PAEDIATRICS

Lecture Notes

Simon J. Newell
Jonathan C. Darling

9th Edition

LN

with online self-test

WILEY Blackwell

Paediatrics
Lecture Notes

We dedicate this book to our students, past, present, and future.

Paediatrics
Lecture Notes

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OSCE stations

Preface

When *Lecture Notes: Paediatrics* began over 40 years ago, the notion of a weblink to watch a YouTube video would have been science fiction. (Try **http://tinyurl.com/lnpcell** '*Inner life of the cell*' from Harvard and imagine trying to watch and believe this in 1973.) Looking back at the first edition, it tells of: high mortality from Rhesus disease; life-threatening infections, since abolished by immunization; lead poisoning; frequent admissions for accidental ingestion of drugs, before childproof containers and blister packs; and '*At present there is no cure for leukaemia…*'

Paediatrics and child health have come a long way. Children are 20% of the population and are seen in 40% of general practice consultations. We have again set out to focus on the core of the paediatric curriculum that every medical student should learn. We hope our book will also be useful to other health professionals who care for children, especially our colleagues in advanced nursing roles.

In this new edition we have advanced the use of information boxes indicating *key points, practice points, treatment guides, learning logs,* and web-based support material. Each chapter begins with a chapter map and suggests practical ways of gaining experience in paediatrics in the learning log at the end. This edition offers many updated and new sections, as well as new chapters in adolescent health, genetics, safe prescribing and careers in paediatrics.

Students and teachers all want success in examinations. We have added more OSCE stations, along with OSCE tips at the end of each chapter, to be used alongside the section on *Preparing for Clinical Examinations in Paediatrics and Child Health* and the extended matching questions (EMQs). We hope you will find these useful.

We have amended the book to give it what we hope will be an easy-to-follow structure: Part 1 takes you through the essentials you need to know at the outset; Part 2 covers normal and abnormal from fetal life through to adolescence; then Part 3 moves to systems and specialties; and finally we explain in Part 4 what happens next – exams and (we hope) careers in paediatrics.

We both used *Lecture Notes* when we were medical students and it is a popular choice of text at home in the UK and abroad. We hope you will enjoy reading *Lecture Notes* during your paediatrics and that it will in some way contribute to still higher and better standards for children's health during your careers in the next 40 years.

Simon Newell
Jonathan Darling

Acknowledgements

This book was conceived by Professor Sir Roy Meadow and Professor Dick Smithells, whose teaching inspired many students in paediatrics.

We are grateful to the European Resuscitation Council for permission to use their illustrations, and algorithms in emergency paediatrics. We thank the focus groups of medical students, whose reflections on the previous edition were so helpful to us.

Further reading

Large comprehensive textbooks:

Kliegman RM, Stanton BMD, St Geme J, Schor NF (eds) (2011) *Nelson Textbook of Pediatrics*. 19th edition, Elsevier Saunders.

McIntosh N, Helms PJ, Smyth RL, Logan S (eds) (2008) *Forfar and Arneil's Textbook of Pediatrics*, 7th edition, Churchill Livingstone.

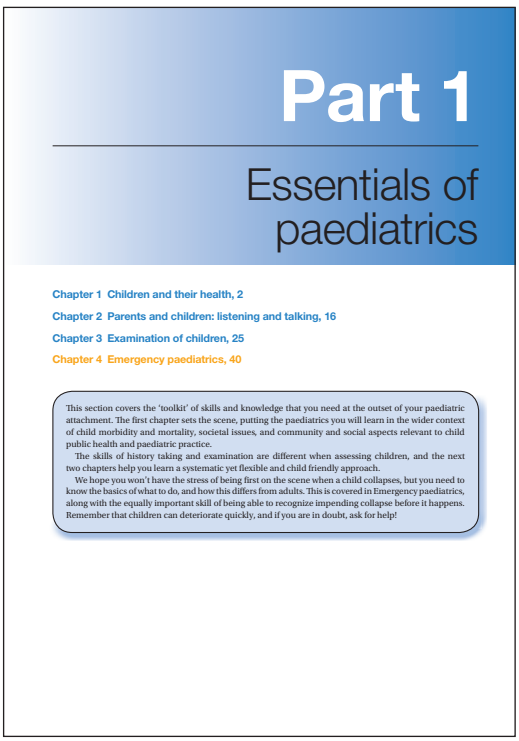
Rennie JM (ed.) (2012) *Rennie & Roberton's Textbook of Neonatology*, 5th edition, Churchill Livingstone.

We have included links to useful supplementary reading and resources throughout the text – look out for the **Resources boxes**.

How to use your textbook

Features contained within your textbook

Overview pages give a summary of the chapters in each part.



