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Mustansiriyah University
College of Pharmacy
Department of Clinical Pharmacy*



**Clinical Pharmacy Lab
First Semester
For 4th Class**

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Introduction

Lab. I

Aim of the lab

This lab Provides solid background of pharmacy practice workshop where the student starts to learn the role of pharmacist in three major variables:

The medicine (Drugs) The patient The prescription

1. The medicine:

Different types of drug groups used in variable clinical conditions will be presented to the student, and the information about each drug will be collected using different drug guides and organized according to (patient education sheet) which enables the student to put this drug information in a questioner profile to communicate with the patient. For example:

- _ What is (Aspirin) and how does it work?
- _ Why, when, and how it is used?
- _ what unwanted effect could Aspirin have? How can be managed?
- _ Can you take Aspirin with other medications?
- _ Are there any patients who should not take Aspirin?
- _ What should I do if I forget to take a dose?
- _ What necessary storage conditions?

2. *The patient:* The student will learn how to communicate with outpatients visiting the pharmacy. This enables him to gain some self confidence about his drug information and how to label the information on the package. The student will be assessed for the following points:

- _ Patient history information e.g. past history, allergy to food& drugs, smoking, alcohol, pregnancy.
- _ Patient education information e.g. writing instructions for specific drug, alternatives, cautions.
- _ Pharmacist dispensing skills e.g. dosing, dosage form, strength, duration of therapy.
- _ Non verbal communications e.g. Structure of conversation, student face the patient, speak clearly, open - ended questions.

3. *The prescription :* The student learn to distinguish between different types of prescriptions whether used for the first time, repeated prescription for chronic diseases, legal or illegal, used for external or internal medications etc. Also the students learn how to dispense these different prescriptions using the above information.

Over the Counter Drugs(OTC)

This group of medications are dispensed without prescriptions (by hand) to treat minor medical problems rapidly without necessary visit to the clinics.

There is many information to be collected before dispensing the drug which highlighted the pharmacist skills in this area, these are;

1. The severity of symptoms, onset and duration.
2. Acute versus chronic
3. Exacerbating and relieving factors

4. Concomitant medications

5. Patients age, sex, pregnancy, smoking etc. The OTC drugs include the following groups:

Antiseptics and disinfectants

Topical powders, lotions, ointments and creams

Mouth washes, gargles, lozenges

Antacids

Laxatives

Suppositories

Tonics and vitamins

Cough preparations

Simple analgesics and antipyretics

Antidiarrheals

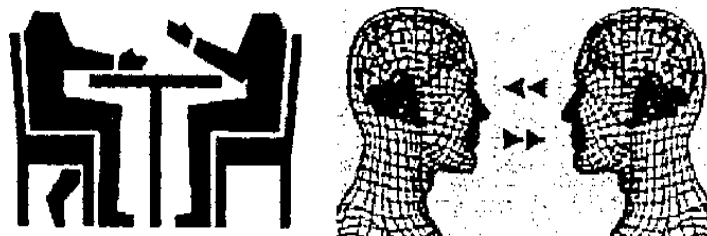
Sweeteners

Eye, ear, nose drops

Referral conditions: some medical conditions should not be handled by the pharmacist and should be referred to the physician:

- 1-When symptoms too severe to be prescribed by the patient without definitive diagnosis and physical examination.
- 2-When symptoms are too minor but persistent and cannot be easily identified.
- 3-When recurrence of symptoms occurs rapidly.
- 4-When the patient is infant, elderly, or pregnant and lactating.
- 5-When the cause is not recognized easily.
- 6- When the pharmacist is doubt about drug abuse.

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Definition

Communication is the transmission of information, thoughts, and feelings so that they are satisfactorily received or understood.

The Pharmacist's Need for Good Communication Skills

The opportunities for pharmacist to perform a physical examination and /or diagnostic tests are limited, however, a number of studies have shown that in more than 75% of all cases taking a patient history alone will result in a correct diagnosis.

It is vital, therefore, the pharmacists possess excellent communication skills to ensure that correct information is obtained from the patient with Improving patient understanding and outcomes.

Key Elements of Communication Skills

A study of communication among pharmacists revealed five skills areas that are fundamental to effective practice of pharmacy. These are:

- 1- Building relationship.
- 2- Explaining skills.
- 3- Questioning skills.
- 4- Non-Verbal communication.
- 5- Listening skills.

1. Building Relationship

Patients are more influenced by, and followed the advice of pharmacists with whom they formed a good relationship.

The pharmacist can perform many strategies to initiate, maintain, and enhance the professional relationship with the patients. Among the most important are: 1-Greeting by name. 2-Showing pleasure, and warmth.3-Showing interest in patients. 4-Being helpful. 5-Being available / accessible.6-Preserving confidentiality.

2. Explaining Skills:

Explanation does involve giving information, but it is not simply a matter of "telling", rather it is concerned with enabling another person to "understand what had been said".

So, the effectiveness of pharmacist's explanation to a patient can only be judged by the extent to which the patients has understood, remember, and utilize what has been explained. A useful structure for explanations is:

1-Introduction (what is going to be explained and why e.g. I'm going to tell you how to use the inhaler properly. this will help you in relieving your symptoms).

2-Information, then

3-Summary.

The understanding retention and utilization of information can be enhanced by pharmacists using the following techniques:

1-Planing: this means we need to have prepared explanation (e.g. for the use of inhaler device,..), in case we may not have all the facts it is best to ask the customer to come later , so that we can check the facts and prepare explanation .

2-Placing the most important points at the beginning and at the end of any counseling process (to enhance memory).

3-Using of appropriate language and avoiding jargons (jargons is technical terms e.g. this is a sustained release tablet !!!!or enteric coated !!!!!).

4-Etnphasizing key points which may put the patient in harm.

5-Providing only essential information in order to prevent overload (i.e. explanation should be as brief as possible).

6-Simplifying complicated message.

7-Repeating the instructions.

8-Accompanying the oral message with written or visual aid.

9-Encouraging the patient to repeat demonstration (to ensure that the massage is understood).

10-Monitor feedback to check the extent of patient understanding (looking for the non-verbal signs that the person is not understanding is also important).

11-Ending the consultation with summary of key points.

The explanation may be simple or complex. Simple explanation conveys the facts (e.g. take the single dose of the statins (antihyperlipidemic drugs) at night). Complex explanation includes causation in addition to the facts (e.g. take the single dose of the statins (antihyperlipidemic drugs) at night because the synthesis of cholesterol is higher at night). Complex explanation takes more time but produce better results.

3- *Questioning Skills.*

Good questioning skills are essential to any pharmacists to obtain specific information. However, the type of question and the way in which it asked will affect the level of response given. Generally, there are three main types of questions:

A-Closed questions: which are worded in ways that restrict their answers and it usually requires the respondent to give a single word such as "yes" or "no". This type of questions will give a lot of information quickly but the information gathered may be incomplete e.g.: do you know how to take your medication?

B-Open-ended questions: which allow people to respond in their own way and expand their answers. This type of questions can produce more details information but it is time consuming. e.g. What did your doctor call you about taking the medication?

C-Leading-questions; which lead the person in the direction of certain answers in biased way and, as a result, they may distort the nature of response received e.g.: You are familiar with your medications, aren't you?

In pharmacy practice where time can be a limiting factor, pharmacist can use a combination of open and closed questions to ensure that accurate and complete information are obtained more quickly. Example:

Mr. A.G is in the pharmacy asking for "good stomach medicine for his wife"

Pharmacist: "she has a stomach problem?" (closed question)

Mr. A.G: "yes"

Pharmacist: "What exactly do you mean by stomach problem?"(open question)

Mr. A.G: "well she has a burning feeling in her chest and bad taste in her mouth,"

Some pharmacist finds that the use of an acronym such as the simplest one (WHAM), is useful to remember the questions, however it does not provide complete information, and we need more specific questions for each individual and condition.

WHAM

W: Who is the patient and What are the symptoms? **H:** How long have the symptoms been present? **A:** Action taken? **M:** Medication being taken?

4- Non-Verbal communication.

Non-verbal communication can be defined as: all forms of human communication apart from purely the words used. Using this definition, the term non-verbal includes both paralanguage (how something is said) and body language. The paralanguage includes the vocal characteristics as:

1-Tone: tone in particular can convey more meaning than actual words e.g. "Thank you for asking question" said in a harsh voice contradict the words and indicate that is not meant. The same words in a warm tone show sincerity.

2-Speed: the speed of speaking must enable the listener to understand.

3-Volume (how loudly we speak): the volume must be adjusted to the circumstance and emphasize key words.

The body language in turn, includes:

1-Eye contact: the maintenance of eye contact during communication may indicate an interest in the subject in western cultures. However, Orientals tend to decrease eye contact during communication and will often look at the floor when speaking.

2-Facial expression: the facial expression of pharmacist should be encouraging and welcoming. As well as pharmacist should be able to read the meaning of patient's facial expression regarding the level of comprehension and receptiveness.

3-Body posture: leaning towards the person who is talking or sitting in a relaxed fashion, can encourage good communication.

4-Physical contact: this is an important aspect and can be used to enhance communication. A sympathetic touch on an arm can say far more than any number of words. However, physical contact is governed by social and religious rules, which vary between cultures.

5-Personal space (distance): 0.5-1 m is usually sufficiently close to allow friendly and meaningful communication.

6-Gesture: Hand gestures in particular are useful when emphasizing a point or to help to describe something and can greatly enhance communication and improve understanding.

It is generally agreed that in any communication, the actual words convey only about 10% of message (verbal communication). The other 90% of message is transmitted by

non-verbal communication which consists of paralanguage (about 40%) and body language (about 50%).

5 -Listening Skills

In pharmacy practice, the pharmacist needs to employ active listening to the patients to prevent their dissatisfaction with the consultation.

Active listening is much more than hearing what another person is saying. It is understanding the emotions and feeling associated with the words which is called empathy. Empathy is the ability to recognize and share someone else's feeling (i.e. listening of feeling i.e. imagine yourself in patient's positions). Accordingly, the pharmacist verbal and non-verbal features should make the customers recognize that they are being listened. Non-verbal signs, including, maintaining eye contact, smiling, and the use of posture (in leaning towards the patients) all indicates that the pharmacist paying attention. Verbal signs can indicates that the careful listening is going on, and these include brief verbal contributions such as (yes), (Mmm), (Oh),etc.

When verbal and non-verbal message conflict, for example, if the pharmacist says (how interesting) while at the same time looking at his watch, or picking up a document and reading it, the customer will believe the non-verbal message.

Environment for Communication The key elements of environment for communication are:

1-Privacy: an area where the patient and pharmacist cannot be overheard is very important to ensure confidential communication and this may be only a corner in the pharmacy away from the customers' cue. Privacy allows the pharmacist to give accurate and complete information and allow the patient to ask even potentially embarrassing or stupid questions.

2-A place to sit comfortably - e.g. a desk or table and two or more chairs.

In addition, the visibility of library references books will enhance the professional image.

Influencing skills (guidelines for becoming more effective influencer pharmacist)

1-Think about your personal appearance-do you dress and look like professional? first impression is very important in developing positive expectation among the public.

2-Think about the appearance of your pharmacy-does it have the appearance of a professional environment?

3-When talking to customers, try to find something in their background that similar to yours-people are more influenced by pharmacist with whom they have a something common.

4-Use simple language and offer as much information as the person wants.

Respiratory system

A. Cough

Lab. II



Drug groups

Tussiram, Plumocodiene, Tussilet, Sedilar, Solvodin, Samilin, Cemo, Exidil, Sinecod, Actifed, Tussivan.

Management

The choice of treatment depends on the type of cough. Suppressants (e.g. *pholcodine*) are used to treat unproductive coughs, while expectorants such as *guaifenesin* (*guaiphenesin*) are used in the treatment of productive coughs. Productive coughs should not be treated with cough suppressants because the result is pooling and retention of mucus in the lungs and a higher chance of infection, especially in chronic bronchitis.

A. Non-pharmacological therapy

1. Steam inhalations

These can be useful, particularly in productive coughs. The steam helps to liquefy lung secretions and patients find the warm moist air comforting. A preparation such as menthol and eucalyptus or a proprietary inhalant. One teaspoonful of inhalant should be added to a pint of hot (not boiling) water and the steam inhaled. A cloth or towel can be put over the head to trap the steam.

2. Fluid intake

Maintaining a high fluid intake helps to hydrate the lungs and hot drinks can have a soothing effect and increase fluid intake by around 2 La day.

B. Pharmacological therapy

1. Cough suppressants

Codeine side-effects (even at OTC doses can cause constipation and, at high doses, respiratory depression) Dextromethorphan is less potent than codeine and has a low

potential for abuse. It is generally non-sedating and has few side-effects. Occasionally, drowsiness had been reported. Dextromethorphan can be given to children of 2 years and over.

2. *Demulcents*

Preparations such as glycerin, lemon and honey or Simple Linctus are popular remedies and are useful for their soothing effect. They do not contain any active ingredient and are considered to be safe in children under 2 years and pregnant women.

3. *Expectorants*

Two mechanisms have been proposed for expectorants. They may act directly by stimulating bronchial mucus secretion, leading to increased liquefying of sputum, making it easier to cough up. Alternatively, they may act indirectly via irritation of the gastrointestinal tract, which has a subsequent action on the respiratory system, resulting in increased mucus secretion. Example is *Guaifenesin (guaiphenesin)* commonly found in cough remedies. In adults, the dose required to produce expectoration is 100–200 mg.

Cough remedies: other constituents

1. *Antihistamines*

Include diphenhydramine and promethazine. These reduce the frequency of coughing and have a drying effect on secretions, but induce drowsiness. A combination of an antihistamine and a cough suppressant may be useful in that antihistamines can help to dry up secretions and, when the combination is given as a night-time dose if the cough is disturbing sleep, a good night's sleep will invariably follow.

The non-sedating antihistamines are less effective in symptomatic treatment of coughs and colds because of their less pronounced anticholinergic actions.

Interactions: they should not be used by patients who are taking phenothiazines and tricyclic antidepressants because of additive anticholinergic and sedative effects. Increased sedation will also occur with any drug that has a CNS depressant effect. Alcohol should be avoided because this will also lead to increased drowsiness.

2. *Sympathomimetics*

Pseudoephedrine is used in cough and cold remedies for its bronchodilatory and decongestant actions as well as a cough and an expectorant/decongestant combination can be useful in productive coughs. It has a stimulant effect that may theoretically lead to a sleepless night if taken close to bedtime. Sympathomimetics can cause raised blood pressure, stimulation of the heart and alterations in diabetic control therefore should be used with caution in patients with diabetes, coronary heart disease (e.g. angina), hypertension, hyperthyroidism.

Interactions: Avoid in those taking: monoamine oxidase inhibitors (e.g. phenelzine) reversible inhibitors of monoamine oxidase A (e.g. moclobemide), beta-blockers, tricyclic antidepressants (e.g. amitriptyline).

3. *Theophylline*

Theophylline is included in cough remedies for its bronchodilator effect. OTC medicines containing theophylline should not be taken at the same time as prescribed theophylline since toxic blood levels and side-effects may occur. The action of theophylline can be potentiated by some drugs, e.g. cimetidine and erythromycin. Levels of theophylline in the blood are reduced by smoking and drugs such as carbamazepine, phenytoin and rifampicin that induce liver enzymes, so the metabolism of theophylline is increased and lower serum levels result.

Side-effects include gastrointestinal irritation, nausea, palpitations, insomnia and headaches. The adult dose is typically 120 mg three or four times daily. It is not recommended in children.

