reduced by having plenty of space around the bed. Cool air on the face (provided by an open window or fan) or application of a cold, moist face-cloth may be helpful.

The patient’s awareness of the symptom can often be reduced by distraction, e.g. listening to music or painting.

*Breathing exercises*

The patient can learn patterns of breathing that reduce dyspnoea and feelings of anxiety. For example, exhalation through pursed lips can assist patients with expiratory obstruction. Slow, regular, deep breathing can reduce anxiety.

**Drug therapy**

*Bronchodilators*

Bronchodilators are essential if bronchospasm is present. If in doubt, a clinical trial of a β-agonist (e.g. salbutamol) is worthwhile. These...
Drugs are best given by nebulizer or “puffer”. Puffers are probably just as effective as nebulizers and have the advantage of low cost and ease of use. The usual dose for salbutamol is 90–180 μg every 4–6 hours.

Patients with persistent bronchospasm may benefit from additional treatment with aminophylline (if not already receiving a theophylline preparation). The maximum initial dose is 100 mg every 8 hours by mouth, increasing gradually over 1 week to a maximum maintenance dose of 600 mg every 8 hours. The drug may also be given by intravenous infusion (the maximum dose is 5 mg/kg body weight over 30 minutes, followed by a maintenance dose of 0.25 mg/kg per hour).

**Corticosteroids**

Corticosteroids may be useful in patients with bronchial compression caused by a tumour. They also provide short-term relief in lymphangitis carcinomatosa. Recommended starting doses are: prednisolone 50–60 mg once daily by mouth, or dexamethasone 4–8 mg once daily by intramuscular injection. If corticosteroids are discontinued after more than 1 week of treatment, the dose should be reduced gradually to avoid acute adrenal insufficiency.

**Sedative drugs**

As a general rule, sedative drugs (e.g. benzodiazepines, opioids) should be used with care in patients with dyspnoea because they inhibit respiratory drive.

**Opioids**

Opioids may be given as required to patients with intermittent dyspnoea, or regularly to those with persistent dyspnoea. A typical starting dose is morphine 5–6 mg every 4 hours by mouth. This can be gradually increased as necessary. If the patient is already taking a regular opioid, the dose may be increased by 25% initially, and adjusted thereafter.

**Benzodiazepines**

Benzodiazepines are generally useful only in patients with anxiety. Diazepam 5 mg at night may improve sleep. Lorazepam (0.5–1 mg
sublingual) acts more rapidly and is preferred by many patients for daytime use.

**Oxygen**
Oxygen is useful in patients with severe dyspnoea, particularly those with dyspnoea at rest. Long-term oxygen therapy is best given by nasal prongs (4 litres/min) because these do not interfere with social contact. Oxygen should not be continued unless there is a clear benefit.

In patients with chronic dyspnoea, oxygen may be given intermittently as required (e.g. 5 minutes of oxygen inhalation before exercise).

**Respiratory panic attacks**
Respiratory panic attacks are usually precipitated by exertional dyspnoea, for example when a dyspnoeic patient is walking to the toilet or climbing stairs. The increased dyspnoea associated with exertion causes anxiety, which in turn makes the dyspnoea worse. Affected patients are obviously distressed and are convinced that they are about to die.

In an acute attack, the patient should be instructed to breathe slowly and deeply. The carer should stay with the patient until the attack subsides.

Lorazepam (0.5–1 mg sublingual) is ideal to reduce anxiety. Diazepam (5–10 mg by mouth, at night) is useful for long-term control.

After the attack has settled down, the nature of the attacks should be carefully explained and the patient should be taught slow, regular breathing in case a further attack occurs.

**Massive haemoptysis**
Massive haemoptysis may occur as a result of chest infection, lung tumour (primary or secondary), or pulmonary embolus. It is usually preceded by smaller haemoptyses, which allows caregivers to prepare for the emergency in advance.
Massive haemoptysis (i.e. more than 400 ml in 3 hours or 600 ml in 24 hours) has a mortality of 75% and heroic efforts at resuscitation are inappropriate in patients with advanced cancer. Intravenous midazolam (5–10 mg) or diazepam (10–20 mg) should be given until the patient is unconscious. If there is no intravenous access, diazepam (10–20 mg) should be given per rectum. A nurse or doctor should stay with the patient throughout.

A similar approach is used for massive haemorrhages from other sites, and for acute tracheal compression.

"Death rattle"

"Death rattle" is usually heard in patients who are moribund or too weak to expectorate. The noise is due to excessive secretions, mainly in the hypopharynx.

Comfort is the aim of treatment. Patients should be placed in the semi-prone position to encourage postural drainage. Suction of the oropharynx is uncomfortable and should generally be performed only in unconscious patients.

Anticholinergic drugs have an antisecretory action and may be helpful, particularly if started early. Examples include hyoscine butylbromide (20 mg by subcutaneous injection, followed by 20 mg/24 hours by subcutaneous infusion) and hyoscine hydrobromide (0.4 mg by subcutaneous injection, followed by 1.2 mg/24 hours by subcutaneous infusion).

Noisy tachypnoea in the moribund

Noisy tachypnoea in the moribund is characterized by fast, snorting respirations in an unconscious dying patient. It is often associated with prominent movements of the chest and abdomen. Although the patient is unaware, the noise is very distressing to family and other patients.

The aim of treatment is to reduce the noise to avoid distress to others. Morphine (up to 10 mg by intravenous injection) is given to reduce both the respiratory rate (to about 12–20 breaths per minute) and the depth of respiration. If the patient is already receiving a strong opioid, the usual dose may have to be doubled or trebled.
9. Hiccup

Hiccup is a reflex that involves spasm of the diaphragm and intercostal muscles, followed by sudden inspiration against a closed glottis. The reflex is typically activated by irritation of the vagus nerve or by stimuli from other parts of the central nervous system. The central component of the reflex is processed in the brain stem and is inhibited by increased carbon dioxide in the blood and by stimuli from the pharynx.

Causes (see Box 9.1)

Gastric distension is probably the commonest cause of hiccup in patients with advanced cancer and it may be associated with gastric stasis (delayed gastric emptying).

Treatment

Non-drug measures

Many “home remedies” are based on pharyngeal stimulation or increased carbon dioxide in the blood:

- **Methods that work by pharyngeal stimulation:**
  - drinking cold water out of the wrong side of a glass;
  - rapid ingestion of two heaped 5-ml spoons of granulated sugar;
  - massage of the soft palate with a cotton swab;
  - inducing a sneeze.

- **Methods that work via increased carbon dioxide in the blood:**
  - breath-holding;
  - breathing into a paper bag.
Box 9.1  **Causes of hiccups**

*Irritation of vagus nerve*
- abdominal branches
  - gastric distension
  - gastritis
  - hepatomegaly
  - gall bladder distension
  - pancreatitis
  - intestinal obstruction
  - peritonitis
  - intra-abdominal haemorrhage
- thoracic branches
  - oesophageal reflux
  - oesophageal obstruction
  - pneumonia
  - myocardial infarction
- laryngeal branches
- pharyngeal branches
- auricular branches
- meningeal branches

*Irritation of phrenic nerve*
- disphragmatic
  - subphrenic abscess
  - tumour
- mediastinal tumour
- cervical tumour

*Central nervous system*
- intracranial tumour
- brain stem lesion
- basilar artery insufficiency
- head injury
- encephalitis
- meningitis
- alcohol
- uraemia
- psychogenic

Drug therapy

Underlying causes should be treated where possible. If simple non-drug remedies do not relieve hiccup, the patient should be treated as follows:

1. Antacid preparation containing activated dimeticone (simethicone) every 4–6 hours, or more often if beneficial.

2. If antacid-dimeticone is ineffective, add metoclopramide (10–20 mg every 4–6 hours by mouth) or cisapride (20 mg every 12 hours by mouth).

3. If hiccup persists, substitute baclofen (5–10 mg every 6–12 hours by mouth) for the metoclopramide.

Dimeticone is an antiflatulent drug that facilitates belching, thereby reducing gastric distension; metoclopramide hastens gastric emptying; and baclofen relaxes the diaphragm.

Neuroleptics

Chlorpromazine should be used only if the treatment described above is ineffective. It should be continued for several days at a dose of 10–25 mg every 6 hours by mouth or by intramuscular injection.

Chlorpromazine and metoclopramide must not be used together because chlorpromazine blocks the gastrokinetic effect of metoclopramide. Furthermore, both are antidopaminergic and have an additive potential for causing extrapyramidal effects (e.g. spasmodic torticollis, motor restlessness).