Part 1

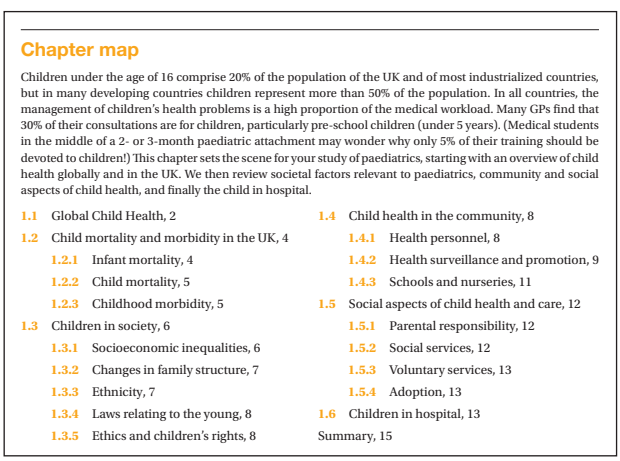
Essentials of paediatrics

This section covers the 'toolkit' of skills and knowledge that you need at the outset of your paediatric attachment. The first chapter sets the scene, putting the paediatrics you will learn in the wider context of child morbidity and mortality, societal issues, and community and social aspects relevant to child public health and paediatric practice.

The skills of history taking and examination are different when assessing children, and the next two chapters help you learn a systematic yet flexible and child friendly approach.

We hope you won't have the stress of being first on the scene when a child collapses, but you need to know the basics of what to do, and how this differs from adults. This is covered in Emergency paediatrics, along with the equally important skill of being able to recognize impending collapse before it happens. Remember that children can deteriorate quickly, and if you are in doubt, ask for help!

Every chapter begins with a **chapter map** showing the contents of the chapter and an **introduction** to the topic.



Chapter map

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!) This chapter sets the scene for your study of paediatrics, starting with an overview of child health globally and in the UK. We then review societal factors relevant to paediatrics, community and social aspects of child health, and finally the child in hospital.

Treatment boxes give prescribing guidelines and advice.

TREATMENT

Vitamin K is given to all newborns as an oral supplement or as a single IM injection. Oral vitamin K is repeated over the first month in breast-fed infants.

Key point boxes highlight important information about a topic.

KEY POINTS

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.

OSCE tip boxes and **OSCE stations** help you prepare and revise for exams.

OSCE TIP

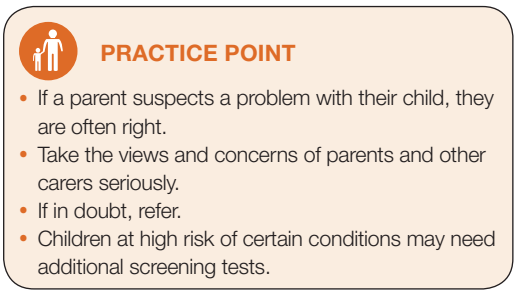
In an exam, never do anything that is painful, likely to cause discomfort, or which is emabarassing. Some tasks are not practical in the OSCE settting. If you are going to omit part of the examination for these reasons, explain this to the examiner (e.g. in the cardiac examination, say that you would want to: plot growth centiles, measure BP with correct cuff, and examine femoral pulses).

Resource boxes point you to useful information in books and online.

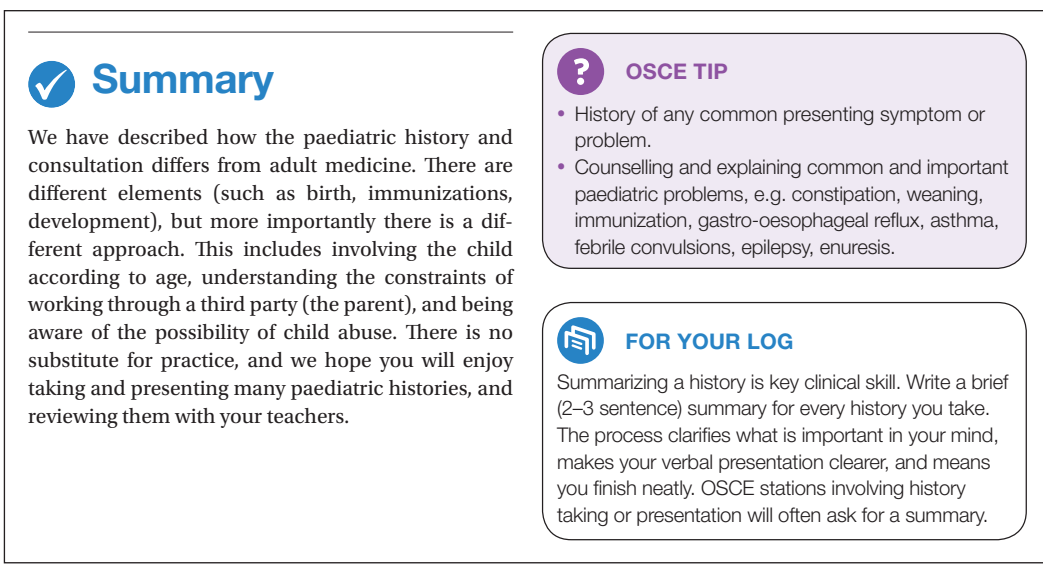
RESOURCE

- See the United Nations Development Programme website for the latest information on progress: **www.undp.org** and click 'Millenium Development Goals'.
- Health Metrics and Evaluation has a superb site to explore health and other data (**www.healthmetricsandevaluation.org**). Go to 'Tools' then 'Visualizations' and select 'GBD 2010' to review the global burden of different diseases by age and region.
- Visit **www.gapminder.org** for another great site to compare health and other data between countries and historically.

