Section 1 Health and disease

Chapter 1

People and the environment

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Patients will come to consult you as a health care worker because you have been trained both to define their problem and to deal with it. Good clinical method, with a detailed history and a thorough clinical examination, provides the fundamental foundation from which you can meet their needs. But there is so much more to the medicine of Africa than excellent clinical method; it is essential to put the patient into the context of their home and community. This chapter does this, first through the case history of a 15-year-old girl in rural Ethiopia (Box 1.1).

Box 1.1.

Lidya's mother and father farm a small plot of land in the highlands of Ethiopia, 50 km west of Sodo in Wolaitta Zone. They produce beans, teff and some maize, but, as is true for most subsistence farming families in the area, only Lidya's father has regularly worn shoes. Lidya was 13 years old when she first noticed swelling of her feet; her two younger brothers have normal legs. Their home is traditional, in a village of similar homes and is without a metal roof.

For nearly a year, Lidya managed to hide the swelling from her family and school friends by wearing long skirts. The swelling rose from her feet up her lower legs, and she became aware of a little oozing of colourless fluid between her toes. It got steadily worse throughout the year, during the rainy seasons and the dry season. Her mother noticed this and reacted badly, saying Lidya had brought a curse on to the family. Lidya became more and more miserable, because she realized that she would have to stop school, and would probably never marry. Finally, one night, she resolved to jump from a tree to end her life. But her father managed to stop her. He said she must talk to her uncle, who had the same swelling of his legs and had recently found a way of treating it; a diagnosis of bilateral lymphoedema of the legs had been made in her uncle's case

Her uncle showed Lidya how to treat her feet with soap, antiseptic, ointment, bandages, socks and large-size shoes supplied by the Mossy Foot Association, a local non-government organization, made up of people from her village and *woreda* (district), who work to treat and prevent podoconiosis. After 4 months of careful treatment, the ooze of colourless fluid stopped and the outgrowths on her feet disappeared. After 6 months of daily bandaging, Lidya was able to wear normal shoes again. Lidya returned to school and later invited people from the Mossy Foot Association into her school to explain to other pupils that the condition can be both treated and prevented. When she has finished school, Lidya aims to train as a nurse; she is no longer afraid that she will not marry.

Lidya's clinical problem is chronic bilateral swelling of the legs – lymphoedema. This is the clinical problem. We have to try to do something for the swelling of her legs, but there is so much more in Lidya's history and environment that a conventional clinical approach will miss. There are four core questions which we must ask; these questions are the starting point for good clinical practice in Africa; if they are not used, it will be barren.

Why should this person? **WHO**
From this place? **WHERE**
Present in this way? **HOW**
At this time? **WHEN**

What problems and issues does this history raise?

Who – a young rural Ethiopian woman, with a family history of swelling (uncle)

- the support and education of young women
- the disadvantages imposed by disability
- poverty; only her farmer father has shoes; what are the effects of poverty?
- traditional culture, swelling of legs disfigures and causes social stigma
  - mother believes that traditional curse afflicts the family
  - delay in seeking professional health care
  - can deep cultural beliefs be changed?
- traditional support now channelled into the Mossy Foot Association
  - voluntary organizations; would a micro-credit scheme be possible?

Where – rural Southern Ethiopia; what is the significance of the place?
How – what is the cause of the swelling and oozing of lymph/tissue fluid

- can the family find the cash for the necessary treatment?

When – her swelling does not change with the seasons

Why should this person? WHO

The family – man, woman and children

When you see a patient, a man, a woman or a child, ask yourself whether the symptoms, the patient's approach to their disease and

Principles of Medicine in Africa, 4th edn, ed. David Mabey *et al.* Published by Cambridge University Press. © Cambridge University Press 2013.

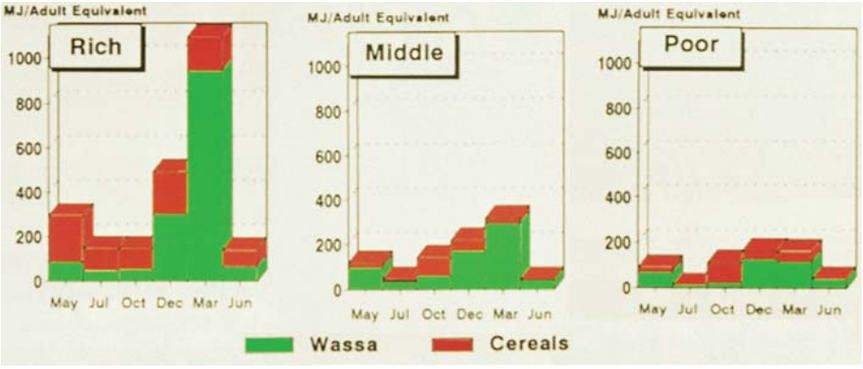

Fig. 1.1. Household energy stocks at different seasons in rich, middle income and poor families. (Adapted, from Pastore G *et al.* (1993). *Eur J Clin Nutr*; **47**: 851–62 with permission from Macmillan Publishers Ltd).

the effects of their disease on their home and family are distinctive just because a woman, or a child, or a man is ill. If your patient is a less-educated woman, both her lack of education and the fact that she is a woman could have delayed her seeking medical help (Africa Progress Report, 2010). Women are less likely to use health services than men. They may require permission from their husband or father to travel to a health facility, and have less control over the cash for transport, registration, investigations and medications. Will the children be deprived of extra clothes if their mother is ill or has to stay at home when her child is sick with, for example, a sickle cell crisis, so that she cannot make a little money through petty trading?