Haloperidol causes less sedation than chlorpromazine and may be used instead. The recommended dose is 1–5 mg by mouth or by subcutaneous injection, followed by 1–5 mg at bedtime or every 12 hours.

Other drugs

Other drugs to consider include:

- phenytoin, sodium valproate, and carbamazepine: these anticonvulsant drugs may be useful if hiccups are related to phrenic nerve irritation or a brain stem tumour;
• nifedipine: 10–20 mg every 8 hours.

If drug treatment for hiccup initially proves to be effective, but hiccup re-emerges, the dose should be increased (within safe limits and as tolerated). An alternative treatment should be considered only if the higher dose proves to be ineffective.
10. Intestinal obstruction

The underlying mechanisms, features, and treatment of intestinal obstruction in patients with advanced cancer are often very different from those in other patients.

Causes (see Box 10.1)

There are three main mechanisms, any of which (either alone or in combination) may cause partial or complete intestinal obstruction:

- **Intraluminal obstruction** (physical obstruction of the lumen of the intestine).
- **Extraluminal obstruction** (compression of the intestine by adjacent disease) by tumour masses or adhesions. Tumour-related obstruction is usually due to intra-abdominal primary cancer but is sometimes caused by metastatic disease from primary cancer elsewhere, e.g. breast, lung, or melanoma.
- **Changes in intestinal motility** may be due to tumour invasion, ischaemic fibrosis, or part of a more generalized paraneoplastic autonomic neuropathy. Severe constipation can cause or exacerbate intestinal obstruction.

The small intestine is involved more often than the large intestine. Patients with advanced cancer often have multiple sites of obstruction in both the small and large intestines.

Evaluation

The classical features of intestinal obstruction (in patients without terminal illness) are:

- acute nausea and vomiting;
Box 10.1 Causes of intestinal obstruction

*Intraluminal obstruction*
- tumour
- faecal impaction
- intussusception
- volvulus

*Extraluminal obstruction*
- tumour
- adhesions
- strangulated hernia

*Changes in intestinal motility*
- tumour invasion of intestinal wall
  - rigidity (linitis plastica)
  - visceral neuropathy
- severe constipation
- drugs:
  - opioids
  - anticholinergic drugs
  - anticoagulants
  - corticosteroids
  - radiation fibrosis

- constipation;
- acute abdominal colic;
- acute abdominal distension;
- "tinkling" bowel sounds.

In advanced cancer, however, the full syndrome is uncommon. There is often an insidious onset and one or more of the above features may be absent. Also, a background of continuous pain caused by the tumour itself is almost always present in addition to colic.

The pattern of symptoms and signs depends largely on the level of obstruction (see Table 10.1). Some obstructed patients present with
Table 10.1

Features of intestinal obstruction at different levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Vomiting</th>
<th>Constipation</th>
<th>Abdominal colic</th>
<th>Abdominal distension</th>
<th>Bowel sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>+++</td>
<td>+/-</td>
<td>+/-</td>
<td>Absent (or limited to upper abdomen)</td>
<td>Usually normal</td>
</tr>
<tr>
<td>Small intestine</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>Variable&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Variable&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Large intestine</td>
<td>+</td>
<td>+++</td>
<td>++</td>
<td>Variable&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Variable&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>If there is extensive intra-abdominal disease (e.g. multiple adhesions due to widely disseminated cancer), abdominal distension may be absent or minimal, and bowel sounds may be minimal. If there is a single obstruction in an otherwise intact abdomen, there may be a more typical picture with abdominal distension and “tinkling” bowel sounds.

diarrhoea rather than constipation; this is a form of overflow diarrhoea.

No evaluation of the abdomen is complete without a rectal examination. The main objective is to exclude faecal impaction. Blood on the gloved finger suggests the possibility of intraluminal tumour. The femoral and inguinal canals should also be checked to exclude hernia.

If the patient has had previous abdominal surgery, the surgeon and/or the operating notes should be consulted.

Investigations

Plain abdominal X-rays

Plain X-rays of the abdomen are useful to determine:

- the presence and level of obstruction;
- whether faecal impaction is likely to be the cause of obstruction;
whether free air is present – a finding that indicates perforation of the bowel.

Further investigations
Blood chemistry is not normally indicated in terminally ill patients. Other investigations (e.g. contrast studies, endoscopy) should be undertaken only in patients who may be candidates for surgery.

Treatment

Nasogastric tube
A nasogastric tube on free drainage provides relief of nausea and vomiting by decompression of the stomach. However, with modern drug approaches to the management of intestinal obstruction, insertion of a nasogastric tube is rarely necessary.

A nasogastric tube is not appropriate as a long-term measure; many patients find it uncomfortable and socially embarrassing, and it cannot be used without help from a second person.

Surgery
A decision to operate should take into account the following factors:

- general condition of the patient before the onset of obstruction;
- willingness of the patient to undergo surgery;
- presence of massive ascites and multiple masses (surgery is unlikely to be of value in such cases);
- previous extensive radiotherapy (this makes surgery difficult and more risky);
- radiographic pattern (patients with gross distension are more likely to have a single lesion amenable to surgical correction).

Medical treatment
Patients with inoperable intestinal obstruction can continue to take limited quantities of fluids and selective soft foods.
The aims of treatment are to:

- eliminate nausea and reduce vomiting to once or twice per day;
- eliminate colic and pain;
- reverse obstruction (where possible);
- maintain hydration and electrolyte balance.

**Eliminate nausea and reduce vomiting – antiemetics**

**Metoclopramide**

Metoclopramide may be useful in patients with partial obstruction, especially if functional (without organic cause). It should not be used in patients with complete obstruction or abdominal colic. Its prokinetic effect is antagonized by drugs with anticholinergic effects, e.g. most tricyclic antidepressants and phenothiazines. The starting dose is 10 mg every 4-6 hours by subcutaneous injection or 60 mg/24 hours by subcutaneous infusion.

**Cyclizine and haloperidol**

Cyclizine (50–100 mg every 8 hours by subcutaneous injection; 150–300 mg/24 hours by subcutaneous infusion) may be used if metoclopramide is contraindicated or has failed to relieve symptoms. Haloperidol (2.5–5 mg every 12 hours by subcutaneous injection; 5–10 mg/24 hours by subcutaneous infusion) can be used in combination with cyclizine if nausea persists.

**Levomepromazine (methotrimeprazine)**

Levomepromazine is an alternative to cyclizine and haloperidol. The dose is 6.25–25 mg once daily by subcutaneous injection or 12.5–50 mg/24 hours by subcutaneous infusion.

**Octreotide**

Octreotide is a somatostatin analogue which has antisecretory and proabsorptive properties in the gastrointestinal tract. By reducing gastric contents, it reduces distension, colic, and nausea and vomiting. The usual dose is 100–200 μg every 8 hours by subcutaneous injection or 300–600 μg 24 hours by subcutaneous infusion. Its use is limited by high cost, and its superiority over cheaper drugs is not fully established.
5-HT₃ antagonists
In obstructed patients, especially those with marked distension, 5-HT₃ antagonists (e.g. ondansetron, granisetron) may also be helpful. They work by selective blockade of serotonin (5-hydroxytryptamine) type 3 receptors.

Eliminate colic and pain
Bulk-forming, osmotic, saline, and stimulant laxatives are usually contraindicated.

Analgesics
Morphine should be given to relieve background tumour pain; it may also eliminate colic. A typical starting dose is 10 mg by subcutaneous injection, followed by 5–10 mg every 4 hours by subcutaneous injection or a subcutaneous infusion adjusted according to response. Higher doses are required if the patient is already receiving a strong opioid.

Antispasmodics
Hyoscine butylbromide (10–20 mg every 4–8 hours by subcutaneous injection; 60–120 mg per day by continuous subcutaneous infusion) should be given if colic persists despite the use of oral morphine. Hyoscine butylbromide also has an antisecretory effect.

Reverse obstruction
Obstruction may occasionally be reversed medically. The lower colon may be emptied using saline enemas (see page 31). An oil retention enema may relieve obstruction due to faecal impaction and/or colonic narrowing.

If the obstruction is due to tumour mass (intraluminal or extraluminal), corticosteroids occasionally help by reducing peri-tumour oedema. Doses are empirical, e.g. dexamethasone 8–16 mg once daily for 5 days, by mouth or by subcutaneous or intramuscular injection. If effective, dexamethasone should be continued at a lower dose, e.g. 2–4 mg once daily by mouth.

