
Tropical Paediatrics

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Children in the tropics are like children everywhere: nutrition and caring practices are the fundamental determinants of their well-being, with common infections a major compounding element. Poverty and its concomitant deprivations are more important causes of illness than conditions unique to the tropics and must be dealt with in a realistic affordable manner. Behaviours are the key determinants of health, making the time spent on careful, culturally appropriate and sensitive counselling of care-givers critical to effective outcomes. Feeding practices are particularly the key to healthy growth, and prevention of illness. This requires knowledge of local foods, their costs, storage, seasonality, preparation and nutritional content. Time spent in learning about food and feeding beliefs to better guide mothers is as critical as knowledge of pharmacology to make proper drug choices.

18.1 Prevention comes first

The real specialty of paediatrics is promotion of good health and prevention of illness. A healthy mother is the first cardinal determinant, with adequate spacing of pregnancies, good nutrition during a gestation without smoking or alcohol abuse, regular antenatal care including iron and folate supplements and tetanus toxoid, preparation for a clean and safe delivery and confident commitment to exclusive breastfeeding. Tests for maternal syphilis and HIV testing and, where necessary, provision of antiretroviral therapy to mothers in labor and to the neonate are essential in most settings today. All newborns should receive eye prophylaxis (silver nitrate is largely replaced by erythromycin or chloramphenicol drops) and vitamin K. Proper neonatal examination will reveal the same wide range of congenital problems seen in wealthy communities, with the possible addition of congenital syphilis, rarely placental malaria, and neonatal tetanus. The latter is entirely preventable with tetanus toxoid immunisation of pregnant women. Suspect neonatal tetanus in babies who stop suckling after 48-72 hours and develop muscle spasms (risus sardonicus of the face) and later seizures. For babies of unimmunised mothers delivered at home, a dose of antitetanus immunoglobulin may prevent or at least lessen disease. Parenteral penicillin, seizure control with diazepam, respiratory support, and nasogastric feeding are needed for a week or more for recovery. The old measures of darkened rooms and enforced silence only serve to deprive the victim of needed nursing care and round the clock observation.

Exclusive breast feeding should start within minutes of birth and continue for six months, when complementary foods are introduced. Breast feeding should be maintained for two years or more, except in the case of HIV positive mothers. In these, abrupt weaning at the end of 6 months of *exclusive* breast feeding is generally recommended. For low birth weight (LBW) newborns, successful initiation of breast feeding may be lifesaving and “kangaroo mother care (1,2)” involving prolonged skin-to-skin contact between newborn and mother, has been shown superior to incubator nursing as an excellent means to assure warmth from

the mother's body and continuous access to the breast. LBW babies should receive frequent attention until they have reached at least 3 kgms. Remember that poor feeding is often the only sign of early sepsis.

Routine immunisations (BCG and OPV at birth, DPT, OPV Hib and HBV at 6, 10 and 14 weeks, measles at nine months, boosters at 15-18 months, and in some settings yellow fever and meningitis vaccines), bed net protection from mosquitoes, and generous use of soap and water along with regular monitoring of growth should assure most children remain healthy.

18.1.1 Adequate diet is the key

Nutrition is the "joker" most often forgotten by those new to poor environments. Severe syndromes of marasmus and kwashiorkor are readily recognised and must be managed with immediate hospitalisation, intensive feeding and adherence to the WHO "Ten Steps" for treating severe malnutrition (3) (See Table 18.1).

Table 18.1: WHO guidelines: ten steps for routine management of children with severe malnutrition

Prevent and treat

1. Hypoglycaemia
2. Hypothermia
3. Dehydration
4. Electrolyte imbalance
5. Infection
6. Micronutrient deficiencies

Provide special feeds for

7. Initial stabilisation
8. Catch-up growth

Other

9. Provide loving care and stimulation
10. Prepare for follow-up after discharge

Of particular importance are immediate and round the clock feeding, avoiding hypothermia, adequate hydration, and electrolyte and micronutrient supplements. Daily broad spectrum antibiotics are given because of the particular vulnerability of these children to severe infections.

More subtle forms of malnutrition are the stunting and generally small size that reflect chronic undernourishment. This is often accompanied by micronutrient deficiencies, especially of vitamin A, iron and B vitamins (anaemia), zinc, and in some environments iodine deficiency (goitre). Rarer malnutritional syndromes of rickets (bowed legs), scurvy (gum hypertrophy and swollen painful joints), pellagra (with typical exfoliating rash in exposed surfaces), and tachycardia with cardiac failure due to thiamine deficiency are still seen where diets are monotonous and lacking key ingredients. Multivitamins are a most useful supplement in many settings, but cannot take the place of a more diversified diet.

Careful feeding advice to the mother with special attention to breast feeding must accompany EVERY interaction as diet is at least as important as drugs in the recovery from most conditions.

All young children in the tropics can benefit from a dose of 200,000 units Vitamin A six monthly, for even without eye signs subclinical deficiency is common and results in increased susceptibility to infections.

18.1.2 Children with special needs

Where children and their families are displaced from their homes and dependant on outside food sources, great effort is needed to assure that properly fortified foods are provided in adequate quantity and frequency to maintain health. All too often relief efforts focus on the sick and malnourished, providing therapeutic feeding while “normal” children are relatively starved, thereby providing a continued incidence of flagrant malnutrition when even modest preventive measures amongst the non-sick population would prevent illness and severe PEM. A particularly vulnerable group are children with disabilities. Thus the promotion of general rations, often with feeding centres for the poorest children to assure they receive their share are properly immunised and growth faltering and illness are detected early is by far the most effective means to assuring the best health for the largest number of children. Only when these tasks are properly covered should one turn to the more clinically challenging cases of paediatric illness.

18.2 Diseases of children

In most tropical settings, access to laboratory aids to diagnosis may be very limited, which makes careful history and physical examination all the more central to your diagnosis and treatment plan. Regular growth, evidenced by weight gain along a steady trajectory plotted on a standard Road to Health Chart (4) is the best evidence of good health; faltering growth, the best indicator that something is wrong. Your task is to rule out the most severe and threatening conditions, decide on the most likely cause and recommend appropriate affordable action. A definitive etiologic diagnosis is often not possible under these circumstances making recognition of common syndromes and an orderly review of possible conditions based on incidence and severity for your locality an important tool. In this chapter we will address the common presentations of sick children identifying the most prevalent and serious conditions to consider and manage. More detail on the etiologic agents and their manifestations are given in the other appropriate chapters of this book and useful references for more detail on paediatric conditions are found at the end of this chapter.

