Chapter 1

Children and their health

Children under the age of 16 comprise 20% of the population of the UK and of most industrialized countries, but in many developing countries children represent more than 50% of the population. In all countries, the management of children's health problems is a high proportion of the medical workload. Many GPs find that 30% of their consultations are for children, particularly pre-school children (under 5 years). (Medical students in the middle of a 2- or 3-month paediatric attachment may wonder why only 5% of their training should be devoted to children!)

Mortality and morbidity

The health of nations has traditionally been measured by mortality. Deaths and their causes are easier to record than morbidity (illness), which is more difficult to determine, even for the few diseases (mostly infections) which are notifiable by law. Special studies are needed to determine the incidence of other conditions.

The causes of death and the patterns of illness in children differ markedly from those in adults. They are influenced by a diversity of factors which include sex, social class, place of birth and season of the year. The decline in child mortality in the past century has resulted more from preventative (public health) measures than from improved treatment. Today virtually the entire population of the UK has safe food and water, free immunization and easy access to local health care. This is not the case in non-industrialized countries.

In developing countries:
20% lack food
20% lack safe drinking water
33% lack clothing, shelter, education and health services.

Under-5 mortality rate (rate/1000 live births)

The under-5 mortality rate is a useful measure of child health internationally (Fig. 1.1). While similar to the infant mortality rate, it detects trends that the infant mortality rate might miss, because in some countries infants dying in the first few weeks are not recorded.

Child mortality in the UK

In the UK, child mortality is concentrated in the perinatal period (Table 1.1). The only remaining scope for a *major* reduction in child deaths lies in better obstetric, neonatal and infant care.

Stillbirth: a child born dead after the 24th week of pregnancy
Abortion or miscarriage: a fetus born dead before 24 weeks of gestation
Live birth: Any newborn with signs of life (e.g. heart beat) at birth at any gestation.

Table 1.1 UK mortality rates.

Mortality indices	UK rate
Stillbirth rate (stillbirths per 1000 total births)	5
Early neonatal mortality rate (deaths in first 7 days per 1000 live births)	3
Perinatal mortality rate (stillbirths + first week deaths per 1000 total births)	8
Infant mortality rate (deaths in first year per 1000 live births)	6
Under-5 mortality rate (deaths in the first 5 years per 1000 live births)	7