Maintain hydration and electrolyte balance
Many patients are able to eat small amounts of food and to drink fluids, and this should be encouraged. If fluid intake is minimal and
the patient has intolerable dry mouth related to dehydration, administration of fluids by subcutaneous infusion (hypodermoclysis) should be considered.

**Hypodermoclysis**

Hypodermoclysis is a useful technique with several benefits. Placement of needles is easy and it is possible to give fluids intermittently, allowing patients freedom of movement for part of the day. Moreover, the technique can be taught to families in the home setting. A continuous infusion pump is not required.

A butterfly needle (size 25 French gauge) should be inserted under the skin, preferably on the anterior abdominal wall. Sites on the arms or legs may be used if oedema is absent.

Saline solutions may be administered (with or without added potassium chloride – maximum 40 mmol/litre) at rates of up to 200 ml/hour, but many patients need only 50 ml/hour or less. In patients who are receiving more than 50 ml/hour, hyaluronidase (600 units/litre) is usually required to promote tissue absorption of fluid.

*Note:* Dextrose (glucose) solutions should not be used as they are not properly absorbed.

The needle site should be checked daily. The needle does not have to be changed unless redness and tenderness develop. Usually a site can be used for 4–7 days.

**Venting gastrostomy**

A venting gastrostomy may be appropriate for patients with malignant intestinal obstruction and persistent nausea, vomiting, and abdominal distension despite optimal medical management.

The technique involves the placement of a venting catheter directly through the abdominal wall into the stomach. This may be done by endoscope, at laparotomy, or directly through the skin of the abdominal wall (percutaneously under radiological guidance). The catheter allows gastric contents to escape, which permits patients to eat and drink if they wish, and avoids the need for nasogastric drainage.
11. Mouth care

This chapter addresses the following common mouth problems: dry mouth, caries, hypersensitivity of teeth, mouth infections (candidiasis, bacterial infection, herpes simplex), aphthous ulcers, and halitosis.

**Routine mouth care**

The aims of mouth care are:

- to prevent discomfort;
- to facilitate eating and drinking;
- to prevent halitosis (foul-smelling breath);
- to minimize social isolation and psychological distress;
- to ensure that the oral mucosa and lips are moist, clean, and healthy, thereby promoting comfort and preventing infection;
- to remove debris and plaque, without damaging the mucosa.

Routine mouth care and daily examination of the mouth help to prevent and identify common problems such as dry mouth, candidiasis, and ulceration. Routine mouth care involves use of the following:

- *Toothbrushes* are ideal for the removal of plaque and debris from the teeth. This helps keep the oral mucosa healthy and prevents halitosis. Cleaning should be carried out at least twice a day. Used carefully, a small soft brush is safe and effective even in unconscious patients. Toothpaste should be rinsed away because it has a drying effect if left in the mouth. Toothbrushes are also useful to clean the tongue. Alternatively, a plastic or wooden spatula can be used for this purpose.

- *Dental floss* is effective for cleaning between the teeth but very ill patients find it difficult to use.
SYMPTOM RELIEF IN TERMINAL ILLNESS

- Petroleum jelly prevents dry, cracked lips. It should be applied regularly in a thin layer, at least twice daily.
- Mouthwashes (see Box 11.1) are important to maintain a clean healthy mouth and to prevent halitosis.

To minimize the risk of transmission of viral hepatitis B or HIV, gloves should be worn for procedures that involve contact with the inside of the patient's mouth. Gloves are unnecessary when feeding the patient or cleaning the face and lips.

With help and guidance, patients may be able to carry out mouth care themselves. Relatives may also be trained to assist in mouth care when necessary.

Denture care

Dentures are a frequent cause of gum irritation and ulceration in patients with terminal illness. They also act as a reservoir for Candida. If not cleaned regularly, they may be a source of halitosis. Problems are particularly likely in patients with severe weight loss, as dentures become loose and ill-fitting; such dentures require relining or remoulding.

<table>
<thead>
<tr>
<th>Box 11.1</th>
<th>Standard mouthwash</th>
</tr>
</thead>
<tbody>
<tr>
<td>A standard mouthwash can be prepared by mixing the following ingredients:</td>
<td></td>
</tr>
<tr>
<td>- 1 litre of water</td>
<td></td>
</tr>
<tr>
<td>- 1 teaspoon of sodium bicarbonate (baking soda)</td>
<td></td>
</tr>
<tr>
<td>- 1 teaspoon of salt</td>
<td></td>
</tr>
<tr>
<td>- peppermint water (to flavour).</td>
<td></td>
</tr>
<tr>
<td>The mouth should be rinsed with 15–30 ml of mouthwash every 2–4 hours if there is dry mouth or halitosis. The mouthwash should be spat out after use.</td>
<td></td>
</tr>
</tbody>
</table>

In patients with candidiasis, dry mouth, and/or poor oral hygiene, dentures should be removed each evening, thoroughly cleaned, and left to soak overnight in 1% sodium hypochlorite. If sodium hypo-
chlorite is not available, the dentures should be left to dry for 8 hours – drying of dentures helps to reduce colonization by *Candida*.

**Dry mouth**

Dry mouth causes problems with speech as well as with chewing, swallowing, and appetite. The lips become dry and cracked, and mouth ulceration and infection commonly develop.

**Causes** (see Box 11.2)

Dry mouth is a constant feature of systemic dehydration from any cause, including reduced fluid intake and disorders associated with polyuria (e.g. hypercalcaemia, diabetes, uraemia).

Mouth breathing causes local dehydration of the oral mucosa. Similarly, oxygen inhaled by mouth during oxygen therapy causes marked local dryness; this may be avoided by giving humidified oxygen or oxygen by nasal prongs.

Dry mouth is a common adverse effect of various drugs, notably anticholinergics (inhibition of salivation) and diuretics (polyuria).

**Treatment**

Adequate fluid intake and routine mouth care help keep the mouth moist. If the mouth becomes dry, the underlying cause should be identified and reversed where possible. For example, mouth infections should be treated and anticholinergic drugs should be reduced or discontinued.

**Hydration**

In all patients with dry mouth, further measures are required to improve systemic and local hydration:

- Systemic hydration is increased by encouraging oral fluids. If the patient is unable to drink adequately, subcutaneous fluids (hypodermoclysis – see page 70) should be considered unless the patient is moribund.
Local hydration is improved by increasing the humidity of the room if the air is dry, and by regular use of a mouthwash (see below) and ice chips for the patient to suck (these can be wrapped in a gauze bag if preferred).

**Oral hygiene**
Special attention should be given to mouth care, including regular removal of debris with a soft toothbrush. Debris may be loosened by sucking on unsweetened fresh pineapple, and rolled sage leaves can be used to freshen the mouth.

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**Box 11.2 Causes of dry mouth**

- Illness-related
  - mouth breathing
  - dehydration
  - oral candidiasis
  - fever

- Cancer-related
  - infiltration of salivary glands
  - hypercalcaemia

- Treatment-related
  - local radiotherapy
  - local surgery
  - drugs
    - anticholinergic drugs
    - opioids
    - diuretics
  - oxygen therapy

- Other
  - anxiety
  - depression
  - diabetes mellitus (polyuria)
  - diabetes insipidus (polyuria)
  - hypothyroidism
  - vitamin deficiency
  - uraemia
Saliva
Sugarless chewing gum or ascorbic acid tablets may be used to increase salivary flow.

Pilocarpine (5 mg every 8 hours by mouth, increased if necessary to 10 mg) also stimulates salivation and is helpful in some patients. Its effectiveness should be assessed by a 2-day trial of treatment.

Artificial saliva preparations are often oily and some patients find them unpalatable. A non-oily preparation can be made locally by adding 10 g of methylcellulose and 0.2 ml of lemon essence to 1 litre of water. The usual dose is 1 ml/hour by dropper.

Mouthwashes
Mouthwashes that contain glycerine, alcohol, or phenol should be avoided – they have a drying effect and may damage the oral mucosa. It is better to use a non-drying mouthwash such as standard mouthwash (see Box 11.1, page 72).

Caries (tooth decay)
Caries presents with toothache, sensitivity to hot or cold foods, or food trapped between the teeth. Examination of the affected tooth may reveal an obvious cavity or discoloration (white, brown, or black). If caries is suspected, the patient should be seen by a dentist.

Hypersensitivity of teeth
Hypersensitivity is due to gum recession, root exposure, and/or caries. Special toothpastes and soft toothbrushes are recommended.

