

Accidents at home

Stella Lowry

Every year there are about 5500 fatal accidents in British homes (some two fifths of all fatal accidents). A further 2.2 million people have non-fatal accidents at home needing hospital treatment, and another 900 000 are dealt with by general practitioners. The cost of domestic accidents to the health service in England and Wales is about £300 000 a year.¹

Statistical information about non-fatal domestic accidents has been collected since 1976 by the Department of Trade and Industry, based on attendance records at the accident departments of 20 hospitals. Information about fatal accidents is held in the home accident deaths database, and the Home Office publishes annual statistics about accidents involving fire.

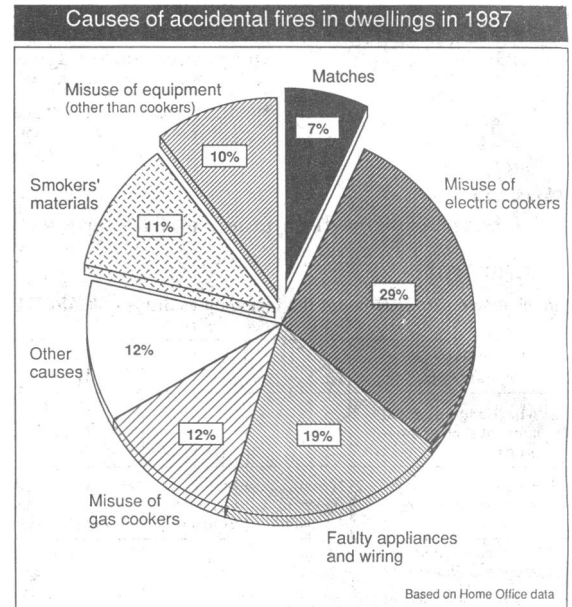
Accidents and children

Accidents are the commonest cause of death in children aged over 1 year and account for a third of all childhood deaths. About three quarters of a million children are injured at home each year, and domestic accidents account for most of the falls, burns, and poisonings. Nevertheless, many of these accidents are preventable.² The accidents that children have often reflect their stage of development, and this makes them more predictable by adults. Under the age of 3 months one of the commonest accidents is being dropped by an adult; by 10 months children are crawling and starting to walk and risk hurting themselves on the sharp edges of furniture. Later, increasing independence brings risks from any hazard within their reach; falling from windows that open too far, swallowing household chemicals, and playing with matches. By school age, road traffic accidents have become important.

From the age of 2 boys are about twice as likely to have an accident as girls. And childhood accidents also show a definite variation with social class,³ this gradient being steeper than for any other cause of death in children. Thus in Haringey, London, in one year nearly a fifth of children under 5 attended an accident and emergency department, three quarters of them because of an accident at home (P Constantinides and G Walker, unpublished data). Children from the least affluent parts of the borough were four times more likely to have an accident than those from the most affluent parts, and there was a significant association between accident rates and unemployment, overcrowding, rented tenure, poor parental education, and low social class.

Elderly people are also at risk of accidents at home. As in children, their risk is influenced by what they can or cannot do. Deteriorating sight and poor mobility may put them at risk of falls; open or portable fires rather than central heating are a fire hazard; and frailty or lack of money may prevent them from maintaining equipment properly. In 1987, 18% of people who died in fires were aged 60-74, and a quarter were over 75.⁴

The guidelines about designing safer houses produced by the Child Accident Prevention Trust are based on studies of the type and frequency of accidents to children at home.⁵ Many of the guidelines also apply to other groups at risk, including the elderly. Some



Causes of accidental fires in dwellings in 1987 (based on Home Office data)

of the recommendations—L shaped flights of stairs to reduce the distance in a fall, no doors or windows opening on to stairways, and through routes in kitchens that avoid the cooker—are best introduced during planning. Others can be incorporated easily into existing homes: good lighting of stairwells, hand-rails with an all round grab, no cupboards above the cooker, non-slip floor surfaces in kitchens, safety glazing for shower screens, and so on. If all of the recommended features were incorporated into the design of a new house the trust estimates that the total cost would be increased by only 5%.