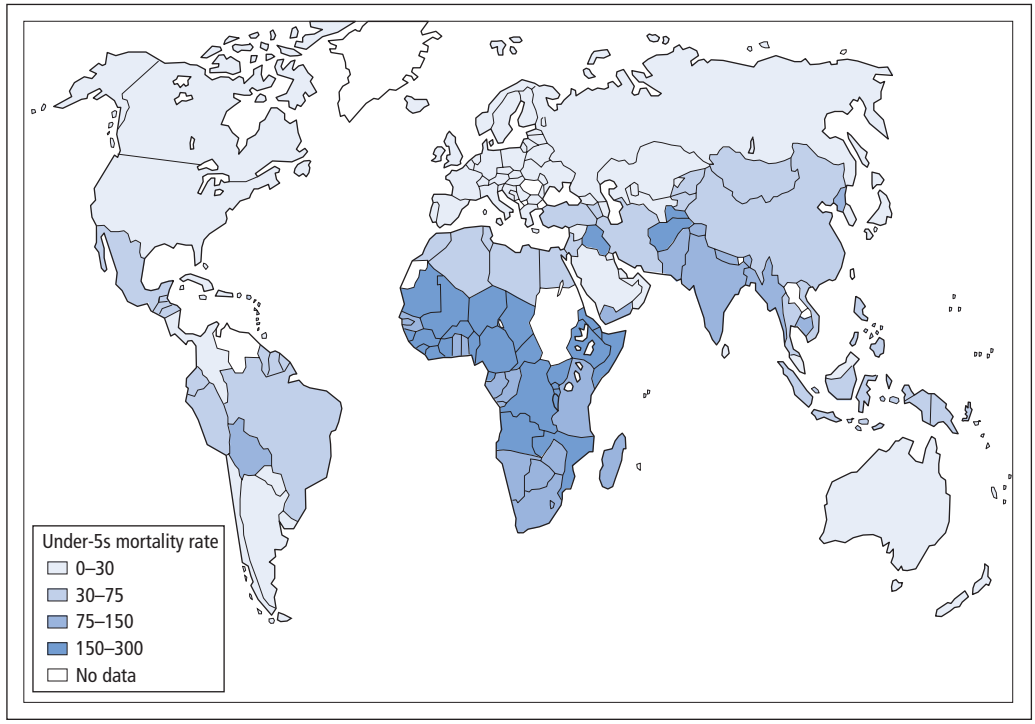

Figure 1.1 Worldwide under-5 mortality rates in year 2000. Numbers are deaths/1000 liveborn infants. There was a large reduction in under-5 mortality worldwide by about 65% from 1960 to 2000. However, from 1990 to 2000, some countries saw an increase in mortality due to HIV and armed conflicts. Reproduced with permission, courtesy of University of California Atlas of Global Inequality (http://ucatlas.ucsc.edu).

The major causes of childhood death are neoplasms and accidents. Deaths are more frequent in males for nearly all categories, but especially accidents (Fig. 1.2).

The continuing fall in UK infant mortality is commendable (Fig. 1.3), but it is salutary to remember that half the countries in the European Union have lower rates. On the other hand, several of the East European countries have infant mortality rates 2–3 times higher, and some of the non-industrialized countries have rates over 150/1000 liveborn infants. The improvement in infant mortality in the UK has been attributable to the reduction in neonatal mortality. Post-neonatal mortality (from 1 month to 1 year) shows less improvement. Although some of these deaths result from persistent, serious congenital abnormalities and perinatal problems, and others are the results of accidents or diagnosable disorders, many are infants who die at home, for whom no cause of death is found at postmortem (sudden infant death syndrome, p. 250).

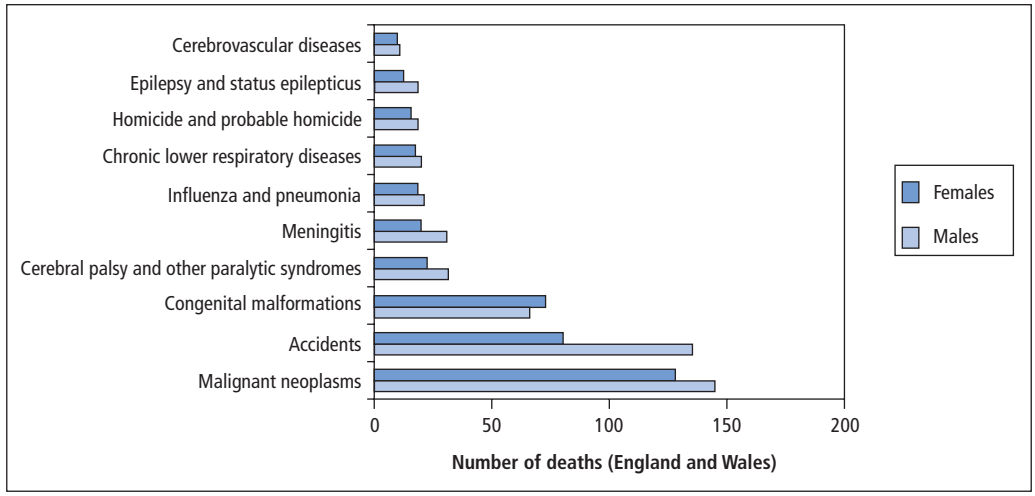

Figure 1.2 Causes of death in childhood. Mortality ages 1–14 in 2003. Source: National Statistics Online at www.statistics.gov.uk.

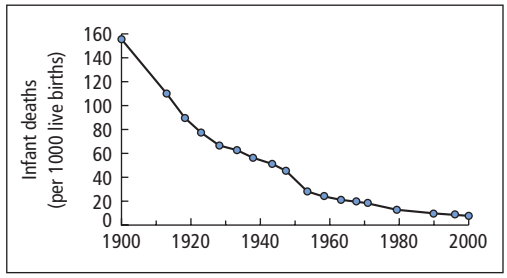

Figure 1.3 Infant mortality (0–1 years). By 2000, the infant mortality in England and Wales had fallen to a fraction of the level in 1900 (from 156 per 1000 live births to 6 per 1000).