Mouth infections
Patients with terminal illness have a high risk of mouth infections because of:

- reduced immune defences (due to factors such as debility, undernutrition, and AIDS);
- reduced mucosal integrity (due to old age, radiation therapy, and undernutrition);
symptom relief in terminal illness

- reduced flow of saliva (saliva contains natural antibacterial enzymes, antibodies, and glycoproteins which protect the mucosa);
- reduced personal attention to mouth care (due to debility, loss of energy, and depression).

Candidiasis

Candidiasis is particularly common in patients taking corticosteroids and/or antibiotics, those with diabetes mellitus, and those with dentures. It is also common in AIDS, where it is often severe and resistant to treatment.

Candidiasis should be suspected in any patient who complains of dryness or soreness of the mouth, or reduced sense of taste.

Examination of the mouth reveals one or more of the following:
- loosely adherent, cheesy-white plaques anywhere on the oral mucosa or tongue (pseudomembranous candidiasis);
- red, sore mucosa (erythematous candidiasis);
- macerated sores at the corner(s) of the lips (angular stomatitis);
- a red patch of inflamed mucosa under a denture (chronic atrophic candidiasis).

Diagnosis

The diagnosis is obvious when loosely adherent white plaques are present. If there is doubt, a swab should be sent for microbiological examination; alternatively, a trial of therapy may be started.

Treatment

The patient should be treated with one of the following antifungal agents:
- Nystatin mouthwash (100 000–500 000 units every 6 hours for 14 days).
- Ketoconazole (200 mg once daily for 5 days, by mouth) is similarly effective and is generally well tolerated. Its once-a-
day schedule is attractive and, because it acts systemically, it eradicates *Candida* from other sites. If ketoconazole is used for more than 10 days, there is a small risk of liver damage.

- *Fluconazole* (50–100 mg once daily for 5 days, by mouth). Clinical trials suggest that fluconazole is more effective than ketoconazole and nystatin, but it is more expensive.

Ketoconazole and fluconazole should be avoided in patients who are receiving cisapride because this combination occasionally causes severe cardiac toxicity.

Candidal regrowth occurs in about one-third of patients with cancer. In patients with AIDS, continued prophylaxis with fluconazole is often recommended.

After treatment the mouth should be examined every 2–3 days for signs of reinfection.

**Bacterial infection**

Bacterial infection is particularly common in patients with previous dental or gingival disease. It presents with:

- necrotizing gingivitis (common in patients with AIDS);
- dental abscess;
- soft-tissue ulceration.

The appearance of the lesions is often nonspecific and cannot be readily distinguished from that of viral or fungal infections. Specimens should be taken for culture before treatment is started.

**Treatment**

Bacterial infections of the mouth should be treated with systemic antibiotics and specific dental treatment as necessary.

**Herpes simplex**

Severe herpesviral infections of the mouth are common in patients with reduced immune function (e.g. due to AIDS, advanced cancer, or cancer chemotherapy). The lesions are often nonspecific – there may be no vesicles, only erythema and ulceration.
Many cases of herpesviral infection of the mouth are probably unrecognized, particularly in patients with advanced cancer. Caregivers should maintain a high level of suspicion and consider a trial of therapy if in doubt.

**Treatment**
Systemic aciclovir is the treatment of choice. Local analgesics may be given to relieve pain:

- choline salicylate gel (massaged gently into affected area, up to a maximum of every 3 hours).
- benzydamine (local spray or mouth-rinse every 1.5–3 hours).

**Aphthous ulcers**

Aphthous ulcers are often very painful. Their appearance is non-specific and they may be confused with ulcers caused by infection (bacterial, viral, or fungal) – cultures should be taken to identify ulcers that need specific treatment.

The following triple regimen is usually effective:

- tetracycline suspension (250 mg in 10–20 ml water, held in the mouth for 3 minutes and then spat out; repeated every 8 hours for 3 days)  
  plus
- chlorhexidine gluconate 0.2% mouthwash (rinse with 10 ml every 8 hours)  
  plus
- hydrocortisone lozenges (2.5 mg every 8 hours, in contact with the most painful ulcer).

Local analgesic agents should be given for pain relief.

**Halitosis**

Halitosis means foul-smelling breath. It prevents close contact with friends and relatives, reduces self-confidence, and spoils enjoyment of food. The cause is usually reversible (see Box 11.3, page 79).
Box 11.3 Causes of halitosis

Local causes
- poor oral hygiene
- dental disease
- gingivitis
- oral candidiasis
- infected tumour
  - mouth
  - gastrointestinal tract
  - respiratory tract

Distant causes
- sinusitis
- upper respiratory tract sepsis
- lower respiratory tract sepsis
- gastric stasis

Treatment

Strict attention to mouth care and adequate fluid intake are essential in all patients. The teeth should be cleaned thoroughly at least twice a day, using a toothbrush and toothpaste. Furred deposits on the tongue should be removed with a toothbrush or spatula.

Various mouthwashes may be helpful:

- standard mouthwash (see Box 11.1, page 72);
- effervescent mouthwash tablets (dissolved in 100 ml of water);
- 1% hydrogen peroxide mouthwash may help, but should not be used if fresh granulation tissue is present;
- metronidazole mouthwash (200 mg in 5 ml every 8 hours) is useful in patients with persistent halitosis if oral bacterial infection is suspected.

Specific treatment should be given according to the underlying cause. For example, systemic antibiotics are indicated for patients with infected oropharyngeal cancer or lung sepsis. Foul breath associated with gingivitis or oral sepsis is suggestive of anaerobic infection, which may be treated with metronidazole (500 mg by mouth every 8–12 hours).
Nausea and vomiting are common in terminal illness. Sometimes it is impossible to control vomiting completely, particularly if there is intestinal obstruction. Patients are generally satisfied, however, if nausea is controlled, even if they continue to vomit once or twice a day.

**Mechanisms of nausea and vomiting**

Nausea and vomiting occur when the "vomiting centre" (in the brain stem) is activated by any of the following:

A. cerebral cortex;
B. vestibular apparatus;
C. chemoreceptor trigger zone (CTZ);
D. vagus nerve;
E. direct action on vomiting centre.

Connections with the cerebral cortex mean that nausea and vomiting can be induced by psychological stimuli such as anxiety and fear, for example before chemotherapy ("anticipatory vomiting"). The vestibular nuclei transmit stimuli relating to movement and position, and the CTZ detects chemical changes in the blood; both are situated in the brain stem. The abdominal organs are linked by the vagus nerve to the vomiting centre.

**Causes** (see Box 12.1)

The various causes of nausea and vomiting act via one or more of the five mechanisms (A–E) described above. Often there is more than one cause present in the same patient.
Box 12.1 Causes of nausea and vomiting

Note: The letters A–E refer to the mechanisms associated with each cause. This is an important consideration when planning treatment.

Situational
A emetic triggers:
   malodour
   too much food
   unpalatable food
A,D inadequate mouth care

Illness-related
D constipation
D gastric irritation:
   distension
   blood
   gastritis
C,D gastrointestinal disease
C renal failure

Specific to cancer
D intestinal obstruction
E intracranial tumours:
   increased intracranial pressure
   irritation of 8th cranial nerve
D gastric outlet obstruction
C hypercalcaemia

Treatment-related
C,D chemotherapy
D abdominal radiotherapy
C,D drugs:
   antibiotics
   aspirin
   corticosteroids
   digoxin
   iron
   nonsteroidal anti-inflammatory drugs (NSAIDs)
   opioids
SYMPTOM RELIEF IN TERMINAL ILLNESS

Box 12.1 (continued)

Other

D acute pain
C,E infection:
  acute
  systemic
A emotional distress
A anxiety
B vestibulitis
D migraine
C diabetic ketoacidosis

A Acts via cerebral cortex
B Acts via vestibular apparatus
C Acts via CTZ
D Acts via vagus nerve
E Acts via vomiting centre

Evaluation

As in many palliative situations, diagnosis of the cause is usually based on probability and pattern recognition. Initial evaluation should consider the most common causes of nausea and vomiting, e.g. opioids, delayed gastric emptying, gastritis, constipation, intestinal obstruction, biochemical disturbance, and raised intracranial pressure.

If there is no obvious cause, a blood test should be done to exclude hypercalcaemia or renal failure.

Drug review

If the patient is taking a drug that causes gastric irritation, the drug should be stopped or reduced if at all possible. Alternatively, a similar drug may be prescribed instead; for example, opioid-related nausea is sometimes relieved by switching to a different opioid.