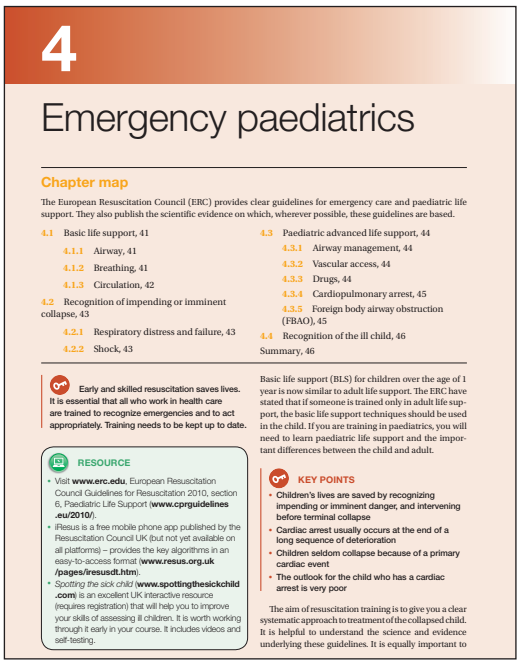
Practice point boxes give practical tips on how best to handle a specific scenario.



Each chapter ends with a **Summary** and a section called **For your log** which suggests practical ways of gaining experience in paediatrics.



The **Emergency** and **Paediatric symptom sorter quick reference guide** sections are clearly indicated for quick reference.



4

Emergency paediatrics

Chapter map

The European Resuscitation Council (ERC) provides clear guidelines for emergency care and paediatric life support. They also publish the scientific evidence on which, wherever possible, these guidelines are based.

Early and skilled resuscitation saves lives. It is essential that all who work in health care are trained to recognize emergencies and to act appropriately. Training needs to be kept up to date.

RESOURCE

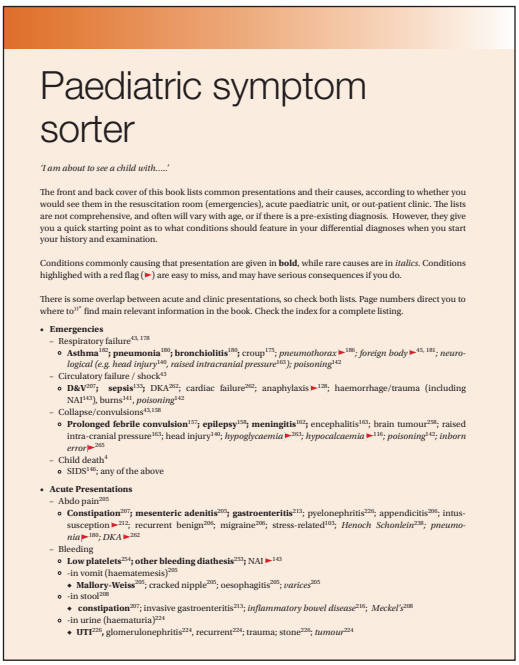
- Visit **www.erc.edu**, European Resuscitation Council Guidelines for Resuscitation 2010, section 6, Paediatric Life Support (**www.cprguidelines.eu/2010/**).
- iResus is a free mobile phone app published by the Resuscitation Council UK (but not yet available on all platforms) – provides the key algorithms in an easy-to-access format (**www.resus.org.uk/pages/iresusdt.htm**).
- *Spotting the sick child* (**www.spottingthesickchild.com**) is an excellent UK interactive resource (requires registration) that will help you to improve your skills of assessing ill children. It is worth working through it early in your course. It includes videos and self-testing.

Basic life support (BLS) for children over the age of 1 year is now similar to adult life support. The ERC have stated that if someone is trained only in adult life support, the basic life support techniques should be used in the child. If you are training in paediatrics, you will need to learn paediatric life support and the important differences between the child and adult.

KEY POINTS

- **Children's lives are saved by recognizing impending or imminent danger, and intervening before terminal collapse**
- **Cardiac arrest usually occurs at the end of a long sequence of deterioration**
- **Children seldom collapse because of a primary cardiac event**
- **The outlook for the child who has a cardiac arrest is very poor**

The aim of resuscitation training is to give you a clear systematic approach to treatment of the collapsed child. It is helpful to understand the science and evidence underlying these guidelines. It is equally important to



Paediatric symptom sorter

'I am about to see a child with.....'

The front and back cover of this book lists common presentations and their causes, according to whether you would see them in the resuscitation room (emergencies), acute paediatric unit, or out-patient clinic. The lists are not comprehensive, and often will vary with age, or if there is a pre-existing diagnosis. However, they give you a quick starting point as to what conditions should feature in your differential diagnoses when you start your history and examination.

Conditions commonly causing that presentation are given in **bold**, while rare causes are in *italics*. Conditions highlighed with a red flag (►) are easy to miss, and may have serious consequences if you do.

There is some overlap between acute and clinic presentations, so check both lists. Page numbers direct you to where to[97] find main relevant information in the book. Check the index for a complete listing.