Rules and regulations

Because the cause of so many domestic accidents is predictable it is possible to legislate for safety standards that reduce the risks—for example, restrictions on the flammability of children's nightwear and on how far windows in multistorey dwellings may open.⁶

One important problem that has not been properly dealt with so far is domestic architectural glass, which was found to cause no less than half the injuries seen in a group of 80 children with lacerations.⁷ Ten years ago the author of this report concluded that safety glass should be used in all glass doors, French windows, patio doors, and the lower parts of windows—but our hospitals are still treating over 400 000 such injuries every year (R Sinnott, conference of Institution of Environmental Health Officers, London, 1987). Nearly half involve glass in doors, and two fifths of them happen to children under 15.

There are regulations covering the use of glass in buildings. British Standard code of practice BS 6262 specifies that safety glass must be used in fully glazed doors. The code defines a fully glazed door as being one in which the glazed panel is at least 300 mm wide and

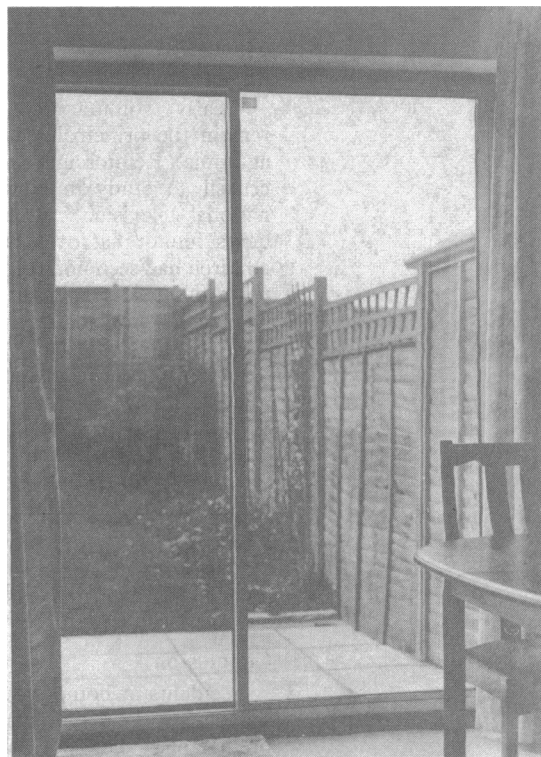
comes within 150 mm of the edges and top of the door and within 300 mm of the bottom. Any other type of door is not covered by the code. The code also specifies that safety glass should be used in windows less than 800 mm from the floor in places where many people move about. The concept of "many people" is vague, and would not apply in most homes. Many homes contain large areas of glass that would not be covered by the code and present a real danger, especially to children and elderly people.

The regulations covering safety glass are also confusing. British Standard 6206 covers the impact performance of flat safety glass and safety plastics and divides them into three classes: A, B, and C. Class C is the minimum acceptable standard for low level glazing and B that for doors and side panels. Plastics are often safer than glass, but they tend to bow and discolour with time and are easily scratched. "Wired glass" is not necessarily safe. The mesh holds the shattered pieces of glass together, but does not increase the strength of the glass under impact. "Laminated glass" consists of two layers of annealed glass with an interleaved and bonded layer of plastic. It is just as likely to crack as any other annealed glass, but the plastic layer holds the pieces together. Laminated glass may be of safety class A, but this should not be assumed. People wanting safe glass for domestic use should use "toughened glass." This has a high compressive strength, and because it tends to break into small cuboid pieces it is always of safety class A, regardless of its thickness.

The restricted applications of regulations about domestic glass and the confusing range of products available make it hard for householders to know whether their homes are safe or not, and perhaps it would be better to stipulate that the highest grade of safety glass should be used for all domestic glazing.

Limitations of legislation

Laws to improve home safety have drawbacks as well as advantages. The standards may not be hard and fast enough—indeed, the present standards for safety glass are under review after recent publicity about the death of a boy whose heart was punctured by a spear of glass from a conservatory fitted with toughened glass that met current standards. Other factors may need to



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Safe as houses? How safe is safety glass?

be considered—for example, is the best safety glass easy to break if it is necessary to escape from a fire? There is also the question of personal freedom, given that most people regard their homes as places where they can do as they like. Many home safety features are, therefore, couched as recommendations rather than laws.

Laws and recommendations may be combined, as in the case of domestic wiring. For new houses the local electricity board must be satisfied with the standard of wiring before connecting the supply; thereafter things are left to the owner's discretion. Fixed wiring should last for 20 to 30 years if properly used, although of course systems installed 20 years ago were not designed to cope with the proliferation of electrical domestic equipment that has occurred since. Sockets, switches, and circuit breakers are subject to mechanical wear and have a shorter life.