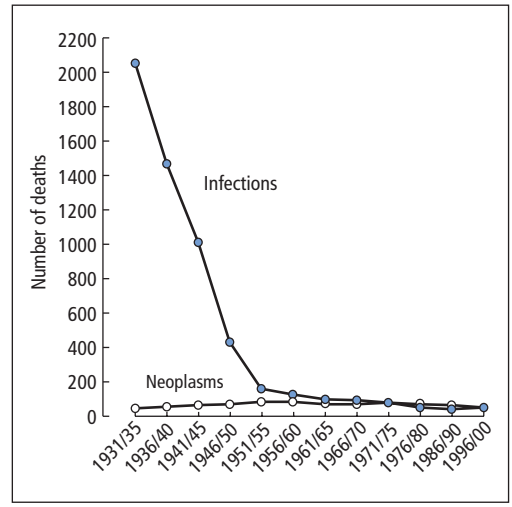

Figure 1.4 Child mortality from infections and neoplasms, per million children living (aged 1–4 years).

Deaths are concentrated in early life and are higher for boys at all ages, by a factor of 1.3 in the first month of life and by 1.6 for children of school age. For a schoolchild, death is more likely to be due to an accident, particularly a road accident with the child as pedestrian or cyclist, than to any disease. The decline in mortality from infectious diseases has made other serious disorders appear more common. Death from malignancy is now as common as from infection (Figs 1.2 and 1.4).

The pattern of morbidity in children is very different from that of adults (Fig. 1.5). Infections are common, especially of the respiratory, gastrointestinal and urinary tracts, as well as the acute exanthemata (e.g. chickenpox). Although degenerative disorders and cerebral vascular accidents are very rare in childhood, new forms of chronic disease are becoming relatively more important as formerly fatal childhood disorders become treatable but not necessarily curable. Thus children with complex

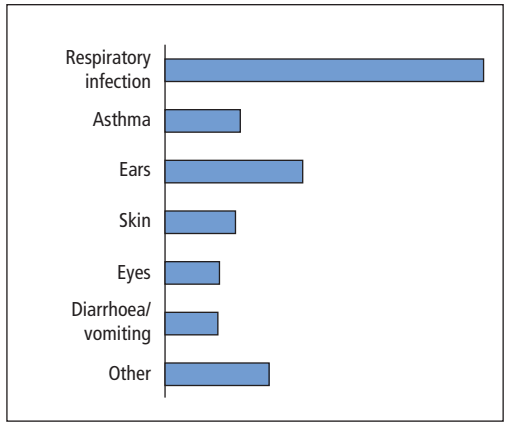

Figure 1.5 Most common reasons for a child to be seen by their GP.

congenital heart disease, malignant disease, cystic fibrosis and renal failure benefit from modern life-saving therapies but may not achieve a cure, and often have to live with the difficulties and side-effects of complicated treatment.

The hallmarks of childhood are growth and development, which influence both the kinds and the patterns of childhood illness. Congenital malformations, genetic disease and the consequences of problems in the perinatal period (e.g. cerebral palsy) are common. You do not need to spend much time looking after children to realize that disturbances of development and behaviour, and anxiety about normal variants, are both prevalent and important to parents.

It has been estimated that a British GP with an average practice would see a new case of pyloric stenosis every 4 years, childhood diabetes every 6 years, Down syndrome every 16 years, Turner's syndrome every 60 years and haemophilia or Hirschsprung's disease every 600 years! Hospitals may give a very false impression of the pattern of illness in the community at large.

Children in society

Socioeconomic inequalities

The Registrar-General's five-point grading of *social class* is a crude but useful classification. Although it depends on the occupation of the father, this still has a close correlation with many other important factors including income, housing and attitudes to child rearing.

Socioeconomic class

I Higher professional (usually university graduates)
II Other professional and technical
III Other non-manual and skilled manual
IV Semi-skilled manual
V Unskilled manual
Unclassified.

Nearly 10% of children cannot be classified because they do not have a parent with skills or employment. This unclassified group consistently fares less well than social class V. The health and educational progress of a child are directly related to the home and the environment. The child of an unskilled worker (social class V) has a 50% greater chance of being born dead or with a serious physical handicap than a lawyer's child (social class I). The disadvantage is there at birth and continues throughout childhood. The social class IV or V child will have more accidents, more physical illnesses, will be smaller and will read less well than the child from social class I or II. Death rates for younger children are more than twice as high as those of older children. At any age a child from social class V is twice as likely to die as one from social class I (Table 1.2).