In many cases of drug-induced nausea (e.g. caused by chemotherapy) it is inappropriate to reduce or stop the offending drug. Such
cases generally require additional treatment with an antiemetic drug (see below).

**Treatment**

Nausea and vomiting can often be reduced by treatment of associated symptoms such as pain, anxiety, and cough.

**Non-drug measures**

*Environment*

The patient’s room should be airy and free of odours and other triggers of nausea. These triggers vary from patient to patient and should be identified by questioning.

*Diet*

Patients should choose when and what they would like to eat. Patients with persistent nausea may well tolerate a small meal but reject a large one. Eating should never be forced or hurried.

Some foods and drinks are particularly likely to precipitate nausea, e.g. warm foods with a strong smell, milk products, red meat, and coffee. Other foods such as dry toast, hard sweets, and salty potato crisps are generally well tolerated.

*Fluid balance*

Patients should be encouraged to drink as much as they can tolerate. In most cases the fluid intake gradually returns to normal as the vomiting is brought under control. Patients with persistent vomiting may require intravenous or subcutaneous fluids to maintain hydration and electrolyte balance (see page 69).

*Position*

Pressure on the stomach should be avoided. Maintenance of a semi-erect or erect position may help if there is oesophageal reflux.

*Mouth care*

Poor oral hygiene may contribute to nausea. Regular mouth care (see pages 71–75) ensures that the patient’s mouth and pharynx are clean and moist.
**Complementary therapies**
The following complementary therapies may be helpful:

- *Acupuncture*. The acupuncture point for the relief of nausea and vomiting is on the anterior surface of the wrist, three finger-breadths proximal to the distal skin crease, between the tendons of palmaris longus and flexor carpi radialis. This point may also be stimulated by acupressure, using wrist bands.

- *Relaxation therapy*

- *Distraction therapy* (e.g. music, painting).

**Drug therapy**

As a general rule, oral drugs are not absorbed effectively if the patient is vomiting. An alternative route of administration should be used if the patient is vomiting more than three times a day or if vomiting occurs soon after oral administration.

**Antiemetic drugs (see Table 12.1)**

Different antiemetics have different mechanisms of action which relate to the various mechanisms of nausea and vomiting:

- neuroleptics (e.g. haloperidol, prochlorperazine) act predominantly on the CTZ (the actions of chlorpromazine and levomepromazine (methotrimeprazine) are less specific);

- antihistamines (e.g. cyclizine, hydroxyzine, dimenhydrinate) and anticholinergic drugs (e.g. hyoscine) act on the vomiting centre itself;

- prokinetics (e.g. metoclopramide, domperidone, cisapride) promote gastric and small bowel activity via a cholinergic mechanism; metoclopramide and domperidone also inhibit the CTZ;

- **5-HT<sub>3</sub>** antagonists (e.g. ondansetron, granisetron) block the action of 5-hydroxytryptamine (serotonin) type 3 receptors on vagal efferents in the bowel and also have a central action on the CTZ and vomiting centre;
corticosteroids (e.g. dexamethasone) are helpful for vomiting caused by chemotherapy and probably act by a peripheral mechanism;

- benzodiazepines and cannabinoids probably act on the cerebral cortex.

The correct choice of antiemetic therefore depends on the suspected mechanism of nausea and vomiting in the individual patient (mechanisms A–E, Box 12.1).

Recommended doses are shown in Table 12.1. The dose should be adjusted to provide relief of symptoms without causing unacceptable adverse effects.

If an antiemetic is only partly effective despite dose adjustments, it is often useful to add a second antiemetic with a different mechanism of action. However, prokinetic drugs have a cholinergic mechanism of action and should not be combined with antiemetics that have significant anticholinergic effects.
<table>
<thead>
<tr>
<th>Group</th>
<th>Examples</th>
<th>Dose</th>
<th>Route of administration</th>
<th>Adverse effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroleptic drugs</td>
<td>Haloperidol</td>
<td>0.5–2 mg every 8–12 hours</td>
<td>p.o., s.c.</td>
<td>Dry mouth, drowsiness, extrapyramidal effects</td>
</tr>
<tr>
<td></td>
<td>Prochlorperazine</td>
<td>(a) 5–12 mg every 6–8 hours</td>
<td>(a) p.o., i.v., i.m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) 25 mg every 12 hours</td>
<td>(b) p.r.</td>
<td></td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>Dexamethasone</td>
<td>10–20 mg once daily</td>
<td>p.o., s.c., i.v.</td>
<td>Gastric irritation, poor control of blood glucose</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(in diabetics), euphoria, anxiety, depression</td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Hydroxyzine</td>
<td>50–100 mg every 6–8 hours</td>
<td>p.o., i.v., i.m.</td>
<td>Anticholinergic effects, drowsiness</td>
</tr>
<tr>
<td></td>
<td>Dimenhydrinate</td>
<td>50–100 mg every 6–8 hours</td>
<td>p.o., i.v., i.m.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cyclizine</td>
<td>50–100 mg every 6–8 hours</td>
<td>p.o., s.c., i.v., i.m.</td>
<td></td>
</tr>
<tr>
<td>Prokinetic drugs</td>
<td>Metoclopramide</td>
<td>10–20 mg every 4–6 hours; 60 mg/24 hours</td>
<td>p.o., s.c., i.v.</td>
<td>Extrapyramidal effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>s.c.</td>
<td></td>
</tr>
<tr>
<td>5HT₃ antagonists</td>
<td>Ondansetron</td>
<td>8 mg every 8–12 hours</td>
<td>p.o., i.v.</td>
<td>Headache, constipation</td>
</tr>
<tr>
<td>Anticholinergic drugs</td>
<td>Hyoscine hydro-</td>
<td>0.3 mg every 6–8 hours</td>
<td>s.c.</td>
<td>Anticholinergic effects</td>
</tr>
<tr>
<td></td>
<td>bromide</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Abbreviations:
- p.o. by mouth
- s.c. by subcutaneous injection
- s.c.t. by continuous subcutaneous infusion
- p.r. by rectal suppository
- i.v. by intravenous injection
- i.m. by intramuscular injection

Extra-pyramidal effects include dystonia (may occur immediately), parkinsonism (after 15–30 days of treatment), or tardive dyskinesia (after weeks or months of treatment).

Anticholinergic effects include blurred vision, dry mouth, palpitations, constipation, and urinary retention.

Extra-pyramidal effects are uncommon with metaclopramide at the doses described, but they should be watched for, particularly in younger patients.

These drugs are effective but very expensive. They work by selective blockade of serotonin (5-hydroxytryptamine) type 3 receptors.
13. Skin problems

This chapter addresses the following common skin problems: decubitus ulcers (pressure sores), malodorous tumours, and pruritus.

Decubitus ulcers

When a person is sitting or lying, the weight of the body puts pressure on the skin and tissues in contact with the chair, bed, or other surface. The pressure is highest on the skin and tissues that overlie bony prominences, particularly if the person is thin. In such areas the pressure blocks the blood supply and ischaemic damage eventually occurs. In healthy people this eventuality is avoided by changes in position, but in sick, immobile patients irreversible ischaemic damage can develop in a few hours, particularly if the supporting surface is hard, e.g. a hospital transport trolley.

Shearing forces (forces that put lateral stress on the skin and subcutaneous tissues) are a common cause of ulcers, particularly those over the sacral area in a bed-bound patient in a semirecumbent position.

It is commonly assumed that decubitus ulcers start in the skin and subsequently penetrate deeper tissues. In practice, the reverse often occurs both because muscle is more sensitive to pressure damage than skin, and because shearing forces may preferentially damage deeper tissue. Deep tissue necrosis may remain unrecognized until the skin breaks.

Evolution

Stage A: Blanching erythema
The earliest sign is redness of the affected skin. Light finger pressure causes the skin to blanche (whiten), which indicates that the microcirculation is intact. Assessment is often difficult in patients with dark skin.
**Stage B: Non-blanching erythema**
There is redness of the affected area and the skin does not blanche when pressure is applied to it. This lesion suggests that ulceration is imminent.

**Stage C: Partial-thickness skin loss**
The ulcer is superficial and presents clinically as an abrasion, blister, or shallow crater.

**Stage D: Established ulcer**
The ulcer presents as a deep crater with full-thickness skin loss and damage to subcutaneous tissue. The wound is often covered with hardened exudate (eschar), removal of which reveals the extent of underlying tissue damage. There may be extensive necrosis of muscle, bone, and supporting structures (e.g. tendon or joint capsule).