18.2.1 Common diseases are common

The Integrated Management of Childhood Illness – IMCI (5): The WHO has developed a comprehensive orderly approach to dealing with sick children. Though primarily aimed at primary care nurses, it lends itself well to all levels of practice, be it by paediatrician, generalist, nurse or paramedic. Starting with history and observation for general danger signs (lethargy, convulsions, inability to feed, intractable vomiting), it covers in an orderly way attention to chief complaint (diarrhoea, cough, fever, ear pain) a review of systems for key signs and symptoms, a clear assessment of growth and nutrition and immunisation status. There is especial emphasis on careful appropriate education of the care-giver regarding drug administration, feeding, expected rate of recovery and signs requiring a return visit.

Following this approach, lower level staff can reliably diagnose and manage the most common and important illnesses of children (diarrhoea, pneumonia and other lower respiratory disorders, malaria, and sometimes ear and throat infections) and detect for immediate referral children with general danger signs, severe dehydration and shock, severe pneumonia, meningitis, other neurological syndromes and undiagnosed fevers while providing practical nutritional advice and preventive measures. This allows the physician to concentrate on the less common and difficult to diagnose and manage conditions. Do not let the high prevalence of these common potentially life threatening conditions lull you into believing they are less important: indeed, properly managed by IMCI protocols, a maximum number of child lives will be saved.

18.2.2 Neurological disorders

Convulsions, marked lethargy and neck stiffness are all emergencies requiring LP for further diagnosis. Where CSF is purulent, a gram stain on the spun specimen may be diagnostic. Viral meningitis is common, generally producing a CSF with a few hundred cells – a mixture of polymorphs and lymphocytes. But when an ‘aseptic’ CSF shows a raised protein of over 1G/litre, TB meningitis must always be suspected. Do not perform a lumbar puncture if there is (1) altered state of consciousness or (2) signs of shock or (3) skin purpura. Such children may have meningococcaemia, and the procedure is liable to produce coning in these circumstances. Immediate intravenous therapy, the administration of an IV antibiotic, followed by urgent admission to hospital is required. Cerebral malaria can advance to coma with frightening speed and must be considered early. In many areas neurocysticercosis is the most common cause of unexplained recurrent seizures even in very young children (6).

HIV presents with a wide array of neurological manifestations ranging from hyper-reflexia and ankle clonus to delayed milestones and even later, to regression in mental development. In some settings fetal alcohol syndrome is all too common. The typical facies is seen in only the more severe cases – alcohol may produce a gradation of effects on the child’s cognitive function from subtle to extreme.

18.2.3 Fever

Fever is the most common presenting symptom you will encounter in the tropics. The severity, duration, and temperature pattern are informative, but accompanying signs and symptoms are the most helpful diagnostic clues. Measured temperature is essential, and a complete physical examination critical to finding key clues: stiff neck, swellings, ENT, joints, skin rash or eschar or bite, organomegaly, pain or tenderness, neurological deficits. Local knowledge is extremely important in deciding the most likely aetiology, but always remember that “common diseases are common” even in the tropics. Look for ear and throat infections, urinary tract infections, TB and HIV before you go for the unusual “tropical diseases” found in text books.

18.3 Malaria

Malaria is dealt with comprehensively in Chapter 5. Malaria can be a severe and unpredictable disease in children, especially those below 5 years. Complications may develop very rapidly. The symptoms often differ from those in adults, and in any febrile illness malaria should be suspected if the child has been exposed. Poor feeding, lethargy or irritability, coughing and seizures (frequently subtle) are important presenting features.

Complications include cerebral malaria, anaemia, severe jaundice, hypoglycaemia, and metabolic acidosis.

Agitation and respiratory distress as a result of metabolic acidosis are ominous signs. Secondary bacterial sepsis is common and broad-spectrum antibiotics should be given to children with severe malaria. Renal failure and respiratory distress syndrome are rare in young children. Apart from other causes of fever, malaria is often misdiagnosed as meningitis, severe anaemia or hepatitis, with resultant delay in initiating therapy.

18.3.1 Treatment

For children with uncomplicated malaria the treatment of choice should be quinine. In severe malaria, and where vomiting is a problem, quinine should be given intravenously, taking particular care that the correct dosage is administered

Loading dose:

Quinine hydrochloride 20mg/kg in 5% dextrose saline (5-10ml/kg) IV over four hours. (A loading dose should not be used if the child has received quinine or mefloquine in the preceding seven days).

Maintenance dose:

Eight hours after starting the loading dose give 10mg/kg (max. 700mg) IV over 4 hours. Repeat every 8 hours until oral medication can be given

NEVER GIVE UNDILUTED QUININE (OR CHLOROQUINE) BY THE IV ROUTE

If IV administration is not possible quinine hydrochloride should be given by deep intramuscular injection before referral. When given intramuscularly there must be scrupulous attention to aseptic technique, and quinine should be diluted to 60-100mg/ml to reduce pain and prevent sterile abscess formation.

Total duration of treatment with quinine is seven days or longer until a blood smear is negative.

If there is suspected quinine resistance (malaria acquired in South America or Asia) add

- doxycycline (if over 8 years of age) 2mg/kg (max 100mg) twice daily for 7 days)
- OR:
- pyremethamine (25mg)-sulfadoxine(500mg)

Dosages:

6 wks – 1yr: 1/4 tab
 1 – 3 yrs: 1/2 tab
 4 – 8 yrs: 1 tab
 9 – 14 yrs: 2 tabs

As there is no liquid preparation of quinine available oral administration can be difficult in children. To make it more palatable the crushed tablets can be mixed with mashed banana, chocolate syrup or jam.

Artemether lumefantrine is an alternative agent to quinine in children greater than one year of age.

Ancillary treatment in severe malaria:

- Watch for hypoglycaemia
- Rehydration is important, but restrict fluids if unconscious
- Anticonvulsants may be needed to terminate seizures

18.3.2 Oral treatment

Quinine sulphate: 10mg/kg (max 600mg) three times daily for 7 days
+ doxycycline or pyrimethamine-sulfadoxine as above.

OR

Atovaquone (250mg)+proguanil(100mg):

11 – 20kg: 1 tab

21 – 30 kg: 2 tabs

31 – 40 kg :3 tabs

OR

Mefloquine: 15mg/kg (max 750mg) THEN:
10mg/kg (max 500mg) 6-8 hr later.

Malaria due to *P. vivax*; *P. ovale*; *P. malariae*:

The vast majority are chloroquine sensitive.

Give:

Chloroquine: 10mg base/kg (max 600mg base) THEN:

5mg base/kg (max 310 mg) after 6hr and on day 2 & 3.

Primaquine phosphate must be added to eradicate the exo-erythrocytic stage after treating the acute attack with chloroquine.