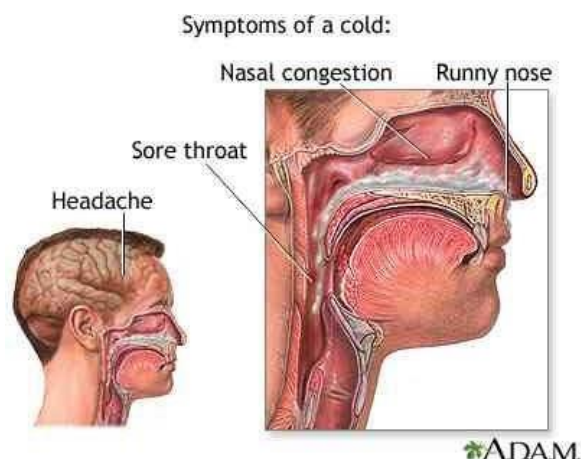
Diabetes

In short-term acute conditions the amount of sugar in cough medicines is relatively unimportant. Diabetic control is often upset during infections and the additional sugar is now not considered to be a major problem.



B. Common Cold

Lab.III



Drug groups:

Panadol Cold &Flu day, Panadol Cold &Flu night, Panadol sinus, Actifed, Coldin , Flu out, Nasordin, nasophrin drops ,Otrivin, Methadine, Methadine N drop,Vibrocil, Clarinase, Orofar lozenges, Strepsils, Angiovag buccal spray, sedating antihistamines: Allermine, atarax, chlorpheniramine, cyproheptadine, zaditen, promethazine. Non-sedating Antihistamines: zirtek, loratidine, Telfast.

Management:

A-Non pharmacological measures: Non -drug therapy include:

- 1- increased fluid intake which may loosen the mucus and promote drainage.
- 2-getting adequate rest may help to recover quickly.
- 3-adequate nutrition.
- 4-saline solution(discussed later) can soothe the irritated nasal tissue and moisturized nasal mucosa'3' ' and it can be given to all age group an during pregnancy.

B- pharmacological therapy:

1-Decongestants(sympathomimetics):

A-Systemic (oral) decongestants: like pseudoephedrine and phenylprine. They reduce nasal congestion by constricting dilated blood vessels in the nasal mucosa.

C/I: Systemic (oral) decongestants cause stimulation of the heart, increase the BP and may cause hyperglycemia. Therefore, they should avoid in:(D.M, Ischemic heart disease (angina, M.I), hypertension, and hyperthyroidism)

D/I: Avoid concomitant use with MAOI because of risk of hypertensive crisis,

avoid in patients taking beta blockers & TCAS, avoid in first trimester of pregnancy.

B. Topical(drop/spray) Nasal Decongestants(sympathomimetics):

2. *Nasal Spray or Drop:* nasal sprays are preferable for adults and children aged over 6 years because spray has a faster onset of action and cover a large surface area. Nasal drops are preferable for children aged below 6 years because their nostrils are not sufficiently wide to allow effective use of sprays. (but the drops cover a limited surface area and easily swallowed which increase the possibility of systemic effects).

3-*Topical Nasal decongestants(sympathomimetics):* can be recommended for those patients in whom Systemic (oral) decongestants are to be avoided (1). (i.e. D.M, Ischemic heart disease (angina, M.I), hypertension, and hyperthyroidism).

4-*Duration of treatment with Topical Nasal Decongestants(sympathomimetics):* If topical; (drops or sprays) decongestants are to be recommend, the pharmacist should advice the patients not to use the product for longer than 7 days (1) (3-5 days in some references because:

Rebound congestion (Rhinitis medicamentosa) can occurs with topically applied (especially short acting* ') but not with oral sympathomimetics.

5-*Topical nasal decongestants:*

*can be given to pregnant women after the 1st trimester (i.e. the 1st three months) of pregnancy.

*Not OTC for children < 2 years.

*Not recommended for children <6 months (or 3 months in BNF) because they are obligate nose breathers and rebound congestion can cause obstructive apnea'4'. Saline nose drop can be used from birth to help with congestion. this would be more suitable and safer alternative than topical sympathomimetics

Note: regarding saline solution:

1-there are already formulated saline drops or spray products in the market. Or it may be prepared in the pharmacy.

2-saline solution can be prepared by the patient using one teaspoonful of table salt in seven ounces of warm water and administered with a bulb syringe (dose 2-6 drops in each nostril four times daily or as needed) , discard any unused portion.

6-*Adminstration of nasal drops and spray,* (see the supplement).

2-*Antihistamines:*

Antihistamine can reduce some of symptoms of a cold: runny nose (rhinorrhoea) and sneezing but are not so effective in reducing nasal congestion.

Antihistamine can be classified into:

A- *Sedating Antihistamine:*

Examples of OTC sedating antihistamine are:

Chlorpheniramine (Histadin® tablet and syrup), Dexchlorpheniramine (polaramine® tablet), and Diphenhydramine (AHermin® tablet and syrup), and Triprolidine (Actified® tablet and syrup).

Side effects: sedation and drowsiness (patients should be informed) and anticholinergic S/Es (i.e. dry mouth, urinary retention, constipation ,) and the elderly patients are more susceptible to these accordingly they are not recommended (or used with caution) for patients with :Glaucoma, or prostate hypertrophy and in elderly patients.

D/I: the sedative effects of antidepressants, anxiolytics, and hypnotics are likely to be enhanced by sedating antihistamine'.

B- Non-Sedating Antihistamine:

Examples of OTC non-sedating antihistamine are:

Loratadine (clarityn® tablet and syrup), and cetirizine (Zirtek® tablet and syrup).

They are generally preferable over the older antihistamines because of much lower incidence of S/Es).

Adult dose of loratadine: 10 mg once daily.

Note ralthough the drowsiness is rare, but the warning that these drugs may affect driving and skilled tasks is still present.

3-Combination products: sympathomimetics (for congestion) + Antihistamine (for rhinorrhoea and sneezing):

Example of OTC products is:

Actifid® tablet and syrup: which composed of Triprolidine (sedating antihistamine) and Pseudoephedrine (sympathomimetics).

4-Analgesics, antipyretics, and cough preparations':

Systemic analgesics and antipyretics (e.g. paracetamol, Ibuprofen) are effective for aches or fever & sore throat which may be associated with common cold.

In addition, cough, when present, may be treated by suitable cough products (see cough).

5-Vitamin C in common cold:

A review of trial data conducted in 2000 concluded that Vitamin C:

*Does not prevent colds and appears to reduce the duration of symptoms when ingested in large dose (up to 1 gm daily) although the response is variable.

6-Zinc lozenges: can decrease the duration & severity of common cold, but evidences is currently insufficient to recommended zinc to treat common cold.

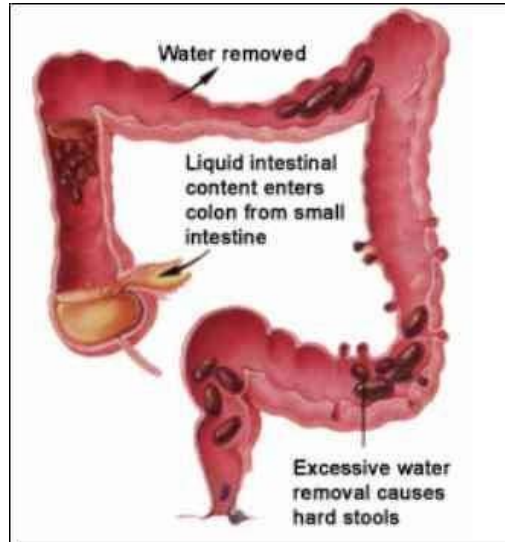
7-Vapour inhalation: with menthol crystals as a steam.

8-Vaccination: Annual "flu" vaccination for at-risk group (those have chronic respiratory diseases "asthma", chronic heart diseases, chronic renal failure, D.M. & etc).

Gastrointestinal system

A. Constipation

Lab. IV



Drug groups

Laxative: Senna, Dulcolax, Agiolax, Lactulose, Glycerin Supp.

Management

A. Non-pharmacologic therapy

Increasing the amount of dietary fiber, maintaining fluid consumption. An adequate fluid intake is essential for well-being, and, for both prevention and treatment of constipation at amount of 2.5 liters a day for adults and not all of this needs to be in the form of water. Tea and coffee can be counted towards daily fluid intake and doing regular exercise.

B. Pharmacologic therapy

1. Stimulant laxatives (e.g. sennosides and bisacodyl)

They work by increasing peristalsis within 6–12 h when taken orally and produce griping/cramping pains. The intensity of the laxative effect is related to the dose taken. They should be used for a maximum of 1 week. Bisacodyl suppository has an effect within 1 h and sometimes as soon as 15 min after insertion. Docusate sodium have both stimulant and stool-softening effects and acts within 12 days. Castor oil is a traditional remedy for constipation, which is no longer recommended since there are better preparations available.

Patient education:

- Start at the lower end of the recommended dosage range, increasing the dose if needed.

- Bisacodyl tablets are enteric coated and should be swallowed whole because bisacodyl is irritant to the stomach.

2. *Bulk laxatives (e.g. ispaghula, methylcellulose and sterculia)*

They work by swelling in the gut and increasing faecal mass so that peristalsis is stimulated. The laxative effect can take several days to develop.

Patient education:

- The sodium content of bulk laxatives (as sodium bicarbonate) should be considered in those requiring a restricted sodium intake.
- An increase in fluid intake would be necessary.
- In the form of granules or powder, the preparation should be mixed with a full glass of liquid (e.g. fruit juice or water) before taking.
- Intestinal obstruction may result from inadequate fluid intake in patients taking bulk laxatives, particularly those whose gut is not functioning properly as a result of abuse of stimulant laxatives.

3. *Osmotic laxatives (e.g. lactulose, Epsom salts and Glauber's salts)*

- Lactulose works by maintaining the volume of fluid in the bowel and take 1–2 days to work.
- Lactitol is chemically related to lactulose and is available as sachets. The contents of the sachet are sprinkled on food or taken with liquid. One or two glasses of fluid should be taken with the daily dose.
- Lactulose and lactitol can cause flatulence, cramps and abdominal discomfort.
- Glycerin suppositories have both osmotic and irritant effects and usually act within 1 h. They may cause rectal discomfort. Moistening the suppository before use will make insertion easier.

❖ *Constipation in children*

A change in diet and emotional causes can lead to constipation. Simple advice about sufficient dietary fibre and fluid intake may be all that is needed. A single glycerin suppository together with dietary advice may be appropriate. Referral to the doctor would be best if these measures are unsuccessful.

❖ *Constipation in pregnancy*

Constipation commonly occurs during pregnancy due to hormonal changes. The intake of plenty of high-fibre foods and fluids can help. Oral iron, prescribed for pregnant women, may contribute to the problem. Stimulant laxatives are best avoided during pregnancy; bulk-forming laxatives are preferable.

❖ *Constipation in the elderly*

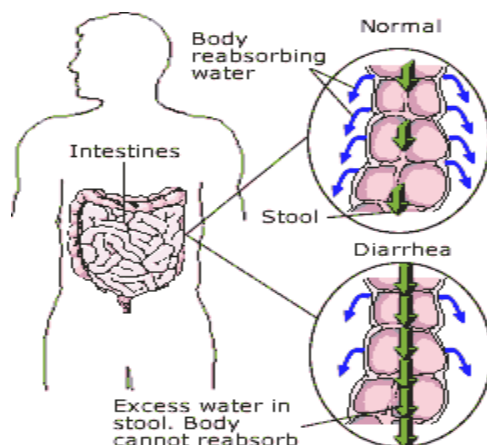
It is a common problem in elderly patients for several reasons.

1. Elderly patients are less likely to be physically active.
2. They often have poor natural teeth or false teeth and so may avoid high-fibre foods that are more difficult to chew.
3. Multidrug regimens are more likely in elderly patients, who may therefore suffer from drug-induced constipation.
4. Fixed ideas about what constitutes a normal bowel habit are common in older patients.
5. If a bulk laxative is to be recommended for an elderly patient, an advice about maintaining fluid intake to prevent the possible development of intestinal obstruction.

❖ *Laxative abuse*

Two groups of patients are likely to abuse laxatives:

1. Those with chronic constipation who get into a vicious circle by using stimulant laxatives, which eventually results in damage to the nerve plexus in the colon. where the contents of the gut are expelled, causing a subsequent cessation of bowel actions for 1 or 2 days. This then leads to the false conclusion that constipation has recurred and more laxatives are taken and so on.
2. Those who take laxatives in the belief that they will control weight, e.g. those who are dieting or, more seriously, women with eating disorders (anorexia nervosa or bulimia), who take very large quantities of laxatives.



Drug groups

Anti-diarrheal: Vacontil, Enterostop, Kaolin.

Management

1. Oral rehydration therapy or Oral Rehydration Solution(ORS) :

Rehydration therapy is considered to be the standard treatment for acute diarrhoea in babies and young children to prevent dehydration. Oral rehydration sachets may be used with antidiarrhoeals in older children and adults. Sachets of powder for reconstitution are available; these contain sodium as chloride and bicarbonate, glucose and potassium. The absorption of sodium is facilitated in the presence of glucose. A variety of flavours are available.

Patient education

1. Patients should be reminded that only water should be used to make the solution (never fruit or fizzy drinks) and that boiled and cooled water should be used for children younger than 1 year.
2. Boiling water should not be used, as it would cause the liberation of carbon dioxide.
3. The solution can be kept for 24 h if stored in a refrigerator. Fizzy, sugary drinks should never be used to make rehydration fluids, as they will produce a hyperosmolar solution that may exacerbate the problem. The sodium content of such drinks, as well as the glucose content, may be high.
4. Home-made salt and sugar solutions should not be recommended, since the accuracy of electrolyte content cannot be guaranteed, and this accuracy is essential, especially in infants, young children and elderly patients.

5. Special measuring spoons are available; their correct use would produce a more acceptable solution, but their use should be reserved for the treatment of adults, where electrolyte concentration is less crucial.

Amount of rehydration solution to be offered to patients.

Quantity of solution

Age (per watery stool)

Under 1 year 50 mL (quarter of a glass)

1–5 years 100 mL (half a glass)

6–12 years 200 mL (one glass)

Adult 400 mL (two glasses)

2. *Loperamide*

It is an effective antidiarrhoeal treatment for use in older children and adults.

Patients should drink plenty of extra fluids. Oral rehydration sachets may be recommended. *Loperamide* may not be recommended for use in children under 12 years.

3. *Diphenoxylate/atropine (Co-phenotrope)*

It can be used as an adjunct to rehydration to treat diarrhea in those aged 16 years and over.

4. *Kaolin*

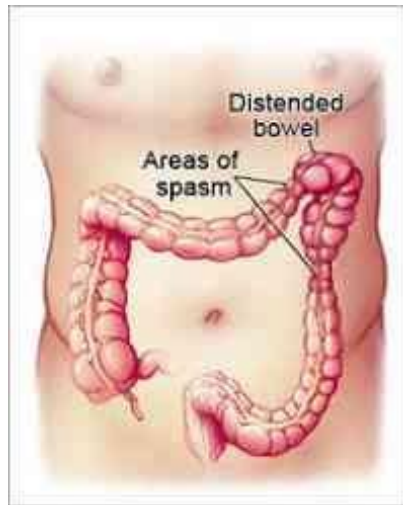
It *absorbs* water in the GI tract and would absorb toxins and bacteria onto its surface, thus removing them from the gut.

Practical points

1. Patients with diarrhoea should be advised to drink plenty of clear, non-milky fluids, such as water and diluted squash.
2. The patient can be advised to continue their usual diet but that fatty foods and foods with a high sugar content might be best avoided as they may not be well tolerated.
3. Breast- or bottle feeding should be continued in infants. The severity and duration of diarrhoea are not affected by whether milk feeds are continued. A well-nourished child should be the aim, particularly where the infant is poorly nourished to begin with and where the withholding of milk feeds may be more detrimental than in a well nourished infant, where temporary withdrawal is unimportant.

C. Irritable bowel syndrome

Lab. V



Drug groups

Duspatiline, Antispasmin, Stelabid, Colona.