**Prevention**

**Risk assessment**
Good nursing care prevents decubitus ulcers. All patients receiving palliative care should undergo risk assessment so that preventive efforts can be focused where they are most needed.

The Waterlow scale (see Table 13.1) is a convenient way of evaluating a patient’s risk of ulceration. The score is calculated by adding together the scores for each of 10 risk factors. A combined score of 10 or more indicates that the patient is at some risk; 15 or more, high risk; and 25 or more, very high risk.

Debilitated patients are at high risk of pressure ulcers because they sit or lie for prolonged periods. Patients with anorexia–cachexia syndrome are also at high risk because of a combination of malnutrition and muscle wasting.

Other medical disorders that predispose to ulcer formation include diabetes and tissue fluid retention states (e.g. congestive heart failure, hypoalbuminaemia, or correctable local oedema).

Excess moisture (e.g. urine, sweat) leads to maceration, which damages skin integrity. It also provides an ideal culture medium for
**Table 13.1**

**The Waterlow scale for estimating the risk of decubitus ulcer**

A combined score of 10 or more indicates that the patient is at risk; 10 or more, high risk; 25 or more, very high risk.

<table>
<thead>
<tr>
<th>Sex/age</th>
<th>Mobility</th>
<th>Special risk factors&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1 Fully mobile</td>
<td>0 Terminal cachexia 8</td>
</tr>
<tr>
<td>Female</td>
<td>2 Restless</td>
<td>1 Cardiac failure 5</td>
</tr>
<tr>
<td>14–49</td>
<td>1 Apathetic</td>
<td>2 Peripheral</td>
</tr>
<tr>
<td>50–64</td>
<td>2 Restricted</td>
<td>3 Vascular disease 5</td>
</tr>
<tr>
<td>65–74</td>
<td>3 Inert/traction</td>
<td>4 Orthopaedic case&lt;sup&gt;c&lt;/sup&gt; 5</td>
</tr>
<tr>
<td>75–80</td>
<td>4 Chair-bound</td>
<td>5 Operating table&lt;sup&gt;d&lt;/sup&gt; 5</td>
</tr>
<tr>
<td>81+</td>
<td>5</td>
<td>Neurological deficit&lt;sup&gt;e&lt;/sup&gt; 4–6</td>
</tr>
</tbody>
</table>

**Body weight**

<table>
<thead>
<tr>
<th>Appetite</th>
<th>Body weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>0 Normal</td>
</tr>
<tr>
<td>Above average</td>
<td>Poor 1</td>
</tr>
<tr>
<td>Obese</td>
<td>2 Fluids only</td>
</tr>
<tr>
<td>Below average</td>
<td>3 Nil</td>
</tr>
</tbody>
</table>

**Skin (risk areas)**

<table>
<thead>
<tr>
<th>Incontinence</th>
<th>Skin (risk areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>0 Absent 0</td>
</tr>
<tr>
<td>“Tissue paper”</td>
<td>1 Occasional 1</td>
</tr>
<tr>
<td>Dry</td>
<td>1 Frequent 2</td>
</tr>
<tr>
<td>Oedematous</td>
<td>1 Urine and faeces 3</td>
</tr>
<tr>
<td>Clammy</td>
<td>1</td>
</tr>
<tr>
<td>Discoloured</td>
<td>2</td>
</tr>
<tr>
<td>Broken/spot</td>
<td>3</td>
</tr>
</tbody>
</table>

<sup>a</sup>Adapted with the permission of the originator, Mrs J. Waterlow SRN RCNT.

<sup>b</sup>Scores for these factors are added together for each patient.

<sup>c</sup>Applies to orthopaedic trauma or surgery to spine, pelvis, or lower limbs within the past few days.

<sup>d</sup>Applies to surgery lasting more than 2 hours or prolonged wait on transport trolley within the past few days.

<sup>e</sup>For example, paraplegia, stroke, or diabetic neuropathy; score depends on severity of deficit.

Bacteria, and this increases the risk of infection. Incontinent patients are therefore at very high risk of decubitus ulcer.
Pain relief is an important preventive measure in some patients, as poorly controlled pain is often associated with reduced mobility.

**Nursing care**

Preventive measures include:

- *Regular assessment.* High-risk sites should be examined routinely at least once a day (ideally every 4 hours).
- *Regular change of position:*
  - where possible, mobility should be improved;
  - patients who are chair-bound should be encouraged to shift position every 15–20 minutes;
  - bed-bound patients should be turned every 2 hours;
  - positions that involve direct pressure on the greater trochanter should be avoided;
  - the patient's relatives may be trained to change the patient's position;
  - bedclothes should be loose to allow spontaneous movement.
- *Avoidance of hard surfaces.* Transport trolleys and operating tables should be padded to protect pressure points, and waiting times should be kept to a minimum – hard transport trolleys are a notorious cause of decubitus ulcers.
- *Avoidance of shearing forces:*
  - whenever the patient is moved from bed or chair, he or she should be lifted, not dragged – two caregivers are normally required to do this safely;
  - in bed-bound patients, a second “lifting” sheet should be placed over the main sheet: this makes lifting and turning easier and helps soak up excess moisture (sweat, urine, or faeces);
  - creases in bedsheets should be smoothed out.
SYMPTOM RELIEF IN TERMINAL ILLNESS

- **Clean skin, free of excess moisture:**
  - mild soaps should be used;
  - the skin should be patted dry (not rubbed) – massage is ineffective and may be harmful;
  - a skin moisturizer should be used to keep the skin soft and supple;
  - if the patient is incontinent, a barrier cream should be applied;
  - urine and/or faeces should be cleaned away immediately if the bed is soiled.

**Pressure relief**

*Cushions and pillows*
Direct pressure on bony prominences can be avoided by use of pillows or foam wedges. Gel-filled cushions are helpful to avoid pressure on the sacrum. Where resources are limited, rubber gloves or empty infusion bags can be filled with water and used as support cushions for heels or elbows. It is particularly important to keep pressure off the heel.

*Note:* Ring cushions should not be used for the heel as they increase pressure on adjacent tissues.

*Beds and mattresses*
Most beds in hospitals (and many beds in the home) are quite hard and are therefore a major hazard for patients at risk of pressure sores.

*Sheepskins* reduce shearing forces, but are minimally effective in distributing pressure. Natural sheepskins are better than synthetic sheepskins.

Several types of mattresses and support systems have been developed to help prevent decubitus ulcers:

- **Polyester fibre** mattresses are effective when placed on top of a regular mattress; they are inexpensive and are suitable for home use.
Polyethylene foam mattresses provide good pressure distribution; they are fairly inexpensive and are also suitable for home use. They should be at least 10 cm thick and made of high-density material.

Advanced support systems are indicated for special cases, where affordable. Examples include ripple mattresses, airwave and air-support systems, water mattresses, and specialized flotation and mechanical beds.

Treatment

The following principles apply to the treatment of all decubitus ulcers:

- reverse contributing factors (see above);
- increase preventive efforts (see above);
- relieve pressure (see above);
- avoid further damage;
- maintain a clean wound;
- promote healing.

Risk factors must be identified and corrected where possible. This includes any underlying medical disorders that interfere with wound healing. For example, malnourished patients may require protein supplements and vitamin C.

Wound care for established ulcers

Established ulcers should be treated according to ulcer type, which is recognized by the colour and consistency of the ulcer base and exudate (see Table 13.2).

Hydrogel dressings and hydrocolloid dressings protect and moisturize the wound, absorb exudate, and provide an environment for autolytic debridement.

An alginate dressing covered by a polyurethane dressing may be useful for high-exudate wounds.
### Table 13.2
**Local dressings for pressure ulcers**

<table>
<thead>
<tr>
<th>Appearance (ulcer type)</th>
<th>Aim of treatment</th>
<th>Recommended dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (necrotic)</td>
<td>Remove necrotic tissue</td>
<td>Hydrogel or hydrocolloid</td>
</tr>
<tr>
<td>Yellow (sloughy)</td>
<td>Remove slough</td>
<td>Hydrogel or hydrocolloid</td>
</tr>
<tr>
<td>Red, deep (granulating)</td>
<td>Promote granulation</td>
<td>Hydrogel or hydrocolloid</td>
</tr>
<tr>
<td>Red, superficial (epithelializing)</td>
<td>Promote epithelialization</td>
<td>Hydrocolloid or low-adherence dressing or polyurethane film</td>
</tr>
<tr>
<td>Yellow/green, offensive (infected)</td>
<td>Treat infection</td>
<td>Low-adherence dressing or alginate</td>
</tr>
</tbody>
</table>


**Debridement**

Necrotic tissue and debris should be removed regularly (i.e. whenever the dressing is changed) with forceps. Scissors may also be necessary to free necrotic tissue from the wound base. Care must be taken not to damage normal tissue.