Dosage: 0.3mg/kg (max 15mg) daily with food for 14 days

For SE Asia: 0.5mg/kg (max 30mg) daily with food for 14 days

(if develops nausea, halve the dose)

Important: Screen for G6PD deficiency before giving primaquine (7).

18.3.3 Chemoprophylaxis

Infants and children under 5 years are at especially high risk of severe malaria, and should not be taken into malarial areas unless this is essential. Children should be protected against mosquito bites at all times, and mosquito nets used to cover bedding. It is advisable to keep babies under mosquito nets as much as possible between dusk and dawn. The inside of the house, especially the bedrooms, should be sprayed at dusk with an aerosol insecticide after closing the windows. Special insecticide mats, impregnated with insecticide, can be obtained. Skin repellents containing 20% DEET are effective against mosquito bites but are reported to be dangerous for use in children.

It is essential to ascertain the state of resistance to chemoprophylactic and therapeutic agents before entering a country or region.

Chloroquine and proguanil can safely be given to babies and young children. Although chloroquine is secreted into the breast milk, the levels are not high enough to protect the breast-feeding infant. In fully breast-fed infants give half the recommended paediatric dose of chloroquine. Mefloquine is contraindicated in children weighing less than 15 kg. Doxycycline is contraindicated in children under 8 years.

Overdoses of chloroquine can have serious effects, and all antimalarial drugs should be stored out of the reach of children in childproof containers.

18.3.4.1 Drug dosages in children

*P.vivax**; *P.ovale*; *P.malariae*: Chloroquine 5mg base/kg (max 300mg) once a week
 (* some resistance in PNG/SE Asia)

P. falciparum: Mefloquine 5 - 9kg – 1/8 tab
 10 -19 kg - 1/4 tab
 20 – 30kg – 1/2 tab
 31 – 45 kg – 3/4 tab
 > 45 kg – 1 tab

Doxycycline 2mg/day (max 100mg) per day*
 (*children > 8yrs only)

Atovoquone (250mg)+proguanil (100mg):
 11-20kg 1/4 tab (62.5mg+25mg)
 21-30kg 1/2 tab (125mg+50mg)
 31-40 mg 3/4 tab (187mg+75mg)

Chloroquine + proguanil (Sub-Saharan Africa):

< 2yr: Chloroquine 5mg/kg + proguanil 50mg/day
 2-6yr: Chloroquine 5mg/kg + proguanil 100mg/day
 7-10yr: Chloroquine 5mg/kg + proguanil 150mg/day
 >10 yr: Chloroquine 5mg/kg + proguanil 200mg/day

18.4 Gastrointestinal disorders

18.4.1 Diarrhoea

Diarrhoea is still the most important cause of death in disadvantaged children in the Third and Tropical worlds - deaths that need not occur if attention to early and adequate hydration and continued nutrition are patiently pursued. Specific aetiology is rarely established, nor is it needed for good management. Oral rehydration therapy is indicated in all cases, and in the hands of mothers who have been correctly counselled in its use can prevent more severe dehydration and maintain appetite and well-being even during ongoing losses. An intragastric tube is the simplest way to administer fluids where dehydration cannot be achieved via the oral route. This can obviate the need for intravenous administration in many cases. In cases of severe dehydration and shock where intravenous access cannot be easily achieved, an intraosseous transfusion (8) can be a lifesaving procedure.

18.4.2 Cholera

Cholera may be suspected in rare instances of acute onset watery diarrhea, but almost always occurs where many cases are evident as an epidemic. Rehydration and replacement of continuing losses keep mortality well below 1%. Tetracycline (50mg/kg/day in 6 hourly doses for three days) or doxycycline (6mg/kg in a single dose daily for 3 days) will reduce the duration of illness by half to 2-3 days. With such a short course staining of teeth is not a problem. Alternative antibiotics include ampicillin, erythromycin or a single dose of ciprofloxacin. For sporadic cases, report suspects and collect stool for confirmation by culture or dark field microscopy, but in epidemic conditions, clinical diagnosis is adequate. Immunisation offers no substantial protection and has no role in controlling an ongoing epidemic.

18.4.3 Dysentery

Blood in the stool is evidence of invasive disease, most often due to *Shigella*, and requires antibiotic (local sensitivities need to be determined). Other pathogens, eg *Salmonella*, enterohaemorrhagic *Escherichia coli*, *Campylobacter* and *Entamoeba histolytica* may need consideration if response to quinolones is slow. Stool examination can be misleading; some parasites (*Ascaris*, amoebic cysts, *Giardia*) may be merely commensals and not clinically significant in the tropical setting.

Acute abdominal signs require careful investigation as in any setting: appendicitis, intussusception, and obstructions can occur. The abdominal crisis of sickle cell disease can mimic infections, and abdominal tuberculosis of both retroperitoneal nodes as well as intestine (“ropey feel”) can mimic nearly any diagnosis. Anaemia, localised pain or masses, ascites and jaundice will help differentiate these diagnoses.

18.4.4 Persistent diarrhoea

Persistent diarrhoea lasting over 10 days, is a common problem in the subtropics and tropics, and a particularly difficult one in HIV-infected children. It is both a cause and result of undernutrition, most particularly marasmus, and requires careful dietary management. Risk factors include young age, malnutrition, impaired immune function (especially HIV), recent introduction of cow’s milk feeds, prior antibiotic therapy and infection with *Cryptosporidium* or pathogenic strains of *E coli*. Persistent diarrhoea may result in the loss of large amounts of protein via the bowel - a protein-losing enteropathy, (PLE) leading to generalised oedema and a picture closely resembling kwashiorkor. Indeed, the two conditions may be indistinguishable, though in PLE there are low serum levels of both albumen and globulin, whereas in kwashiorkor globulin levels are well maintained or even raised.

The aims of therapy are

- To maintain fluid balance, if necessary with an intragastric or intravenous line
- Provide intensive feeding, three hourly around the clock in order to prevent further nutritional deterioration.
- Give low lactose feeds, in the form of soya milks. Yoghurt (or a similarly fermented milk product) contains little lactose and its probiotic content may have additional benefits.
- Provide supplementary vitamins, particularly zinc, vitamin A, folate B12 and iron supplement

A ‘bowel cocktail’ of neomycin 100mg/kg/24 hours for 3 days and cholestyramine 1g 6 hourly for 5 days is effective in resistant cases.