Management

1. Antispasmodics

They are the mainstay of OTC treatment of IBS and improve abdominal pain with smooth muscle relaxation. *Alverine citrate*, *peppermint* and *mebeverine* are used.

They work by a direct effect on the smooth muscle of the gut, causing relaxation and thus reducing abdominal pain. The patient should see an improvement within a few days of starting treatment and should be asked to return to you in 1 week. It is worth trying a different antispasmodic if the first has not worked. Side-effects from antispasmodics are rare. All antispasmodics are contraindicated in paralytic ileus, a serious condition that fortunately occurs only rarely (e.g. after abdominal operations and in peritonitis). Here the gut is not functioning and is obstructed. The symptoms would be severe pain, no bowel movements and possibly vomiting of partly digested food. Immediate referral is needed.

2. Mebeverine hydrochloride

It is used at a dose of 135 mg three times a day taken 20 min before meals. It is not recommended for pregnant or breastfeeding women, for children under 10 or for patients with porphyria.

3. Bulking agents

Patients with IBS must eat a diet high in fibre, and raw wheat bran was often recommended as a way of increasing the fibre intake. Bran is no longer recommended in IBS. Bulking agents such as ispaghula containing soluble fibre can help some patients. It may take a few weeks of experimentation to find the dose that suits the

individual patient. The patient should increase fluid intake to take account of the additional fibre.

4. Antidiarrhoeals

Use of OTC antidiarrhoeals such as *loperamide* is appropriate only on an occasional, short-term basis. *loperamide* improved diarrhoea, including frequency of bowel movements, but not abdominal pain or distension.

Practical points

1. Diet

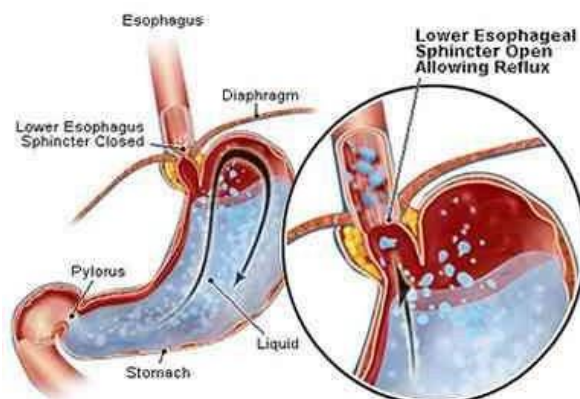
Patients with IBS should follow the recommendations for a healthy (low-fat, low-sugar, high-fibre) diet. Bran (which contains insoluble fibre) used to be widely recommended but it tends to ferment in the bowel and can lead to feelings of bloating and discomfort, and can make symptoms worse. Dietary sources of soluble fibre can be recommended including oats and pulses. Some patients find that excluding foods which they know exacerbate their symptoms is helpful. The sweeteners sorbitol and fructose can make symptoms worse and they are found in many foods the patient needs to check labels at the supermarket. Cutting out caffeine, milk and dairy products and chocolate may be worth trying. Although some patients benefit from the withdrawal of milk and dairy products, there is no evidence of lactase deficiency in IBS. Remind patients that caffeine is included in many soft drinks and so they should check labels.

2. Complementary therapies

Some patients find relaxation techniques helpful. Videos and audio tapes are available to teach complementary therapies. Hypnotherapy is of benefit in IBS. If patients want to try this, they should consult a registered hypnotherapist. Others as acupuncture, reflexology, aromatherapy or homoeopathy.

D. Gastroesophageal reflux disease(GERD)

Lab. VI



Drug groups

Maloox, Rennie. H₂ receptor antagonist: Zantac. Alginates: Gaviscon.

Proton pump Inhibitor: Omeprazole

Management

A-Non-pharmacological advices:

- 1-Eat small and frequent meals (to avoid distending the stomach).
- 2-Do not eat within 3 hours of going to bed and do not lie down for about 3 hours after eating.
- 3-Use extra pillow to elevate the head of the bed.
- 4-Do not wear tight fitting clothing.
- 5-Avoid smoking, alcohol, caffeine and foods that exacerbate symptoms of GERD.
- 6-Weight reduction should be advised.

B-pharmacological therapy:

1. *Antacids:(AL salts, Mg salts, Ca-carbonate, Na-bicarbonate):*

Practical points:

- 1-Best time for taking Antacids(U'3):

Antacids preferably taken after food by about 1 hour (because gastric emptying is slowed by food thus antacids remain in the stomach for prolonged time—acts for about 3 hours), (taking antacids on an empty stomach —rapidly emptied from the stomach —

*-short duration of action (< 1 hour)).

- 2-Dosage form:

*Antacid suspensions are more effective and work more quickly than tablets (of the same type and quantity).

*Patient should be instructed to chew the tablets thoroughly followed by a full glass of water to ensure maximum therapeutic effect.

*Tablet antacid may be taken during a day at the work while suspension is taken at home.

Interactions:

A-Antacids can affect the absorption of a no. of drugs (via chelation and adsorption) and the majority of these interactions are easily overcome by leaving a minimum gap of (1-2) hours between the doses of each drug(3).

Note: exception of this rule is antacids-quinolons antibiotics interaction:

If quinolons taken 1st —————take antacids at least 2 hours after quinolons
If antacids taken 1st—————take quinolons at least 4 hours after antacids
B-antacids ————increase the PH of the stomach—————cause a premature release of enteric coated tablets or granules in the stomach rather than the intestine.

Use of antacids during pregnancy:

Heartburn is common during the pregnancy especially in the 3rd trimester. Antacids are generally considered safe during pregnancy but its best to avoid sod. bicarbonate because of the risk of sodium loading leading to edema and weight gain.

Side effects of antacids:

A- AL-containing antacids tend to be constipating

Mg- containing antacids tend to osmotic diarrhea and are useful in patients who are slightly constipated. Thus combination products of AL and Mg salts cause minimum bowel disturbances.

B- Antacids containing sod. Bicarbonate should be avoided in patients if sodium intake should be restricted (e.g. in patient with CHF, hypertension.!).

2. *Histamine 2 receptor antagonists (H2RA):*

a. *The patients:*

OTC use of H2RA is restricted to adults and children over the age of 16 years (3'4)

. They cannot be given (as an OTC) to pregnant women.

b. *When to take H2RA (regarding OTC use for GERD only):*

Patient can take 1 tablet when symptoms occur (2), but when food is known to precipitate symptoms, H2RA should be taken an hour before food.

c. *Duration for OTC H2RA:*

OTC use of H2RA is restricted for short -time use only (not more than 2 weeks)

d. *Drug-drug interaction for H2RA;*

Of the H2RA, cimetidine (enzyme inhibitor) has the greatest potential to interact with other drugs (1), including theophylline resulting in toxic level of theophylline. Other important concurrent drugs to avoid are warfarin, and phenytoin. Other H2RA do not affect hepatic enzyme significantly and do not inhibit the metabolism of other drugs.

3. Alginates(Gaviscon)

Alginate-containing Antacids form a sponge -like matrix that float on the top of the stomach contents, so when reflux occurs, alginate rather than acids will be refluxed and irritation is minimized.

Practical points:

- 1-They are best given after each main meal and before bedtime (3>5), although they can be taken on as needed basis.
- 2-Tablets must be chewed and followed by a full glass of water so that foam can float on water in the stomach.
- 3-Alginate work when the patient in the upright position and, therefore, must not be taken just before lying down.
- 4-they can be given in pregnancy.

4. Proton pump inhibitors(omeprazole):

Following reclassification from prescription-only to pharmacy medicine status, omeprazole 10 mg is now available for sale over the counter for heartburn sufferers (18 years or over) who experience intermittent and relapsing symptoms.

How to take OTC omeprazole:

- 1-Omeprazole is available over the counter as a 10mg gastro-resistant tablet. The tablets should be swallowed whole with plenty of liquid (e.g. water or fruit juice) before a meal. It is important that the tablets should not be crushed or chewed.
- 2-The initial starting dose is 20mg (that is, two tablets) once daily and may need to be taken for 3 to 4 days to obtain symptom relief. When symptoms improve the dose can then be reduced to one 10mg tablet daily, returning to two tablets if symptoms return. The lowest effective dose should always be used and the maximum daily dose is two tablets.
- 3- If continuous treatment for more than 4 weeks is required to prevent symptoms or no relief is obtained within two weeks then the patients should be referred to their doctor.
- 4-Patients requiring immediate symptomatic relief can be advised to take a simple antacid or antacid/alginate at the same time for the first few days of treatment if necessary.
- 5-Adverse drug effects and drug Interaction:
Omeprazole is well tolerated and side effects have generally been mild and reversible. Headache, diarrhea, nausea, abdominal pain and rash are among adverse side effects reported with omeprazole. Omeprazole is an inhibitor of cytochrome P450 and may increase serum concentrations of other drugs metabolized by cytochrome P450 (such as warfarin, phenytoin and diazepam).

Skin disorders

A. Athlete's foot

Lab. VII



Drug groups

Allylamines: Terbinafine, Azole: Clotrimazole, Miconazole, Ketoconazole
Tolnaftate, HC cream.

Management

Many preparations are available for the treatment of athlete's foot. Formulations include creams, powders, solutions, sprays and paints.

1. *allylamines* (e.g. *terbinafine*), azoles (e.g. *clotrimazole*, *miconazole* and *ketoconazole*), *undecenoic acid* and *tolnaftate*. All are more effective than placebo. *terbinafine* is more effective in preventing recurrence. *Terbinafine* and *ketoconazole* have a 1-week treatment period, which some patients may prefer. Regular application of the product to clean, dry feet is essential and treatment must be continued after symptoms have gone to ensure eradication of the fungus and advise use for 1–2 weeks after the disappearance of all signs of infection.

2. *Azoles* (e.g. *clotrimazole*, *ketoconazole* and *miconazole*)

They have a wide spectrum of action and have both antifungal and antibacterial activity. (The latter is useful as secondary infection can occur.) The treatment should be applied two or three times daily. Formulations include creams, powders and sprays. *Miconazole*, *clotrimazole* and *ketoconazole* have occasionally been reported to cause mild irritation of the skin. *Ketoconazole* has a 1-week treatment period.

3. *Terbinafine*

Terbinafine is available as cream, solution, spray and gel formulations. *terbinafine* is better than the azoles in preventing recurrence, so it will be useful where frequent

bouts of athlete's foot are a problem. *Terbinafine* can cause redness, itching and stinging of the skin; contact with the eyes should be avoided. *Terbinafine* products are not recommended for use in children.

4. *Tolnaftate*

Tolnaftate is available in powder, cream, aerosol and solution formulations and is effective against athlete's foot. It has antifungal, but not antibacterial, action. It should be applied twice daily and treatment should be continued for up to 6 weeks. *tolnaftate* may sting slightly when applied to infected skin.

5. *Hydrocortisone cream or ointment*

topical hydrocortisone in athlete's foot is not recommended because, although it would reduce inflammation, it would not deal with the fungal infection, which might then worsen. Combination products containing *hydrocortisone* together with an antifungal agent are, however, available OTC for use in athlete's foot. Treatment is limited to 7 days.

Practical points

1. *Footwear*

Sweating of the feet can produce the kind of hot, moist environment in which the fungus is able to grow. Shoes that are too tight and that are made of synthetic materials make it impossible for moisture to evaporate. If possible, the patient should wear leather shoes, which will allow the skin to breathe. In summer, open-toed sandals can be helpful, and shoes should be left off where possible. The wearing of cotton socks can facilitate the evaporation of moisture, whereas nylon socks will prevent this.

2. *Foot hygiene*

The feet should be washed and carefully and thoroughly dried, especially between the toes, before the antifungal preparation is applied.

3. *Transmission of athlete's foot*

Athlete's foot is easily transmitted and is acquired by walking barefoot, e.g. on changing-room floors in workplaces, schools and sports clubs. There is no need to avoid sports but wearing some form of footwear such as rubber sandals is advisable.

4. *Prevention of re-infection*

Shoes and socks are kept free of fungus. Socks should be changed and washed regularly. Shoes and feet can be dusted with a fungicidal powder to eradicate the fungus and absorb moisture and prevent maceration. Patients should be reminded to treat all shoes, since fungal spores may be present.



Drug groups

Minoxidil

Management

Minoxidil

It is available as a 2 or 5% lotion with the drug dissolved in an aqueous alcohol solution. *Propylene glycol* is included to enhance absorption. The mechanism of action of *minoxidil* in baldness is unknown. Treatment is most likely to work where the bald area is less than 10 cm in diameter, where there is still some hair present and where the person has been losing hair for less than 10 years. It works best in men with hair loss or thinning at the top of the scalp and in women in a generalised thinning over the whole scalp – both manifestations of alopecia androgenetica. After 4–6 weeks, the patient can expect to see a reduction in hair loss. It will take 4 months for any hair regrowth to be seen, or continuing use for 1 year before abandoning treatment. Initially, the new hair will be soft and downy but it should gradually thicken to become like normal hair in texture and appearance.

Application

The lotion should be applied twice daily to the dry scalp and lightly massaged into the affected area. The hair should be clean and dry and the lotion should be left to dry naturally. The hair should not be washed for at least 1 h after using the lotion.

Caution

Irritant and allergic reactions to the *alcohol/propylene glycol* vehicle sometimes occur. A small amount (approximately 1.5%) of the drug is absorbed systemically and there is the theoretical possibility of a hypotensive effect, but this appears to be unlikely in practice. *Minoxidil* causes a reflex increase in heart rate, tachycardia and palpitations. Use cautiously in anyone with hypertension, angina or heart disease.

Treatment must be continued indefinitely; new hair growth will fall out 2–3 months after treatment is stopped. *Minoxidil* should not be used in alopecia areata or in hair loss related to pregnancy.



Drug groups

Acyclovir

Management

1. Aciclovir and penciclovir

Aciclovir cream and penciclovir creams are antivirals that reduce time to healing by one half to 1 day and reduce pain experienced from the lesion. Treatment should be started as soon as symptoms are felt and before the lesion appears. Once the lesion has appeared, evidence of effectiveness is less convincing. The treatments are therefore a helpful recommendation for patients who suffer repeated attacks and know when a cold sore is going to appear.

Aciclovir cream can be used by adults and children and should be applied 4-hourly during waking hours (approximately five times a day) to the affected area for 5 days. If healing is not complete, treatment can be continued for up to 5 more days, after which medical advice should be sought if the cold sore has not resolved. Penciclovir can be used by those aged 12 years and over and is applied 2-hourly during waking hours (approximately eight times a day) for 4 days.

2. Bland creams

Keeping the cold sore moist will prevent drying and cracking, which might predispose to secondary bacterial infection. For the patient who suffers only an occasional cold sore, a simple cream, perhaps containing an antiseptic agent, can help to reduce discomfort.

Practical points

1. Preventing cross infection

Patients should be aware that HSV1 is contagious and transmitted by direct contact. Tell patients to wash their hands after applying treatment to the cold sore. Women should be careful in applying eye makeup when they have a cold sore to prevent infection affecting the eye. It is sensible not to share cutlery, towels, toothbrushes or face flannels until the cold sore has cleared up. Oral sex with someone who has a cold sore means a risk of genital herpes and should be avoided until the cold sore has gone.

2. Use of sunscreens

Sunscreen creams (SPF 15 or above) applied to and around the lips when patients are subject to increased sun exposure (e.g. during skiing and beach holidays) can be a useful preventive measure.

3. Stress

Sources of stress in life could be looked at to see if changes are possible.



Drug groups

Zinc pyrithione, Selenium sulphide, Ketoconazole, Cool Tar.

Management

The aim of the treatment is to reduce the level of *M. furfur* on the scalp; therefore, agents with antifungal action are effective.