- **Emergencies**
  - Respiratory failure[43, 178]
    - **Asthma**[182]; **pneumonia**[180]; **bronchiolitis**[180]; croup[175]; *pneumothorax* ►[186]; *foreign body* ►[45, 181]; *neurological (e.g. head injury*[149]*, raised intracranial pressure*[163]*)*; *poisoning*[142]
  - Circulatory failure / shock[43]
    - **D&V**[207]; **sepsis**[133]; DKA[202]; cardiac failure[202]; anaphylaxis ►[128]; haemorrhage/trauma (including NAI[143]); burns[141]; *poisoning*[142]
  - Collapse/convulsions[43,158]
    - **Prolonged febrile convulsion**[157]; **epilepsy**[158]; **meningitis**[162]; encephalitis[162]; brain tumour[228]; raised intra-cranial pressure[163]; head injury[146]; *hypoglycaemia* ►[61]; *hypocalcaemia* ►[116]; *poisoning*[142]; *inborn error* ►[205]
  - Child death[4]
    - SIDS[146]; any of the above
- **Acute Presentations**
  - Abdo pain[205]
    - **Constipation**[207]; **mesenteric adenitis**[205]; **gastroenteritis**[213]; pyelonephritis[226]; appendicitis[206]; intussusception ►[212]; recurrent benign[206]; migraine[206]; stress-related[103]; *Henoch Schonlein*[228]; *pneumonia* ►[180]; *DKA* ►[202]
  - Bleeding
    - **Low platelets**[224]; **other bleeding diathesis**[232]; NAI ►[143]
    - -in vomit (haematemesis)[205]
      - **Mallory-Weiss**[205]; cracked nipple[205]; oesophagitis[205]; *varices*[205]
    - -in stool[208]
      - **constipation**[207]; invasive gastroenteritis[213]; *inflammatory bowel disease*[210]; *Meckel's*[208]
    - -in urine (haematuria)[224]
      - **UTI**[225], glomerulonephritis[224], recurrent[224]; trauma; stone[226]; *tumour*[224]

Don't forget to visit **www.lecturenoteseries.com/paediatrics** to download the **Symptom sorter** to your mobile device.

The anytime, anywhere textbook

Figure and Text not available in this digital edition.

Figure and Text not available in this digital edition.

We hope you enjoy using your new book. Good luck with your studies!

About the companion website

Don't forget to visit the companion website:

www.lecturenoteseries.com/paediatrics

The website contains a PDF of the **Paediatric symptom sorter** for you to download and view on your mobile device.

Part 1

Essentials of paediatrics

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1

Children and their health

Chapter map

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!) This chapter sets the scene for your study of paediatrics, starting with an overview of child health globally and in the UK. We then review societal factors relevant to paediatrics, community and social aspects of child health, and finally the child in hospital.

1.1 Global child health

Children make up about 2 billion of the world's population. Health inequalities between nations are seen most starkly in childhood indicators, such as under-5 mortality rates (Figure 1.1). Most childhood deaths occur in sub-Saharan Africa and south Asia (Figure 1.2), and malnutrition causes or contributes to at least half of them, along with many other factors (Figure 1.3). There has been a sustained international effort in the last few decades to address inequalities, culminating in the Millenium Development Goals adopted in 2000 by all members of the United Nations. These set measurable targets to be achieved by 2015 in relation to poverty, maternal and child health and combating disease such as HIV and malaria. Progress has been made, but much remains to be done.

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

The under-5 mortality rate is a useful measure of child health internationally. 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.

Paediatrics Lecture Notes, Ninth edition. Simon J. Newell and Jonathan C. Darling.