18.5 Respiratory disorders

The symptoms of respiratory infection – fever, runny nose, cough, and more seriously, earache, stridor, wheezing and tachypnoea - are the commonest of presenting complaints in children. Respiratory rate is a sensitive indicator of lower respiratory pathology (>60/min under 2 months, >50/min to 12 months, >40/min over one year) and, following the IMCI protocol, are best treated syndromically with broad spectrum antibiotics for 5 days. Pneumonias of all types, viral croup, bronchiolitis, and more rare pathogens will usually respond within 2-3 days. Obvious signs of distress with chest indrawing, nasal flaring and

grunting require immediate attention with oxygen and broad spectrum parenteral antibiotics and hospitalisation until respiratory rate falls.

Upper respiratory symptoms are almost ubiquitous, and usually of little significance but some syndromes are both common and severe. Chronic sinusitis with purulent discharge can spread to the orbit, cavernous sinus, or meninges and may require intravenous antibiotics for 10 days. Acute otitis media is often not recognised until ruptured, purulent and chronic. Cleaning with careful swabs and antibiotic drops for up to a month may be required and hearing loss is a common concomitant. Mastoiditis is a severe complication often infected with *Pseudomonas* or *Staphylococcus aureus* and may ultimately require surgery after a month of antibiotics. Foreign bodies lodged in nose or ears can cause offensive malodorous purulent discharge.

Mouth lesions range from *strep* throat with red tonsils and exudates (ten days of penicillin to avoid rheumatic fever or acute post-streptococcal glomerulonephritis), white adherent membranes in diphtheria, peritonsillar and retropharyngeal abscess, Ludwig's angina in the floor of the mouth, epiglottitis with jaw and tongue thrust forward and inability to swallow all require specific antibiotic therapy and, where dysphagia or respiratory difficulty is found, hospitalisation and supportive care is essential.

A variety of viruses may cause mouth ulcers, but the most common and important condition in children is herpetic gingivostomatitis. This may complicate other infections, such as pneumonia and meningitis, but often occurs *de novo*, as the first contact with the *Herpes simplex* virus. It is characterised by high fever, many painful ulcers in the oro-pharynx, red, swollen gums and a consequent disinclination to feed. In children with sub-optimal nutrition this may have serious consequences. The lip ulcers or angular stomatitis, if neglected, may progress to large necrotic lesions of the face (cancrum oris, or noma). Treatment is symptomatic but it is important to maintain fluid intake with extra vitamins, until the child is again able to eat. In severely malnourished children, and especially in the HIV infected, antiviral agents such as acyclovir should be given. Interestingly, the classical picture of infectious mononucleosis so commonly seen in older first world children, and characterised by pharyngitis, cervical adenopathy and an enlarged spleen, is seldom encountered in third world settings, presumably because there has been exposure to the virus at a much earlier age.

18.5.1 Asthma

Asthma is an increasingly common finding in poor communities where domestic and environmental air pollution are prevalent, but often acute viral syndromes present with wheeze and should be managed with hydration and where possible inhaled beta agonists (a spacer made from a plastic bottle and mask are extremely helpful). SC epinephrine is useful for acute severe cases but all efforts to manage without recourse to chronic drug use is important in poor settings. Do not forget to rule out foreign body aspiration in the case of abrupt onset.

18.5.2 Pertussis

Pertussis, especially in the very young, may not manifest the classical "whoop" but rather episodic paroxysms of exhaustive coughing concluding in vomiting. Called the "100 day

cough”, it can take a terrible toll nutritionally and requires supportive care with NG feeding. Erythromycin in the earliest stages may decrease the duration.

18.5.3 Larval pneumonitis

Less commonly, heavy worm load migrations (*Ascaris*, hookworm, *Strongyloides*) can cause a diffuse pneumonitis with sputum loaded with polymorphs, revealed to be eosinophils only when Wright stained.

18.6 Human Immunodeficiency Virus Infection (HIV) (8)

Today HIV infection is the most prominent underlying factor you will find in dealing with sick children, causing increased incidence and severity of the most common infections: diarrhea, respiratory infection, skin lesions of all kinds, tuberculosis and CNS infections and syndromes. While respiratory pathogens characterise HIV in the Western world, diarrhea is the predominant feature of HIV in the tropics. The array of agents causing enterocolitis in HIV is long and often exotic: many viruses, cryptosporidia, and other protozoa, as well as extensive candidiasis. All require hydration and nutritional support even before efforts to identify and eliminate the offending pathogen.

Failure to thrive must always suggest HIV, although faltering growth is extremely common in most poor environments for other reasons. Obviously, the HIV status of the mother is the best clue to the young child, for if she is negative, the child will almost certainly be also. Remember, however, that about 3/4s of HIV infected mothers deliver a normal uninfected baby. The commonly available “rapid tests” for HIV detect the presence of antibody and therefore may remain falsely positive reflecting maternal antibody as long as 15 months after birth. Even HIV infected babies can thrive when receiving a good diet and infections are rapidly and effectively treated. Recurring infections and particularly severe manifestations of common conditions (thrush, other skin rashes, otitis, chronic and recurring diarrhoeas, coughs, and always TB) should suggest HIV.

For an up-to-date review of highly active antiretroviral therapy in children the reader is referred to the website: <http://AIDSinfo.nih.gov>

18.7 Tuberculosis

Tuberculous disease in infancy and childhood differs considerably from that in adults, and its management will therefore be dealt with in some depth. Here TB is not a single uniform illness but comprises a spectrum of severity from the tiny microscopic x-ray spot to the most advanced disseminated and destructive conditions. The majority of primary TB infections are so mild that they may be completely unrecognised clinically, yet the course is unpredictable, and progression to frank disease is always possible at any stage in the life span. The dangers of progression are greatest in the first two years of life, and for this reason treatment of every young child is desirable, no matter how mild the infection. Such a policy is however fraught with difficulties, both diagnostic and logistic.

Tuberculosis in childhood constitutes a spectrum of three broad categories:

18.7.1 At risk

These are children who have been in contact with an open case of TB. They show no evidence of infection but may well harbour *Mycobacteria* at the earliest stage. They are otherwise well, tuberculin negative and with a normal chest X-ray.

18.7.2 Infected, no disease. Asymptomatic tuberculin reactors.

These are children under 5 years who are tuberculin positive, but in whom there is no other evidence of TB.

18.7.3 Clinically active

Here there has been progression of the primary complex, and disease is clinically apparent. The wide range of disorder includes

- 1
- Classical primary (lung lesion plus hilar glands)
- Lymphobronchial disease (compression of the airway by glands)
- Progressive pneumonia, with or without cavitation
- Dissemination - lymph nodes, miliary, meningitic
- Bone/joint, renal, other organs
- Mixtures of these forms

TB may be discovered incidentally in association with other chronic disorders such as HIV infection and malaria. Any patient with HIV should be suspected of having TB and an intensive search made for clinical and laboratory evidence.

