

Child-resistant containers for drugs

During this century accidents have supplanted infections as a major cause of death and morbidity in children: accidental poisoning contributes substantially to such statistics. Poisoning is common, with nearly 15 000 children admitted to hospital in 1978 after ingestion, but it is rarely fatal (about 20 deaths annually in England, Wales, and Scotland). About 75% of poisoning deaths are caused by medicinal substances and during the last 20 years there has been a change in such drugs: deaths from salicylate poisoning have fallen, deaths from tricyclic antidepressants and diphenoxylate (Lomotil) have risen, and deaths from barbiturates remain at the same level.¹ Childhood poisoning is the result of deliberate self poisoning in older children, deliberate poisoning by adults (child abuse), or, most commonly, accidental ingestion, generally by the young child. It is to this group that energetic efforts in prevention have been addressed.

Three proposals have been made to reduce childhood poisoning: (1) Education of parents, children, and the public. (2) Locking tablets and medicines in child-resistant cupboards. (3) Supplying drugs in containers which children find difficult to open.

Local intensive education may result in a reduction in poisoning, or in a harvest of unwanted tablets but the effects are shortlived. Furthermore, it is becoming clear that there is more to poisoning than availability of drugs; psychosocial factors—such as family stress and the personality of the child—are important in the aetiology of child poisoning and are difficult to modify by current educational methods. Cupboards that lock are used only by a minority of the population and do not merit further discussion. Child-resistant containers (CRCs) are more likely to be successful since they are a passive means of prevention and do not leave the matter to parental initiative. It must be stressed that CRCs are not child *proof* and accidents may still occur but the chance of an accident is less likely.

History of child-resistant containers

In 1968 the Hill Committee reported on the hospital treatment of acute poisoning and drew attention to the rise in the number of poisoned children admitted to hospital: representatives of the British Paediatric Association and the Department of Health then

met to investigate the matter. At the same time the results of investigations into the use of CRCs in North America suggested that poisoning would be reduced to 15% of former levels by the use of CRCs.^{2,3} In 1974 a working party of the UK Medicines Commission recommended that hazardous solid dose medicines should be unit packaged (bubble packs)—but that use of CRCs should not be compulsory. Regulations came into force in January 1976 requiring that children's aspirin and paracetamol tablets sold over the counter be packed in CRCs and a voluntary scheme covering dispensed aspirin and paracetamol followed shortly. Since 1977 adult aspirin and paracetamol preparations have been sold in CRCs.

Effects of their use

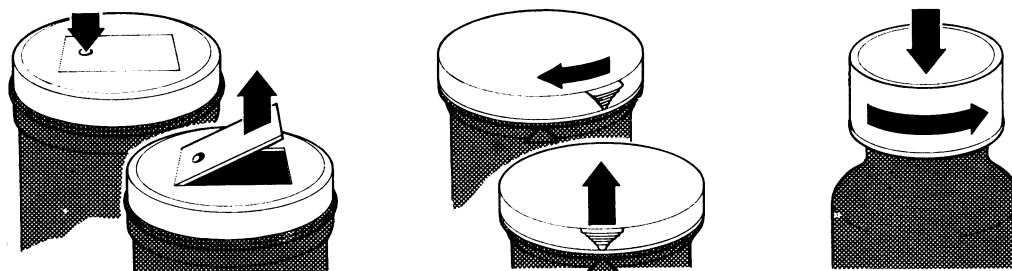
Since 1976 the overall incidence of childhood poisoning in the UK has fallen and aspirin and paracetamol poisoning have dropped by about half.⁴

Types of child-resistant containers

Three opaque reclosable CRCs are used in Britain (Figure). The *pop-lok* is useful for tablets only. The dot is pressed and the free end of the tab springs up and is grasped to pull off the cap. *Snap-safe* caps can only be pushed off when the arrows on lids and containers are aligned: again, they are suitable for tablets only. *Clic-loc* is a screw cap with an inner bevelled rim screwed on to the container which cannot be unscrewed unless an outer rim is pushed down during the rotatory opening movement. It can be used on standard tablets or medicine bottles. The other form of child-resistant packaging is the dark coloured unit or bubble pack. CRCs must conform to a British Standards Institution protocol requiring that 80% of a test panel of children under 5 years cannot open such containers after a single demonstration, but that 90% of adults must be able to open them using written instructions.

A new provision

A voluntary agreement between the medical and pharmaceutical professions to dispense all solid-dose preparations in CRCs came into force in March 1981. This has been criticised⁴ because public



POP-LOK (solids only)

SNAP-SAFE (solids only)

CLIC-LOC (solids or liquids)

Figure Three types of child-resistant containers commonly used in the UK (reproduced by permission of the Consumers' Association, *Drug and Therapeutics Bulletin*, 17, No 3).

opinion may turn against CRCs and drug compliance may falter. A sensible compromise would be to use CRCs for those drugs known to be harmful to children (antidepressants, digoxin, barbiturates, and iron) but to leave others in bottles with conventional screw tops.

Disadvantages

The use of CRCs inevitably has snags. The old and infirm⁵ may not be able to open CRCs and may transfer the contents to a less safe receptacle. However, patients can ask to have their tablets and medicine in conventional screw top bottles. The mechanism may fail⁶ and children may open child-resistant tops⁷ or bite through unit packaging⁸ but these risks are lower than that of poisoning. Another concern is that parents will become less vigilant when relying on CRCs; this may be so, but the statistics since 1976 suggest that there are fewer cases of poisoning from all causes, so perhaps CRCs are a regular reminder of such hazards. When public opinion is sought (rather than anticipated) people of all ages broadly accept their value.⁹

Cost

Snap-safe and pop-lok tops are the same price (about 1.5 or 2.5p) as ordinary tops; clic-locs are between 50 and 100% more expensive.

Other measures

If the number of tablets available for ingestion were to be reduced the risk of serious poisoning should also be lower. Packs for children should not contain more than 25 doses and tablets for children should be white and should not resemble sweets. Adult preparations can be of any colour but packs containing more than 25 doses will soon be restricted to pharmacies.¹⁰ Lastly, doctors should consider if

certain drugs such as tricyclic antidepressants for nocturnal enuresis are necessary; practices such as 'the prescription of 250 analgesic tablets . . . for a short-term self-limiting disorder such as influenza (are) to be deplored.'¹¹

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