This class difference has remained much the same, or even widened, over the last 40 years despite overall improvements in mortality and morbidity rates. Family size and birth order can also be important. The later children of large families tend

Table 1.2 Social class and childhood mortality: death rates per 100 000.

	Social class				
Age	**I**	**II**	**III**	**IV**	**V**
1–4	33	34	46	64	116
5–9	24	19	24	31	45
10–14	20	22	23	31	36

to be smaller and have an increased chance of death in infancy or handicap later on.

Changes in family structure

The proportion of children born outside marriage has risen to 40% of all births. Over half of the children born outside marriage have parents who are living together, and are therefore likely to be brought up within a stable home. One-third are born to women under the age of 20. The change in the traditional pattern of family life and the increase in marital breakdown (one in three marriages ends in divorce) mean that 23% of dependent children now live in single-parent families.

Government objective
To reduce the rate of conception among those under 16 to <4.8/1000.

Home factors that can adversely affect children's health and development include:

- Parental discord
  - quarrelling
  - separation and divorce
  - domestic violence
- Parental illness
  - death of a parent
  - chronic disability
  - physical illness
  - mental illness
- Inability to cope with demands of parenting
- Abuse
- Financial hardship.

The complexity and multiplicity of the factors that cause a child to be disadvantaged sometimes makes us feel helpless. However, since adversities compound one another, much may be achieved by modifying even one adverse factor.

Extensive medical and social services exist, particularly for handicapped children, but all too often they are best used by well-informed, middle-class parents, while the parents of the disadvantaged child do not use them sometimes because they do not know about them. All medical and paramedical staff have a duty to recognize children in need or in distress, and to see that they benefit from the help that is available.

All children need:
- Self-esteem (we need to feel wanted)
- At least one good human relationship (we need to trust and feel trusted)
- Firm supervision and clear boundaries (we need rules).

A small change that helps to achieve one of these for a child may make a big difference.

Twenty percent of the world's population lives in absolute poverty. Nearly half of them are children.

Child health in the community

Community paediatricians

Most paediatricians have a commitment to some services outside of the hospital. Community paediatricians specialize in working outside of the hospital. They work closely with health visitors and the staff of child health clinics, and also with GPs, social and educational services. The boundary between hospital general paediatrics and community paediatrics is increasingly blurred. Community paediatricians often specialize in one or more of the following:

- Child health surveillance
- Provision of children's services to a specific geographical sector
- Learning problems and disability
- Child protection (child abuse)
- Audiology
- Adoption and fostering
- School health.

Health visitors

These are registered nurses with additional training in health promotion and prevention of illness in all age groups. Many are attached to general practices and a few specialize (e.g. in diabetes) and have hospital attachments. They are responsible for family health, and particularly for mothers and pre-school children. Their job is to prevent illness and handicap by giving appropriate advice, by

detecting problems early and by mobilizing services to deal with those problems. They have a key role in child health promotion.

School nurses

School nurses provide a variety of school-based services:

- Confidential health advice for children and young people
- Sex education
- Developmental screening
- Health interviews
- Immunization programmes
- Working with schools to create a health-promoting environment
- Enuresis management.

Healthy Schools

Children spend a large amount of time in school, and the school environment affects their health. The 'Healthy Schools' initiative in the UK encourages schools to take positive steps towards promoting children's health.

Promoting healthy schools

- Healthy eating
- Physical activity
- Health education
- Education about drugs, tobacco and alcohol
- Dealing with bullying
- Sex and relationship education.

Promotion of regular water-drinking and easy access to clean and well-maintained toilets reduces problems of constipation, urine infections and wetting.

Child health clinics

These clinics aim to be readily accessible to young families. They are often in GP surgeries, but may also be located in health centres, village halls or purpose-built accommodation. They are staffed by health visitors and GPs. About 90% of babies attend such a clinic during their first year, but thereafter attendance falls off.

Functions

- Child health surveillance
- Routine medical and developmental examinations for infants and pre-school children
- Immunization
- Health education
- Advice and support for those with special problems.

Parent-held child health record

Parents should be encouraged to take the 'red book' whenever the child attends clinic or hospital. It contains a permanent record of child health surveillance, the child's growth including a centile chart, hospital visits, health education and advice (p. 16).