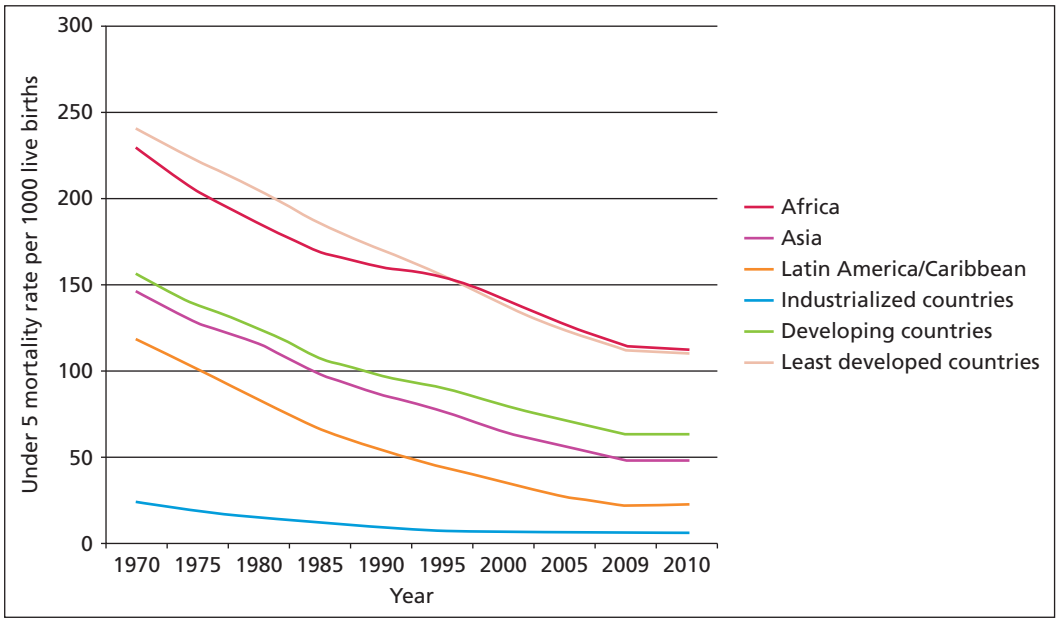

Figure 1.1 Changes in worldwide under-5 mortality rates. Data taken from *The State of the World's Children 2012: Children in an Urban World* (UNICEF). See www.unicef.org/sowc2012.

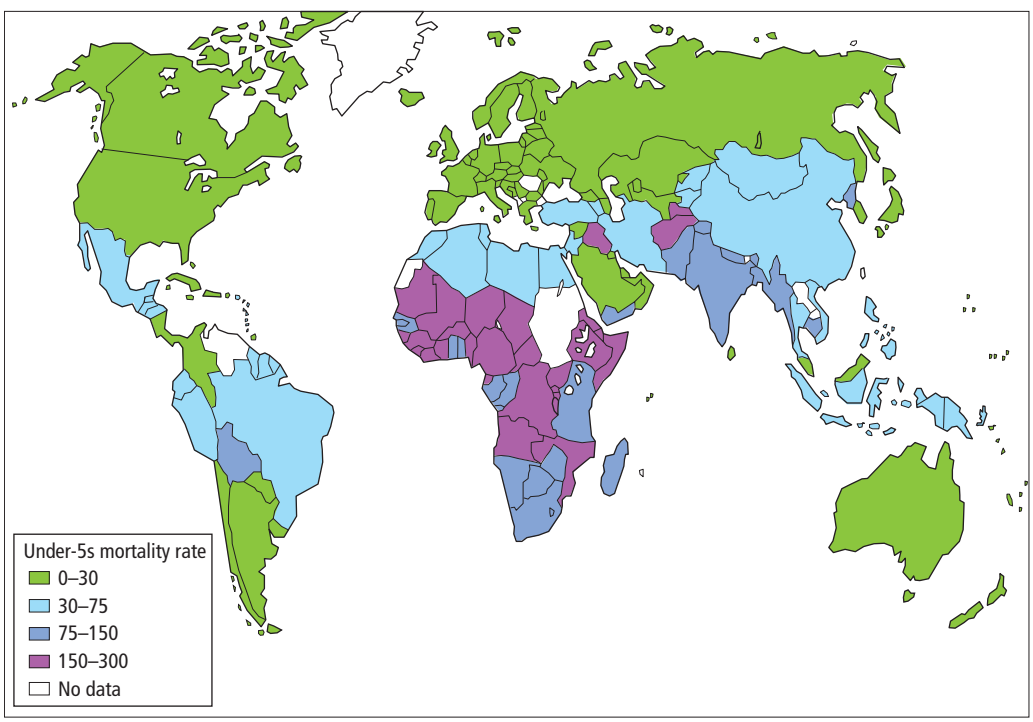

Figure 1.2 Worldwide under-5 mortality rates in year 2000. Numbers are deaths/1000 liveborn infants. There was a large reduction in under-5 mortality worldwide by about 65% from 1960 to 2000. However, from 1990 to 2000, some countries saw an increase in mortality due to HIV and armed conflicts. Reproduced with permission, courtesy of University of California Atlas of Global Inequality (http://ucatlas.ucsc.edu).

