

Papers and Originals

Accidents to Old People in Their Homes

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Among young people the morbidity and mortality attributable to traffic accidents is already reaching disturbing proportions, but various kinds of accidents to older people are no less serious a medico-social problem of the times. A society like our own, with a large and still-increasing proportion of the elderly, must do everything possible to reduce the high accident rate among them because, humanitarian considerations apart, it throws a disproportionate strain upon medical, surgical, orthopaedic, and social services.

Three out of four fatal accidents in the home involve people aged 65 years or more, and in more than half the victim is over 75. In 1964 3% of all the deaths of men and 4.8% of all the deaths of women of 65 and over were attributable to accidents rather than disease (Boucher, 1966). Old people spend relatively little time out of doors. We recognize that they are specially at risk in traffic, yet some 80% of the accidents which befall them are mishaps in the home environment. Many of these could be prevented: here, then, is a fruitful field for endeavour.

Of all accidental deaths of old people at home 95% are attributable to a burn or scald, to coal-gas poisoning, or to a fall. Burns are especially dangerous to them, for at the age of 70 a 10% area burn carries a 50% mortality (Bull and Squire, 1949). Further, of our 900 coal-gas-poisoning deaths a year three-quarters occur in old people: in this age group these are mostly accidental, not suicidal happenings. But falls are the greatest problem of all, and in nine out of ten of all fatalities from falls the victim is elderly.

Large numbers of hospital beds are required to care for these elderly victims of mishap; many of them need to stay in hospital unusually long, and as a group they are at great risk there from post-traumatic complications, and from the bedfast state generally. Even when accidents are not fatal and do not necessitate admission, they sap confidence and generate insecurity and fears, the most inhibiting of which is the fear of falling. This often leads straight on to immobility, increasing dependence on others, and so to family stress and social breakdown. The ultimate decline of many previously vigorous elderly personalities can be traced to an accident.

Causation—Physical Characteristics of the Elderly

Perhaps the causes of accidents to old people are easier to define than they are among other groups. The elderly are more inclined to overcautiousness; they seldom take a calculated risk in dangerous circumstances; they often fail to appreciate a danger. The root of their troubles lies, therefore, either in their reduced physical capabilities or in the home environment itself. Individual variation is wide, and performance cannot be closely correlated with age. Nevertheless, one must expect normal senescence to carry with it predictable limitations.

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Avoidance of accidents demands efficient special senses; but many old people will not report or not even be aware of their deficiencies. We must accordingly think for them, and see that they have glasses for their presbyopia and an aid for their defect of hearing, where that is a practical possibility. One in three of all retired people cannot smell efficiently, and cannot therefore detect escaping gas (nor, perhaps, hear it either). Though this olfactory defect cannot be remedied, it can at least be tested for, and a timely warning uttered.

The lengthy studies by Welford and his colleagues at Cambridge on the abilities and skills of normal older people have revealed one factor which is of special importance in the present context: as they grow older they exhibit slowing in sensorimotor activities. Analysis shows that, though nerve-conduction and muscular movement are not much retarded, there is a significant slowing of the central processes for perceiving signals and shaping the appropriate response. In other words, there must be an appreciable time lag between perceiving a hazardous state of affairs and taking avoiding action. This applies particularly to the performance of an old person at the kerbside—and all road users should be aware of this difficulty. It is equally relevant in many home situations.

Amnesia is often observed in healthy old age. It may go beyond normal limits when mental disorder is threatening. Either way it may constitute a risk by causing things to be left in dangerous places to be tripped over, by allowing gas-taps to be left on unlit, or by leading, via a state of disorientation, to unpredictable and apparently quite irrational actions.

Highly significant studies of balancing mechanisms in old people have been made by Sheldon (1963, 1966). He has demonstrated that, for humans, standing erect is something which has to be learned; it is not a built-in mechanism. The amplitude of body sway which develops while standing in a relaxed state is wide in young children; it diminishes gradually in adolescence, is least in middle life, and increases after the fifties, especially if there is no visual control of the response. Some of the reflex actions which really old people employ to correct their sway are large, late, and sometimes inappropriate. So there seems in old age to be a breakdown of an acquired skill, which results in great difficulty with balancing. Sheldon relates how old people have summed it up, "Once you're going, you've got to go!" There is no doubt that accidents to old people occur most often when they are changing their posture—while getting out of bed, rising from chairs, or getting up from a sitting position. We must direct our preventive activities especially to these times.