1. Ketoconazole

Ketoconazole 2% shampoo is the most effective and thus is considered first line in moderate-to-severe dandruff used twice a week for 2–4 weeks, after which usage should reduce to weekly or fortnightly as needed to prevent recurrence. The shampoo can also be used in **seborrhoeic dermatitis**. Ketoconazole is **not absorbed** through the scalp and **side-effects are extremely rare**. There have been occasional reports of allergic reactions.

2. Zinc pyrithione

Zinc pyrithione is effective against dandruff and has a cytostatic effect. It should be used twice weekly for the first 2 weeks and then once weekly as required.

3. Selenium sulphide 2.5%

Selenium sulphide works by reducing the cell turnover rate (cytostatic effect). Twice-weekly use for the first 2 weeks is followed by weekly use for the next 2 weeks; then it can be used as needed. The hair and scalp should be **thoroughly rinsed after using selenium sulphide shampoo**; otherwise discoloration of blond, grey or dyed hair can result. **Frequent use can make the scalp greasy and therefore exacerbate seborrhoeic**

dermatitis. Products containing selenium *sulphide* should not be used **within 48 h** of colouring or perming the hair. **Contact dermatitis** has occasionally been reported. *Selenium sulphide* **should not be applied to inflamed or broken skin.**

4. Coal tar

Coal tar is the least effective of the antidandruff agents. Coal tar can **cause skin sensitization and is a photosensitiser.**

Practical points

1. Continuing treatment

Patients need to understand that the **treatment will not cure their dandruff permanently and** that it will be sensible to use the treatment on a less frequent basis to prevent their dandruff from coming back.

2. Treating the scalp

It is the scalp that needs to be treated rather than the hair. **The treatment should be applied to the scalp and massaged gently.** All products need to be left on the scalp for 5 min before rinsing for the full effect to be gained.

3. Standard shampoos

It is generally agreed that frequent washing (at least three times a week) is an important part of managing dandruff. Between applications of their treatment the patients can continue to use their normal shampoo. Some may wish to wash their hair with their normal shampoo before using the dandruff treatment shampoo.

4. Hair products

Gel, mousse and hairspray can still be used and will not adversely affect treatment for dandruff.



Drug groups

Corticosteroids: HC, Clobetason, Anipruritic: Calamine Lotion, Crotamiton.

Management

1. Emollients

- Emollients are the key to managing eczema and are medically inert creams and ointments which can be used to soothe the skin, reduce irritation, prevent the skin from drying, act as a protective layer and be used as a soap substitute. They may be applied directly to the skin or added to the bathwater.
- There are many different types of emollient preparations that vary in their degree of greasiness. The greasy preparations such as white soft paraffin are often the most effective, especially with very dry skin, but have the disadvantage of being messy and unpleasant to use.
- Emollient preparations should be used as often as needed to keep the skin hydrated and moist. Several and frequent applications each day may be required to achieve this.
- Standard soaps have a drying effect on the skin and can make eczema worse. Aqueous cream can be used as a soap substitute. It should be applied to dry skin and rinsed off with water.
- Adding emulsifying ointment or a proprietary bath oil to the bath is helpful. Emulsifying ointment should first be mixed with water (one or two tablespoonfuls of ointment in a bowl of hot water) before being added to the bath to ensure distribution in the bathwater.
- Some patients with eczema believe, incorrectly, that bathing will make their eczema worse. This is not the case, provided appropriate emollient products are used and standard soaps and perfumed bath products are avoided, and in fact, bathing to remove skin debris and crusts is beneficial.

2. Topical corticosteroids

Hydrocortisone cream and ointment and *clobetasone* 0.05% can be used. *Topical hydrocortisone* OTC is licensed for the treatment of irritant and allergic dermatitis, insect bites and mild-to-moderate eczema. OTC *hydrocortisone* is contraindicated where the skin is infected (e.g. athlete's foot or cold sores, in acne, on the face and anogenital areas). Children aged over 10 years and adults can be treated, and any course must not be longer than 1 week.

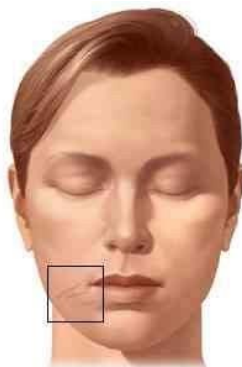
Topical clobetasone 0.05% can be used for the short-term treatment and control of patches of eczema and dermatitis in people aged 12 years and over. The indications include atopic eczema and primary irritant or allergic dermatitis and exclude seborrhoeic dermatitis.

3. Antipruritics

Antipruritic preparations are sometimes useful, The itch of eczema is not histamine related, so the use of antihistamines other than that of sedation at night is not indicated. *Calamine* or *crotamiton* can be used in cream or lotion. Indications for use are the same as those for *topical hydrocortisone*

F. Warts

Lab. IX



Flat warts:
Found on face, neck, arms,
back of hands, and legs

Drug groups

Salicylic Acid

Management

Treatment of warts aims to reduce the size of the lesion by gradual destruction of the skin. Continuous application of the selected preparation for several weeks or months may be needed.

1. Salicylic acid

It is the treatment of choice acts by softening and destroying the skin, thus mechanically removing infected tissue available in collodion-type bases that help to retain the salicylic acid in contact with the wart. Lactic acid is included in some preparations with the aim of enhancing availability of the salicylic acid. It is a keratolytic and has an antimicrobial effect. Ointments, gels and plasters containing salicylic acid provide a selection of methods of application. Preparations should be kept well away from the eyes and applied with an orange stick or other applicator, not with the fingers.

2. Duct tape

The tape is left in place for up to 6 days at a time after which the wart is soaked in warm water for 5 min and then gently abraded with an emery board. Treatment takes up to 8 weeks.

3. Glutaraldehyde

It is used in a 5 or 10% gel or solution to treat warts but not for anogenital warts. Patients should be warned that glutaraldehyde will stain the skin brown, although this will fade after treatment has stopped.

Practical points

Application of treatments

Treatments containing salicylic acid should be applied daily. The treatment is helped by prior soaking of the affected hand or foot in warm water for 5–10 min to soften and hydrate the skin, increasing the action of the salicylic acid. Removal of dead skin from the surface of the wart by gentle rubbing with a pumice stone or emery board ensures that the next application reaches the surface of the lesion. Occlusion of the wart using an adhesive plaster helps to keep the skin macerated, maximising the effectiveness of salicylic acid. Protection of the surrounding skin is important and can be achieved by applying a layer of petroleum jelly to prevent the treatment from making contact with healthy skin.



Drug groups

Permethrin, Malathion.

Management

Two treatments are recommended, 7 days apart. Aqueous lotions are used in preference to alcoholic versions because the latter sting and irritate excoriated skin. Medical supervision is required for the treatment of scabies in children under 2 years. The treatment is applied to the entire body including the neck, face, scalp and ears in adults. Particular attention should be paid to the webs of fingers, toes and soles of the feet, and under the ends of the fingernails and toenails.

1. Permethrin

The cream formulation is used in the treatment of scabies. For a single application in an adult, 30–60 g of cream (one to two 30-g tubes) is needed. The cream is applied to the whole body and left on for 8–12 h before being washed off. If the hands are washed with soap and water within 8 h of application, cream should be reapplied to the hands. Medical supervision is required for its use in children under 2 years and in elderly patients (aged 70 years and over). Permethrin can itself cause itching and reddening of the skin.

2. Malathion

Malathion is effective for the treatment of scabies and pediculosis (head lice). For one application in an adult, 100 mL of lotion should be sufficient. The aqueous lotion should be used in scabies. The lotion is applied to the whole body. The lotion can be poured into a bowl and then applied on cool, dry skin using a clean, broad paintbrush or cotton wool. The lotion should be left on for 24 h, without bathing, after which it is washed off. If the hands are washed with soap and water during the 24 h, malathion should be reapplied to the hands. Skin irritation may sometimes occur. Medical supervision is needed for children under 6 months.

Practical points

1. The itch will continue and may become worse in the first few days after treatment. The reason for this is thought to be the release of allergen from dead mites. Patients need to be told that the itch will not stop straightaway after treatment. Crotamiton cream or lotion could be used to relieve the symptoms, provided the skin is not badly excoriated. An oral antihistamine such as promethazine may be considered if the itch is severe.
2. The treatment should be applied to cool, dry skin. Good advice would be to apply the treatment immediately before bedtime (leaving time for the cream to be absorbed or the lotion to dry). Because the hands are likely to be affected by scabies, it is important not to wash the hands after application of the treatment and to reapply the preparation if the hands are washed within the treatment period.
3. All members of the family or household should be treated, preferably, on the same day. Because the itch of scabies may take several weeks to develop, people may be infested but symptomless. It is thought that patients may not develop symptoms for up to 8 weeks after infestation. The incubation period of the scabies mite is 3 weeks, so reinfestation may occur from other family or household members.
4. The scabies mite can live only for around 1 day after leaving its host and transmission is almost always caused by close personal contact. It is possible that reinfestation could occur from bedclothes or clothing and this can be prevented by washing them at a minimum temperature of 50°C after treatment.

Childhood Conditions

A. Napkin rash

Lab. X

Drug groups

Zinc, lanolin, castor oil

Management

1. Emollient preparations

Emollient preparations are the mainstay of treatment. The inclusion of a water repellent such as *dimeticone* is useful.

2. Zinc

Zinc acts as a soothing agent.

3. Lanolin

Lanolin emollient hydrates the skin. It can sometimes cause sensitivity reactions, although the high grades of purified lanolin used in many of today's products should reduce the problem.

4. Castor oil/cod liver oil

Castor oil and cod liver oil provide a water-resistant layer on the skin.

5. Antibacterials (e.g. chlorhexidine gluconate)

These may be useful in reducing the number of bacteria on the skin.

6. Antifungals

Secondary infection with *Candida* is common in napkin dermatitis and the azole antifungals would be effective. *Miconazole* or *clotrimazole* applied twice daily could be recommended by the pharmacist with advice to consult the doctor if the rash has not improved within 5 days. If an antifungal cream is advised, treatment should be continued for 4 or 5 days after the symptoms have apparently cleared. An emollient cream or ointment can still be applied over the antifungal product.

7. Hydrocortisone

Prescription-only medicine

Topical steroids are effective treatments for napkin dermatitis and other preparations containing steroids may well be prescribed by the doctor but its use OTC is restricted to children over 10 years.

Method of use

Firstly, the preparation should be applied thinly and sparingly. Secondly, the absorption of corticosteroids from topical vehicles is increased when the skin is occluded by wearing plastic pants. Occasionally, there are systemic side-effects as a result of large quantities of topical steroids being applied followed by occlusion under waterproof pants. If the condition does not respond quickly to treatment (within 10 days), further advice should be sought from the doctor.

Practical points

1. Nappies should be changed as frequently as necessary. Babies up to 3 months old may pass urine as many as 12 times a day.
2. Nappies should be left off wherever possible so that air is able to circulate around the skin, helping the affected skin to become and remain dry. Lying the baby on a terry nappy or towel with a waterproof sheet underneath will prevent the soiling of furniture or bedding.
3. Waterproof pants create an occlusive barrier, which prevents the evaporation of moisture and can worsen napkin dermatitis. They should only be used for short periods of time, if at all.
4. The washing routine for terry nappies is important. If a sanitizing solution is used to soak the nappies, thorough rinsing is needed before washing. The nappies should be rinsed well after washing to ensure that no chemicals are left in the fabric that might irritate the baby's skin. Towing nappies may be bleached occasionally before washing, but thorough rinsing is essential.
5. At each nappy change the skin should be cleansed thoroughly by washing with warm water or using a proprietary lotion or wipes. The skin should then be carefully and thoroughly dried. The use of talcum powder can be helpful, but the clumping of powder can sometimes cause further irritation. Talcum powder should always be applied to dry skin and should be dusted lightly over the nappy area. The regular use of an emollient cream or ointment, applied to clean dry skin, can help to protect the skin against irritant substances.

B. Threadworms (pinworms)

Lab. X



Drug groups

Antihelmintic: Albendazole, Mebendazole.

Management

1. Mebendazole

Mebendazole is the preferred treatment for threadworms and is an effective, single-dose treatment. It is also active against whipworm, roundworm and hookworm. Compliance with therapy is high because of the single dose. The drug is formulated as a suspension or a tablet, which can be given to children aged 2 years and over and to adults. Reinfection is common and a second dose can be given after 2–3 weeks. Occasionally, abdominal pain and diarrhea may occur as side-effects. Mebendazole is not recommended for pregnant women.

2. Piperazine

Piperazine is effective against threadworm and roundworm. It is available in granular form in sachets. It acts by paralysis of the threadworms in the gut. The incorporation of a laxative (Senna) in the sachet preparation helps to ensure that the paralyzed worms are then expelled with the faeces. One dose is followed by another 2 weeks later to destroy any worms that might have hatched and developed after the first dose. Only two doses are required.

Practical points

1. All family members should be treated at the same time, even if only one has been shown to have threadworms. This is because other members may be in the early stages of infection and thus asymptomatic. If this policy is not followed, reinfection may occur.
2. Transmission and reinfection by threadworms can be prevented by the following practical measures:
 - (a) Cutting fingernails short to prevent large numbers of eggs being transmitted. Hands should be washed and nails brushed after going to the toilet and before preparing or eating food, since hand-to-mouth transfer of eggs is common. Eggs may

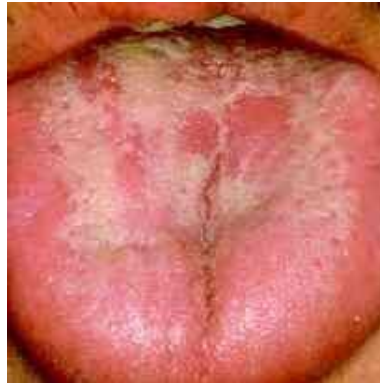
be transmitted from the fingers while eating food or onto the surface of food during preparation. Eggs remain viable for up to 1 week.

(b) Children wearing pyjamas to reduce the scratching of bare skin during the night. Underpants can be worn under pyjama bottoms.

(c) Affected family members having a bath or shower each morning to wash away the eggs that were laid during the previous night.

C. Oral thrush

Lab. X



Drug groups

Miconazole gel.

Management

Antifungal agents (Miconazole)

Miconazole gel. Preparations containing nystatin are also effective but are restricted to prescription-only status. Miconazole gel is an orange-flavored product, which should be applied to the plaques using a clean finger four times daily after food in adults and children over 6 years, and twice daily in younger children and infants. For young babies, the gel can be applied directly to the lesions using a cotton bud or the handle of a teaspoon. The gel should be retained in the mouth for as long as possible. Treatment should be continued for 2 clear days after the symptoms have apparently gone, to ensure that all infection is eradicated.

Miconazole gel should not be recommended for patients taking anticoagulants. There is evidence of an interaction with warfarin leading to an increase in bleeding time.

Practical points

1. Oral thrush and nappy rash

Both should be treated at the same time. An antifungal cream containing miconazole or clotrimazole can be used for the nappy area.

2. Breastfeeding

Where the mother is breastfeeding, a small amount of miconazole gel applied to the nipples will eradicate any fungus present. For bottle-fed babies, particular care should be taken to sterilize bottles and teats.

Minor eye disorders

Lab. XI

Conjunctivitis is one cause of a painful red eye.



- **Management.** Acute infective conjunctivitis is frequently self limiting. Gentle cleansing of the affected.
- Chloramphenicol eye drops 0.5% every 2 h for the first 24 h and then four times daily or chloramphenicol eye ointment 1% can be used over the counter (OTC) for the treatment of acute bacterial conjunctivitis in adults and children aged 2 years or over.
- People with infective conjunctivitis or those treating someone who is infected should wash their hands regularly and avoid sharing towels and pillows.
- Contact lenses should not be worn until the infection has completely cleared and until 24 h after any treatment has been completed.
- Medical advice is urgently needed if the eye(s) become markedly painful, there is photophobia, marked redness or vision is affected. eye(s) with cotton wool soaked in water can be recommended regardless of whether treatment is also being suggested.