18.7.4 Finding mycobacteria in sputum

Diagnosis of TB disease in children presents further difficulties because:

- In contrast to adults, *Mycobacteria* are excreted in a child's sputum in small number, only sporadically, or not at all.
- Sputum is not readily obtainable from children and gastric washing or other techniques must be resorted to in order to obtain material.
- False positives are frequent on direct smear of gastric washings, and results of culture may only be available after some weeks.

Isolation of the organism is therefore the exception rather than the rule even in centres of expertise. In primary care clinics, which manage the majority of children, this "gold standard" is almost never reached.

18.7.5 Tuberculin Test

The ideal test is the intradermal Mantoux, but often a multiple puncture percutaneous test such as the Tine or Monotest is the only one available.

A positive Tine is one where 2 or more tine papules have run together to form a larger papule or blister. All reactions less than this are 'negative' or 'doubtful'. A Tine is only a screening test. If the result is doubtful, a 'proper' intradermal tuberculin test should be done.

In practice, diagnosis rests on an "analysis of probabilities", none of which is specific for TB in children.

The following are the factors we consider:

- SYMPTOMS: cough, fever, tiredness etc., have many other causes.
- SIGNS: painless lymph node enlargement, wheezing and other chest signs may or may not be present.
- POOR WEIGHT GAIN OR WEIGHT LOSS: very common in many communities for other reasons.
- HISTORY OF CONTACT: A history of possible contact with TB is elicited very frequently.
- A REACTIVE TUBERCULIN TEST:
 - A positive reaction indicates that infection with tubercle bacilli has occurred. But it does not necessarily mean that active disease is present.
 - A mildly positive reaction in a malnourished or immuno-compromised child should always be viewed with suspicion. But a negative reaction certainly does not rule out the presence of active tuberculous disease.
 - Another source of confusion is the almost universal administration of BCG vaccination which induces variable skin reactivity for at least two years.

18.7.6 Chest X-ray

A chest X-ray is an essential tool in making the diagnosis in a child. Certain changes, such as large hilar glands, with or without infiltrates in the lungs, a miliary pattern, or narrowed airways, are virtually diagnostic of TB. A lateral film is essential to assess hilar nodes.

- There is a wide "grey zone" of X-ray changes which may or may not represent TB, and are often interpreted differently by different observers.
- Miniature films are particularly difficult to interpret in children.
- Quality of large plates is often poor in peripheral hospitals and clinics, making interpretation difficult or impossible.
- Lastly, many clinics do not have 'the luxury' of X-ray facilities.

The following point system (see Table 18.2) has been found to be useful for nurses working in rural clinics. It helps them decide when to send a child to a hospital or clinic for an X-ray, and when to start treatment as an interim measure. By so doing serious disease such as TB meningitis may be prevented.

The point system is not meant to establish a firm diagnosis of TB, but is a more objective means of determining if the findings are LIKELY to be TB and to decide on initial management.

Table 18.2: A "POINT SYSTEM"		
CONTACT	PROVEN, CLOSE	3
	UNCERTAIN/NOT CLOSE	1
	NIL KNOWN	0
ILLNESS	2 WEEKS OR LESS	0
	GREATER THAN 2 WEEKS	1
DIAGNOSIS		
WEIGHT	DEFINITE WEIGHT LOSS	2
	WEIGHT BELOW 60% OF EXPECTED	2
	WEIGHT 60-80% OF EXPECTED	1
CLINICAL	WHEEZE OR STRIDOR	1
	RUBBERY/MATTED GLANDS	2
TINE	POSITIVE	3
	DOUBTFUL	1
	NON-REACTIVE	0
CXR	NORMAL	0
	DOUBTFUL	1
	NO RESPONSE TO ANTIBIOTIC/ DEWORMING AFTER 2WEEKS	2
	"TYPICAL"	3
	- Enlarged mediastinal nodes	
	- Infiltration + nodes	
	- miliary	
- ronchopneumonic pattern		
- leural effusion		
TOTAL POINTS _____		

18.7.6.1 Use of the score

A score of 3 POINTS merits commencement of 2 MONTHS TREATMENT with INH RIF and PZA, 5 days a week under supervision. After this re-evaluation is required, and X Ray of chest repeated.

A score of 4 or 5 POINTS merits 4 MONTHS TREATMENT - INH RIF and PZA for 2 MONTHS followed by INH and RIF only for 2 MONTHS. Notify as "suspected". Routine re-evaluation after this period is advisable.

6 OR MORE POINTS: Notify as "probable" (or "confirmed" if positive culture obtained) 4 MONTHS TREATMENT as above, and as recommended by WHO, is sufficient for most of these children with primary complex disease.

18.7.6.2 In extensive or disseminated disease

In extensive or disseminated disease, i.e.:

- Marked nodal enlargement or consolidation
- Bronchopneumonic spread
- Bone/joint
- Abdominal and glandular

6 MONTHS OF TREATMENT is required. This is achieved by extending the period on INH and RIF to 4 MONTHS.

18.7.7 Treatment

All children diagnosed with probable TB should receive INH RIF and PZA for the initial 2 MONTHS. These are now easy to administer as special formulations are available for children. The drugs are contained in tablets which may be chewed or dissolved in 5 ml of water. Rimcure® Paed 3-FDC Tablets contain RIF 60mg, INH 30 mg, and PZA 150 mg. This is followed by INH and RIF for a further 4 MONTHS as recommended by WHO but may not be essential if the child has no localising signs of TB and responds well to the 2 months of treatment. Rimactazid® Paed 60/60 Tablets contain RIF 60 mg and INH 60 mg. They are so designed that a suitable dosage can be achieved by giving 1 tablet a day for every 5 kg of body weight.

Treatment is given daily, or at least 5 days a week, under supervision (Directly Observed Therapy, Short Course - DOTS) Thrice weekly regimens requiring higher drug dosages may be used where the more desirable daily schedules are not possible.

A 4th drug - ETHIONAMIDE, ETHAMBUTOL, OR STREPTOMYCIN is added for part or all of the 6 month period in the case of:

- Miliary disease
- Meningitis
- Re-treatment or
- Suspected resistance

Finally children at risk, and those infected, with no disease (see above) should receive INH and RIF under direct observation for 3 months, or if no supervision is possible, INH ONLY for 3-6 months.

18.8 Urinary Problems

An important cause of haematuria in children living in tropical and subtropical climates is schistosomiasis (bilharzia), caused by the blood fluke *Schistosoma haematobium*. Urinary schistosomiasis is widespread throughout Africa, the Middle East and India. *S. mansoni* affects the colon and liver, and is found in Africa, South America and the Caribbean. *S. japonicum* causes more acute and severe bowel symptoms and is encountered only in Asia. Their prevalence depends on the availability of the specific snail vector, on the presence of bodies of water offering optimal conditions for propagation, on the parasite itself, and on the

human element – humans urinating or defaecating in or near water. The parasite’s life-cycle is a complex one and is referred to elsewhere.