Whenever you see a young child, ask to see the red book. Thank the parent for bringing it.

Child health promotion

Child health promotion

- Primary and secondary prevention of problems.

Child health surveillance

- Part of child health promotion
- Secondary prevention through early detection of existing problems.

The core child health promotion programme in the UK includes (Table 1.3):

- Childhood surveillance
- Immunizations
- A systematic process to assess the individual child's and family's needs
- Early interventions to address those needs
- Health promotion.

The aim is a flexible, targeted approach in partnership with parents, to ensure that all children's health and developmental needs are addressed. The programme is a combined undertaking, starting at birth with the postnatal check by the paediatrician or midwife, and then involving the primary

Table 1.3 Core UK child health promotion programme.

Age	Intervention
Each stage	• Assessment of child and family needs • Deliver key messages about parenting and health promotion • Review general progress including growth and development • Nutrition
Antenatal	• Antenatal screening • Advice on breast feeding • Advice on general health and well-being ◇ healthy eating ◇ smoking cessation • Plan transition from midwifery to health visiting service
Soon after birth	• General physical examination ◇ especially eyes, heart and hips • Vitamin K (i.m. or drops) • Blood spot screening test (age 5–7 days) (p. 72). • Newborn hearing screen (in first days)
New birth home visit (~12 days)	• Midwife or health visitor • Give personal child health record • Key health issues, e.g. breast feeding
6 weeks to 4 months (3–4 visits)	• General physical examination at 6–8 weeks ◇ especially eyes, heart and hips • Immunizations at 2, 3 and 4 months (p. 198) • Identify postnatal depression or other mental health needs • Weaning advice
By first birthday	• Systematic assessment by health visiting team of: ◇ child's physical, emotional and social development ◇ family needs • Address any needs and agree future contact with parents
12 and 13 months	• Immunizations (p. 198)
2–3 years (flexible)	• Health visiting team reviews progress as necessary • Build on other contacts (e.g. immunization, visits to GP)
3–5 years	• Immunization (pre-school booster)
4–5 years (school entry review)	Check the following: • Immunizations up-to-date • Access to primary and dental care • Appropriate interventions in place for physical, developmental or emotional problems • Child's height and weight • Hearing test • Provide information about specific health issues to family and school
Primary and secondary schools	• Access to school nurse through drop-in sessions or clinics ◇ self-referral ◇ parents ◇ teachers • Referral to specialists for children causing concern • In-school nursing care for some medical needs/disabilities • Heaf test age 10–14 years ± BCG • School-leaver immunization (p. 198)

health care team: health visitor, GP and later school nurses.

If a parent suspects a problem with their child, they are often right.
Take the views and concerns of parents and other carers seriously.
If in doubt, refer.
Children at high risk of certain conditions may need additional screening tests.

Immunization

Immunization is a key part of the programme (p. 196).

Health education and preparation for parenthood

During the final years at school and in the antenatal period, there are numerous opportunities for health education and training in *parentcraft*. Effective and timely health promotion reduces fetal, infant and childhood morbidity and mortality.

Key messages for parents

- Regular antenatal care
- Avoid smoking and alcohol during pregnancy
- Breast feeding, and information on how to breast- or bottle-feed
- Reduce risk of SIDS (p. 250)
- Immunization
- The parent-held record (the red book)
- Good childhood nutrition
- Love, care, nurture and play
- Avoid parental smoking (respiratory disease in children)
- What action to take when your child is ill
- Reduce risks of accidents at home and on the road
- Good dental health.

Government objective
A reduction in smoking in pregnancy of at least one-third.

Pre-school facilities

In the UK, all 3- and 4-year-olds are entitled to free part-time early education which can be in school nurseries, day nurseries, playgroups or with approved childminders.

Nurseries or playgroups may be stand-alone or attached to primary schools. They aim to encourage a child's development and learning by play, stimulation and physical activity. Infants and younger children may attend day nurseries while their parents are at work, or parent–toddler groups with a parent. Pre-school facilities are particularly important for children from disadvantaged backgrounds. 'Surestart programmes' develop facilities for these children, and provide support for parents with young children.

Incidence of some important problems

At 5 years:
- 7% have had at least one seizure
- 5% have a squint
- 5% have a behavioural problem
- 5% have a speech or language problem
- 2% have a substantial congenital defect.