Allergic conjunctivitis

This produces irritation, discomfort and a watery discharge. It typically occurs in the hay fever season. It is sometimes difficult to differentiate between infection and allergy and therefore referral is important if there is any doubt.



Conjunctivitis

ADAM.

Management

- In seasonal allergic conjunctivitis, decongestant and antihistamine drops can be helpful and sodium cromoglicate (sodium cromoglycate) eye drops is an effective, safe treatment. Mast cell stabilizers help to prevent the onset of allergic reactions by blocking the attachment of immunoglobulin/allergen complexes to mast cells. They do not provide the rapidity of relief associated with topical antihistamines but are effective when used for longer periods of time.
- In recurrent seasonal allergies it is appropriate to use a mast cell stabilizer for 4 weeks before the start of an allergy season.
- If there is prolonged exposure to allergens in perennial allergic conjunctivitis, then the continued use of a topical antihistamine becomes inappropriate and it is better to recommend drops containing a mast cell stabiliser such as Sodium cromoglicate. Sodium cromoglicate 2% eye drops can be recommended OTC for the treatment of both seasonal and perennial allergic conjunctivitis.

vernal keratoconjunctivitis

It is a more chronic form of allergic conjunctivitis. It usually occurs in atopic individuals. It is an important diagnosis to make, as untreated it can lead to corneal scarring. It would normally be managed by an ophthalmologist. Steroid drops may be used in the management of more severe cases.

Blepharitis

It may present with similar symptoms to allergic conjunctivitis. However, it is often the case that pruritis (itching) is less prominent with blepharitis. This is also the case with dry eye syndrome (keratoconjunctivitis sicca). Blepharitis is an infection along the lid margin. Its management usually requires removal of the crusty matter from between the lashes with a cotton wool bud.

Women's Health disorders

A. Cystitis

Lab.XII

Management

For pain relief, offer paracetamol or ibuprofen for up to 2 days. A high temperature will also be reduced, bearing in mind that a level above 38.5°C is more characteristic of pyelonephritis.

1. Potassium and sodium citrate

Potassium and sodium citrate work by making the urine alkaline. The acidic urine produced as a result of bacterial infection is thought to be responsible for dysuria; alkalinisation of the urine can therefore provide symptomatic relief. While easing discomfort, alkalinising the urine will not produce an antibacterial effect, and it is important to tell patients that if symptoms have not improved within 2 days, they should see their doctor. Proprietary sachets are more palatable than potassium citrate mixture.

Contraindications

There are some patients for whom such preparations should not be recommended. For *potassium citrate* these would include anyone taking potassium-sparing diuretics, aldosterone antagonists or angiotensin converting enzyme inhibitors, in whom hyperkalemia may result. Sodium citrate should not be recommended for hypertensive patients, anyone with heart disease or pregnant women.

Advice

Potassium citrate mixture tastes unpleasant, despite its fruity lemon smell, and patients should be advised to dilute the mixture well with cold water.

Warning

Patients should be reminded not to exceed the stated dose of products containing *potassium citrate*: several cases of hyperkalemia have been reported in patients taking *potassium citrate mixture* for relief from urinary symptoms.

2. Complementary therapies

Cranberry juice has been recommended as a folk remedy for years as a preventive measure to reduce UTI. A systematic review of evidence showed that drinking cranberry juice on a regular basis (300 mL per day) has a bacteriostatic effect. The mechanism for this is unknown and the full clinical implications have not been elucidated. *Cranberry* juice is unlikely to be effective in the treatment of acute

cystitis. For women who are prone to cystitis, drinking cranberry juice is not harmful and might help.

3. Trimethoprim and nitrofurantoin

Trimethoprim and nitrofurantoin should be deregulated from prescription-only medicine control for the treatment of uncomplicated acute bacterial cystitis.

Practical points

1. Drinking large quantities of fluids should theoretically help in cystitis because the bladder is emptied more frequently and completely as a result of the diuresis produced; this is thought to help flush the infecting bacteria out of the bladder. However, this may cause more discomfort where dysuria is severe and may be better as advice to prevent recurrence rather than to use during treatment.
2. During urination the bladder should be emptied completely by waiting for 20 s after passing urine and then straining to empty the final drops. Leaning backwards is said to help to achieve a complete emptying of the bladder than the usual sitting posture.
3. After a bowel motion wiping toilet paper from front to back may minimize transfer of bacteria from the bowel into the vagina and urethra.
4. Urination immediately after sexual intercourse will theoretically flush out most bacteria from the urethra but there is no evidence to support this.

B. Dysmenorrhea

Lab.XII

Management

The pain of dysmenorrhea is thought to be linked to increased prostaglandin activity, and raised prostaglandin levels have been found in the menstrual fluids and circulating blood of women who suffer from dysmenorrhea. Therefore, the use of analgesics that inhibit the synthesis of prostaglandins is logical. Women taking oral contraceptives usually find that the symptoms of dysmenorrhea are reduced or eliminated altogether.

1. NSAIDs (Ibuprofen, diclofenac and naproxen)

NSAIDs can be considered the treatment of choice for dysmenorrhea. Naproxen 250mg tablets can be used by women aged between 15 and 50 years for primary

dysmenorrhea only. Two tablets are taken initially then one tablet 6–8 hours later if needed. Maximum daily dose is 750mg and maximum treatment time is 3 days.

Contraindications: GI irritation and should not be taken by anyone who has or has had a peptic ulcer. All patients should take NSAIDs with or after food to minimize GI problems. NSAIDs should not be taken by anyone who is sensitive to aspirin and should be used with caution in anyone who is asthmatic, because such patients are more likely to be sensitive to NSAIDs.

2. *Aspirin*

- Aspirin also inhibits the synthesis of prostaglandins but is less effective in relieving the symptoms of dysmenorrhea than is ibuprofen.
- Aspirin can cause GI upsets and is more irritant to the stomach than NSAIDs. For those who experience symptoms of nausea and vomiting with dysmenorrhea, aspirin is probably best avoided.
- Soluble forms of aspirin will work more quickly than traditional tablet formulations and are less likely to cause stomach problems. Patients should be advised to take aspirin with or after meals.
- The pharmacist should establish whether the patient has any history of aspirin sensitivity before recommending the drug.

3. *Paracetamol*

- Paracetamol has little or no effect on the levels of prostaglandins involved in pain and inflammation and so it is theoretically less effective for the treatment of dysmenorrhoea than either NSAIDs or aspirin.
- paracetamol is a useful treatment when the patient cannot take NSAIDs or aspirin because of stomach problems or potential sensitivity.
- Paracetamol is also useful when the patient is suffering with nausea and vomiting as well as pain, since it does not irritate the stomach.

4. *Hyoscine*

- Hyoscine, a smooth muscle relaxant that the antispasmodic action will reduce cramping. In fact, the dose is so low (0.1-mg hyoscine) that such an effect is unlikely.
- The anticholinergic effects of hyoscine mean that it is contraindicated in women with closed-angle glaucoma.
- Additive anticholinergic effects (dry mouth, constipation and blurred vision) mean that hyoscine is best avoided if any other drug with anticholinergic effects (e.g. tricyclic antidepressants) is being taken.

5. *Caffeine*

There is some evidence (from a trial comparing combined ibuprofen and caffeine with ibuprofen alone and caffeine alone) that caffeine may enhance analgesic effect. OTC products contain 15–65 mg of caffeine per tablet. A similar effect could be achieved

through drinking tea, coffee or cola. A cup of instant coffee usually contains about 80-mg caffeine, a cup of freshly brewed coffee about 130 mg, a cup of tea 50 mg and a can of cola drink about 40–60 mg.

Practical points

1. Exercise during menstruation is not harmful, in fact, exercise may well be beneficial, since it raises endorphin levels, reducing pain and promoting a feeling of well-being. There is some evidence that moderate aerobic exercise can improve symptoms of premenstrual syndrome.
2. There is some evidence that a low-fat, high-carbohydrate diet reduces breast pain and tenderness.
3. advice to women taking analgesics for dysmenorrhea:
 - (i) Take the first dose as soon as your pain begins or as soon as the bleeding starts, whichever comes first. Some doctors advise to start taking the tablets on the day before your period is due. This may prevent the pain from building up.
 - (ii) Take the tablets regularly, for 2–3 days each period, rather than ‘now and then’ when pain builds up.
 - (iii) Take a strong enough dose. If your pains are not eased, ask your doctor or pharmacist whether the dose that you are taking is the maximum allowed. An increase in dose may be all that you need.
 - (iv) Side-effects are uncommon if you take an anti-inflammatory for just a few days at a time, during each period. (But read the leaflet that comes with the tablets for a full list of possible side-effects.)

Central system disorders

A. Motion sickness

Lab. XIII



Management

1. Antihistamines

They include *cinnarizine*, *meclozine* and *promethazine*. Anticholinergic effects are thought to be responsible for the effectiveness of antihistamines in the prophylaxis of motion sickness. All have the potential to cause drowsiness and *promethazine* appears to be the most sedative.

- *Meclozine* and *promethazine theoclate* have long durations of action and are useful for long journeys since they need to be taken only once daily.
- *Cinnarizine* and *promethazine theoclate* are not recommended for children younger than 5 years, whereas *meclozine* can be given to those over 2 years.
- These drugs are best avoided during pregnancy.

2. Anticholinergic agents

hyoscine hydrobromide is the only anticholinergic used widely in the prevention of motion sickness which can be given to children over 3 years.

- Anticholinergic drugs can cause drowsiness, blurred vision, dry mouth, constipation and urinary retention as side-effects, although they are unlikely at the doses used in OTC formulations for motion sickness. Children could be given sweets to suck to counteract any drying of the mouth.
- *Hyoscine* has a short duration of action (from 1 to 3 h). It is therefore suitable for shorter journeys and should be given 20 min before the start of the journey.
- Anticholinergic drugs and antihistamines with anticholinergic effects are best avoided in patients with prostatic hypertrophy because of the possibility of urinary retention and in glaucoma because the intraocular pressure might be increased.

- side-effects from anticholinergic agents are additive and may be increased in patients already taking drugs with anticholinergic effects, such as tricyclic antidepressants (e.g. *amitriptyline*), butyrophenones (e.g. *haloperidol*) and phenothiazines (e.g. *chlorpromazine*).

3. *Alternative approaches to motion sickness (Ginger)*

It has been suggested that ginger acts on the GI tract itself rather than on the vomiting centre in the brain or on the vestibular system. No official dosage level has been suggested. Ginger would be worth trying for a driver who suffered from motion sickness, since it does not cause drowsiness, and might be worth considering for use in pregnant women, for whom other antiemetics such as anticholinergics and antihistamines are not recommended.

B. Insomnia

Lab. XIII



Management

1. *Antihistamines (diphenhydramine and promethazine)*

- They reduce sleep latency (the time taken to fall asleep) and also reduce nocturnal waking. They should be taken 20–30 min before bedtime and can be recommended for adults and children over 16 years. Tolerance to their effects can develop and they should not be used for longer than 7–10 consecutive nights.
- *Diphenhydramine* has a shorter half-life than *promethazine* (5–8 h compared with 8–12 h). Following a 50-mg dose of *diphenhydramine* there is significant drowsiness for 3–6 h.
- These antihistamines have anticholinergic side effects, including dry mouth and throat, constipation, blurred vision and tinnitus. These effects will be enhanced if the patient is taking another drug with anticholinergic effects (e.g. tricyclic antidepressants and phenothiazines) but patients taking these drugs would be better referred anyway. Prostatic hypertrophy and closed-angle

glaucoma are contraindications to the use of *diphenhydramine* and *promethazine*.

- *Diphenhydramine* and *promethazine* should not be recommended for pregnant or breastfeeding women.

2. *Benzodiazepines*

these drugs are for short-term use only and should not be used for longer than 3 weeks, pharmacists are well aware that patients continue to be on these drugs for long periods of time.

3. *Aromatherapy*

Lavender oil has been shown to induce a sense of relaxation, as has camomile. One or two drops of the essential oil sprinkled on a pillow or three or four drops in a warm (not hot) bath can be recommended.

4. *Melatonin*

Melatonin is currently available only as prescription-only medicine. *Melatonin* is produced by the body's pineal gland during darkness and is thought to regulate sleep. *Melatonin* levels are lower in the elderly. Supplementation with *melatonin* can raise levels and help to restore the sleep pattern. *Melatonin* has a short half-life (2–3 h) and is subject to first-pass metabolism. Sublingual, controlled release products are available.

5. *St John's wort (hypericum)*

Practical points

Sleep hygiene

Key points are as follows:

- Establish a regular bedtime and waking time
- Consciously create a relaxation period before bedtime
- No meals just before bedtime
- No naps during the daytime
- No caffeine after early afternoon
- Reduce extraneous noise (use earplugs if necessary)
- Get up if you can't sleep – go back to bed when you feel 'sleepy, tired'
- Restrict alcohol intake to 1–2 units a day or less
- Restrict nicotine intake immediately before bedtime

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Supplement

(Disease discussion)

Respiratory system

A. Cough

Lab. II

Coughing is a protective reflex action caused when the airway is being irritated or obstructed. Its purpose is to clear the airway so that breathing can continue normally.

Types of cough

1. *Unproductive (dry, tickly or tight)*: no sputum is produced caused by viral infection and is self-limiting.
2. *Productive (chesty or loose)*: sputum is normally produced but over secretion to coughing may be caused by irritation of the airways due to infection, allergy, etc., or when the cilia are not working properly (e.g. in smokers). Non-colored (clear or whitish) sputum is uninfected and known as mucoid. Colored sputum may indicate a bacterial chest infection such as bronchitis or pneumonia and require referral. In these situations the sputum is described as green, yellow or rust-colored thick mucus and the patient is more unwell usually with a raised temperature, shivers and sweats. Sometimes blood may be present in the sputum (hemoptysis), with a color ranging from pink to deep red. Hemoptysis is an indication for referral.

Significance of questions and answers

1. *Age*: the patient is – child or adult – will influence the choice of treatment.
2. *Duration*: most coughs are self-limiting and will be better within a few days with or without treatment. In general, a cough of longer than 2 weeks' duration that is not improving should be referred.
3. *Associated symptoms*: cold, sore throat and catarrh may be associated with a cough.
4. *Postnasal drip*: is a common cause of coughing and may be due to sinusitis.
5. *Smoking habit*: smoking will exacerbate a cough and can cause coughing since it is irritating to the lungs. On stopping, the cough may initially become worse as the cleaning action of the cilia is re-established during the first few days.
6. *Angiotensin-converting enzyme (ACE) inhibitors*: Chronic coughing may occur in patients, particularly women, taking ACE inhibitors such as *enalapril*, *captopril*, *lisinopril* and *Ramipril*. Patients may develop the cough within days of starting treatment or after a period of a few weeks or even months.

Referral conditions

Cough lasting 2 weeks or more and not improving, sputum (yellow, green, rusty or blood-stained), chest pain, shortness of breath, wheezing, whooping cough or croup, recurrent nocturnal cough, suspected adverse drug reaction and failed medication requiring referral to a physician.

1. *Tuberculosis (TB)*
2. *Chronic bronchitis*
3. *Asthma*: a recurrent night-time cough can indicate asthma, especially in children
4. *Croup (acute laryngotracheitis)*: it usually occurs in infants. The cough has a harsh barking quality. It develops 1 day or so after the onset of cold-like symptoms, often associated with difficulty in breathing and an inspiratory stridor (noise in throat on breathing in).
5. *Whooping cough (pertussis)*: it starts with catarrhal symptoms. The whoop is the sound produced when breathing in after a paroxysm of coughing. The bouts of coughing prevent normal breathing and the whoop represents the desperate attempt to get a breath.
6. *Cardiovascular*: coughing can be a symptom of heart failure. If there is a history of heart disease, especially with a persisting cough, then referral is advisable.
7. *Gastro-oesophageal*: can cause coughing. Sometimes such reflux is asymptomatic apart from coughing.