Clinical features depend on the phase of parasitic invasion:

- Penetration of the skin by cercariae may result in a burning sensation, followed by intense itching (Swimmer’s Itch)
- Growing larvae (schistosomulae) circulating in the blood stream may cause a severe constitutional illness with fever, malaise, enlargement of the liver and spleen, urticaria and joint pains (Katayama Syndrome).
- The mature worms (Trematodes) settle in the portal veins and egg-laying begins. In the case of *S. haematobium* eggs are passed into the bladder venules and penetrate the mucosae, passing out in the urine and resulting in dysuria and haematuria. The passage of *S. mansoni* and *S. japonicum* eggs into the bowel may cause dysenteric symptoms.
- Egg laying may continue for years with resultant fibrosis and even calcification of the bladder and ureters, strictures of the bowel and/or cirrhosis of the liver

Symptomatology depends on the extent of the infestation and on the child’s immune status. The condition is often completely asymptomatic, and in endemic areas, a degree of immunity undoubtedly develops. Acute symptoms – swimmers itch and Katayama syndrome - are usual seen in new arrivals without previous exposure. On the other hand schistosomiasis is responsible for much long-term morbidity – chronic ill health, poor school performance and at a later stage chronic urinary or bowel disease. Bladder and hepatic malignancies are also considered to be an end result of long-continued infection.

Treatment and prevention are discussed elsewhere.

Table 18.3 Table of Common Skin Conditions

Condition	Distinguishing Features	Cause(s)	Treatment
Seborrhoeic dermatitis	<ul style="list-style-type: none"> • generally self-limiting • frequent between the ages of 1 to 6 months, • affecting the scalp, trunk and flexures • causes no discomfort or itching • scaling particularly prominent on scalp, producing thick greasy crusts • Red scaly patches on trunk • flexures may become weepy - prone to secondary yeast or bacterial infection 	Ill-understood, genetic basis,	1% hydrocortisone cream together with exposure to sunlight Scalp crusts can be removed by applying 2% salicylic acid in petroleum jelly over night, and then shampooing
Napkin dermatitis Refers to different conditions	Non-specific - erythema and later dryness and wrinkling of buttocks or thighs of nappy area. Folds are usually spared.	Maceration of the skin, friction, heat and diarrhoea all play a part in the cause of napkin dermatitis	Increase frequency of changing and thorough cleansing between nappy changes. Warm tap water and a mild

affecting the area covered by the napkin	<p>Long attributed to production of ammonia by urea splitting organisms, but this theory disproved</p> <p>Intertrigo - involvement predominantly of the groin flexures. Causative organism(s) uncertain.</p> <p>Seborrheic dermatitis. nappy rash part of picture described - also involvement of flexures elsewhere and usually scalp crusting</p> <p>Candidal - starts off in deep flexures which show diffuse inflammation; rounded red spreading lesions with a typical scale round the edges</p> <ul style="list-style-type: none"> o uncommon for rash to spread beyond margins of the nappy o Persistent more widespread candidal rashes common in HIV infected infants. <p>Nodulo-ulcerative - Largish nodules with central erosions but no pus formation. Usually on the genitalia, buttocks or anterior thighs</p> <p>Impetigo - there are many superficial bullae, most of which rupture quickly</p> <p>Folliculitis - tiny inflamed follicles and superficial pustules - also generally staphylococcal</p> <p>Atopic or contact dermatitis, with sensitivity to elastic, fabric softener, or soap powder – less common</p>	<ul style="list-style-type: none"> - Candida albicans frequently recovered but role probably overplayed. - Bacterial overgrowth napkin area marvellous culture medium - normal density of aerobic bacteria in napkin dermatitis increases four fold. However the role of bacteria still not well established - Cloth vs. disposable napkins. higher incidence of rashes in home laundered cloth napkins. Disposable napkins far less liable to retain moisture. - Nutrient deficiencies. Premature infants fed intravenously on zinc deficient formulae may develop severe erythematous nappy rashes, with similar lesions in skin folds elsewhere and around the mouth. Essential fatty acid and zinc deficiency may also play a part in the severe rashes seen in kwashiorkor. 	<p>neutral soap should be used. Skin should be patted dry and simple protective cream used</p> <ul style="list-style-type: none"> - Desitin, zinc oxide ointment, Lassar's Paste or Nivea <p>For more severe rashes the importance of good hygiene and exposure to sunlight should be emphasised. One cream is effective for all cases</p> <ul style="list-style-type: none"> - Vioform and hydrocortisone. The former has mild antibacterial, and anti-fungal, and the latter anti-inflammatory properties. <p>Candida: Vioform and hydrocortisone cream is also extremely effective. Use nystatin cream three times daily only if typically candidal</p> <p>Intertrigo responds promptly to Vioform and hydrocortisone cream.</p> <p>Impetigo and folliculitis should be treated with an appropriate antibiotic.</p> <p>Kwashiorkor and vitamin and trace mineral deficiencies treated with supplements and diet</p>
Impetigo	Superficial infection of the skin manifested by blisters or pustular lesions which rapidly become crusted	Coagulase positive <i>Staph. aureus</i> , or certain strains of Group A beta-haemolytic strep. Both organisms found together in 50% of cases. Staphylococcal infection more likely if the intact skin is affected (especially the face), and if bullae are present Streptococcal impetigo tends to complicate scabies and insect bites (papular urticaria),	All cases of impetigo should be treated with a systemic antibiotic <p>In community settings give erythromycin 25mg/kilo/day 3 times a day for 5 days, or cotrimoxazole, 2.5-10ml twice daily for 5 days.</p> <p>Local treatment is of lesser</p>

