

Accidental poisoning is common among young children.

As a natural part of their early development children explore their environment using their senses to 'play' with items that are new to them. They cannot differentiate between items that are safe and items that may be harmful. The responsibility lies with the child's parent or carer to ensure that proper precautions are in place to avoid a child gaining access to harmful substances.

Most cases of child poisoning happen within the home when items are left ready to be used, in sight or unattended by adults. Other cases occur when a child has climbed up somewhere high or got into a cupboard and inadvertently accessed harmful substances. In this case a certain level of responsibility lies with manufacturers to ensure their hazardous products are as difficult as possible for young children to open.

Children accessing medication is one of the major causes of accidental poisoning. The rise in adults taking medication, such as antidepressants or sleeping aids, has contributed to the increased incidences of accidental poisoning in children. The number of drug poisonings among children rose by 22% between 2001 and 2008. Researchers believe that this dramatic rise is purely because there are more drugs in the home that can be accessed by curious children.

Researchers from Cincinnati Children's Hospital Medical Centre and the University of Cincinnati recently analysed data on 544,133 children that had visited the emergency department between 2001 and 2008 after accidental medication poisoning.¹ In 95% of the cases the child had gained access and ingested the drug by themselves, rather than receiving a dosage error from their parent or guardian.

Prescription drugs were a bigger problem than over-the-counter too. In all, prescription drugs accounted for 55% of these cases, with 43% of these children admitted into intensive care after going to accident and emergency. Again, the researchers attributed this to the fact that more adults are using prescription drugs to combat a variety of diseases and conditions. The authors of the research also suggested that the best method to combat these high numbers would be to design new packaging for both adult and paediatric drugs that is not only difficult for children to open but is also more difficult for young children to ingest the contents in large quantities.

The World Health Organization (WHO) concurred in its Report On Child Injury Prevention in 2008: 'Child-resistant packaging is one of the best-documented successes in preventing the unintentional poisoning of children.' The first locking device for medical containers was invented in 1967 by Dr Henri Breault. According to WHO, unintentional poisoning deaths among children fell from 151 per 100,000 in 1968 to 23 per 100,000 in 2000 after this introduction.

There is plenty of evidence to suggest that child-resistant packaging is directly related to a reduction in accidental



Child-safe packs: a renewed quest

As medication levels among the general population increase, the risk for children to be accidentally poisoned also rises. **Tim Bollans**, Marketing & Sales Executive, Burgopak Healthcare & Technology, explores the growing need for child resistant packs

poisoning among children. However, with the rise in cases being reported since 2001 there has to be more the industry can do to ensure packaging is difficult for a child to get into. It is impossible to completely 'child proof' a product, but with medicine becoming more commonplace in every household the

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pharmaceutical and healthcare industries are realising the need for child-resistant packaging, particularly in the US where the trend is more marked than in Europe.

A history of accidents involving children opening household packaging and ingesting the contents led the US Congress to pass the Poison Prevention Packaging Act (PPPA) of 1970. This gave the US Consumer Product Safety Commission the authority to regulate this area. The regulations are based on protocols of

performance tests of packages with actual children to determine if the packages can be opened. The PPPA of 1970 specified that nearly all prescription drugs (and certain OTC drugs) intended for household use be shipped in 'child-resistant' formats. The increased number of people taking medication in the US has led to developments in child-resistant packaging since 1967. All innovations are subject to the rigorous testing mentioned above, which they can either pass or fail, but it is also possible to assess their effectiveness during everyday use by the consumer.

Which innovations offer the highest level of child resistance while being convenient and easy-to-use for the adult consumer? Traditionally, medication is packaged in two formats, blisters



Packaging should also reduce the chances and ease of ingesting large quantities of medicinal products

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and bottles, and there are child-resistant versions of both. More recent child-resistant packaging is delivering better solutions for the patient through ease-of-access, portability and increased compliance. Push-and-twist child-resistant bottle caps are probably the format that people are most familiar with. This child-resistant design has been on the market for a while and it is an effective barrier against children accessing potentially poisonous medication. With the bottle format, the room for innovation is quite limited beyond the push-and-twist design.

It is argued by many in the industry, that in terms of compliance, child-resistant blister packaging outperforms bottles. The child-resistant features used in bottles often become disabled. The caps can unintentionally be left off the bottles thus invalidating their child-resistant features. Bottled child-resistant medication can also prove difficult for elderly consumers to open, particularly those who suffer from arthritis or have reduced dexterity.

Child-resistant variations of blister packaging are more successful at achieving patient compliance. Another advantage of blister packs is that they allow for single cavity storage of medication, reducing the likelihood of contamination or incorrect dosing. A good example of a child-resistant blister on the market is GP Solution's Dose Guard. Dose Guard is a secondary barrier that, when applied to the back of a blister pack, will render it child resistant. At the same time it offers improved senior access by incorporating a peel-and-push design. The self-adhesive barrier can be applied to any blister and requires the user to peel away a perforated tab before pushing the medication through the blister; the design comes in single or double layers.

Although child-resistant blister packs can be more effective compared with bottled versions, certain blistered solutions can still have limitations. By directly protecting the blister some manufacturers may force the patient to access the medication by means other than those instructed – for instance, with scissors. Solutions that directly protect the blister while achieving child resistance are not the easiest of solutions to access. This can prove both problematic and frustrating for the consumer who needs access to their medication when in different environments, such as on an aeroplane. This phenomenon even has its own name: 'wrap rage' or 'package rage' – the common name given to the feeling of heightened anger resulting from the inability to open hard-to-remove packaging and access the contents.

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Pharmaceutical and healthcare companies are required by law to produce packaging that is child resistant, but also have to ensure that the medication is easily accessible to the consumer or patient who needs access to it. Child-resistant packages that are able to offer ease of access to patients, while keeping young children out will be successful within the marketplace. But child-resistant packs need to offer both increased portability for those who need their medication on the move, and also encourage compliance from the patient.

Those that also have these attributes will have more chance of being successful in the market. For instance, a design that permanently connects the outer carton, product and patient information will offer maximum opportunity for the patient to comply with their course of treatment. Keeping the medication and information together reduces the risk of dosage mistakes or the patient incorrectly following the information provided by the manufacturer. Packaging that provides the above can also be more compact than traditional pharmaceutical packaging, making it easier for the patient to carry their medication with them, which in turn increases the likelihood of them complying with their treatment.

Child-resistant packaging has been a part of the pharmaceutical and healthcare industries for the last 45 years, but only recently has the need for real innovation been at the forefront of the industry. The increased number of people taking medication has led to a rise in potentially harmful drugs being commonplace in households across the globe. Unfortunately, with this rise, there have also been more reported cases of accidental child poisoning, pushing the need for innovation in the pharmaceutical packaging industry.

There are a number of new solutions on the market that are effective barriers to stopping children accessing potentially harmful medication. Products that combine this safety element yet still provide ease-of-access to the user are gaining a good command in the marketplace. Conversely, packaging companies need to look at the portability of their packaging and whether their products encourage compliance from the patient. A packaging design that encompasses all these components will have the greatest opportunity for success.

REFERENCE

1. The Growing Impact of Pediatric Pharmaceutical Poisoning by G. Randall Bond, Randall W. Woodward, and Mona Ho, The Journal of Pediatrics, Vol. 160, 2, p265-270.

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