At 7 years:
- 15% have eczema, asthma or hay fever
- 13% require special education
- 10% wet their beds
- 2% have had a hernia repair
- <1% have had an appendicectomy.

Social aspects of child health and care

Parental responsibility

If the parents are married at the time of the child's birth, both have parental responsibilities. If they were not married, the mother has parental responsibility, but there are legal mechanisms by which the father can acquire it.

Social services

The social services department of the local

authority is responsible for the care and/or supervision of children up to 18 years if:

- Parents are unable to care for their children
  - ◇ e.g. illness, abuse
- No parent or carer for children
  - ◇ death of parent(s), child abandoned or lost.

In these situations, the local authority assumes parental rights in order to provide security and protection for the child.

Parental rights may be given to the local authority by the court (usually a Family or Juvenile Court), in which case a child is said to be the subject of a *care order*. The court must be satisfied that the child has suffered, or is likely to suffer, significant harm because of the standard of parental care or because of being beyond parental control. 'Harm' includes ill-treatment, sexual abuse, and the impairment of good physical and mental health and development.

The local authority tries to keep or place children with their own parents, relatives or friends. When this is not possible, the child is looked after by the local authority in:

Foster homes (65%) in which a child is cared for in a family other than his own. Brief placements are successful, but long-term fostering less so. There are an increasing number of schemes in which the foster parents are paid extra to look after children with physical and mental handicap or disturbed adolescents.

Residential placements: Children's homes, residential schools and secure units (35%) aim to provide as normal an upbringing as possible, despite frequent changes of staff. They contain a higher proportion of difficult or handicapped children than foster homes. Of children in these homes, 95% still have a living parent, so that many are visited regularly or may be reunited with their parents for weekends or longer periods.

Children may be supervised in their own homes, either on a voluntary basis or as a result of a court *supervision order*. The social worker's prime aim is to prevent family break-up and to help with problems of care, both physical and emotional. He or she works as part of a team with others involved with the family, e.g. health visitors, doctors and teachers.

Children Act 1989

The Act affects all aspects of the welfare and protection of children including day-care, fostering and adoption, child abuse and the consequences for children of marital breakdown. The spirit of the Act is reflected in the opening paragraphs:

'the child's welfare shall be the court's paramount consideration'

'any delay in determining the question (of the child's upbringing) is likely to prejudice the welfare of the child'

'a court shall have regard to . . . the ascertainable wishes and feelings of the child concerned'.

The social services department is responsible for supervising children placed privately with foster parents. People who look after other people's children, whether on a day (child day-care, childminder) or residential (foster) basis, must register with their local social services department, even if they are paid directly by the parent. Social services also provide advice about financial benefits available from the Department of Social Security.

Disability Living Allowance (DLA)

- Care allowance from birth for levels of care in excess of those needed by healthy child
- Mobility allowance is available from the age of 5 years.

Voluntary services

The statutory services are supplemented by a large number of voluntary and charitable organizations, many of which were in existence before, and paved the way for, statutory provisions. Many of those offering services to children have a high level of professional expertise. The NSPCC (National Society for the Prevention of Cruelty to Children) and its Scottish counterpart continue their historic role of protecting children, and giving advice and support to families under stress. Barnardo's, the Children's Society and the National Children's Homes have adapted their activities to the changing pattern of child needs. The Save the Children Fund gives support to deprived inner cities in the UK

as well as relief in developing countries. Many voluntary bodies receive some funding from central and/or local government.

Parent support groups

These exist for almost every chronic disorder of childhood (e.g. Cystic Fibrosis Trust). Their membership consists largely of parents of affected children who can offer advice to others from first-hand experience. They also raise money to support research, thereby augmenting the work of the major medical research charities.

The Family Fund

This gives financial help to less well-off families with very severely handicapped children. It is financed by the Department of Health, but administered by the Rowntree Trust in York. Charitable organizations can often minimize bureaucracy and cut administrative costs and delays.

Adoption

Couples wishing to adopt a child approach their local authority who will assess suitability. The process includes medical assessment of the child and parents. Once adopted, the child is a full member of the family; he or she takes their name and has all the rights of a natural child. It is best for parents to inform their child from the beginning that they are adopted.