Ideally, domestic wiring should be checked every five years. In 1986 a total of 47 electrocutions occurred in the home (J Stocking, conference of Institution of Environmental Health Officers, London, 1987), and faulty electrical equipment and wiring are also common causes of domestic fires (figure). In 1987 there were 63 000 domestic fires in the United Kingdom,⁴ and though they accounted for less than a fifth of all fires they accounted for no less than three quarters of all deaths and non-fatal injuries from this cause. Death occurs most commonly through the effects of gas and smoke; hence the installation of smoke detectors might have an important preventive role.

The incidence of domestic fires is significantly associated with unemployment, low socioeconomic status, and inversely with owner occupation.⁸ Very overcrowded conditions increase the risk of fire and the difficulties of escaping from it. The Institution of Environmental Health Officers is particularly concerned about the risks in houses in multiple occupation.⁹ Because of the shortage of environmental health officers, they are confined to reacting to complaints rather than able to inspect regularly. Until the service is adequately funded the poorest and most disadvantaged members of our society will not be



J ALLAN CASH

710 People died and 9480 were injured in house fires in 1987

adequately protected from the dangers of badly maintained properties.

Prevention by education

Clearly, voluntary compliance with advice must remain the principal means of preventing accidents at home. Reinforcing such advice is, nevertheless, crucial. A study in Newcastle on the effects of a national television campaign about childhood accidents found that over half of families with young children had seen none of the programmes, and only a tenth of those specifically encouraged to watch had taken any action as a result.¹⁰ But almost two thirds of those families who had received specific advice at a home visit had taken action to improve domestic safety.

Hence people respond best to simple, specific advice directly relevant to their own homes when it is given separately from other information. It may not be possible to make special visits to all patients to advise on home safety, but doctors are well placed to give opportunistic advice during home visits or when a patient presents as the result of an accident.

Conclusion

Accidents at home place a heavy strain on health service resources, yet many domestic accidents are predictable and potentially preventable. Safety features can be incorporated into most houses rela-

tively cheaply. Doctors are often ideally placed to offer advice not only about home safety, but also about what help is available from social security offices to provide families on low incomes with safety features like fireguards and stair gates. Legislation is no guarantee of domestic safety, but it at least provides some protection for the most vulnerable members of society. This protection is lost if the regulations cannot be enforced, and the present shortage of environmental health officers adds to the dangers.

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- 2 Child Accident Prevention Trust. *Basic principles of child accident prevention. A guide to action.* London: CAPT, 1989.
- 3 Constantinides P. *Safe at home? Children's accidents and inequality.* *Radical Community Medicine* 1988 Spring; 31-4.
- 4 Home Office. *Fire statistics United Kingdom 1987.* London: Government Statistical Service, 1989.
- 5 Page M. *Child safety and housing. Practical design guidelines for commissioning agencies, architects, designers, and builders.* London: Child Accident Prevention Trust, 1986.
- 6 Gloag D. *Colloquium on strategies for accident prevention. A review of the present position.* London: Medical Commission on Accident Prevention, 1987.
- 7 Jackson RH. Lacerations from glass in childhood. *Br Med J* 1981;283:1310-2.
- 8 Chandler SE, Chapman A, Hollington SJ. Fire incidence, housing and social conditions—the urban situation in Britain. *Fire Prevention* 1984;172:15-20.
- 9 Institution of Environmental Health Officers. *Houses in multiple occupation.* London: IEHO, 1984.
- 10 Colver AF, Hutchinson PJ, Judson EC. Promoting children's home safety. *Br Med J* 1982;285:1177-80.

In the article on electromagnetic radiation in homes (16 December, p 1517) Mr Brian Maddock of the Central Electricity Research Laboratories was wrongly referred to as Brian Maddox. We apologise to Mr Maddock.

BOOKS RECEIVED

Acquired immune deficiency syndrome

A Colour Atlas of AIDS in the Tropics. M A Ansary, S K Hira, A C Bayley, et al. (Pp 126; figs; colour plates; £35.) London: Wolfe Medical, 1989. ISBN 0-7234-1567-6.

HIV Infection: Teaching Slides. W Holmes, F Savage. In sets of 24 colour slides, with literature: HIV—clinical manifestations; HIV—prevention and counselling; HIV—virology and transmission. Cost of each set inclusive of surface postage to any destination: self mounting £3.50+VAT; mounted £4.90+VAT; mounted in plastic file or file-bar £9.80+VAT. Airmail postage plus 60p per set of 24 slides. Available from Teaching Aids at Low Cost, PO Box 49, St Albans, Herts AL1 4AX.