<ul style="list-style-type: none"> - Recurrent folliculitis and boils - Streptococcal perianal cellulitis. - Scalded skin syndrome (SSS) 	<p>This results in an angry red eruption around the anus.</p> <p>The surface layer of the skin is red and rapidly separates over large areas</p>	<p>to involve the lower limbs more often, to produce deeper lesions (ecthyma) Strep. more likely if draining glands enlarged</p> <p>SSS caused by certain strains of <i>Staph. aureus</i></p>	<p>importance. Use vioform emulsion or povidine-iodine cream, but NEVER antihistamine or antibiotic creams</p>
<p>Some other blistering lesions</p>	<p>Secondary infection (impetigenisation)</p> <ul style="list-style-type: none"> - Scabies - Pediculosis - Eczema <p>Varicella. Blisters uniform in size, come out in crops, are widespread. May be secondarily infected, i.e. superimposed impetigo.</p> <p>Herpes simplex - The lips and oral mucosa commonly primarily affected - may be secondary infection of viral lesions.</p> <p>Herpes zoster. The blisters are in a characteristic pattern over the distribution of a nerve or 'dermatome'.</p> <p>Hand foot and mouth syndrome. viral infection (usually Coxsackie A) causes crop of blisters symmetrically situated over the hands, feet, knees or elbows, with a few in the oral cavity.</p>	<p>A common feature in HIV-infected children</p>	
<p>Scabies</p>	<p>Highly itchy eruption consisting of tiny papules on chest and abdomen, genitalia and extremities, particularly wrists and hands.</p> <p>May become secondarily infected.</p> <p>Glomerulonephritis can follow infection with certain Griffith's strains of <i>Strep. Pyogenes</i>.</p>	<p>Sensitisation to <i>Sarcoptes scabiei</i> mites, their eggs and excreta</p> <p>Mites burrow in the epidermis</p> <p>In hot climates the mites remain in the superficial layers, producing only small papules, and linear burrows are not present</p> <p>Herd or individual immunity never produced</p> <p>Personal skin contact the predominant factor in infectivity</p>	<ul style="list-style-type: none"> • Permethrin (synthetic pyrethrin) is an extremely effective, safe, and cosmetically acceptable treatment for both scabies and head lice. • Benzyl benzoate ointment must be diluted to 12.5% in children and 6,25% in infants under 6 months. Not dangerous if ingested by a child • 1% gamma-benzene hexachloride (GBHC) is effective and well-tolerated. Widely used,

			<p>but concerns about CNS toxicity as result of accidental poisoning, and from absorption through the skin when used excessively.</p> <ul style="list-style-type: none"> - apply to cool dry skin - only leave on for 6 hours - not in children under two - not in malnourished - not in sick children - not on inflamed skin. • Alternative therapies are crotamiton (Eurax), sulphur cream, and Tetmosol soap. None of these is curative in severe cases. • NB!!! Treat the whole family as the condition is highly contagious.
<p>Headlice (Pediculosis capitis)</p>	<ul style="list-style-type: none"> - Common infestation of the scalp in children - characteristic eggs of headlice (nits) can be seen as little white specks, glued to the scalp hairs - Itchy papules often become infected from scratching, resulting in impetigo of the scalp - Posterior cervical and occipital nodes are frequently enlarged - Eyelids can also be involved - In adolescents, pubic and axillary hair may be infested 	<p>Adult louse feeds on blood by biting into the scalp</p>	<ul style="list-style-type: none"> • Permethrin 1% lotion pleasant and effective; also kills the eggs. • Malathion 0.4% in alcohol is cheap, safe and effective treatment. -kills lice as well as nits, so that the hair need not be removed. • Benzyl benzoate, still widely used, is messy and less effective • Gamma benzene hexachloride 1% - effective but poisonous when swallowed! • NB!!! Treat the whole family as the condition is highly contagious.
<p>-Papular urticaria</p>	<ul style="list-style-type: none"> -common in the hot months - marked itching at the site of both fresh and old bites -may be secondarily infected 	<ul style="list-style-type: none"> -Repeated bites from fleas, or sometimes bed bugs, result in hypersensitivity -Haemolytic streptococci are a frequent secondary invaders 	<ul style="list-style-type: none"> - A blitz on fleas within the house essential - spray the bed mattress and the cracks in the floor with a good insecticide

			<ul style="list-style-type: none"> - outdoor sandfleas are often responsible. - Crotamiton cream (Eurax) is helpful - it is both anti-pruritic and antiseptic. Apply it three times a day.
Infantile eczema (Atopic dermatitis)	<ul style="list-style-type: none"> -intensely itchy (unlike seborrheic dermatitis) -In infancy it often starts first on the cheeks -In older children the flexures are commonly affected 	-Atopy (usually a familial tendency)	<ul style="list-style-type: none"> - Liberal use of moisturizing creams - Judicious use of topical corticosteroids - Regular applications of 'wet wraps' - cotton bandages moistened with hot water, applied to the affected areas for up to 24 hours. - Applied daily at first, then the frequency of application may be gradually reduced as skin heals and the itch-scratch-itch habit is controlled <p>Wet wraps should be re-instituted as soon as the child starts to scratch again.</p>
Nummular eczema	<ul style="list-style-type: none"> -round "coin" like red and weeping lesions -single or multiple lesions on dry skin -occurs on the extensor surfaces of the arms and legs 	Skin dryness, not atopy	<p>Limit baths (to avoid skin dryness)</p> <p>Frequent lubrication</p> <p>Short courses of potent steroid ointments</p> <p>Control of any associated secondary infection</p>
Pityriasis sicca alba	Discrete, hypopigmented patches with a fine branny scale situated on the face or neck	Cause is unknown Possibly a mild form of atopic dermatitis	<ul style="list-style-type: none"> - 1% hydrocortisone ointment or 5% liquor picis carbonis in emulsifying base
Lichen striatus	Linear dermatitis, generally unilateral. Usually self-limiting and causes no symptoms Affects children between the ages of 5 and 10 years In dark-skinned individuals the band-like areas are usually hypopigmented, while in the light-skinned it appears rose- or flesh-coloured	Unknown origin	<p>No therapy is necessary</p> <p>Generally resolves spontaneously in 3-12 months</p>
Psoriasis vulgaris	Erythematous, hyperkeratotic, hyperpigmented lesions,	Common inherited disorder of unknown aetiology Marked by long remissions	First line of treatment - topical keratolytics (5% salicylic acid in Vaseline),