> *As a young woman who has an obvious physical disability and has had to interrupt her education, Lidya is highly vulnerable. Treatment of her lymphoedema may never restore her legs to normal, but must aim for impoved function so that she can resume schooling and rejoin society.*

Familial clustering of disease may be the consequence of shared environment (using the same cooking pot or common grain store), or of hereditary factors. Genetic factors are highly important in sickle cell disease, and play a smaller but significant part in many other non-communicable diseases. Tuberculosis, malaria and HIV are examples of infectious diseases in which susceptibility to disease has a hereditary basis. *The lymphoedema affecting Lidya runs in families, and non-affected relations of affected people endure stigma and have less hope of marriage: be aware of the effects on other family members of diagnosing conditions known by the community to be 'familial'.*

Assess the effects on the rest of the family when one member is sick.

Orphans

In this era of AIDS, the children of some families who have lost father, mother, uncles and aunts, may depend on an old grandmother and may be deprived severely. AIDS has left many children as orphans; their lack of mother and father may bring added and different problems as they grow into adulthood.

If your patient is an AIDS orphan, mobilize whatever support you can for the patient and the family.

Old people

Although the catastrophe of AIDS has cut life expectancy sharply in Africa, so that many years gained through better health care and economic progress have now been lost, there is already an older population, and others grown old without HIV, for whose care health services will have to adapt in the future (Africa Progress Report, 2010; UNDP, 2010).

People at home

When there is no piped water, when the nearest all-weather road is some hours' walk away and when evening light is given by small tin lamps with a kerosene wick, it is hard for any family to be able to provide an environment that promotes health. Habits may be so entrenched that they are not easy to change. While education of mothers is often a powerful factor in keeping a family healthy, their environment may dominate their ability to change.

Find out all you can about the patient's home and consider how this may have affected their disease; it may influence what you decide to do.

Poverty

There is plenty of evidence that poverty is bad for health (WHO, 2006; UNDP, 2010): poor rural families are particularly vulnerable and disadvantaged because they are unable, throughout Africa,

- to find the costs of travel and lodging;
- to pay registration or card fees at a hospital;
- to pay for prescribed treatment;
- to find money for supplemental feeding;
- to buy food when stocks are low in the hungry season;
- to buy shoes (*in Lidya's case*)
- to improve a simple home.

Poverty can be desperately serious for nutrition: in the hungry season in an Ethiopian community the stocks of food of the poor were 6.5 times smaller than those of better-off families (Pastore *et al.*, 1993) (Fig. 1.1). Poor people were less likely, in the same rural Tanzanian community, to seek professional help for an ill child (Fig. 1.1.) (Schellenberg *et al.*, 2003).

Nevertheless, poor but healthy families can break out of poverty quicker than unhealthy ones, and their resilience and fortitude in adversity frequently is an example for all.

- **Do not merely be content with documenting poverty and arranging exemption of fees; do something to enable your patient to begin the climb out of poverty.**
- **Micro-finance may be available; take advice because its small loans could set up some of the more adventurous in business or trading.**
- **In places where the health centre is more than, say, 3 hours' walk for poor village people, establish some primary care closer to their village.**

Culture, customs, health and disease

Cities are getting bigger and bigger, mobile phones multiply, more access roads have transformed some formerly remote places and T-shirts of international sportsmen are seen in remote places, but still cultural traditions continue to shape people's beliefs about disease, what care they seek (*none by Lidya's family*), how they respond to illness and what remedies, practices or foods they will resort to in order to regain health. In many places an adversary may be thought to be responsible for an illness, or a malign spiritual force (*a curse in Lidya's case*), while some individuals themselves are thought, rightly or wrongly, to have brought the illness on themselves. In each instance the remedy and the action will differ according to local beliefs. Whatever your role in the health team, get to grips with the local culture and try to uderstand it; do not dismiss practices that do not promote health, but work with local leaders to change them.

Cultural beliefs and practices

While cultural beliefs and practices are at their most distinct in rural communities, they are beginning to lose their hold on those who have moved to cities and so are confronted by a bewildering array of ideas, advertisements, education and opportunities for health care. Some conditions carry a deep stigma, for example, AIDS, leprosy with its depigmented patches and thus vitiligo, or any patch of depigmented skin, and, of course, epilepsy. *(Lidya endured the stigma of ugly and swollen legs, her disability did not produce support, but only scolding and stigma).*

Example – Epilepsy (Chapter 61)

In diverse cultures all over Africa a profound and isolating stigma defines the individual who has had a seizure and may be worse where the psychiatric service is responsible for the care of epilepsy. An individual with a seizure may have few opportunities for employment, may find it difficult to be accepted as a normal person and may even become an outcast.

- **Do all you can to educate the family and to change the attitudes of the community towards the patient and towards disease that carries a social stigma.**
- **Work with your health team or the District health team, through the community leaders, to rehabilitate the patient and to find useful work for any patient whose disease is a stigma.**
- **Work with one or two educated patients in a district to form a Patients' Association, which can speak up for them and then begin to raise funds for their training and rehabilitation.**

Practices derived from beliefs

Strongly held beliefs about the cause of disease lead to carefully preserved practices, some of which may be harmful: an obvious example is mud applied to the umbilical stump, which can lead to neonatal tetanus. Some practices, however, may be beneficial.These practices may involve a traditional practitioner or may be used in the home by the family of the sick person, but home-prepared remedies may be toxic – the excessive purgation of *Kosso* (Ethiopian highlands), the hepatic or renal damage caused by some traditional remedies or the uterine rupture caused by an oxytoxic Kenyan plant.

Identify any obviously harmful traditional practices locally and work with the health team to try to change them.