Cerebral blood-flow is often critical in the aged, and many diseases may temporarily reduce it below the safety limit. To the quasi-physiological causes of falls and accidents already mentioned, then, must be added certain states of disease. Among them cardiovascular and cerebro-vascular insufficiencies rank high. Certain syndromes which are uncommon among young adults are often met with in geriatric practice. They include

postural hypotension, "silent" cardiac infarction, "little strokes," which are usually examples of internal carotid or basilar artery insufficiency short of actual thrombosis, and those transient attacks of disturbed consciousness which occur when old people occlude their vertebral arteries by throwing their heads backwards while reaching up to high shelves. Other common disorders which predispose to falls are vertigo, Parkinsonism, and locomotor disease and weakness generally.

Causation—The Environment

It is an unhappy fact that many of our elderly people are domestically as well as in other respects very ill provided for, just at a time when their powers are waning and their lives and limbs are most at risk. Their houses are old-fashioned, too large for them now that the family has grown up, in poor repair and even worse decorative order, with antiquated plumbing and faulty electric circuits. They are often cold and draughty: hypothermia is not the least of the risks to life which old people run. Much of their washing, cooking, heating, and lighting equipment is out of date, inefficient, and sometimes positively dangerous. The likelihood is that their furniture is decrepit and unfit for the sudden strains they may throw upon it. Soft furnishings from a bygone era may be heavy and tattered, and the paintwork is often dark and the windows half obscured, just when more light is needed to counteract failing vision. Many old houses, especially in the country, are built on several levels with unexpected steps, sills to internal doorways, and outside lavatory arrangements.

Specific hazards that are well known but still go uncorrected include unguarded fires, carpets not tacked at the edges, loose and holed mats (appropriately called "slip mats"), and trailing electric flex. It is often suggested that the gross clutter of furniture in some old persons' living-rooms is hazardous in itself, but many of them would not be able to get about without something to cling on to always within reach. Such people become immobilized with fear in the open spaces of a ward or welfare home.

In particular the stairs present a risk. One-third of all accidents to old people at home occur here. Staircases are often steep, sometimes spiral, and perhaps have one handrail but sometimes none, and are almost invariably badly lit.

In many instances the things which are wrong with the environment could have been corrected earlier by foresight and planning on the part of the occupier now grown old. But so seldom have any positive steps been taken, even for safety's sake. Sometimes the impediments were conservatism, apathy, and lack of imagination: more often, with the present generation of retired people, there was no money to spare for modernization. The next generation can avoid the same traps, but only if they consciously prepare for their own retirement. Things can often be put right by sons and daughters, or by local authorities' officers if family support is lacking, but they have to be shown the way by those who are able to assess the hazards. This means the family doctor, home nurse, health visitor, local authority medical officer, or the consultant through whose hands the elderly patient has lately passed.

Often it will be greatly to a frail patient's advantage to live entirely downstairs, but personal prejudices against this are apt to be strong, and the hazards of the staircase are seldom accepted as sufficient justification for a new way of living. Rehousing is the only practical solution for the bad cases, of which there are so many. Here again the suggestion may not be agreed to, and if it is accepted there is a long wait on the local authority's housing list. But the doctor can, and should, vigorously support a claim for rehousing where the old environment is clearly hazardous. Even so, built-in safety factors cost money, and they are often conspicuously absent in the new quarters offered to old people.

Falls

Before we consider detailed methods of preventing home accidents it is appropriate to give more attention to falls. The high incidence and the heavy mortality from this cause have already been mentioned. Women are twice as often involved as men; but there are more elderly women than men. The danger from falls rises sharply with age: those over 80 have eight times greater mortality from tumbling than have those of 60. Many are instinctively aware of the risk of falling, and their caution makes them rise most carefully from their chairs. Unfortunately this fear keeps too many of them too long in chairs.

Sheldon (1960) made an analysis of 500 falls in people over 50. The largest group, but still only 34% of the total, were purely accidental, and presumably most of these could have been prevented. Loss of balance on a slippery surface accounted for a quarter, and a further quarter were attributable to "drop attacks" in which, while standing, they tumble abruptly without loss of consciousness but in a state of hypotonicity, and may then lie several hours incapable of getting up. Muscular tone, as well as normal physical activity, returns at once if they can be got standing again. The cause of "drop attacks" is still uncertain, but they are a potent cause of injury, and in adverse circumstances they may add to the year's list of hypothermia cases. The statistics of Boucher (1959) giving the geographical distribution of fatal falls are interesting. The death rate from this cause is twice as high in Scotland as it is in Southern England, and there is a steady gradation from north to south. It suggests the possibility of climatic factors.