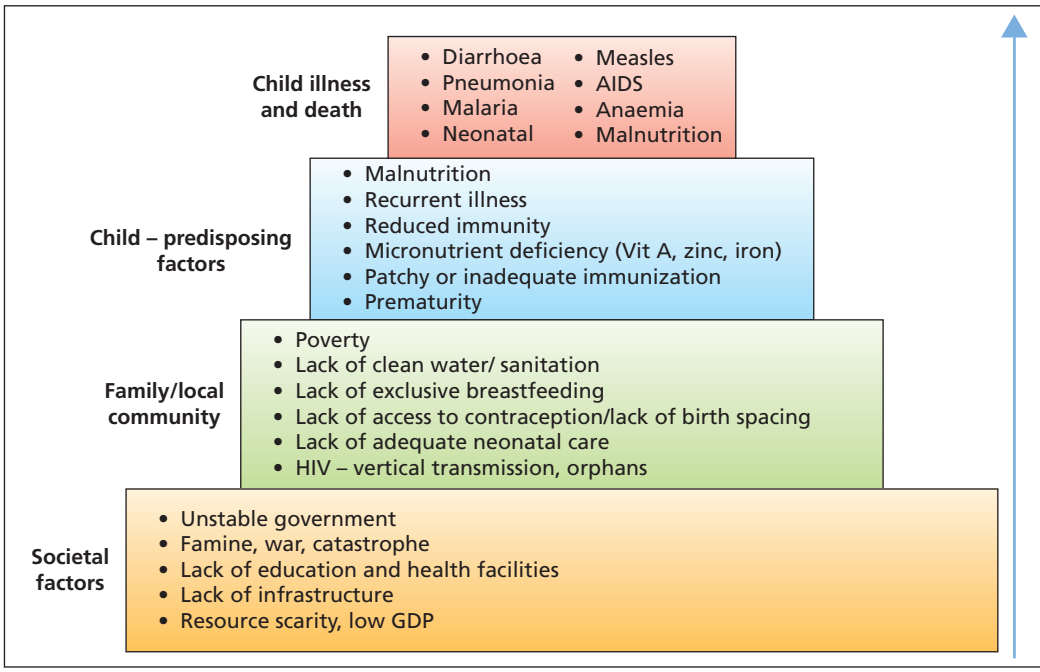

Figure 1.3 Global causes of child morbidity and mortality.

RESOURCE

- See the United Nations Development Programme website for the latest information on progress: **www.undp.org** and click 'Millenium Development Goals'.
- Health Metrics and Evaluation has a superb site to explore health and other data (**www.healthmetricsandevaluation.org**). Go to 'Tools' then 'Visualizations' and select 'GBD 2010' to review the global burden of different diseases by age and region.
- Visit **www.gapminder.org** for another great site to compare health and other data between countries and historically.

In developing countries:

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

1.2 Child mortality and morbidity in the UK

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 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.

1.2.1 Infant mortality

- UK infant mortality continues to fall (currently 4.3 per 1000 live births) (Figure 1.4).
  - But half the countries in the European Union have lower rates.

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

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.

- Several East European countries have infant mortality rates 2–3 times higher.
- Some non-industrialized countries have rates over 150.

- Improvement in UK infant mortality:
  - Mainly due to reduction in *neonatal* mortality
  - Less improvement in *post-neonatal* mortality (1 month to 1 year).
- Some deaths result from persistent, serious congenital abnormalities and perinatal problems, others due to accidents or diagnosable disorders, but many are infants who die at home, for whom no cause of death is found at postmortem (Section 15.3).

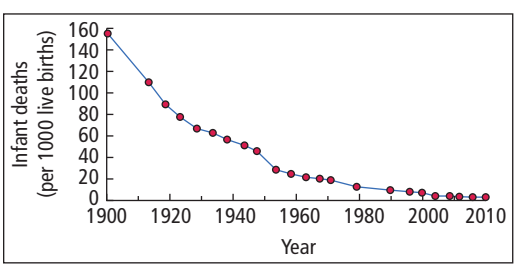

Figure 1.4 Infant mortality (0–1 years). By 2010, the infant mortality in England and Wales had fallen to a fraction of the level in 1900 (from 156 per 1000 live births to 4.3 per 1000). Even in the last 30 years it has fallen by over 60%.

1.2.2 Child mortality

- The major causes of childhood death are neoplasms and accidents.
- 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 (Figure 1.5).
- 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 (Figures 1.5 and 1.6).

1.2.3 Childhood morbidity

- The pattern of morbidity in children is very different from that of adults (Figure 1.7):
  - Infections are common, especially of the respiratory, gastrointestinal and urinary tracts, as well as the acute exanthemata (e.g. chickenpox).
  - Degenerative disorders and cerebral vascular accidents are very rare.
- New forms of chronic disease are becoming relatively more important as formerly fatal childhood disorders become treatable (but not necessarily curable):
  - Children with complex 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 syndrome every 60 years and haemophilia or Hirschsprung disease every 600 years! Hospitals may give a very false impression of the pattern of illness in the community at large.

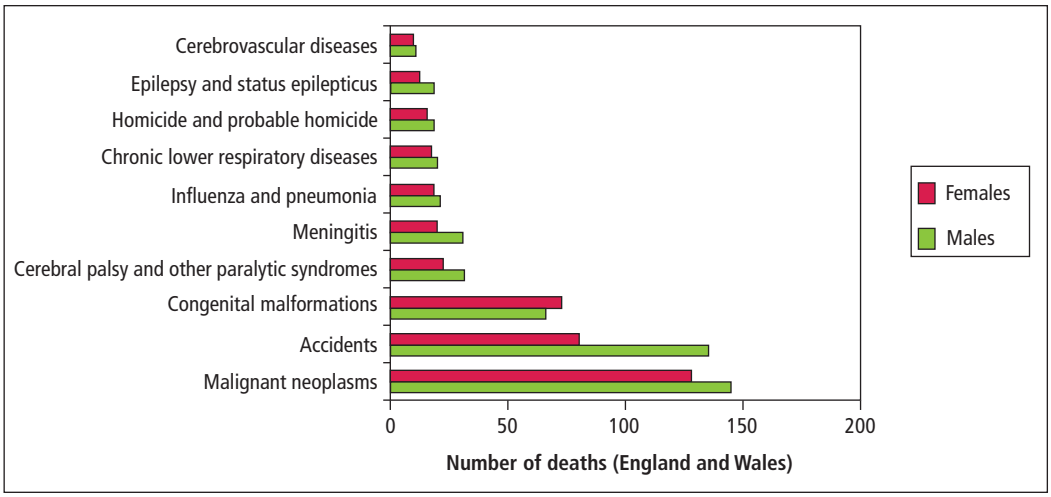

Figure 1.5 Causes of death in childhood. Mortality ages 1–14 in 2003.
Source: National Statistics Online at www.statistics.gov.uk.