Health-seeking behaviour, traditional and orthodox medical practice

When a traditional practitioner is first consulted, the delay can seriously affect outcome, whether in rural Kenya or in urban Zambia.

When user charges were abolished, attendance at primary care centres rose significantly

The work of the traditional healer is described in relation to mental health in Chapter 62 and to cancer in Chapter 76. In Burkina Faso, the Expanded Programme of Immunization (EPI) was understood and welcomed because the methods used were so similar to those that had been used by the traditional healers – a little scarification with some of the healing 'medicine' applied at the same place.

Treatment

1. *Acceptable or not*? Amputation can be considered a desperate measure, which is feared because it destroys a person's identity: it can thus be rejected even when it is essential. Similarly, caesarean section is not considered by some West African women as normal and so is refused (Okonofua, 2001). Unacceptable side effects of drugs often deter people from sticking to a prescribed course of treatment. Beliefs within a culture and experience through an illness may make forms of treatment, normal and routine in orthodox medicine, strange and unacceptable.

Listen to your patients; try to find out what they feel and do not suggest any treatment that they do not understand or will not accept.

2. *Duration*. Many people cannot understand the need for taking drugs regularly and for months, as in diabetes, epilepsy, HIV and tuberculosis. Even with heavily funded HIV programmes and their excess over normal numbers of staff, follow-up has not been 100 per cent and thus drug taking also has not been continued in these patients. Most think that they are well as soon as their urgent symptoms are over, for example, the acute pain of a sickle cell crisis. Some give away drugs to another member of the family who is sick, or sell them in a market, or take them all at once. Since much traditional medicine involves a single dose, the continued treatment demanded by 'modern' medicine is hard to understand. A destitute person who has been given free drugs has at least that asset to sell and sell well.
3. *Painful*. Scarifications at the site of pain or of an obvious mass or pulsation, for example, over the pulmonary artery in children with early severe rheumatic heart disease, are common. If the scarring is old and healed, it shows that the symptoms are not recent. Scarification may also be responsible for transmission

of hepatitis B and C viruses. The widespread demand for a painful injection may depend on the belief that powerful treatment is expected to cause pain.

Do not prescribe unnecessary injections; far too many are given, which waste resources and encourage uncritical practice (see Chapter 4).

The perceived burden of disease

It may be all too easy to look at a man's hydrocoele in northern Ghana and advise him to have an operation, and yet he needs reassurance as much as surgery because of the serious cultural burden caused by the hydrocoele (Gyapong *et al.*, 2000). *Lidya needs reassurance and a caring, professional touch – people with disfiguring lymphoedema comment that stigma within communities is so great that family and acquaintances fear to share meals with them or even touch them. (For Lidya before her treatment, marriage was an unattainable ambition.)*

Think beyond the immediate and, no doubt, interesting physical signs of anyone with an advanced, deforming or feared disease; try to find out how they are coping in their community and among their peers.

Work, employment and occupations

The people of tropical and subtropical Africa are still dominantly rural, but in most countries the supposed opportunities for employment and the imagined riches of the city are causing a steady flow of people off the land and into the overcrowded cities. The diseases of the farmer and of the agricultural community still inhibit rural prosperity: these are considered below.

Hazards of employment and of industrial work

The growth of industry has not been matched by measures to protect the health of industrial workers, particularly in small-scale industry and in the informal business sector in many countries.

- Lead poisoning, which may affect a whole community as in Zamfara State, Nigeria, in 2009, when illicit mining for gold, in an area also rich in lead, caused many deaths. Lead may also cause anaemia, which was found in lead smelters and petrol pump attendants, but surprisingly not in informal workers with car batteries in Accra.
- Industrial lung disease in South Africa has been shown to be a serious problem by the national Surveillance of Work-related and Occupational Respiratory Diseases in South Africa – SORDSA (Esterhuizen *et al.*, 2001a): pneumoconiosis and other dust-related diseases are still a major health problem: silicosis is increasing and is a significant risk factor for tuberculosis in HIV-positive and HIV-negative men (Corbett *et al.*, 2000). Many workers are being exposed excessively, chiefly in the paper and pulp industry, health care and the chemical and food industries, to substances that have clinical effects after a short latent period. For example, isocyanates in spray paints and latex were found important in provoking occupational asthma (Esterhuizen *et al.*, 2001b).
- Workers on big commercial farms are always vulnerable. In South Africa, they can be seriously undernourished, have a high rate of alcoholism and of head injury (London *et al.*, 1998), while in Ethiopia chronic non-blinding onchocerciasis on a large coffee plantation led to absenteeism.

Hazards and traditional occupations

Traditional methods in a wide variety of occupations may lead to significant symptoms and morbidity. For example, men and women in coastal Nigeria who dried their fish catches by burning firewood had defective lung function and many respiratory symptoms. Grindstone cutters north of Kano, Nigeria, who worked in small funnels in the ground, were exposed continuously to dust rich in silica particles; nearly 40 per cent were found to have silicosis.

Take a careful history about the work done by your patient; it may be responsible for, or contribute unfavourably to, their symptoms and signs.

The vulnerable subsistence farmer

Injury and disease in a subsistence farmer and the subsequent incapacity can be disastrous, because the poorest may have no alternative source of income. If the incapacity is at a season when farming activity is high, the economic effects on the farmer may be even more disastrous (Fig. 1.2).