Extensive tenacious eschar may have to be removed surgically under local or general anaesthesia.

**Infected ulcers**

Infection is particularly likely in patients with diabetes, local oedema, and nutritional deficiency, and in those taking corticosteroids.

Topical antibiotics and antiseptics (e.g. iodine) should generally be avoided – they are often ineffective and may irritate healing tissue. Systemic antibiotics are indicated if the infected ulcer causes an acute cellulitis or if there are signs of systemic infection.

Patients with deep ulcers are at risk of osteomyelitis or abscess formation. These complications should be suspected if the wound cannot be cleaned and persistent infected necrotic tissue is present.

Necrotic, infected decubitus ulcers are often foul-smelling and may require additional treatment as described for malodorous tumours below.
Promotion of healing

Healing is promoted by:

- a clean, moist wound with no evidence of infection or necrotic tissue;
- warm adjacent skin;
- minimal exudate.

A healing ulcer is characterized by a pink-red base, i.e. healthy granulation tissue. During healing, gauze dressings soaked in saline should be applied to keep the ulcer bed clean and moist at all times. This provides a warm, moist environment that is ideal for healing. In normal circumstances the dressing should not be changed more often than once a day, otherwise the wound will be exposed to unnecessary cooling and drying.

Malodorous tumours

The foul smell associated with necrotic ulcerated tumours embar- rasses patients, reduces self-esteem, and limits social contact. Such tumours are particularly common in patients with breast cancer, head and neck cancer, and melanomas. The presence of malodour suggests infection by anaerobic bacteria.

Prevention

Anticancer treatment (local excision, radiotherapy, or chemotherapy) should be considered before ulceration occurs. This is particularly important in patients with breast cancer.

Treatment

Specific anticancer treatment may be considered, but this is not often feasible. However, the following measures can do much to improve the patient’s quality of life.

The smell associated with the tumour can be reduced by good ventilation of the room and use of room deodorants. The type of deodorant should be changed regularly: after a few days the
smell of a deodorant can become highly unpleasant when mixed with that of the tumour.

**Dressings**
The following dressings help reduce odour:

- activated charcoal (some preparations contain silver, which has additional antibacterial properties);
- honey and/or yoghurt inhibit bacterial growth and reduce odour, but they are messy and awkward to use;
- alginate dressings help reduce odour by absorbing exudate.

**Systemic antifibiotics**
Metronidazole (500 mg every 12 hours by mouth) is the drug of choice because it is effective against anaerobic bacteria. Alcohol must be avoided in patients on metronidazole as the combination may cause abdominal pain and vomiting.

Clindamycin (150–300 mg every 6 hours by mouth) is an alternative to metronidazole, but long-term use can result in pseudomembranous colitis.

Whatever antibiotic is used, treatment often has to be continued indefinitely because bacteria are rarely eliminated completely.

**Topical antibiotics**
Metronidazole gel 0.75%, applied to the ulcer every 12 hours, has the advantage of no systemic effects.

**Pruritus (itching)**

**Causes** (see Box 13.1)

Dry skin is the commonest cause of pruritus in debilitated patients. Pruritus is also a feature of most skin diseases and is often associated with allergic reactions. Histamine release is a well recognized mediator of pruritus, but the basis of pruritus in systemic disorders is generally poorly understood.
Box 13.1 Causes of pruritus

*Environmental*
soap (dry skin)
contact allergy:
  - perfumed soaps or creams
  - detergents (clothes/sheets)
  - rubber
  - wool

*Illness-related*
cholestatic jaundice
renal failure
iron deficiency anaemia

*Cancer-related*
leukaemias
lymphomas
polycythaemia vera
neuroendocrine tumours
skin metastases

*Treatment-related*
opioids (following epidural use)
contact allergy to skin cream:
  - neomycin
  - antihistamines
  - local anaesthetics

*Drug allergies*

*Other*
dry skin
hyperthyroidism
psychogenic
primary skin disease:
  - scabies
  - lice
  - atopic dermatitis
  - fungal infections
Treatment

Skin care is the key to successful management. The patient should be discouraged from scratching because this damages the skin and ultimately makes the pruritus worse; gentle rubbing is acceptable.

If the affected skin is dry, the patient should stop using soap and use a non-detergent skin cleanser instead. After cleaning, the skin should be patted dry with a clean towel, followed by application of an emollient cream.

Patients with persistent localized pruritus may benefit from application of cold wet dressings, hydrocortisone cream, crotamiton cream, oily calamine lotion (with added 0.5% phenol), or an antihistamine cream.

Systemic antihistamines and corticosteroids may be considered in selected patients, particularly if an allergic cause is suspected. Ondansetron may be helpful in pruritus associated with renal failure.

Cholestatic pruritus

Severe pruritus is a common problem in jaundiced patients with cholestasis or biliary obstruction. Occasionally the obstruction is surgically correctable, which usually relieves the pruritus. Medical treatments for cholestatic pruritus include:

- androgens (stanozolol 5–10 mg once daily by mouth, or methyltestosterone 25 mg twice daily sublingual): take effect after 5–7 days;
- rifampicin (150 mg every 12 hours by mouth);
- ondansetron (8 mg by intravenous injection) provides rapid relief (30 minutes); maintenance treatment is 4 mg by mouth every 12 hours.

*Note:* Colestyramine is generally ineffective and is no longer recommended for the treatment of cholestatic pruritus.
14. Urinary symptoms

This chapter addresses the following symptoms: reduced urine production; hesitancy and urinary retention; urinary incontinence; bladder spasms; haematuria.

Normal function
Normal urinary function depends on:

- well-perfused, healthy kidneys;
- a patent (unobstructed) urinary tract, from kidneys to urethral meatus;
- coordinated function of the bladder muscle (detrusor) and urethral sphincter, which depends on an intact nerve supply.

Terminal illness can interfere with any or all of these elements.

Reduced urine production
Dehydration is the commonest cause of reduced urine production. Severe fluid loss with hypotension (shock) results in underperfusion of the kidneys. The urine output is reduced and may stop altogether.

Renal disease may also result in reduced urine production, although in some cases urine output may be increased initially. Ureteric obstruction also presents with reduced or absent production of urine, particularly if there is obstruction of both ureters.

Hesitancy and urinary retention
The causes of hesitancy and urinary retention are similar (see Box 14.1) and include general physical difficulties, bladder dysfunction, and/or obstruction of bladder outflow.
Bladder dysfunction may be the result of structural damage, damage to the nerve supply, or neural inhibition by drugs, particularly anticholinergic drugs (e.g. phenothiazines, haloperidol, antihistamines, and tricyclic antidepressants).

Most cases of bladder outflow obstruction in men are caused by prostate enlargement.

Evaluation

The history often provides important clues. The following should be considered:

- urine volume, concentration, stream;
- presence of abdominal pain and/or constipation;
previous urethral instrumentation or infection (possibility of urethral stricture);

- blood in the urine (haematuria) or sudden reduction or cessation of urine flow.

Examination should include the following elements:

- Mental examination: delirium may result in lack of awareness of voiding stimuli and lead to either retention or incontinence. However, urinary problems – particularly retention – may be the cause of the delirium rather than the effect.

- Abdominal examination: may reveal a distended bladder palpable above the pubic ramus (dull to percussion); this suggests urethral obstruction, especially in elderly men.

- Examination of the urethral meatus: excludes blockage at that site.

- Rectal examination: should be carried out to exclude faecal impaction and, in men, to estimate the size of the prostate. Benign prostate enlargement is the commonest cause of urinary obstruction in men.

- Examination of the urine: may reveal the presence of gas or solid matter mixed with urine, which suggests a fistula.

If a patient is catheterized for diagnostic purposes, the amount of urine obtained should be measured. If the bladder is empty, radiological or endoscopic examination of the ureters should be considered.

Treatment

**Urinary catheter**

Insertion of a urinary catheter is indicated in patients with a palpable bladder who have not been able to urinate despite measures such as assistance to stand up (male patients), a warm bath, or rectal emptying.