<p>Guttate psoriasis</p>	<p>particularly the scalp, elbows, knees, extensor surfaces of the limbs and lumbosacral area</p> <p>Variant of psoriasis vulgaris. Generalised 'drop-like' lesions.</p>	<p>and exacerbations</p> <p>Often follows a streptococcal infection</p>	<p>alternating with tar preparations (5% liqor picis carbonis or 2-5% crude coal tar in emulsifying base). If not effective - topical corticosteroids, which frequently produce rapid resolution.</p> <p>Wean gradually from high to low potency steroids, otherwise there may be a 'rebound effect', or 'pustular psoriasis'.</p> <p>Calcipotriol ointment (available as Dovonex) is an effective topical treatment for limited, localised plaques of psoriasis.</p> <p>Topical Anthralin is also effective, but limited by its staining properties. Reserved for refractory psoriasis.</p> <p>Treatment of underlying streptococcal infection often hastens resolution</p>
<p>Verruca vulgaris (warts)</p>	<p>Commonly affect the hands and fingers in children</p>	<p>Intra-epidermal tumours caused by infection with various strains of the human papilloma virus</p>	<p>The majority disappear spontaneously as the child gradually develops immunity to the virus.</p> <p>Simplest treatment is topical keratolytics, e.g. salicylic acid and lactic acid in flexible collodion applied daily until the wart resolves.</p> <p>Cryotherapy with liquid nitrogen, repeated every 4 weeks until clear, is effective, but only use if the child is willing.</p>
<p>Verruca plana (Plane warts)</p>	<p>Flat, elevated, flesh-coloured papules, usually on the face. Characteristically appear over scratch marks (Koebner effect).</p>	<p>Ditto</p>	<p>Nightly applications of tretinoin cream (Retin A) or Benzyl peroxide cream (Quinoderm) may hasten resolution.</p>
<p>Molluscum contagiosum</p>	<p>Smooth, pink or flesh-coloured, dome-shaped nodules (1-10mm in diameter). Larger lesions often show central depression. Appear anywhere on the body, but palms and soles spared. The face tends to be particularly affected. Lesions on the eyelids may result in</p>	<p>DNA virus of poxvirus group</p> <p>Secondary eczema often occurs around lesions, and they become secondarily infected.</p> <p>Can be very troublesome and disfiguring in HIV-infected children</p>	<p>Spontaneous resolution in 3 months to three years in otherwise healthy children. No action is thus the best policy as they will heal without scarring.</p> <p>When only a few lesions are present, they can be treated with</p> <ul style="list-style-type: none"> liquid nitrogen, (cryotherapy),

	chronic conjunctivitis or punctate keratitis. -		<ul style="list-style-type: none"> • painting with phenol or other vesicants or • pricking the centre of the lesion to remove the cheesy material within. <p>For multiple lesions oral cimetidine for 6 weeks may be effective</p>
Cutaneous larva migrans (sandworm)	Intensely itchy serpiginous patches usually on the buttocks or feet	Larval stage of the dog hookworm <i>Ancylostoma caninum</i>	Treated with albendazole orally. Prevented by adequate disposal of dog faeces, and avoidance of flesh contact with sand.
Maggot fly myiasis	Painful boil-like lesions	Larvae of a fly (the Putsi/Tumbu fly (<i>Cordylobia anthropophaga</i>) in Africa. Eggs deposited on clothing on washing lines. <i>Dermatobia hominis</i> in Latin America	Cover lesion with Vaseline to block the passage of air. Maggot can then be extruded by gentle pressure.
Jigger or sand flea.	Itchy tender swelling containing the flea and a mass of eggs	Pregnant flea (<i>Tunga penetrans</i>) Lesion may become secondarily infected and even be a cause of tetanus.	Squeeze out flea carefully. Treat the wound with antiseptics, and if necessary, antibiotics.
Tinea capitis (Scalp ringworm)	A single round patch of scalp hair loss and scaliness (ringworm), or – more commonly in the tropics – multiple small scabbed patches. Often a hypersensitivity reaction to the fungus develops, leading to a marked inflammatory reaction and enlarged occipital nodes, often mistaken for impetigo of the scalp.	Diagnosis of fungal (dermatophyte) infection can be made with a potassium hydroxide preparation of hairs and scalp scrapings. This will reveal either an endothrix (spores within the hairshaft) of <i>Trichophyton violaceum</i> , or an ectothrix (spores around the hairshaft) – <i>Microsporum canis</i> .	Treatment of choice is oral griseofulvin at a dose of 10mg/kg/day for 6 weeks. Local treatment is ineffective.
Tinea corporis (Body ringworm)	Oval lesions with a well-defined border which spread peripherally as they clear in the centre. The face is particularly affected in children. Other superficial fungal skin infections - athlete's foot, and tinea cruris (in the groins), are not common before puberty.	<i>Trichophyton</i> or <i>Microsporum</i> species	Topical applications of anti-fungal creams (clotrimazole, econazole, ketoconazole or terbinafine) are rapidly curative. The older (but cheaper) benzoic and salicylic acid ointment (Whitfield's) can be used if the others are not available.
Pityriasis versicolor	Unsightly macular patches on the arms, upper portion of the trunk, neck and lower half of the face.	Caused by a fungus - <i>Pityrosporum orbiculare</i> . Potassium hydroxide slide preparations of skin scrapings show characteristic fungal	Selenium sulphide (Selsun shampoo), benzoic and salicylic acid ointment (Whitfield's), and other topical antifungals are all

		hyphae and clusters of spores, resembling 'spaghetti and meat balls'.	effective treatments.
Pityriasis rosea	An initial, or 'herald' patch is followed 5- days later by a symmetrical eruption of pinkish scaly papules that spares the face and follows the lines of the ribs, so that it has a 'Christmas tree' distribution.	A benign, self-limiting condition of unknown cause. Seasonal clustering and sometimes prodromal symptoms suggest that it is a viral infection.	Sometimes mild itching which responds to topical antipruritics, such as calamine or crotamiton (Eurax). Exposure to sunshine or ultraviolet lamp treatment hastens resolution.
Urticaria	Irregular circumscribed, red, slightly raised, intensely itchy wheals which shift in situation.	'Acute' urticaria (lasting for less than 6 weeks) usually due to viruses, food or drug allergy. In 'chronic' urticaria, lasting longer than 6 weeks, no cause is found in 80% of patients.	Attempt to identify the cause and eliminate it if possible. Give an oral antihistamine - hydroxyzine (Aterax) is cheap and effective. Don't stop the antihistamines prematurely. Continue it for 1-2 weeks after all signs of urticaria have cleared, then taper gradually. Subcutaneous administration of 0.1-0.5 ml of adrenaline (1:1000) is often effective in patients with acute severe urticaria, or angio-oedema (swelling associated with urticaria). Systemic corticosteroids should be reserved for those patients who are unresponsive to other modes of therapy.
Lichen sclerosis et atrophicus	Itching and discomfort in anogenital region. Girls are mostly affected. Perivulval hypopigmented plaques in an hour-glass pattern. Within the plaques tiny haemorrhages and excoriations are characteristic.	A benign condition of unknown aetiology. Not sexually transmitted though sexual abuse is often suspected. But remember syphilis!	Topical corticosteroids (hydrocortisone 1%) and emollient creams offer symptomatic relief. The majority remit with the onset of puberty.
Syphilis	Raised pale plaques on the genital area (condylomata lata) Greyish white painless patches on the tongue - 'Mucous patches'	Treponema pallidum Serological testing will confirm the diagnosis.	Benzathine penicillin 50,000 units per kilogram intramuscularly once only. Repeat in one week.

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18.10 Further Reading

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