Prevention

The first preventive step is to see that the older patient is personally well equipped, with glasses and hearing-aid if necessary, and with sensible clothing and above all with well-fitting lace-up shoes. Loose shoes and bedroom slippers so beloved of the elderly (often because of painful feet, which could be attended to) are unsafe, and produce a poor, shuffling walking performance. It is essential they should lift their feet clear of the ground and over any low obstacles which cannot be eliminated, and good shoes are a prerequisite for this. They should also have good, upright, easy-chairs with the correct height of seat (many being too low) and easily grasped arms, and they should be taught how to get up correctly and safely, consciously pausing to get their balance. Those who need them must be encouraged to use plain rubber-tipped walking-sticks of the right length. For the frailer patient a tripod or four-footed walking-stick or pulpit-type lightweight aid gives much greater stability. These various aids for home use are obtainable on loan from local authority sources under the provisions of Section 28 of the N.H.S. Act. The refusal of some old people to be dependent on walking-aids can be admired, but usually it would be more prudent of them to pocket their pride and remain mobile with this help. Sticks should be regarded as honourable, not as badges of decrepitude.

The next step is for the hazards of the patient's particular environment to be noted in detail. A check-list would be helpful, but in practice this detective process demands close personal observation and use of the imagination. Similarly, the elimination of hazards is just as much a matter of applying common sense and ingenuity as of importing standard gadgets. The environment of old people is not uniform, so safety measures have to be bespoke. Unfortunately they require funds. Under the same section of the Act a local authority is empowered to make adaptations to houses and provide means by which handicapped people can reasonably live at home. The relevant phrase is, "may . . . make arrangements for the prevention of illness . . ." and there could be no question that practical steps to prevent accidents can have this interpretation. In most places the local authority gives this sort of assistance, through the medical officer of health or chief welfare officer or housing

manager. Where this is not the case it is time for medical pressure to be applied locally. Experience shows that when an application for adaptations is made on behalf of a patient it must indicate precisely what is required. Therefore it behoves the doctor to know just what is called for in the circumstances. Consultants in geriatrics are able to give help in such matters. In this way it is possible to get awkward steps replaced by ramps, for the hanging of doors to be reversed, and grab-handles and extra handrails to be installed.

Highly polished floors are dangerous, but so are floors which are badly maintained. Good lighting is vital, especially in halls, on landings, and on stairways, where it seems customary to have the minimum. The extra running-cost of, say, 100-watt lamps as compared with those of 40 watts is negligible when they are only intermittently used; and light-coloured paint costs no more than dark.

Bedroom

In the bedroom points to notice are that the bed should be high enough for the patient to get out easily, but not so high as is optimal for nursing. Low beds can be raised with the help of a joiner. Alternatively this is one of the many possible uses for Dexion slotted angle-iron in making the home environment safer. Unstable furniture like wardrobes, at which a frail person might clutch, should be fastened to the wall, as toppling and crushing accidents in the bedroom are all too common. There should be no loose mats. Some heating is necessary, as cold bedrooms are of themselves hazardous. Open fires and free-standing oil-stoves are clearly to be avoided, and the best bedroom appliances are either electric convector, fan, or night storage heaters. Or a wall-mounted electric fire above head height, aimed downwards and fitted with a cord-operated switch, will serve well.

Bathroom

In the bathroom the slipperiness of the bottom of the bath and of a wet floor are the main problems. Non-slip mats with suction cups within the bath itself are ideal; a fitted synthetic-fibre carpet in the bathroom is comfortable and very safe but too expensive for many pockets. It is possible to obtain baths with built-in handles, but more practical is a hinged bath-handle to fix over the taps. Alternatively, handles can be fixed strategically to the walls. Steps can be fitted close to baths to give safer access, and portable wooden seats are available for resting inside the bath so that the older person can sit higher and so get out more easily. Gas water-heating appliances in bathrooms are risky for old people. The room itself should be heated by a wall-mounted strip or bowl electric fire, out of reach.