1. *Bites* Snake bite. The carpet viper, *Echis ocellatus,* is a particular scourge in the savannah, as it bites farmers just as they prepare the land for planting (Fig. 1.3).
2. *Injuries* can prevent effective farming (Fig. 1.4): for example, in the Ashanti Region of Ghana, machete wounds are important. Where injuries are common, find out why and then plan a programme to prevent them.
3. *Nutrition* When food is short in the hungry season, farmers have a significant energy deficit: the poorest and their children have the greatest changes of weight and so are potentially most vulnerable (Pastore *et al.*, 1993) (Fig. 1.5).
4. *Poisoning* Careless or untutored use of organophosphate fertilizers is an increasing risk, as farmers struggle to increase the yield of their crops. This is also a risk to their children, who may accidentally swallow the fertilizer.
5. *Hidden disability* Farmers in the rain forest or derived savannah who have dermal onchocerciasis may be disabled and may sleep badly as a result of their unforgiving itch, which can affect up to 40 per cent of people over the age of 20.

A fit farmer, who is not disabled, can contribute to the family's needs, therefore:

- **Identify the common causes of injury and incapacity among farmers, men and women, in your area; find methods to reduce them and their impact on the work, the life and the income of the farmer.**
- **Get data to identify any possible effect of the dry or wet season on their incapacity and thus when they are most at risk, and plan methods with them to reduce the hazards and their subsequent disability.**

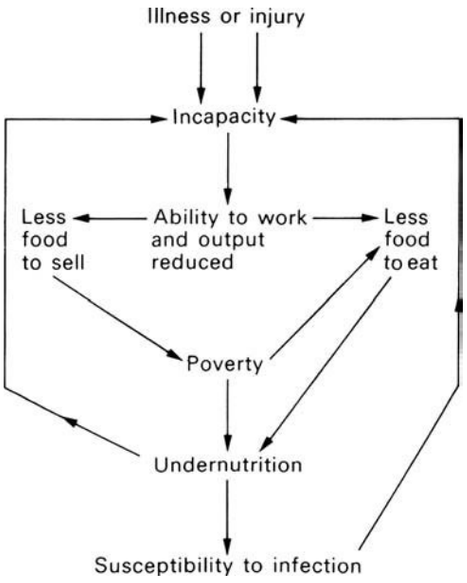

Fig. 1.2. The cycle of injury and poverty in a rural family when the farmer is ill or injured.

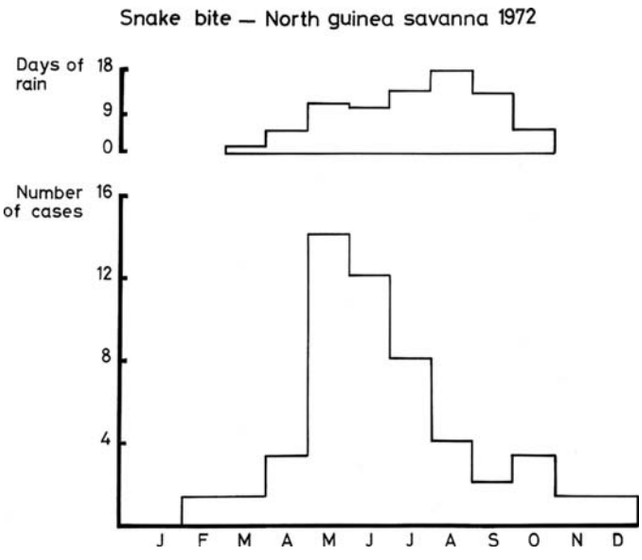

Fig. 1.3. The incidence of snake bite in a farming community in northern Nigeria, highest when land is being prepared for, and during, planting. (Adapted, from Warrell D, Arnett C (1976). *Acta Tropica*; **33:** 307–41 with permission from Elsevier.)

Fig. 1.4. A hand of a farmer; his skin, heavily cornified from holding his hoe, has cracked during the dry season, leading to an incapacitating ulcer (© EHO Parry).

Injuries to the farmer

These are important, although they are often omitted from health plans and targets designed by urban planners

1. *Study the problem in your area; use the data to plan how you can reduce the loss of working time and the subsequent loss of income*
2. *What proportion of farmers have had an injury at work?*
3. *Who is most at risk – younger or older, male or female?*
4. *Are injuries related to hunger or fatigue?*
5. *Is work on a particular crop frequently associated with injury?*
6. *At what time of day are injuries most common?*
7. *At what season of the year are farmers at risk?*
8. *What is done when an injury occurs?*
9. *How much working time and, if possible, how much family income is lost by an injury?*

Habits

Alcohol

Every society has its customs or its prohibitions about the use of alcohol. At least 50 per cent of the sorghum crop may be used for a traditional brew; the matoke staple of Uganda provides a potent

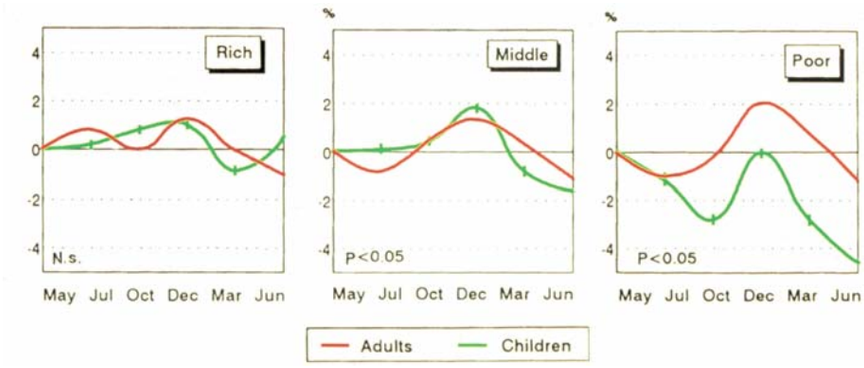

Fig. 1.5. Poverty and weight change (Adapted, from Pastore G *et al.* (1993). *Eur J Clin Nutr*; **47:** 851–62 with permission from Macmillan Publishers Ltd).

distilled *waragi*, which may be drunk relentlessly by village men so that they are wholly incapacitated soon after midday; the welfare and prosperity of whole communities is thus at risk.