Children in hospital

Health care for children has changed dramatically in the last 50 years. Children were separated from their parents for long periods with little appreciation of their particular needs. The birth and development of paediatrics as a medical specialty was largely attributable to the first children's hospitals. Now the special needs of children are recognized in the design and provision of services, e.g. unrestricted visiting, facilities for resident parents, play activities for younger children and education for older children. Every effort is made to minimize a child's need to stay in hospital (Figs 1.6–1.8).

Changes in hospital care

- Child in-patients are younger—42% of medical admissions are under 1 year of age
- The average stay in hospital is much shorter
- There are similar numbers of medical and surgical admissions
- More children are admitted—1 in 4 by age 2 years, 1 in 3 by 4.5 years
- Many medical and surgical procedures are done as day cases
- Parents are actively involved in care
- Outreach nursing teams and day assessment units reduce the need for admission
- Neonatal care makes increasingly heavy demands on resources.

Hospitals are not without risk to patients, especially child patients. The hazard of cross-infection is obvious: the hazard of mother–child separation is less obvious but can be more serious, especially among the 1–4-year-olds. At this age, children are old enough to grieve for a lost mother, but not old enough to understand the reason, or that the separation is temporary. 'Tomorrow' has no meaning for a toddler.

Figure 1.6 Children in hospital.

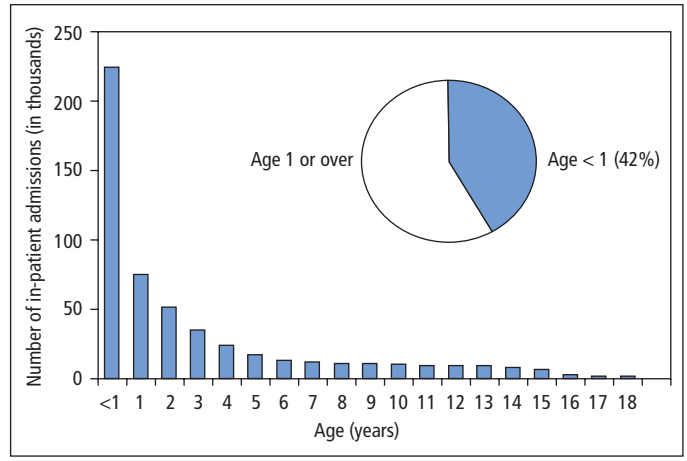

Figure 1.7 Number of paediatric in-patient admissions by age. Number of admissions per year in 1000s in the UK of children 0–18 years old. Source: Audit Commission 1993.