Common Cold

Lab.III

It is a self-limiting viral infection of the upper respiratory tract.

Different types of viruses can produce symptom of the common cold including: rhinoviruses (half of the cases), adenoviruses & influenza virus. The probable routes of transmission are:

- 1- Manual transmission (e.g. hand- to-hand contact).
- 2- Inhalation of droplets spread by sneezing and coughing.

Virus invades nasal & bronchial epithelia, attaching to specific receptors lead to damage the ciliated cell resulted with release of inflammatory mediators and then inflammation of the tissues lining the nose (increase permeability of capillary cell walls, edema, nasal congestion, sneezing, then fluid might drip down and back to the throat and spreading the virus to the throat and upper chest causing cough & sore throat.

Patient assessment

1. *Age*

- In common cold the upper respiratory symptoms are the most prominent while in flu the constitutional symptoms are predominant and fever is present in more than 95% of patient.
- Flu often starts abruptly with sweat and chills, muscular aches and pain in the limbs, a dry sore throat, cough and high temperature. Someone with flu may be bed bound and unable to go to their usual activities. There is often a period of generalized weakness and malaise following the onset of symptoms. A dry cough may persist for some time.
- Sinusitis is a complication that can arise from the common cold. Following the cold, sinus air spaces can become filled with nasal secretions, which stagnate because of a reduction in ciliary function of the cell lining the sinuses. Symptom starts with localized pain that become more sever when the condition persist, bending down, moving the eye from side to side, coughing or sneezing often exacerbate the pain.

6. *Present medication*

If one or more appropriate remedies have been tried without success (failed medication) ————— referral for further investigations.

Treatment timescale: Once the pharmacist has recommended treatment, patient should be advised to see the Dr. in 10-14 days if cold has not improved

Gastrointestinal system

A. Constipation

Lab. IV

Constipation is a condition that is difficult to define and is often self diagnosed by patients. Generally, it is characterized by the passage of hard, dry stools less frequently than by the person's normal pattern.

Although there is no normal no. of stools (which is vary from 3/day-3/week because of variation in diet and other risk factors) most people report more than 3 bowel movement/week.

Patient assessment

1. Symptoms

- Constipation is associated with abdominal discomfort, bloating and nausea.
- Constipation can be so severe as to obstruct the bowel which becomes evident by causing colicky abdominal pain, abdominal distension and vomiting----- referral.
- Blood may arise from piles (hemorrhoids) or a small crack in the skin on the edge of the anus (anal fissure). Both these conditions are thought to be caused

by a diet low in fibre that tends to produce constipation. The bleeding is characteristically noted on toilet paper after defaecation. The bright red blood may be present on the surface of the motion (not mixed in with the stool) and splashed around the toilet pan. If piles are present, there is often discomfort on defaecation. The piles may drop down (prolapse) and protrude through the anus. A fissure tends to cause less bleeding but much more severe pain on defaecation. Medical referral is advisable as there are other more serious causes of bloody stools, especially where the blood is mixed in with the motion.

2. Diet: Insufficient dietary fibre is a common cause of constipation. Changes in diet and lifestyle, e.g. following a job change, loss of work, retirement or travel, may result in constipation. An inadequate intake of food and fluids, e.g. in someone who has been ill, may be responsible. Inadequate fluid intake is one of the commonest causes of constipation.

3. Medication: *Drugs that may cause constipation.*

| <i>Drug group</i> | <i>Drug</i> |
|------------------------------|---|
| Analgesics and opiates | Dihydrocodeine, codeine |
| Antacids | Aluminum salts |
| Anticholinergics | Hyoscine |
| Anticonvulsants | Phenytoin |
| Antidepressants | Tricyclics, selective serotonin reuptake inhibitors |
| Antihistamines | Chlorpheniramine, promethazine |
| Antihypertensives | Clonidine, methyldopa |
| Anti-Parkinson agents | Levodopa |
| Beta-blockers | Propranolol |
| Diuretics | Bendroflumethiazide |
| Iron | |
| Laxative abuse | |
| Monoamine oxidase inhibitors | |
| Antipsychotics | Chlorpromazine |

Treatment timescale: If 1 week's use of treatment does not produce relief of symptoms, the patient should see the doctor. If the pharmacist feels that it is necessary to give only dietary advice, then it would be reasonable to leave it for about 2 weeks to see if the symptoms settle.

B.Diarrhoea

Lab. V

Diarrhoea is defined as an increased frequency of bowel evacuation, with the passage of abnormally soft or watery faeces (more than 3 bowel movements/day is considered abnormal).

Patient assessment with diarrhea

1. *Age*: Infants (younger than 1 year) and elderly patients are especially at risk of becoming dehydrated.
2. *Duration*
 - Diarrhea of > 1-day duration in children < 1 year need referral.
 - Diarrhea of >2 days duration in children < 3 years need referral.
 - Diarrhea of > 3 days duration in older children and adults need referral.
3. *Severity*
 - mild diarrhea when no. of unformed stools/day is ≤ 3 .
 - moderate diarrhea when no. of unformed stools/day is 4-5.
 - severe diarrhea when no. of unformed stools/day is > 5 . Need referral.
4. *Types of diarrhea*
 - Acute diarrhea: is rapid in onset and produces watery stools that are passed frequently.
 - Chronic diarrhea: Recurrent or persistent diarrhea may be due to an irritable bowel or, more seriously, a bowel tumor, an inflammation of the bowel (e.g. ulcerative colitis or Crohn's disease), an inability to digest or absorb food (malabsorption, e.g. coeliac disease) or diverticular disease of the colon.
5. *Symptoms*
 - Abdominal cramps, flatulence, weakness or malaise. Nausea and vomiting, and fever -----acute diarrhea (infective in origin).
 - Vomiting and fever in infants-----severe dehydration will develop.
 - Diarrhea in infants is whether the baby has been taking milk feeds and other drinks as normal. Reduced fluid intake predisposes to dehydration.
 - The presence of blood or mucus in the stools is an indication for referral. Diarrhea with severe vomiting or with a high fever would also require referral.
6. *Signs of dehydration*
 - Mild dehydration (<5%): dehydration is characterized by slightly dry mucous membrane, loss of skin turgor and sunken eyes.

- Moderate dehydration (5-10%): dehydration is characterized by sunken fontanelle and eyes, dry mouth, decreased urine output and the patient is moderately thirsty.

7. Recent travel abroad

Diarrhea in a patient who has recently travelled abroad requires referral since it might be infective in origin.

Causes of diarrhea

1. *Viral*: Viruses are often responsible for gastroenteritis. In infants the virus enters the body via the respiratory tract (rotavirus). Symptoms are those of a cold and perhaps a cough. The infection starts abruptly and vomiting often precedes diarrhea. The acute phase is usually over within 2–3 days, although diarrhoea may persist. Sometimes diarrhea returns when milk feeds are reintroduced. This is because one of the milk digestive enzymes is temporarily inactivated. Milk therefore passes through the bowel undigested, causing diarrhoea. This needs referral.
 2. *Bacterial*. These are the food-borne infections previously known as food poisoning. There are several different types of bacteria that can cause such infections: *Staphylococcus*, *Campylobacter*, *Salmonella*, *Shigella*, pathogenic *Escherichia coli*, *Bacillus cereus* and *Listeria monocytogenes*. The typical symptoms include severe diarrhea and/or vomiting, with or without abdominal pain. Two commonly seen infections are *Campylobacter* and *Salmonella*, which are often associated with contaminated poultry. Contaminated eggs have also been found to be a source of *Salmonella*. Kitchen hygiene and thorough cooking are of great importance in preventing infection. *B. cereus* is usually associated with cooked rice, especially if it has been kept warm or has been reheated.
 3. *Protozoan* infections include *Entamoeba histolytica* (amoebic dysentery) and *Giardia lamblia* (giardiasis) require referral.
8. *Medication*: Some drugs may cause diarrhea as :
- Antacids: *Magnesium salts*
 - Antibiotics
 - Antihypertensives: *methyldopa*; beta-blockers (rare)
 - *Digoxin* (toxic levels)
 - Diuretics (*furosemide*)
 - *Iron preparations*
 - Laxatives
 - *Misoprostol*

- Non-steroidal anti-inflammatory drugs
- Selective serotonin reuptake inhibitors

Treatment timescale: One day in children; otherwise 2 days.

C. Irritable bowel syndrome

Lab. V

Irritable bowel syndrome (IBS) is defined as a chronic, functional bowel disorder in which abdominal pain is associated with intermittent diarrhea, sometimes alternating with constipation, and a feeling of abdominal distension. The incidence of the condition appears to be higher in women. The cause is unknown. IBS can sometimes develop after about gastroenteritis. It often seems to be triggered by stress, and many IBS sufferers have symptoms of anxiety and depression.

Patient assessment

1. Age:

Because of the difficulties in diagnosis of abdominal pain in children, it is best to refer. IBS usually develops in young adult life. If an older adult is presenting for the first time with no previous history of bowel problems, a referral should be made.

2. Symptoms:

IBS has three key symptoms: abdominal pain (which may ease following a bowel movement), abdominal distension/bloating and disturbance of bowel habit. A pattern of symptoms has been going on for months or even years. If an older person is presenting for the first time, referral is most appropriate.

A. Abdominal pain

It is often central or left sided and can be severe. The site of pain can vary from person to person and even for an individual. Sometimes the pain comes on after eating and can be relieved by defaecation.

B. Bloating

A sensation of bloating is commonly reported. Sometimes it is so severe that clothes have to be loosened.

C. Bowel habit

Diarrhea and constipation may occur; sometimes they alternate. A morning rush is common, where the patient feels an urgent desire to defaecate several times after getting up in the morning and following breakfast, after which the bowels may settle. There may be a feeling of incomplete emptying after a bowel movement. The motion is often described as loose and semiformal rather than watery. Sometimes it is like

pellets or rabbit droppings, or pencil shaped. There may be mucus present but never blood.

D. Other symptoms

Nausea sometimes occurs; vomiting is less common. Unrelated symptoms such as backache, feeling lethargic and tired. Urinary symptoms may be associated with IBS, e.g. frequency, urgency and nocturia (the need to pass urine during the night).

E. Previous history

A history of travel abroad and gastroenteritis sometimes appears to trigger an irritable bowel. Referral is necessary to exclude an unresolved infection. Any history of previous bowel surgery would suggest a need for referral.

F. Aggravating factors

- Stress can precipitate and exacerbate symptoms.
- Caffeine often worsens symptoms and its stimulant effect on the bowel and irritant effect on the stomach are well known in any case.
- The sweeteners sorbitol and fructose aggravate IBS.
- Other foods that have been implicated are milk and dairy products, chocolate, onions, garlic, chives and leeks.

Treatment timescale: Symptoms should start to improve within 1 week.

D. Gastroesophageal reflux disease(GERD)

Lab. VI

It is a disorder in which the gastric contents are refluxed into the esophagus which irritate the sensitive mucosal surface.

Patient assessment

1. signs and symptoms

The hallmark of typical symptom of GERD is heartburn which is described as:

A burning sensation or pain experienced in the upper part of the stomach (i.e. the lower chest) in the Midline (epigastrium). The burning feeling tends to move upwards behind the breastbone (retrosternally).

The pain may be felt only in the lower retrosternal area or may be felt right up to the throat causing an acid taste in the mouth.

2. Precipitating or aggravating factors. Diagnosis of GERD can be helped greatly by asking about the Precipitating factors. These are:

A-Bending or lying down(e.g. at night).

- B-Overweight.
- C-After large meal.
- D-Pregnancy (mechanical and hormonal influence).
- E-It can be aggravated or even caused by belching.

3. *Severity and location of pain*

Patient who have severe pain should be referred as well as pain that radiate to the back and arm (possible heart attack).

4. *Difficulty in swallowing*

The sensation that food stick as tit swallowed or it does not seem to pass directly into the stomach (dysphagia)is an indication for immediate referral (1). (it may be due to obstruction of the esophagus for e.g. by tumor).

5. *Age*

heartburn is not normally experienced in childhood, therefore, children with symptoms of heartburn should be referred for further investigations.

6. *Medication:* To know:

- 1- What had been tried to treat the condition and whether it produced an improvement (1). (unresponsive to appropriate treatment required referral).
- 2- Other medicines (some drugs can cause the symptoms of heartburn e.g. theophylline, calcium channel blockers (like nifedipine), anticholinergics drugs such as hyoscine and drugs with anticholinergic action like TCA

Skin disorders

A. Athlete's foot

Lab. VII

The incidence of athlete's foot (tinea pedis) is not, as its name might suggest, limited to those of an athletic disposition. The fungus that causes the disease thrives in warm, moist conditions. The spaces between the toes can provide a good growth environment and the infection therefore has a high incidence. The problem is more common in men than in women and responds well to OTC treatment.

Patient assessment

1. *Duration*

A long-standing severe condition may need referral the patient. However, most cases of athlete's foot are minor in nature and can be treated effectively with OTC products.

2. *Appearance*

It usually presents as itchy, flaky skin in the web spaces between the toes. The flakes or scales of skin become white and macerated and begin to peel off. Underneath the scales, the skin is usually reddened and may be itchy and sore. The skin may be dry and scaly or moist and weeping.

3. Severity

It is usually a mild fungal infection, but the skin between the toes becomes more macerated and broken and deeper and painful fissures may develop which become inflamed and sore. Once the skin is broken, there is the potential for secondary bacterial infection to develop. If there are indications of bacterial involvement, such as weeping, pus or yellow crusts, then referral to the doctor is needed.

4. Location

Classically, the toes are involved, the web space between the fourth and fifth toes being the most commonly affected.

- More severe infections may spread to the sole of the foot and even to the upper surface in some cases. This type of spread can alter the appearance of the condition and severe cases are probably best referred to the doctor for further investigation. When other areas of the foot are involved, the appearance can be confused with that of allergic dermatitis.
- If the toenails appear to be involved, referral to the doctor may be necessary depending on how many toenails are affected and severity. Systemic antifungal treatment may be required to deal with infection of the nail bed where OTC treatment is not appropriate.

5. Previous history

Any diabetic patient who presents with athlete's foot is best referred to the doctor. Diabetics may have impaired circulation or innervations of the feet and are more prone to secondary infections in addition to poorer healing of open wounds.

6. Medication

Treatment failure may occur simply because it was not continued for sufficiently long enough. However, if an appropriate antifungal product has been used correctly without remission of symptoms, the patient is best referred to the doctor, especially if the problem is of long duration (several weeks).

Treatment timescale

If athlete's foot has not responded to treatment within 2 weeks, patients should see their doctor.

B. Hair loss

Lab VII.

The two major types of hair loss are diffuse hair loss and alopecia areata.

- Alopecia androgenetica (male pattern baldness, sometimes known as common baldness because it can affect women) is the most common cause of diffuse hair loss. Other causes of diffuse hair loss include telogen effluvium, hypothyroidism, severe iron deficiency and protein deficiency. Occasionally, diffuse hair loss is seen after pregnancy, in chronic renal failure and with certain drugs and chemical agents.

Patient assessment

1. Male or female

Men and women both may suffer from alopecia androgenetica or alopecia areata. Alopecia areata can affect people at any age.