In cities, migrant workers, separated from their families and perhaps confined in hostels or in crowded rented rooms, are vulnerable and if they are paid on a Friday, the night may be lost to heavy drinking, commonly followed by violence, trauma, vomiting and pehaps a lung abscess from aspirated vomit.

- **Find out how alcohol is used, or abused, in your district and work with the district health team and other groups in the community to reduce heavy drinking.**
- **Probe deeply, when taking a history, to find out how much a seasoned drinker consumes; few admit to the true volume.**

Tobacco and smoking

While tobacco is an important export crop from central Africa, it is promoted unashamedly by the international tobacco giants, who care nothing for the health of those to whom they seek to sell their cigarettes. They know full well that this wretched catalyst of ill health and disease will reap its fearful harvest of preventable disease, and yet they continue to advertise more and more in Africa. Tobacco causes carcinoma of the bronchus, potentiates other cancers, accelerates ischaemic heart disease, leads to chronic bronchitis in those who smoke and is a risk factor for respiratory infection in infants and children who passively inhale the toxic smoke from their mother or from anyone who smokes in their home. If the threat of chronic non-communicable disease and the toll of children's respiratory disease are to be addressed, smoking tobacco must be prevented.

Set an example, wherever you work, by not smoking and by working hard to prevent their local community from falling into the habit.

Drugs and the use of khat (cha'at)

Hard drugs spare no continent. While they do not yet have the hold in Africa that they do in some industrialized countries, drug barons operate all over the continent and will peddle their addictive stuff anywhere they can, particularly among young urban men.

In the Horn of Africa, however, the green leaves of khat (*Catha edulis*), which contain cathinone, are widely used, chiefly but not exclusively among younger men. Khat is addictive, has amphetamine-like stimulant properties, raises systolic and diastolic blood pressures and can cause serious psychosis. These effects can incapacitate men for meaningful work before the afternoon (Belew *et al.*, 2000). Djibouti airport lounge has a *No khat* notice alongside *No smoking*.

Discourage the use of khat; it may be cultural in some areas to use khat, but addiction to it does no good to working men.

Why should this person from this place?

From this place includes the geographical region, the local environment in that region and, finally, the home where the patient lives with their family. *Lidya illustrates a very important principle for health in Africa, where disease can be focal –*

- Health and disease can be significantly influenced by, or dependent on, the local physical environment

Throughout Africa, the distribution of infectious diseases depends on the environmental and climatic demands of the infecting micro-organism. But there are other conditions, for example, occupational lung disease, which depends primarily on the geology of the region, whether as a result of a small local industry or an extensive gold mining seam in South Africa.

The geography of Africa and its relationship to health, water and food staples is described later.

Podoconiosis (Figs 1.6, 1.7)

Lidya's home in the highlands of Ethiopia is in an area of fertile volcanic soil, which is rich in silicates and of very small particle size. Her condition is well recognized in that area but not in lower-lying areas with different soil types. The swelling is called podoconiosis (a term derived from Greek words meaning *foot* and *dust;* pneumoconiosis means dust in the lungs). Farmers, and indeed all who walk barefoot, are vulnerable because they are exposed over many years to irritant soil, particles of which pass through the skin, where they are channelled into the lymphatics, as any foreign body would be as part of the defence mechanisms of the skin. Podoconiosis was identified as a disease separate from filariasis by Dr Ernest Price, a thoughtful and questioning surgeon. When he did leprosy clinics he noticed, to his great surprise, that in some areas, lymphoedema was common and in others it was absent. The lymphoedema had been thought to be due to Bancroftian filariasis, but Price argued that this was most improbable because the cases were outside the known geographical distribution of the parasite with its mosquito vector. He superimposed maps showing the homelands of patients at his clinic in Addis Ababa and geological maps, and concluded that the condition was only found in areas where the soil arose from extreme weathering of volcanic lavas. He then demonstrated silicate and other mineral particles in the lymph tissues of people resident on these soils. Price named the condition podoconiosis, suggested it was preventable if strong shoes or boots were worn to avoid contact with the soil when farming, and developed surgical treatment of severe disease (Price, 1990). Podoconiosis can be clinically distinguished from filarial lymphoedema in three key ways: (1) it is found in **highland** areas (>1500 m); (2) it is an **ascending** rather than a descending lymphoedema, often limited to beneath the knee; and (3) it involves the lower legs **bilaterally** but **asymmetrically**.

Home and shelter

The quality of the home is very important but, equally important, the access to health care from the home. Housing, access, poverty and education are interwoven, but there are particular problems associated with poor housing.

Quality of housing

Poor housing can promote the transmission of disease and makes people potentially vulnerable to a range of diseases, for example, childhood malaria. With better housing, the burden of disease among poor rural children under 5 was significantly reduced in a programme in northern Malawi.

The numerous disadvantages include:

- overcrowding, which favours the aerosol spread of *H.influenzae*, repiratory viruses, *M.tuberculosis,* meningococci and streptococci, or, for example, the spread of the body louse, and thus of typhus, relapsing fever and trench fever;

Fig. 1.6. Podoconiosis; woman near Shebe, SW Ethiopia, with early lymphoedema of the left leg (© EHO Parry).