Patients with urinary retention require intermittent catheterization every 8 hours or insertion of an indwelling catheter. If the cause is
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reversible, the catheter may be removed after 1–2 days. Patients with irreversible obstruction generally require a long-term indwelling catheter.

Catheters with a small (5–10 ml) balloon are preferred as they cause less discomfort. The catheter must be inserted using aseptic technique. Men require urethral anaesthesia with 2% lignocaine gel.

The drainage system should be airtight to avoid contamination and the urine bag should be attached to the leg to allow drainage by gravity. If the patient is in bed, the bag should be placed below the level of the bladder.

Irrigation is unnecessary unless the catheter becomes blocked or the patient develops haematuria or bladder spasms. In such cases, the catheter should be changed and the bladder should be irrigated with normal saline.

**Drug treatment**

If the patient is receiving anticholinergic drugs, these should be stopped or reduced if possible.

Voiding stimulants should only be used if hesitancy is present. They must not be used if the patient has overflow incontinence or complete obstruction.

Acute retention may be treated with cholinergic drugs (e.g. bethanechol 10–30 mg every 12 hours by mouth, or 5 mg every 8 hours by subcutaneous injection).

Alpha-blockers (e.g. indoramin, prazosin) may be useful in men with partial urinary obstruction due to benign prostatic hypertrophy. Indoramin is given in a dose of 20 mg at night or every 12 hours, increasing as required to a maximum of 100 mg per day. The commonest adverse effect is sedation.

The starting dose of prazosin is 0.5 mg at night, by mouth. Postural hypotension may occur, particularly in patients who are sodium-depleted. The blood pressure should be taken before and 2 hours after administration of prazosin to measure the hypotensive effect. The dose may be increased as tolerated up to a maximum of 1 mg every 8 hours.
URINARY SYMPTOMS

Urinary incontinence

Urinary incontinence includes the following forms of involuntary loss of urine:

- **Stress incontinence** is the commonest form of urinary incontinence in women and is characterized by loss of urine on coughing, sneezing, or laughing. There is a fault in the sphincter mechanism of the bladder, which allows the intra-vesical pressure to exceed the intraurethral counterpressure, despite absence of detrusor activity. Stress incontinence is not usually a major problem in terminally ill patients. 
  *Causes:* Multiparity, postmenopause, earlier hysterectomy.

- **Urgency and urge incontinence** are characterized by a lack of coordination between the bladder muscle and the bladder neck sphincter. 
  *Causes* (see Box 14.2): Urge incontinence is usually associated with cystitis or partial sphincter incompetence. Polyuria may be a contributing factor.

- **Overflow incontinence** is characterized by loss of urine associated with urinary retention. 
  *Causes:* The causes are the same as for urinary retention (see Box 14.1 on page 100).

- **Total incontinence** implies complete loss of sphincter function. There is continuous dribbling of urine and periodic involuntary voiding, particularly when the patient rises to the standing position. 
  *Causes:* denervation by presacral neural infiltration or surgery and direct tumour invasion of bladder neck.

**Treatment**

**General measures**

Regular voiding times should be encouraged. Fluid load should be reduced if the patient is taking excessive volumes. Diuretics should be reduced or stopped if possible.
Treatment of stress incontinence

Treatments for stress incontinence include pelvic floor exercises and surgery, but these are generally inappropriate in terminally ill patients.
Treatment of urgency and urge incontinence
Patients with urgency benefit from regular voiding before the bladder becomes full. They need easy access to toilet facilities and a rapid response to requests for help.

Drug treatment
Anticholinergic drugs are often useful, e.g. oxybutynin (2.5–5 mg every 6–8 hours) or propantheline (15 mg every 8 hours).

Treatment of overflow incontinence
Treatment of overflow incontinence is the same as that for retention.

Treatment of total incontinence
- **Incontinence pads.** Zinc oxide paste or a barrier cream should routinely be applied to nearby skin to prevent maceration and irritation by urine-soaked pads. Petroleum jelly is an alternative.

- **Condom catheter.** This device is usually used for short periods only (e.g. overnight) as it may lead to ulceration of the skin of the penis. It should not be used in patients with overflow incontinence.

- **Urinary catheter** (see also page 101). Catheterization is either continuous (indwelling catheter) or intermittent. Some patients who are able to care for themselves prefer intermittent self-catheterization.

- **Urinary diversion** (e.g. implantation of ureters into bowel) is rarely appropriate in terminally ill patients.

Bladder spasms
Bladder spasms (detrusor spasms) present with brief episodes of deep suprapubic pain. The pain is often very severe and may radiate to the urethra.

Causes
The commonest cause is irritation of the trigone (the triangular internal base of the bladder) by any of the following: cystitis, bladder
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stones, blood clots, or indwelling catheter. Bladder spasms may also result from tumour infiltration or increased tone of the bladder muscle associated with spinal cord injury or post-radiation fibrosis.

Evaluation

Evaluation should include urine microscopy and culture for evidence of infection.

Treatment

Non-drug measures

The underlying cause should be identified and removed where possible. If the patient is catheterized, the volume of the catheter balloon should be reduced to minimize irritation. If this is unhelpful, the catheter should be removed for a trial period.

Drug therapy

Trimethoprim should be started if infection is suspected (200 mg every 12 hours by mouth, for 10 days). Treatment should be reviewed and changed if necessary when urine culture results are available.

In the absence of infection, one of several drugs may be tried:

- **Anticholinergic drugs** reduce bladder muscle sensitivity and are recommended by some authorities as the first-line treatment in the absence of infection. One of the following regimens may be used:
  - oxybutynin 2.5–5 mg every 6–12 hours
  - amitriptyline 25–50 mg at night
  - propantheline 15 mg every 8–12 hours.

- **Nonsteroidal anti-inflammatory drugs (NSAIDs)** are theoretically useful because they inhibit synthesis of prostaglandins (prostaglandins E₂ and F₂₅ stimulate bladder muscle). In practice, however, NSAIDs are often disappointing.

- **Morphine** is only partly effective, but is useful to reduce pain and distress in severe cases.

- **Bupivacaine 0.25%** (20 ml by bladder instillation every 8–12 hours) is effective in some cases.
Haematuria

Causes

Haematuria may be caused by:

- urinary tract infection;
- tumour;
- urinary stone;
- clotting defects.

Evaluation

Urinary tract infection should be excluded and the drug regimen should be reviewed to see whether the patient is taking anticoagulants or NSAIDs.

If the bleeding persists, cystoscopy should be considered. It may be possible to stop haemorrhage from tumours by cauterization or irradiation.

Treatment

The underlying cause should be treated if appropriate, e.g. antibiotics for urinary tract infection. Most cases of haematuria are mild and do not require treatment.

Moderate haematuria may respond to etamsylate (500 mg every 6 hours by mouth). If bleeding is severe or etamsylate is ineffective, bladder instillation with 1% alum is indicated. If alum is not available, the bladder may be irrigated with cold (4 °C) saline at a rate of 3 litres/24 hours.

Profuse bleeding should be treated by insertion of a large catheter (e.g. size 24F) followed by irrigation with saline to evacuate blood clots. Irrigation is continued until all the clots have been removed and outflow is clear. The catheter should then be replaced with a smaller, three-way, indwelling catheter (e.g. size 20F), followed by further irrigation.
Further reading


Kaye P. Notes on symptom control in hospice and palliative care. Essex, CT, Hospice Education Institute, 1989.


¹Obtainable from Distribution and Sales, World Health Organization, 1211 Geneva 27, Switzerland.
Incurable disease causes the deaths of tens of millions of people every year, mostly in developing countries. While it is unlikely that this situation will change significantly in the short term, there is much that can be done to relieve the suffering that is an inevitable feature of such disease.

Even a minor complaint, such as cough or hiccup, which may be little more than an irritation to the healthy individual, can give rise to considerable and unnecessary discomfort in the terminally ill patient. More serious problems, both physical and mental, cause proportionally greater distress. This volume outlines the likely causes of a wide range of these secondary symptoms and provides comprehensive guidance to their management. Many of the approaches discussed are drug-based, but non-drug measures, which are often simple to implement and can provide substantial relief, are also described. The additional support that can be provided by family members and by appropriate counselling is emphasized, particularly in the context of psychological problems such as anxiety and depression.

Complementing WHO's guidelines on the management of cancer pain, now in a second edition, this book is aimed at health professionals of all levels who are concerned with the care and comfort of patients with terminal diseases.