Matters of Life and Death: Women Speak About AIDS. Ed I Rieder, P Ruppelt. (Pp xii+234; £6.50 paperback.) London: Virago, 1989. ISBN 1-85381-103-3.

Taking Liberties: AIDS and Cultural Politics. [Based on a conference, London, March 1988.] E Carter, S Watney. (Pp 240; £8.95 paperback.) London: Serpent's Tail, 1989, in association with the ICA. ISBN 1-85242-147-9.

Psychiatry

Preventing Mental Illness. J Newton. (Pp xi+275; £9.95 paperback.) London: Routledge, 1989. ISBN 0-415-03902-9.

Progress in Psychiatry. "Eating Behavior in Eating Disorders." Ed B T Walsh. Series editor D Spiegel. (Pp xvii+232; figs; £22.50.) Washington: American Psychiatric Press, 1989. Distributed by Cambridge University Press. ISBN 0-88048-163-3.

Psychology

Clinical Practice. No 4. "Anxiety and Depressive Disorders in the Medical Patient." L R Derogatis. TN Wise.

Series editor JH Gold. (Pp xi+260; £20.) Washington: American Psychiatric Press, 1989. Distributed by Cambridge University Press. ISBN 0-88048-159-5.

Clinical Practice. No 5. "Anxiety: New Findings for the Clinician." Ed PP Roy-Byrne. Series editor JH Gold. (Pp xiv+204; £20.) Washington: American Psychiatric Press, 1989. Distributed by Cambridge University Press. ISBN 0-88048-177-3.

Psychological Management of the Physically Ill. Ed JH Lacey, T Burns. (Pp x+349; £29.50.) Edinburgh: Churchill Livingstone, 1989. ISBN 0-443-03601-2.

Wiley Series in Clinical Approaches to Criminal Behaviour. "Clinical Approaches to Violence." Ed K Howells, CR Hollin. Series editors C R Hollin, K Howells. (Pp xiv+344; £35.95.) Chichester: Wiley, 1989. ISBN 0-471-92214-5.

Radiology

AFIP Atlas of Radiologic-Pathologic Correlations, Fascicle I. "Renal Cystic Disease." D S Hartman. Series editor A J Davidson. (Pp xiv+160; figs and colour plates; £34 paperback.) Philadelphia: Saunders, 1989. Distributed by Harcourt Brace Jovanovich. ISBN 0-7216-2343-3.

Clinical Radiology of the Small Intestine. H Herlinger, D Maglante. (Pp xviii+605; figs; £93.) Philadelphia: Saunders, 1989. Distributed by Harcourt Brace Jovanovich. ISBN 0-7216-4608-5.

Fundamentals of Skeletal Radiology. CA Helms. (Pp xii+209; figs; £25 paperback.) Philadelphia: Saunders, 1989. Distributed by Harcourt Brace Jovanovich. ISBN 0-7216-2346-8.

Outpatient Invasive Radiologic Procedures: Diagnostic and Therapeutic. AB Dublin. (Pp xii+154; figs; £30.) Philadelphia: Saunders, 1989. Distributed by Harcourt Brace Jovanovich. ISBN 0-7216-1532-5.

Principles of Biliary Lithotripsy. Ed A S Cass, L H Stahlgren. (Pp vii+104; figs; \$25.) New York: Futura, 1989. ISBN 0-87993-349-6.

Radiology of the Esophagus. M S Levine. (Pp xiv+373; figs; £64.) Philadelphia: Saunders, 1989. Distributed by Harcourt Brace Jovanovich. ISBN 0-7216-2906-7.

Rehabilitation

Health Services Research Reports. "Outcomes of Artificial Lower Limb Fitting in Scotland." P Knight, J Urquhart. (Pp ii+111+appendixes; figs; £3.95 paperback.) 1989. Obtainable from the Common Services Agency for the Scottish Health Service, ISD Publications, Trinity Park House, South Trinity Road, Edinburgh EH5 3SQ.

Respiratory medicine

Surfactant Replacement Therapy. Ed D L Shapiro, R H Notter. (Pp ix+321; figs; \$69.50.) New York: Liss, 1989. Distributed by John Wiley and Sons. ISBN 0-8451-4281-X.

Social services

Assessing Elderly People for Residential Care: a Practical Guide. J Neill. (Pp 57; £4 paperback.) London: National Institute for Social Work, 1989. ISBN 0-902789-59-7.