- a large household can be a risk factor for injury and for childhood mortality;
- the absence of a pit latrine and an unprotected well can lead to contaminated drinking water. Solar disinfection of drinking water, even in a difficult environment, can reduce childhood diarrhoea and morbidity significantly (Conroy *et al.*, 1996);
- the absence of a constant supply of water, so that washing of clothes, of the body and of the face is limited, so that impetigo and pyogenic skin infections can flourish;
- the transmission of zoonoses in homes where animals are brought inside overnight;
- the inevitable hazard of burns from an unprotected fire under a cooking pot or the contents of the pot. Small children and those who have seizures, both of whom can upset the pot so easily, are at particular risk;
- inner-city children, crowded together in homes in a bad state of repair, whose parents are poor and poorly educated, have been found in Nigeria and South Africa to have raised blood lead levels, high enough to call for action;
- a woman who cooks inside the hut, exposed constantly to smoke, can develop chronic obstructive pulmonary disease (COPD) and even, less commonly, cor pulmonale.

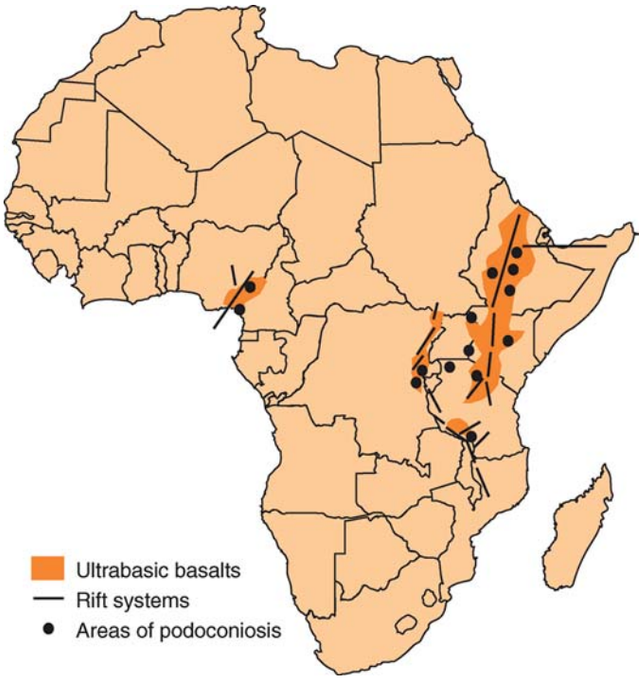

Fig. 1.7. Podoconiosis; distribution in Africa (by courtesy of Dr John Ziegler).

Although better housing can protect against some of these hazards, it can have its own problems, such as the indoor use of a kerosene stove, which is a risk factor for asthma.

Action

As people who have bad housing face such a range of risks, and as they frequently have no voice:

- **Consider how a patient's poor housing may promote disease or hinder recovery, and plan realistically to improve it.**
- **Be ready and active in your district for work with the local authority to ensure that housing is made better.**

Access to health care

Distance is bad for disease and for those who live far from a health facility. Access may be impossible during the rains, the fare on a bus may be too great, the burden of being away from work and a means of livelihood too demanding, while the prospect of having to pay scarce and precious cash for care is altogether too much. In Kenya, among children with severe malaria, the admission rates of those who lived more than 25 km from a district hospital were only one-fifth the rate of those living within 5 km of the hospital.

If long-term care is to succeed for those who live far from a hospital:

- **Consider what you may have to do for a patient who needs long-term care.**
- **Be ready to do all you can to get better local housing and so promote better health.**

Movement of people

From this place, in the Africa of today, may have a double meaning; first the birthplace and second the place where the patient seeks health care. People are on the move.

Do not rely on the case notes; always ask the patient where they are currently living and for how long they have been there. Accurate data on the geography of disease are fundamental.

Urban movement

All over Africa, the urban stampede continues (UN-Habitat, 2010, see also Chapter 56). The urban migrant, away from the restraint of a traditional society, is vulnerable in many ways. City life is becoming increasingly precarious and violent and, although young and hopeful adolescents continue to swell the shanty towns and slums of Africa's rapidly growing cities, they are more and more vulnerable, particularly in this era of HIV. In their villages they were constrained by tradition and the guidance of their family and the village hierarchy. In the city they lack any brake on their behaviour. Thus, they become both sexually active at a younger age and have more sexual partners than in a rural environment (Buvé *et al.*, 2002). Few urban migrants enjoy support from members of their family. The vulnerable and sick migrant also suffers because the health infrastructure is often seriously stretched.

Small rural movements

These are typically seasonal and are considered below.

Large rural movements

These arise on account of:

- Population pressure in poor farming country.
- Drought, flood and famine (Chapter 3)

Internally displaced people (IDP) face appalling problems; they move because they have no alternative. If they may move to a town in an area that is unfamiliar, or even hostile to them and their culture, they become begging urban migrants. They lose dignity and independence: they become dependent wholly on others, even forced to live in shelter camps (Chapter 3).

- War and disorder (Chapter 3)

Not only are the refugees caught in a web of difficulty and deprivation, but the economy of the country where they take refuge can also be affected seriously. Thus there can be huge pressures on the health service and on the supplies of food (WHO, 2006). Darfur, Congo and Chad are grim current examples where displaced people without a viable health service are vulnerable immediately and long term to Post Traumatic Stress Diosorder.

- Return of people displaced by conflict

A different hazard is illustrated by the experience of people who returned to Soroti and its region in eastern Uganda after a period of conflict. They began to restock their cattle, which they had taken with them when they left. But the cattle came from the focus in S.E. Uganda of sleeping sickness (*Trypanosoma b. rhodesiense*). Before long, there was an outbreak of sleeping sickness in Soroti, with its focus around the cattle market.