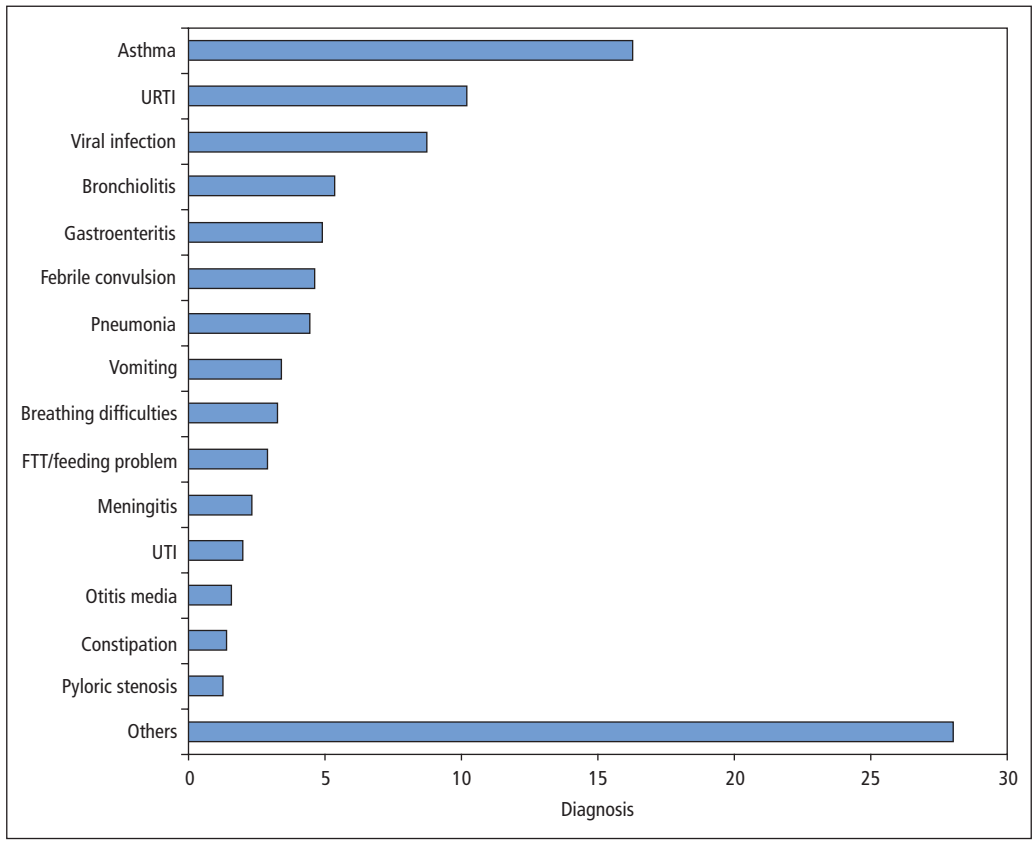

Figure 1.8 Causes of paediatric admissions. Based on a study of admissions to a District General Hospital. *Respiratory problems* (asthma, URTI, bronchiolitis, pneumonia and breathing difficulties) caused 57% of admissions, and *infective illness* 44%. FTT, failure to thrive; URTI, upper respiratory tract infection; UTI, urinary tract infection. After Thakker Y, Sheldon TA, Long R, MacFaul R. *Archives of Disease in Childhood* 1994; 70: 488–492.

A young child separated from his mother may go through three stages:
Protest: he cries for her return.
Withdrawal: he curls up with a comfort blanket or toy and loses interest in food and play.
Denial: he appears happy, making indiscriminate friendships with everybody. This can be mistakenly interpreted as the child having 'settled', but the mother–child bond has been damaged and will have to be rebuilt. On returning home, he may exhibit tantrums, refuse food or wet his bed.

These problems can be avoided or minimized by:
- avoiding hospital admission if possible
- reducing the length of any admission to the minimum
- performing operations (e.g. herniotomy, orchidopexy) and investigations (e.g. jejunal biopsy, colonoscopy) as day cases
- encouraging parents to visit often and arranging for one to sleep alongside a young child.

Hospital organization can also help to reduce stress. Paediatric wards mean that children are looked after by staff specially trained and experienced in the care of children in a child-friendly environment. Teachers, nursery nurses and play leaders organize education and play. The first impression of a children's ward should be of happy chaos, rather than of the highly technical medicine which is in fact going on.

Awareness of ethnic differences

Most countries have ethnic minority communities with particular needs. In the UK, 5% of the population (and nearly 10% of newborns) are from ethnic minority groups. There is great regional variation. *Consanguinity* (marrying a blood relative) is more common in some cultures (e.g. some Muslim communities), increasing the risk of recessively inherited disease. Rickets is more common in some ethnic groups due to diet, pigmented skin and lack of exposure to sunlight. There remain significant health inequalities for many minority groups in Europe.

Find out about your own local situation and be aware of cultural and health differences. These range from what names to use, through to differences in patterns of disease, through travel (e.g. malaria), contact (e.g. tuberculosis) or racial susceptibility (e.g. sickle cell disease). Understanding the importance of racial background, family, cultural and religious beliefs improves paediatric care.

Ethnic composition—England and Wales

White	94%
Indian continent	3%
Black	2%
Other	1%

Laws relating to the young

For legal purposes, a child remains a 'child' up to the age of 18. However, many laws become operative at other ages. School education is compulsory for children aged 5 and over. Children may not leave school until they are 16.

Children may not be employed until they are 13. Then they may be employed only between the hours of 7 a.m. and 7 p.m., and for a maximum of 2 h on school days.

Children under 10 (under 8 in Scotland) are not considered 'criminally responsible' for their misdeeds, and may be dealt with by the Juvenile Courts. The court can make (1) a *care order* giving parental rights to the local authority; or (2) a *supervision order* which may be administered by the social services department or, if the child is over 14, by the probation department. At the age of 15 children can be sent to youth custody.

Adult courts deal with those over the age of 17. Although it is legally possible to be sent to prison for a first offence at the age of 17, in practice it is rare before the age of 20.

At the age of 100, the child may receive a telegram of congratulation from the Queen!