Landings and Corridors

On landings and corridors a wall bar at some 34 to 38 in. (86 to 97 cm.) from the floor will give greater confidence to the frail, and there must be no unnecessary obstructions at floor level. Ideally, in purpose-built old people's quarters there can be a lighting panel or two at skirting-board height, especially at the head and foot of the stairs. On the staircase a second wall-mounted handrail is most valuable, especially if the patient is already handicapped by a locomotor disability. Accidents on the stairs are usually caused by misjudging the first or last step, and the risk is all the greater for the partially sighted. A small knob could be appropriately fixed on the banister to give warning. Some vulnerable old people have to be advised to go downstairs in the sitting position, sacrificing their dignity for their independence. In the lavatory strategically placed handles are a great help, and the water-closet seat must not be too low. There are detachable devices for raising the height of the seat, and portable frames to place over the pedestal to give help in rising.

Living-room

In the living-room points to observe are that the floor coverings are all fixed and in good repair, lighting is adequate, electric flexes are short, windows easy to open and close, tall curtains operated by cords, loose mats eliminated, and all fires suitably guarded. For old people who are known to be unsteady but who insist on open fires, a nursery-type guard fixed to the wall is necessary, and all electric fires without the statutory guards should be banished. If oil-heaters have to be used they should be of the cabinet, blue-flame, convector kind, and these can be fixed to a wall. Stooping tends to be hazardous, and power-points or even gas-taps can be mounted at waist height.

Kitchen

The kitchen is inevitably a dangerous place, but a great variety of adaptations are possible in the interests of safety. For the reason already given, high shelves and cupboards should not be used, and low cupboards necessitating stooping are hardly any better. Where the money is available an older person can be encouraged to install a sink water-heater to reduce the need to carry kettles and a new gas cooker with automatic or push-button ignition, eye-level grill, and glass-fronted oven door. Many burning accidents happen because hot pans have to be moved about or are knocked off the burners. But it is possible to fix vertical slots on the sides of a cooker in which saucepan handles rest safely, and a short shovel-shaped device of wood and metal can be slipped under a hot dish in the oven to save the use of an oven cloth. A small trolley on castors, matched in height to the stove or table, makes the transport of hot dishes easier. Those who are obliged to move with a stick or holding on to furniture are at a loss at the sink or working surface because they can spare only one hand; but they can free the other by having a broad strap, with clip fastenings to go into fixed eyes, to pass behind them and steady them while working. For those who find stooping upsetting there are a variety of long-handled mops, brooms, dustpans, and reaching-tools. There is also a large selection of aids, gadgets, and improvisations to assist those of all ages with residual hemiplegia and other disabilities to wash, dress, climb stairs, attend to their toilet, and cook, all in reasonable safety.

Conclusion

In conclusion something can be said of attitudes, generally, to the risk of accidents. The relatives of older people commonly dissuade them from activity lest they should fall. This may indicate overprotectiveness, but it is often because they are afraid they themselves will be blamed for a mishap; or they fear the opinions of their neighbours, or, ultimately, the chance of strictures from the coroner. Family doctors may be tempted, too, to be cautious and "forbid" an old person to move about or live alone, contrary to his or her inclinations. These attempts at veto may be worrying to an independent-minded patient, and may eventually create more medical and social problems than they solve. It is impossible to protect all old people from all risks at all times: there are certain risks in living life at any age, and many elderly people are prepared to accept the risk of falling, even when alone. In my opinion they should be allowed to do so, provided they are not suffering from gross ataxia or a strong proclivity to syncope, and provided that the worst deficiencies of their environment have been corrected. In the end their own wishes must prevail, provided action under the Mental Health Act is not appropriate.

Contrary to common belief admission to hospitals or welfare homes does not solve the safety problem; in several respects they are not particularly safe places, and numbers of accidents, particularly falling accidents, take place in them which might not have happened in the familiar surroundings of home.

The real future of good general and geriatric practice lies in prevention. In the matter of home accidents to the elderly, at least, there is the greatest possible opportunity for simple, practical countermeasures to reduce morbidity and mortality, while at the same time encouraging patients to greater independence.

Appendix

Below are given the sources of information about aids for the disabled, the elderly, and those at risk from accidents in the home:

1. *Equipment for the Disabled*, vols. 1–4. Published by the National Fund for Research into Poliomyelitis and other Crippling Diseases, Vincent House, Vincent Square, London S.W.1. Loose-leaf volumes, profusely illustrated, some with commercial sources quoted, others with examples of adaptation of common objects.