- Resettlement of people displaced by development

Displaced people either move within the area or to a city. Dams and hydroelectric schemes can displace people and change the ecology of the area, and small dams or irrigation systems can lead to microfoci of new infections, for example, malaria, schistosomiasis or soil-transmitted helminths.

Effects of movement on people

1. *Psychological trauma in losing their home*. The movement of people from a traditional home to a strange one can be very traumatic, so that they have no motive to farm and develop.
2. *Infection*. They may have no immunity to diseases prevalent in the area to which they go. The classic example is highlanders moving into a lowland malarious area, but any forced resettlement may expose people to new infections.
3. *Nutritional deficiency*. In an area where the food is unfamiliar or if they are forced to buy food, they may go hungry.
4. *Loss of farming land or other sources of income*. Historically, sleeping sickness and onchocerciasis are examples. The ravages of onchocerciasis depopulated large areas in the Volta river system of Ghana and Burkina Faso and many people sought new homes away from places where *Simulium damnosum* flourished. The area of good land farmed therefore decreased and people had to move out of the area.

Why should this person fom this place present in this way?

This is the immediate clinical problem and is illustrated by the following cases.

Fever in a migrant to Kampala from western Uganda

A woman aged 28 moved from Fort Portal to join members of her family who had moved to Kampala. As an urban migrant, she was potentially socially and psychologically vulnerable, but her family supported her well.

Why the high fever? The Fort Portal district has places with very little malaria; could her fever be malaria in a non-immune adult? It was.

A blood film showed abundant ring forms of *P. falciparum*. It was only when we asked 'Where has she come from?' that the first lead to the diagnosis was given.

Hand lacerations in a 28-year-old accountant

This man was evasive about the origins of the deep lacerations across the dorsum of his hand and the ulnar side of his wrist. You decide to speak to his brother who has accompanied him. He admits that the lacerations were sustained when his brother tried to break out of the room the family had locked him into. Since the death of his father, the accountant, now financially responsible for the family, had become alcoholic, and the family knew of no way of controlling this beyond barring access to alcohol. They were too embarrassed to seek outside help for the problem.

Fever and abdominal pain in a laboratory assistant

A 21-year-old woman had vague abdominal pain, which she had never had before. She was admitted to a medical ward in the hospital where she worked, but gave no further symptoms to the young intern who saw her. He thought that she had a little free fluid in the abdomen, but he did not ask more nor find other signs.

Why should this young woman have this pain?

Fig. 1.8. Rural reality; a boy, out of school, doing the work of an adult watching over family cattle (capital) but on seriously overgrazed pasture (photograph courtesy of EHO Parry).

She later admitted 2 months amenorrhoea; a peritoneal tap yielded blood. Her ruptured ectopic gestation was safely dealt with.

Drowsiness in a 15-year-old schoolboy

The boy, the son of a professional father, was at a boarding school. He was seen at breakfast time in the emergency department of a large hospital with a friend who believed the boy had had treatment for diabetes. There were no signs.

The blood glucose was 22.8 mmol/l and he had ketonuria. The school did not supply insulin and he had used all that he had taken to school for that school term.

These examples show that answers to the questions *who*? and *where*? can be very important in the vast range of clinical problems in Africa.

Why should this patient, from this place present in this way at this time? The effects of seasons on health and disease

Seasons are very important in the ecology of health and disease in Africa, not only because of the effects of climate on micro-organisms, but also because of the relationship between seasons and food supply, food prices, work and disease, and the efficiency of the health services or travel during the rainy season.

Study the health and disease of the people in the area where you work, identify how they are affected, or could be affected, at different seasons of the year.

Seasons, food and work

Movement of people to find work during the slack farming season

When work is slack on farms and the harvest has been gathered and stored, men move to find seasonal work wherever they can, but they return again when the farming season is imminent. Such movement will be greater when harvests fail as families will be desperate for cash. But the less enterprising and the more vulnerable remain in their village and may lack the support of the younger and fitter members of the family.

Food supply

Food is short before harvest; both in quantity so that there is less available energy, and in essential nutrients, for example, folic acid derived from freshly harvested vegetables. Pregnant mothers and their babies, with lower birthweights, are inevitably affected, but they lose less weight if they are given a food supplement. Animals also suffer, because not only does overgrazing shave off the grass, so that grass cover is almost lost in the dry season, but also the grass itself is deficient in protein during the dry season (Fig. 1.8).

Food prices

As food supply falls, so food prices rise. The poorest people are most at risk. The very people whose nutrition is only marginal when supplies are good are vulnerable as prices rise; they become impotent victims if there is a critical shortage of food when traders drive prices up and up (Fig. 1.9). In many countries, more and more families depend on money remitted from relations overseas and so may be protected from the effects of higher seasonal food prices.

Food storage

Granaries are filled after harvest, but, if the harvest is poor, stocks of grain are soon exhausted. The poorest people have the smallest stocks (Fig. 1.1). If storage is inefficient, as may happen among poorer farmers, grain is destroyed by *Aspergillus* fungi or devoured by rodents. During the rains before the next harvest, *Aspergillus* thrives and produces significant concentrations of aflatoxin, in highest concentration in food that has been longest in store. *Claviceps* contamination may lead to ergot poisoning.