2. History and duration of hair loss

- Alopecia androgenetica is characterized by gradual onset. In men the pattern of loss is recession of the hairline at the front and/or loss of hair on the top of the scalp. In women the hair loss is generalized and there is an increase in the parting width. Another pattern of hair loss in women in the 20+ age group is increased shedding of hair but without any increase in the parting width. This latter pattern is not due to alopecia androgenetica and it is thought that the cause may be nutritional. Hair loss in women is increasingly recognized as a problem.
- Alopecia areata may be sudden and result in patchy hair loss. The cause of alopecia areata remains unknown but it is thought that the problem may be autoimmune in origin.
- Telogen effluvium usually occurs 2–3 months after significant physical or emotional stress. The rate of hair loss increases significantly for a period of time before resolving spontaneously and returning to normal. Typically this can occur following major surgery or illness.

3. Location and size of affected area

If the affected area is less than 10 cm in diameter in alopecia androgenetica, then treatment may be worth trying.

4. Other symptoms

- Coarsening of the hair and hair loss can occur as a result of hypothyroidism (myxoedema).
- Inflammatory conditions of the scalp such as ringworm infection (tinea capitis) can cause hair loss. Referral would be needed in such cases.
- In women excessive bleeding during periods (menorrhagia) could lead to iron deficiency and anaemia, which in turn could cause diffuse hair loss or aggravate alopecia androgenetica. Absent or very infrequent periods are

sometimes due to polycystic ovary disease or elevated prolactin levels, which in both cases can result in alopecia androgenetica.

5. *Influencing factors*

Hormonal changes during and after pregnancy mean that hair loss is common both during pregnancy and after the baby is born. Treatment is not appropriate.\

6. *Medication*

Cytotoxic drugs are well known for causing hair loss. Anticoagulants (*coumarins*), lipid-lowering agents (*clofibrate*) and vitamin A (in overdose) have also been associated with hair loss. Such cases should be referred to the doctor. Other medications include *allopurinol*, beta-blockers, *bromocriptine*, *carbamazepine*, *colchicine*, *lithium* and *sodium valproate*.

Treatment timescale: treatment with *minoxidil* may take up to 4 months to show full effect.

C. Cold sores

Lab.VII

Cold sores (herpes labialis) are caused by herpes simplex virus (HSV) HSV1 typically causes infection around or in the mouth, whereas HSV2 is responsible for genital herpes infection. Occasionally, however, this situation is reversed with HSV2 affecting the face and HSV1 the genital area.

Patient assessment

1. *Age*

cold sores are most commonly seen in adolescents and young adults slightly higher in women than in men and the frequency declines with age. Following the primary attack, the virus is not completely eradicated and virus particles lie dormant in nerve roots until they are reactivated at a later stage.

In active primary herpes infection of childhood, the typical picture is of a febrile child with a painful ulcerated mouth and enlarged lymph nodes. The herpetic lesions last for 3–6 days and can involve the outer skin surface as well as the inside of the mouth. Such patients should be referred to the doctor.

2. *Duration*

The duration of the symptoms is important as treatment with acyclovir is of most value if started early in the course of the infection (during the prodromal phase). Usually the infection is resolved within 1–2 weeks. Any lesions that have persisted longer need medical referral.

3. *Symptoms and appearance*

The symptoms of discomfort, tingling or irritation (prodromal phase), may occur in the skin for 6–24 h before the appearance of the cold sore. The cold sore starts with the development of minute blisters on top of inflamed, red, raised skin. The blisters may be filled with white matter. They quickly break down to produce a raw area with exudation and crusting by about the fourth day after their appearance. By around 1 week later, most lesions will have healed. Cold sores are extremely painful.

When a cold sore occurs for the first time, it can be confused with a small patch of impetigo.

4. *Location*

Cold sores occur most often on the lips or face. Lesions inside the mouth or affecting the eye need medical referral.

5. *Precipitating factors*

cold sores can be precipitated by sunlight, wind, fever (during infections such as colds and flu) and menstruation, being rundown and local trauma to the skin. Physical and emotional stress can also be triggers.

6. *Previous history*

The fact that the cold sore is recurrent is helpful diagnostically. If a sore keeps on returning in the same place in a similar way, then it is likely to be a cold sore. Most sufferers experience one to three attacks each year. Cold sores occur throughout the year, with a slightly increased incidence during the winter months.

7. *Medication*

Immunocompromised patients, e.g. those undergoing cytotoxic chemotherapy, are at risk of serious infection and should always be referred to their doctor.

D. Dandruff

Lab. VIII

Dandruff is a chronic relapsing condition of the scalp and a mild form of seborrhoeic dermatitis, associated with the yeast *Malassezia furfur*, which responds to treatment but returns when treatment is stopped. The condition usually appears during puberty and reaches a peak in early adulthood mainly people aged between 20 and 30 years.

Patient assessment

1. Appearance

Dandruff is characterized by grayish-white flakes or scales on the scalp and an itchy scalp as a result of excessive scaling. In dandruff the epidermal cell turnover is at twice the rate of those without the condition.

In more severe cases of seborrhoeic dermatitis the scales are yellowish and greasy looking and there is usually some inflammation with reddening and crusting of the affected skin

2. *Location*

In dandruff the scalp is the only area affected. More widespread seborrhoeic dermatitis affects the areas where there is greatest sebaceous gland activity, so it can affect eyebrows, eyelashes, moustache, paranasal clefts, behind the ears, nape of neck, forehead and chest. In infants seborrhoeic dermatitis is common and occurs as cradle cap, appearing in the first 12 weeks of life.

3. *Severity*

Dandruff is generally a mild condition. However, the itching scalp may lead to scratching, which may break the skin, causing soreness and the possibility of infection. If the scalp is very sore or there are signs of infection (crusting or weeping), referral should be indicated.

4. *Previous history*

Since dandruff is a chronic relapsing condition there will usually be a previous history of fluctuating symptoms. There is a seasonal variation in symptoms, which generally improve in summer in response to UVB light. *M. furfur* is unaffected by UVA light.

5. *Aggravating factors*

Hair dyes and perms can irritate the scalp. Inadequate rinsing after shampooing the hair can leave traces of shampoo causing irritation and itching.

Treatment timescale: Dandruff treatments need to be applied to the scalp and be left for at least 5 min for best effect and should start to improve within 12 weeks of beginning treatment.

E. Eczema/dermatitis

Lab. VIII

Dermatitis is more commonly used when an external precipitating factor is present (contact dermatitis). The rashes produced have similar features with eczema but the distribution on the body varies and can be diagnostic. Atopic eczema affects up to 20% of children, in many of whom it disappears or greatly improves with age such that 2–10% of adults are affected.

The rash of eczema typically presents as dry flaky skin that may be inflamed and have small red spots. The skin may be cracked and weepy and sometimes becomes thickened. The rash is irritating and can be extremely itchy.

Patient assessment

1. Age/distribution

The distribution of the rash tends to vary with age.

- In infants, it is usually present around the nappy area, neck, back of scalp, face, limb creases and backs of the wrists.
- In white children, the rash is most marked in the flexures: behind the knees, on the inside of the elbow joints, around the wrists, as well as the hands, ankles, neck and around the eyes.
- In black and Asian children, the rash is often on the extensor surface of the joints and may have a more follicular appearance.
- In adults, the neck, the backs of the hands, the groin, around the anus, the ankles and the feet are the most common sites.
- The rash of intertrigo is caused by a fungal infection and is found in skinfolds or occluded areas such as under the breasts in women and in the groin or armpits.

2. *Occupation/contact*

Contact dermatitis may be caused by substances that irritate the skin or spark off an allergic reaction.

- Irritant contact dermatitis is most commonly caused by prolonged exposure to water (wet work). Typical occupations include cleaning, hairdressing, food processing, fishing and metal engineering.
- Substances that can irritate the skin include alkaline cleansing agents, degreasing agents, solvents and oils. Such substances either cause direct and rapid damage to the skin or, in the case of weaker irritants, exert their irritant effect after continued exposure.
- Napkin dermatitis is an example of irritant dermatitis and can be complicated by infection, e.g. thrush.
- In other cases, the contact dermatitis is caused by an allergic response to substances which include chromates (present in cement and rust-preventive paint), nickel (present in costume jewelry and as plating on scissors), rubber and resins (two-part glues and the resin colophony in adhesive plasters), dyes, certain plants (e.g. primula), oxidizing and reducing agents (as used by hairdressers when perming hair) and medications (including *topical corticosteroids, lanolin, neomycin* and *cetyl stearyl alcohol*). Eye make-up can also cause allergic contact dermatitis.

3. *History of hay fever/asthma*

Many eczema sufferers have associated hay fever and/or asthma. There is often a family history (in about 80% of cases) of eczema, hay fever or asthma. Eczema occurring in such situations is called atopic eczema.

4. *Aggravating factors*

- Atopic eczema may be worsened during the hay-fever season and by house dust or animal dander. Factors that dry the skin such as soaps or detergents and cold wind can aggravate the condition.
- Certain clothing such as woolen material can irritate the skin. In a small minority of sufferers (less than 5%), cow's milk, eggs and food coloring (tartrazine) have been implicated.
- Emotional factors, stress and worry can sometimes exacerbate eczema.
- Antiseptic solutions applied directly to the skin or added to the bathwater can irritate the skin.

5. Medication

Topically applied local anesthetics, antihistamines, antibiotics and antiseptics can all provoke allergic dermatitis. Some preservatives may cause sensitization.

Treatment timescale: Most cases of mild-to-moderate atopic eczema, irritant and allergic dermatitis should respond to skin care and treatment with OTC products. If no improvement has been noted after 1 week, referral to the doctor is advisable.

F. Warts

Lab. IX

Warts is caused by the human papilloma virus to the skin and have a high incidence in schoolchildren. Once immunity to the infecting virus is sufficiently high, the lesions will disappear.

Patient assessment

Age

Warts can occur in children and adults; they are more common in children due to higher exposure to the virus in schools and sports facilities and the peak incidence is found between the ages of 12 and 16 years.

Appearance

Warts appear as raised lesions with a roughened surface that are usually flesh coloured. Warts have a network of capillaries and, if pared, thrombosed, blackened capillaries or bleeding points will be seen.

Multiple warts

Warts may occur singly or as several lesions. Molluscum contagiosum is a condition in which the lesions may resemble warts and where another type of viral infection is

the cause. Closer examination shows that the lesions contain a central plug of material (consisting of viral particles), which can be removed by squeezing. The location of molluscum contagiosum tends to differ from that of warts – the eyelids, face, armpits and trunk may be involved. Such cases are best referred to the doctor, since self-treatment would be inappropriate.

Location

The palms or backs of the hands are common sites for warts, as is the area around the fingernails. People who bite or pick their nails are more susceptible to warts around them. Warts sometimes occur on the face and referral to the doctor is the best option in such cases. Since treatment with OTC products is destructive in nature, self-treatment of facial warts can lead to scarring and should never be attempted.

Parts of the skin that are subject to regular trauma or friction are more likely to be affected, since damage to the skin facilitates entry of the virus.

Anogenital

Anogenital warts are caused by a different type of human papilloma virus and require medical referral for examination, diagnosis and treatment. They are sexually transmitted and patients can self-refer to their local genitourinary clinic.

Duration and history

It is known that most warts will disappear spontaneously within a period of 6 months to 2 years. The younger the patient, the more quickly the lesions are likely to remit. Any change in the appearance of a wart should be treated with suspicion and referral to the doctor is advised.

Medication

Diabetic patients should not use OTC products to treat warts since impaired circulation can lead to delayed healing, ulceration or even gangrene. Peripheral neuropathy may mean that even extensive damage to the skin may not provoke a sensation of pain. Warts can be a major problem if the immune system is suppressed by either disease (e.g. HIV infection and lymphoma) or drugs (e.g. ciclosporin (cyclosporin) to prevent rejection of a transplant).

Treatment timescale

Treatment with OTC preparations should produce a successful outcome within 3 months; if not, referral is necessary.

Infestation by the scabies mite, *Sarcoptes scabiei*, causes a characteristically intense itching, which is worse during the night. The itch of scabies can be severe and scratching can lead to changes in the appearance of the skin. Scabies goes through peaks and troughs of prevalence, with a peak occurring every 15–20 years.

Patient assessment

1. Age

Scabies infestation can occur at any age from infancy onwards. Refer infants and young children to the doctor.

2. Symptoms

- The scabies mite burrows down into the skin and lives under the surface. The presence of the mites sets up an allergic reaction, thought to be due to the insect's coat and exudates, resulting in intense itching.
- A characteristic feature of scabies is that itching is worse at night and can lead to loss of sleep.
- Burrows can sometimes be seen as small thread-like grey lines. The lines are raised, wavy and about 5–10 mm long.
- Commonly infested sites include the web space of the fingers and toes, wrists, armpits, buttocks and genital area.
- Patients may have a rash that does not always correspond to the areas of infestation. The rash may be patchy and diffuse or dense and erythematous. It is more commonly found around the midriff, underarms, buttocks, inside the thighs and around the ankles.
- In adults, scabies rarely affects the scalp and face, but in children aged 2 years or under and in the elderly, involvement of the head is more common, especially the postauricular fold.
- Burrows may be indistinct or may have been disguised by scratching which has broken and excoriated the skin.
- Scabies can mimic other skin conditions and may not present with the classic features. The itch tends to be generalised rather than in specific areas.
- In immunocompromised or debilitated patients (e.g. the elderly), scabies presents differently. The affected skin can become thickened and crusted. Mites survive under the crust and any sections that become dislodged are infectious to others because of the living mites they contain.

3. History

The itch of scabies can take several (6–8) weeks to develop in someone who has not been infested previously. The scabies mite is transmitted by close personal

contact, so patients can be asked whether anyone else they know is affected by the same symptoms, e.g. other family members, boyfriends and girlfriends.

4. Signs of infection

Scratching can lead to excoriation, so secondary infections such as impetigo can occur. The presence of a weeping yellow discharge or yellow crusts would be indications for referral to the doctor for treatment.

Childhood Conditions

A. Napkin rash

Lab. X

Most babies will have napkin (nappy) rash at some stage during their infancy. Contributory factors include contact of urine and faeces with the skin, irritant effect of soaps and wetness and maceration of skin due to infrequent nappy changes and inadequate skin care.

Patient assessment

1. Nature and location of rash

Nappy rash, sometimes called napkin dermatitis, appears as an erythematous rash on the buttock area.

2. Severity

In general, if the skin is unbroken and there are no signs of secondary bacterial infection, treatment may be considered. The presence of bacterial infection could be signified by weeping or yellow crusting. Secondary fungal infection is common in napkin dermatitis and the presence of satellite papules (small, red lesions near the perimeter of the affected area) would indicate such an infection. Referral to the doctor would be advisable if bacterial infection were suspected, since topical or systemic antibiotics might be needed. Secondary fungal infection could be treated by the pharmacist using one of theazole topical antifungal preparations that are available.

3. Duration

If the condition has been present for longer than 2 weeks, the pharmacist might decide that referral to the doctor.

4. Precipitating factors

Skin care and hygiene

- Napkin dermatitis is a simple irritant dermatitis due to ammonia, produced as a breakdown product of urine in soiled nappies.
- irritant substances in urine and faeces.