Sociology

Growing Old in the Twentieth Century. Ed M Jefferys. (Pp xiv+256; figs; £35.) London: Routledge, 1989. ISBN 0-415-03103-6.

Statistics

Monographs on Statistics and Applied Probability. No 34. "Design and Analysis of Cross-Over Trials." B Jones, M G Kenward. (Pp xii+340; figs; £27.50.) London: Chapman and Hall, 1989. ISBN 0-412-30000-1.

Surgery

Day Care: Surgery, Anaesthesia and Management. Ed EG Bradshaw, H T Davenport. (Pp xv+191; £25.) London: Arnold, 1989. ISBN 0-7131-4560-9.

Progress in Surgery Vol 3. Ed I Taylor. (Pp x+227; figs; £17.50 paperback.) Edinburgh: Churchill Livingstone, 1989. ISBN 0-443-03959-3.

Reoperative Gastrointestinal Surgery. Ed T T White, M W Mulholland, R C Harrison. (Pp xii+299; figs; £50.) Connecticut: Appleton and Lange, 1989. Distributed by Prentice-Hall International. ISBN 0-8385-8390-3.

Third world

Rheumatic Fever and Rheumatic Heart Disease in Developing Countries. BL Agarwal. (Pp 144; figs; Rs75.) Bangalore: Arnold Publishers, 1988. ISBN 81-7031-155-1.

Urbanization and Its Implications for Child Health: Potential for Action. World Health Organisation. (Pp vi+80; figs; \$12.80 paperback.) Geneva: World Health Organisation, 1989. ISBN 92-4-156123-8.

Toxicology

The Toxicology of Chemicals. "Carcinogenicity: Summary Reviews of the Scientific Evidence. Vol 1." Commission of the European Communities: Industrial Health and Safety. (Pp vi+184; ECU 15.) 1989. Office for Official Publications of the European Communities, Jean Monnet Building—C4/73, L-2920 Luxembourg. ISBN 92-825-9381-9.

Ultrasound

Clinics in Diagnostic Ultrasound. Vol 25. "Diagnosis and Therapy of Fetal Anomalies." Ed J C Hobbins, BR Benacerraf. (Pp xiii+324; figs; £35.) New York: Churchill Livingstone, 1989. ISBN 0-443-08609-5.

Urology

Essential Urology. N Bullock, G Sibley, R Whitaker. (Pp vii+342; figs; £9.95 paperback.) Edinburgh: Churchill Livingstone, 1989. ISBN 0-443-03841-4.

Urinary Calculi: ESWL, Endourology, and Medical Therapy. JE Lingeman, L H Smith, JR Woods, et al. (Pp xvi+460; figs; £36.30.) Philadelphia: Lea and Febiger, 1989. ISBN 0-8121-1187-7.

Urological Pathology. WM Murphy. (Pp x+603; figs; colour plates; £78.) Philadelphia: Saunders, 1989. Distributed by Harcourt Brace Jovanovich. ISBN 0-7216-2417-0.

Miscellaneous

Glossary of Medical Terminology for the Health Professions. Ed J Willey. (Pp ix+302; £18.25 paperback.) New Jersey: SLACK, 1988. Distributed by John Wiley and Sons. ISBN 1-55642-056-0.

The God Squad. P Doyle. (Pp 204; £3.99 paperback.) London: Corgi, 1989. ISBN 0-552-13582-8.

Life in Research. D Richter. (Pp vii+170; £3.95 paperback.) Sutton: Stuart Phillips Publications, 1989. ISBN 1-869808-01-0.

Loss of the Good Authority: the Cause of Delinquency. T Pitt-Aitkens, A T Ellis. (Pp x+264; £14.95.) London: Viking, 1989. ISBN 0-670-82493-3.

On Art and Therapy: An Exploration. M Thomson. (Pp x+118; £6.99 paperback.) London: Virago, 1989. ISBN 1-85381-045-2.

Positive Health Guides. "The Breast Book." J Cochrane, A Szarewski. (Pp viii+135; figs; £5.99 paperback.) London: Optima, 1989. ISBN 0-356-15416-5.

Tradition and the Biological Revolution: the Application of Jewish Law to the Treatment of the Critically Ill. DB Sinclair. (Pp x+118; £19.95.) Edinburgh: Edinburgh University Press, 1989. ISBN 0-85224-636-6.