- **Assess the food security of the people of your area.**
- **Look at the structure and repair of granaries on your field visits and the level of grain in them.**

Table 1.1. *The hungry season: changes among different groups of people in four African countries*

Fat-free mass significantly less than post-harvest	Benin	Rural women	Schultink JW *et al.* (1993) *Eur J Clin Nutr*; **44**: 31–40
Profound loss of fat – partially offset by dietary	The Gambia	Subsistence farming women	Lawrence M *et al.* (1987) *Amer J Clin Nutr*; **45:** 1442–50 supplements
Birthweight and weight gain in pregnancy increased significantly by supplementing high energy groundnut biscuits 4.3 mJ/day	The Gambia	Chronically under-nourished village women	Ceesay SM *et al.* (1997) *Br Med J*; **315:** 786–90
Greater seasonal loss of weight if low socio- economic status	Southern Ethiopia	Subsistence farmers	Branca F *et al.* (1993) *Eur J Clin Nutr*; **47**: 840–50
Less food available, loss of weight, activity unchanged	Southern Ethiopia	Rural women	Ferro-Luzzi A (1990) *Eur J Clin Nutr*; **44:** Suppl 1:7–18
Food stocks of poor families 6.5 times smaller than richer families	Southern Ethiopia	Village people	Pastore G *et al.* (1993) *Eur J Clin Nutr*; **47**: 851–62
Vitamin A,C,B group and iron, protein intake significantly lower	Kenyan highlands	Rural lactating women	Kigutha HN *et al.* (1995) *Int J Food Sci Nutr*; **46**: 247–55

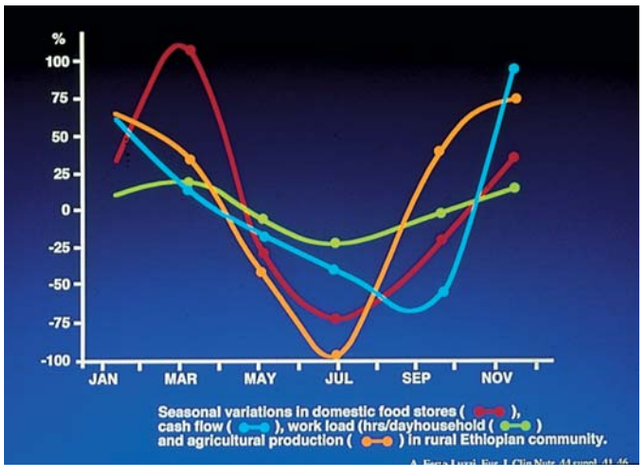

Fig. 1.9. Seasonal variations in domestic food stores, cash flow (work load hours/day/household) and agricultural production in a rural Ethiopian community. (Adapted, with permission, from Ferro-Luzzi A. (1990). *Eur J Clin Nutr*; **44** (Suppl 1); 41–6.)

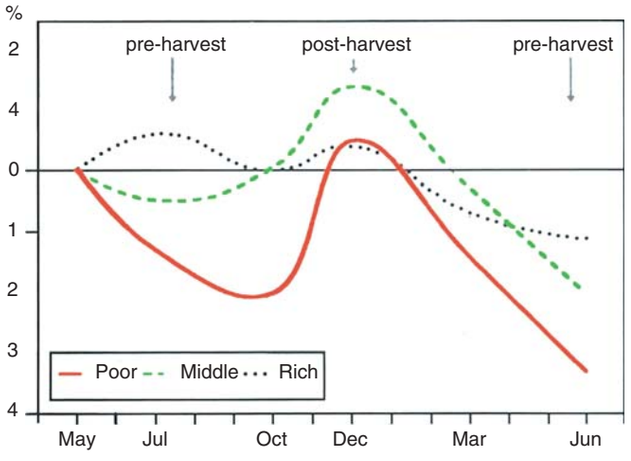

Fig. 1.10. Cumulative changes of weight by seasons in a southern Ethiopian farming community by socio-economic level. (Adapted, from Pastore G *et al.* (1993). *Eur J Clin Nutr*; **47:** 851–62 with permission from Macmillan Publishers Ltd.)

Agricultural work

The rainy season demands periods of intense work, chiefly from men, but in some areas also from women. Undernutrition (shown by a low Body Mass Index – BMI) and disease reduce work and activity.

Pregnant women who were active in the rice fields lost weight during the rains, inevitable when work is at its most arduous and food is scarce and costly. This is bad enough but, if the next year's harvest fails, the people are already hungry and will be unable to make up their need from the harvest.

In 25 per cent of farmers the body weight shifts from the normal range into the category of chronic energy deficiency, so that they become true 'seasonal casualties' (Ferro-Luzzi *et al.*, 1994).

Domestic work

Unlike men, women's work, and thus their need for energy from food, continues throughout the year. In some cultures, women do much farming and so are as vulnerable to its demands as are men, but in others they do little, for example, the Sidamo women of Ethiopia whose farming only accounts for 5 per cent of their total energy expenditure.

Nutrition

Scarce and costly food toward the end of the dry season may cause undernutrition and unmask kwashiorkor. Children and adults lose weight, but the poor suffer most (Fig. 1.10).

Vitamin C and folate deficiency vary with the supply of fresh vegetables and root crops all over Africa; in arid areas of Tanzania folate is deficient during the dry season when fresh vegetables are expensive. Those who depend on the milk of cattle, like Samburu nomads of northern Kenya, may be in near-famine conditions for 4 months during the dry season when their only food is 2 litres of milk daily.

The hungry season is a grim reality: food is scarce, prices are high, stocks are exhausted and energy demands are high (see Table 1.1).

Recognize the hungry season and how some people, especially the poorest, become vulnerable with a significant energy deficiency.

Seasonal deficiencies and intoxications

One of the best examples is *Konzo,* which is both a deficiency and an intoxication. The disease is characterized by an acute *paraparesis*