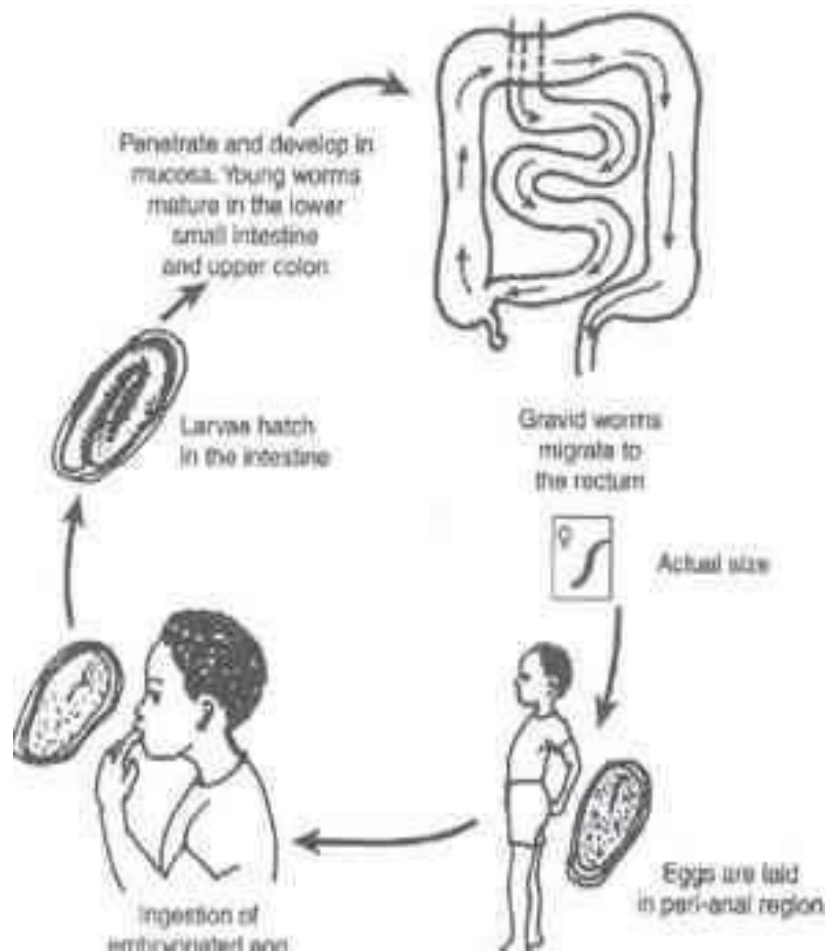
- sensitivity reactions to soaps and detergents and antiseptics left in terry nappies after inadequate rinsing.
- sensitivity reactions to ingredients in some topical preparations, e.g. lanolin (although purified versions of wool fat have reduced the problems previously caused by wool fat and lanolin).
- constant wetting and rewetting of the skin when left in contact with soiled nappies. Maceration of the skin ensues, leading to enhanced penetration of irritant substances through the skin and the breakdown of the skin. Wearing occlusive plastic pants exacerbates this effect. Frequent changes of nappy together with good nappy-changing routine and hygiene are essential.

Treatment timescale

A baby with nappy rash that does not respond to skin care and OTC treatment within 1 week should be seen by the doctor.

B-Threadworms (pinworms)

Lab. X



Infection with threadworms (*Enterobius vermicularis*) is common in young children.

Patient assessment

1. Age

Threadworm infection is very common in schoolchildren.

2. Signs of infection

Usually the first sign that parents notice is the child scratching his or her bottom. Perianal itching is a classic symptom of threadworm infection and is caused by an allergic reaction to the substances in and surrounding the worms' eggs, which are laid around the anus.

Itching is worse at night, because at that time the female worms emerge from the anus to lay their eggs on the surrounding skin. The eggs are secreted together with a sticky irritant fluid onto the perianal skin. Persistent scratching may lead to secondary bacterial infection. If the perianal skin is broken and there are signs of weeping, referral to the doctor for antibiotic treatment would be advisable.

Loss of sleep due to itching may lead to tiredness and irritability during the day. Itching without the confirmatory sighting of threadworms may be due to other causes, such as an allergic or irritant dermatitis caused by soaps or topical treatments used to treat the itching. In some patients, scabies or fungal infection may produce perianal itching.

3. Appearance of worms

The worms themselves can be easily seen in the faeces as white- or cream-coloured thread-like objects, about 10 mm in length and less than 0.5 mm in width. Males are smaller than females. The worms can survive outside the body for a short time and hence may be seen to be moving. Sometimes the worms may be seen protruding from the anus itself.

4. Other symptoms

In severe cases of infection, diarrhoea may be present and, in girls, vaginal itch.

5. Recent travel abroad

If the person has recently travelled abroad, this information should be passed on to the doctor so that other types of worm can be considered.

6. Other family members

The pharmacist should enquire whether any other member of the family is experiencing the same symptoms. However, the absence of perianal itching and threadworms in the faeces does not mean that the person is not infected; it is important to remember that during the early stages, these symptoms may not occur.

C. Oral thrush

Lab. X

Thrush (candidosis) is a fungal infection, which occurs commonly in the mouth (oral thrush), in the nappy area in babies and in the vagina.

Patient assessment

1. Age

Oral thrush is most common in babies, particularly in the first few weeks of life. The infection is passed on by the mother during childbirth. In older children and adults, oral thrush is rarer, but may occur after antibiotic or inhaled steroid treatment. which may be a sign of immunosuppression and referral to the doctor is advisable.

2. Affected areas

Oral thrush affects the surface of the tongue and the insides of the cheeks.

3. Appearance

When candidal infection involves mucosal surfaces, white patches known as plaques are formed, which resemble milk curds. The distinguishing feature of plaques due to *Candida* is that they are not so easily removed from the mucosa, and when the surface of the plaque is scraped away, a sore and reddened area of mucosa will be seen underneath, which may sometimes bleed.

4. Human immunodeficiency virus infection

Persistence of oral thrush and/or thrush of the nappy area after the neonatal period may be the first sign of HIV infection.

5. Medication

A. Antibiotics

Broad-spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection.

B. Immunosuppressives

Any drug that suppresses the immune system will reduce resistance to infection, and immunocompromised patients are more likely to get thrush. Cytotoxic therapy and steroids predispose to thrush. Patients using inhaled steroids for asthma are prone to oral thrush because steroid is deposited at the back of the throat during inhalation, especially if inhaler technique is poor. Rinsing the throat with water after using the inhaler may be helpful.

If the symptoms have not cleared up within 1 week, patients should see their doctor.

Minor eye disorders

Lab. XI

Conjunctivitis is one cause of a painful red eye.

Patient assessment

Conjunctivitis

The term conjunctivitis implies inflammation of the conjunctiva, which is a transparent surface covering the white of the eye. It can become inflamed due to infection, allergy or irritation.

Infective conjunctivitis

Both bacteria and viruses can cause conjunctivitis. The symptoms are a painful gritty sensation and a discharge. The discharge is sticky and purulent in bacterial infections and more watery in viral infections. It nearly always affects both eyes. Conjunctivitis occurring in only one eye suggests the possible presence of a foreign body or another condition accounting for the red eye.

Women's Health disorders

A. Cystitis

Lab.XII

Cystitis is a term used to describe a collection of urinary symptoms including dysuria, frequency and urgency. The urine may be cloudy and strong smelling; these may be signs of bacterial infection caused by *Escherichia coli*, *Staphylococcus saprophyticus* and *Proteus mirabilis*, and the source is often the gastrointestinal (GI) tract. About half of cases will resolve within 3 days even without treatment.

Patient assessment

1. Age

Any child with the symptoms of cystitis should always be referred to the doctor for further investigation and treatment. Urinary tract infections (UTIs) occur in children, and damage to the kidney or bladder may result, particularly after recurrent infections.

2. Gender

Cystitis is much more common in women than in men for two reasons:

- A. Cystitis occurs when bacteria pass up along the urethra and enter and multiply within the bladder. As the urethra is much shorter in females than in males, the passage of the bacteria is much easier. In addition, the process is facilitated by sexual intercourse.
- B. There is evidence that prostatic fluid has antibacterial properties, providing an additional defense against bacterial infection in males.

3. Referral

Any man who presents with the symptoms of cystitis requires medical referral because of the possibility of more serious conditions such as kidney or bladder stones or prostate problems.

4. Pregnancy

If a pregnant woman presents with symptoms of cystitis, referral to the doctor is the best option, because bacteruria (presence of bacteria in the urine) in pregnancy can lead to kidney infection and other problems.

5. Symptoms

- impending attack is an itching or pricking sensation in the urethra and pass urine urgently, but pass only a few burnings, painful drops. This frequency of urine occurs throughout the day and night.
- Dysuria (pain on passing urine) is a classical symptom of cystitis.
- After urination, the bladder may not feel completely empty, but even straining produces no further flow.
- The urine may be cloudy and strong smelling; these may be signs of bacterial infection.
- Cystitis may be accompanied by suprapubic (lower abdominal) pain and tenderness; pain is sometimes felt in the lower back.

6. Blood in urine

Hematuria (presence of blood in the urine) is an indication of kidney stone and need referral to the doctor. It often occurs in cystitis when there is so much inflammation of the lining of the bladder and urethra that bleeding occurs. This is not serious and responds quickly to antibiotic treatment.

7. Vaginal discharge

The presence of a vaginal discharge would indicate local fungal or bacterial infection and would require referral.

8. Previous history

Women with recurrent cystitis should see their doctor.

9. Diabetes

Recurrent cystitis can sometimes occur in diabetic patients.

10. Other precipitating factors

The irritant effects of toiletries (e.g. bubble baths and vaginal deodorants) and other chemicals (e.g. spermicides and disinfectants).

11. Postmenopausal women

Oestrogen deficiency in postmenopausal women leads to thinning of the lining of the vagina. Lack of lubrication can mean the vagina and urethra are vulnerable to trauma and irritation and attacks of cystitis can occur.

12. Medication

Cystitis can be caused by cytotoxic drugs such as cyclophosphamide and also by methenamine hippurate (hexamine) (because of formaldehyde release). It has been claimed that the incidence of cystitis is higher in women who are on the pill.

Treatment timescale: If symptoms have not subsided within 2 days of beginning the treatment, the patient should see her doctor.

B. Dysmenorrhoea

Lab.XII

Dysmenorrhoea (period pains) is divided into two types primary and secondary dysmenorrhoea. Primary dysmenorrhoea is defined as pain in the absence of pelvic disease, whereas secondary dysmenorrhoea refers to pain, which may be due to underlying disease.

Patient assessment

1. Age

The peak incidence of primary dysmenorrhoea occurs in women between the ages of 17 and 25 years. Primary dysmenorrhoea is uncommon after having children. Secondary dysmenorrhoea is most common in women aged over 30 years and is rare in women aged under 25 years more common in older women, especially in those who have had children. Common causes of secondary dysmenorrhoea include endometriosis or PID.

2. Previous history

Dysmenorrhoea is often not associated with the start of menstruation (menarche). This is because during the early months (and sometimes years) of menstruation, ovulation does not occur. These anovulatory cycles are usually, but not always, pain free and therefore women sometimes describe period pain that begins after several months or years of pain-free menstruation.

3. Timing and nature of pains

- a. Primary dysmenorrhoea : classically presents as a cramping lower abdominal pain that often begins during the day before bleeding starts. The pain gradually eases after the start of menstruation and is often gone by the end of the first day of bleeding.
- b. Secondary dysmenorrhoea: The pain of acquired dysmenorrhoea may occur during other parts of the menstrual cycle and can be relieved or worsened by menstruation. Such pain is often described as a dull, aching pain rather than

being spasmodic or cramping in nature. Often occurring up to 1 week before menstruation, the pain may get worse once bleeding starts. The pain may occur during sexual intercourse.

- c. Endometriosis: The pain may also be non-cyclical and may occur with sexual intercourse (dyspareunia).
- d. Pelvic inflammatory disease: There is usually severe pain, fever and vaginal discharge. The pain is in the lower abdomen and may be unrelated to menstruation. It may be confused with appendicitis. Chronic PID may follow on from an acute infection. The pain tends to be less severe, associated with periods and may be experienced during intercourse.
- e. Premenstrual syndrome: (PMS) describes a collection of symptoms, both physical and mental, whose incidence is related to the menstrual cycle. Symptoms are experienced cyclically, usually from 2 to 14 days before the start of menstruation. Relief from symptoms generally occurs once menstrual bleeding begins. Signs and symptoms include a bloated abdomen, increase in weight, swelling of ankles and fingers, breast tenderness and headaches. Women who experience PMS describe a variety of mental symptoms that may include any or all of irritability, tension, depression, difficulty in concentrating and tiredness.

4. *Other symptoms*

Women who experience dysmenorrhoea will often describe other associated symptoms. These include nausea, vomiting, general GI discomfort, constipation, headache, backache, fatigue, feeling faint and dizziness.

Treatment timescale

If the pain of primary dysmenorrhoea is not improved after two cycles of treatment, referral to the doctor would be advisable.

Central system disorders

A-Motion sickness

Lab. XIII

Motion sickness is caused by a conflict of messages to the brain, where the vomiting centre receives information from the eyes, the GI tract and the vestibular system in the ear.

Patient assessment

13. *Symptoms*: nausea, sometimes vomiting, pallor and cold sweats.

14. *Age*

- It is common in young children.

- Babies and very young children up to 2 years seem to only rarely suffer from the problem and therefore do not usually require treatment.
- The incidence of motion sickness seems to greatly reduce with age

15. Previous history

members of the family have history motion sickness and for whom treatment will be needed.

16. Mode of travel/length of journey

The estimated length of time to be spent travelling will help in the selection of prophylactic treatment, since the length of action of available drugs varies. Once vomiting starts there is little that can be done, so any medicine recommended must be taken in good time before the journey if it is to be effective. If it is a long journey, it may be necessary to repeat the dose while travelling and the recommended dosage interval should be stressed.

Children are less likely to feel or be sick if they can see out of the car, so appropriate seats can be used to elevate the seating position of small children. For any method of travel, children are less likely to experience symptoms if they are kept occupied by playing games as they are therefore concentrating on something else.

B-Insomnia

Lab. XIII

Patient assessment

1. Age

- In elderly people the total duration of sleep is shorter. Nocturnal waking is more likely because sleep is generally more shallow. Elderly people may nap during the day and this reduces their sleep need at night even further.
- Many babies, toddlers and infants have poor sleep patterns so referral can be helpful.

2. Symptoms

- It is important to distinguish between the different types of sleep problems:
- Difficulty in falling asleep (sleep latency insomnia)
- Waking during the night
- Early morning waking
- Poor sleep quality
- Snoring.
- Depression is an important cause of insomnia. Early morning waking is a classic symptom of depression. Here the patient may describe no problems in getting to sleep but waking in the early hours and not being able to get back to sleep. This pattern requires referral

- The onset of symptoms of bipolar disorder may be associated with lack of sleep. It is possible that insufficient sleep may actually trigger an episode of mania in bipolar disorder.
- Anxiety can also cause insomnia. This is usually associated with difficulty in getting off to sleep because of an overactive mind.

3. *Duration*

- Sleep disorders are classified as follows:
- Transient (days)
- Short term (up to 3 weeks)
- Chronic (longer than 3 weeks).
- All chronic cases should be referred to the doctor.

4. *Previous history*

Where there is a previous history, it is helpful to know what treatments have been tried. It is also useful to be aware of a history of depression or anxiety or some other mental health problem.

5. *Contributory factors*

- Shift work with changing shifts is a classic cause of sleep problems. Those who work away from home may experience difficulty in getting a good night's sleep because of the combination of travelling and staying in unfamiliar places.
- Alcohol – while one or two drinks can help by decreasing sleep latency, the sleep cycle is disturbed by heavy or continuous alcohol consumption.
- Life changes can cause disrupted sleep, e.g. change or loss of job, moving house, bereavement, loss or separation or the change of life (i.e. menopause).
- Other stressful life events might include examinations, job interviews, celebrations (e.g. Christmas) and relationship difficulties.
- Obesity can be associated with sleep apnoea and snoring, both of which can interrupt sleeping.

6. *Medication*

- Some drugs can cause or contribute to insomnia, including decongestants, *fluoxetine*, monoamine oxidase inhibitors, corticosteroids, appetite suppressants, *phenytoin* and *theophylline*.
- Medical problems can be associated with insomnia through pain (e.g. angina, arthritis, cancer and gastro-oesophageal reflux) or breathing difficulties (e.g. heart failure, chronic obstructive airways disease and asthma). Other medical conditions such as hyperthyroidism and Parkinson's disease can also cause insomnia.

Treatment timescale: There should be an improvement within days: refer after 1 week if the problem is not resolved.