2. *Gadget Leaflets*. Published by the National Association for the Paralysed, 1 York Street, Baker Street, London W.1. Lists of aids, with some line drawings, and certain commercial sources stated. (N.B.: Cooker safeguard well illustrated.)

3. *Practical Aids for the Disabled*. Published by the British Red Cross Society, 14 Grosvenor Crescent, London S.W.1. Illustrated with line drawings of aids, mostly of the do-it-yourself variety.

4. *Everyday Aids for the Disabled*. Published by the West Sussex Association for the Care of Cripples. Oriel House, County Hall, Chichester. Simple do-it-yourself type aids; illustrated line drawings.

5. *Aids for the Disabled*. Price List H/4. This is a pamphlet with a list of commercial suppliers at the end, and is published by the Home Department of the British Red Cross, 14 Grosvenor Crescent, London S.W.1. Dated January 1965.

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Poisoning in the Home by Medicaments

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Accident prevention is an important responsibility of all medical practitioners. Perhaps their greatest contribution should be the prevention of poisoning in the home from the ingestion of medicaments. In adults acute poisoning accounts for approximately 10% of all medical admissions; in children about 3% of all medical admissions are due to accidental poisoning. In certain cities more children die each year from poisoning than from the following communicable diseases combined: measles, rubella, poliomyelitis, tuberculosis, rheumatic fever, scarlet fever, and streptococcal infections. Backett (1965) has shown that domestic accidents are now an important cause of death; in developed countries mortality at all ages from domestic accidents is twice that from tuberculosis. Of these domestic accidents a proportion are due to poisoning and gassing. The percentage of fatal accidents (Fig. 1) due to poisoning and gassing in the various countries for which statistics are available shows that Scotland is in the unenviable position of having the highest incidence of death from these causes. Part of the explanation is that death certification in Scotland is more lax, and deaths due to suicide are often charitably designated accidental. In support of this, suicide is commoner in the other countries mentioned.

In this article, therefore, a number of so-called accidental poisonings in adults will be included as accidental, although very often in fact they have been instances of attempted suicide or self-poisoning (Kessel, 1965) and in no way mischance. Self-poisoning is the main cause of the marked rise of poisoning in adults which has occurred over the past 20 years. Fig. 2 shows the steady rise in admissions of poisoned patients to the Poisoning Treatment Centre of the Edinburgh Royal Infirmary. This is therefore a major epidemic. Eighty per cent of the 812 patients admitted last year were suffering from self-poisoning, 10% were truly suicidal, and only 10% genuinely accidental. Self-poisoning is most frequent in the early twenties, and this is three times more common in young females than in young males. In the older age groups the incidence is the same for both sexes (Fig. 3).

Poisoning in Children

In most children incidents of poisoning are accidental, but it is not uncommon in Scandinavia for children aged 11 to 15 to indulge in self-poisoning. Britain tends to follow Scandinavia in the pattern of self-poisoning, and there is evidence that even in the younger groups accidental poisoning is on occasion not in fact mischance but a pattern of purposeful behaviour. This should be suspected, especially when several episodes of poisoning occur in the one child. Another important aspect of the problem is therapeutic poisoning, which occurs in infants and toddlers, particularly with salicylates.

However these episodes are classified—self-poisoning, attempted suicide, genuine suicide, accidental, deliberate, or therapeutic poisoning—an outstanding factor in the rising incidence is the availability of medicaments and household preparations. It is important, therefore, to consider how this danger can be lessened or prevented.

In children the hackneyed advice regarding the locking up of all medicines cannot be too often repeated. Iron tablets and salicylates remain the commonest forms taken; but this is simply a matter of ready availability and not necessarily choice on the child's part. Judging from the number of inquiries from the National Poisons Information Service contraceptive pills are probably the third most common medicaments accidentally taken by children. Children are often attracted by the colour of tablets and their resemblance to sweets, and this danger may be increased by harassed parents describing them as such to persuade the child to take medicine. This is a mistake which many a parent has lived to regret when later confronted with their child poisoned by "sweets."

In the prevention of accidental poisoning in children there is no alternative to the safely positioned, locked medicine cupboard. The family doctor should regard it as part of his contract in looking after a family to attend to the medicine cupboard, and also ensure that household preparations, such as bleach, are removed from their time-honoured, readily get-at-able site beneath the sink.

Children, especially toddlers, are very susceptible to the toxic effects of salicylates. These may occur even with modest doses

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