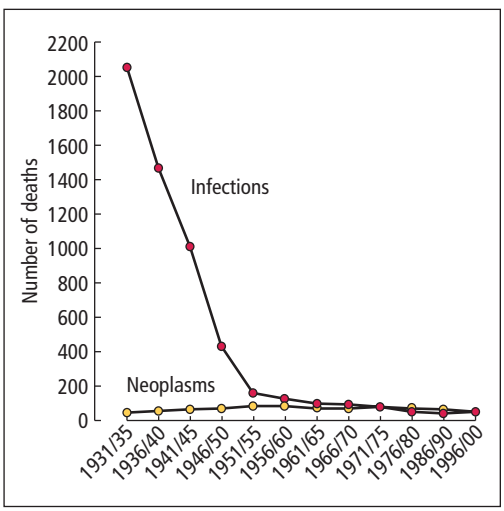

Figure 1.6 Child mortality from infections and neoplasms, per million children living (aged 1–4 years).

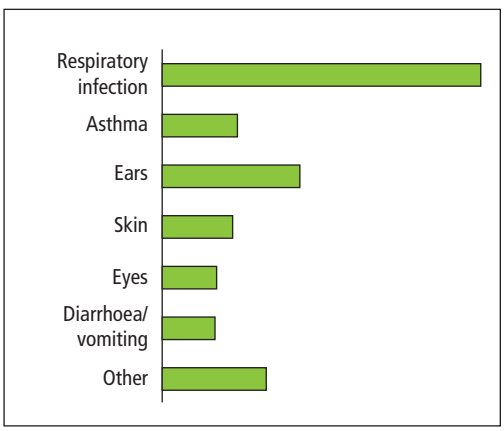

Figure 1.7 Most common reasons for a child to be seen by their GP.

1.3 Children in society

1.3.1 Socioeconomic inequalities

Socioeconomic status is a key determinant of child health. The health and educational progress of a child is directly related to the home and the environment. A child in social class V has a 50% greater chance of being born dead or with a serious physical handicap than one in social class I (see Table 1.2). 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. At any age a child from social class V is twice as likely to die as one from social class I. In many developed countries, health inequalities have grown wider even as average health levels have improved.

The UK has one of the worst rates of child poverty in the industrialized world. The proportion of children living in poverty grew from 1 in 10 in 1979 to 1 in 3 in 1998. Today, 30% of children in Britain (nearly 4 million) are living in poverty. Since 1999, when the Government pledged to end child poverty, 550 000 children have been lifted out of poverty.

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

Age	Social class				
	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

RESOURCE

See **www.endchildpoverty.org.uk** for more information.

1.3.2 Changes in family structure

Family structure has become more fluid in the UK, reflecting changing societal attitudes to marriage, divorce and cohabitation. Children more often have to make transitions to new family structures. They are helped by: family stability; good relationships between partners; avoiding sustained exposure to conflict; and keeping children's needs paramount. Although marriage has declined and 40% of births are now outside marriage, 7 out of 10 families are headed by a married couple. Step-family combinations are increasing. With more single-parent families, and families where both parents work, grandparents play a significant role in childcare (at least weekly for 25% of families); 23% of dependent children live in single-parent families. Although UK teenage pregnancy rates have fallen recently, they are still among the highest across developed countries. Half of all teenage mothers live in the 20% most deprived areas.

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.

KEY POINTS

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 per cent of the world's population live in absolute poverty. Nearly half of them are children.

1.3.3 Ethnicity

Most countries have ethnic minority communities with particular needs. The UK continues to become more ethnically diverse. In the UK, 15% of the population (and one-third 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 (2011)

White	86%
Asian/Asian British	7.5%
Black/Black British	3.3%
Mixed	2.2%
Other	1%

1.3.4 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 education until they are 17.

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.

1.3.5 Ethics and children's rights

In 1989 the United Nations declared that children worldwide should have special rights due to their immaturity and vulnerability. This Convention on the Rights of the Child sets out what every child needs for 'a safe, happy and fulfilled childhood'. These include the right to health, family life, and to have his views taken seriously in matters affecting him. Consent and competence are covered later (Section 16.2). Once a child is deemed to be competent, then the doctor has the normal duty of confidentiality, including not disclosing information to a third party (including a parent). Sometimes this has to be overridden because of safeguarding concerns, but this should be explained to the child.

A challenging part of intensive care (whether paediatric or neonatal) is the decision to withdraw life-prolonging treatment. Decisions should be made by the treating team in partnership with the parents, taking time to ensure all relevant information is considered.

Situations where the withholding or withdrawal of life-prolonging treatment might be considered:

- Brain death: brain stem death despite life prolonging care
- Permanent vegetative state: reliant on others for all care and does not react or relate with the outside world
- 'No chance' situation: life-sustaining treatment simply delays death
- 'No purpose' situation: treatment may save life, but physical or mental impairment is too much to bear
- 'Unbearable' situation: further treatment is more than can be borne.

1.4 Child health in the community

1.4.1 Health personnel

1.4.1.1 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.

1.4.1.2 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.

1.4.1.3 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.

1.4.2 Health surveillance and promotion

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

PRACTICE POINT

- 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.

1.4.2.2 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.

1.4.2.3 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 (Figure 1.8).

PRACTICE POINT

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

1.4.2.4 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 (Chapter 15)
- 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.

Table 1.3 UK Child Health Promotion Programme

Age	Intervention (universal)	Intervention (progressive or targeted)

Antenatal	• Antenatal screening
	• Preliminary assessment of child and family needs
	• Preparation for parenthood
	• Advice on breast-feeding
	• Advice on general health and well-being
	  • Healthy eating and weight
	  • Smoking cessation
	• Plan transition from midwifery to health visiting service
		• Extra support and needs assessment for higher risk groups (at all stages below):
		  • Young first time mothers
		  • Learning difficulties
		  • Drug and alcohol abuse
		  • Domestic violence
		  • Serious mental illness

Birth to 1 week	• Infant feeding support
	• General physical examination
	  • Especially eyes, heart and hips
	• Vitamin K (im or drops)
	• Blood spot screening test (age 5–6 days) (Section 7.4.1).
	• Newborn hearing screen (within first month)
	• Assess child and family health needs
	• Give Personal Child Health Record
	• General information and support, e.g. SIDS advice (Section 15.3, p. 147), injury prevention
		• Immunization for at risk infants:
		  • BCG
		  • Hepatitis B
		• Advice on Healthy Start programme (including vitamin supplements) for low income groups
		• Extra support for infants with special problems (e.g. prematurity, low birth weight)

One to six weeks	• New baby review by 14 days (e.g. midwife, health visitor) and assess maternal mental health
	• Home safety advice
		• For children at risk of obesity
		  • Advice on exercise and nutrition for whole family
		• Extra support for:
		  • Maternal depression
		  • Difficult parental relationship
		  • Parental insensitivity to infant needs

Six weeks to six months	• General physical examination at 6–8 weeks
	  • Especially eyes, heart and hips (and testes for boys)
	  • Review growth
	• Immunizations at 2, 3 and 4 months (Table 14.1)
	• Review general progress
	• Deliver key messages about parenting and health promotion, e.g. promoting development, safety, SIDS
	• Weaning advice
		• Extra support for infants with special problems or parental issues as above
		• Smoking cessation interventions

Six months to one year	• Systematic assessment by health visiting team by one year:
	  • Child's physical, emotional and social development
	  • Family needs
	• Planning to address any needs and agree future contact with parents
	• Advice about dental health
		• As above

One to three years	• Immunizations at 12 and 13 months months (Table 14.1) • 2–2.5 yr review of health and development by health visiting team • Partnership with parents • Build on other contacts (e.g. immunization, visits to GP) • Dental health (avoid sugary food and drinks, teethbrushing)	• Health or developmental problems to be referred early to specialist team • For children at risk of obesity • Advice on healthy eating, portion size and mealtime routines • Smoking cessation support

Age	Intervention (universal)	Intervention (progressive or targeted)
3–5 years	• Immunization age 3 yr months (Table 14.1) • Review general progress • Deliver key messages about parenting and health promotion Around time of school entry, 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 and vision test done	• As above

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 to 14 years +/- BCG
	• School-leaver immunization (Table 14.1)	

Further details of the UK health promotion programme can be found in the Department of Health publication *Healthy Child Programme – pregnancy and the first five years*. 2009. This can be accessed at www.dh.gov.uk (search there for the title).

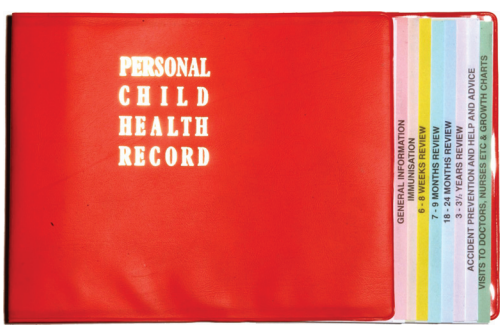

Figure 1.8 Parent-held record ('the red book'). It is useful to refer to the parent-held record during your history for further details about growth, development and immunizations

Government objective

To reduce rates of smoking throughout pregnancy to 11% or less (from 14%) by the end of 2015.

1.4.2.5 Immunization

Immunization is a key part of the programme (Chapter 14).

1.4.3 Schools and nurseries

1.4.3.1 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.

1.4.3.2 Healthy schools

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

Promoting healthy schools

- Healthy eating;
- Physical activity;
- Personal, social and health education (PSHE);
- Emotional health and well-being.

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

1.5 Social aspects of child health and care

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.

1.5.1 Parental responsibility

Both parents have legal 'parental responsibility' if they are married at the time of the child's birth, or if both are registered on the birth certificate. Otherwise, the mother has parental responsibility, but there are legal mechanisms by which the father can acquire it.

1.5.2 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
  - e.g. 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 court 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* (75%) in which a child is cared for in a family other than his own. 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 (25%) 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.

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