Accidental poisoning is common amongst 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. This 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 anti-depressants or sleeping aids, has contributed to the increased incidences of accidental poisoning in children. The amount of drug poisonings among children rose 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.

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 and 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 adults and paediatric drugs, that is not only difficult to open, but would also make it more difficult for young children to ingest large quantities.

The World Health Organization (WHO) concurred in their Report On Child Injury Prevention in 2008: “Child-resistant packaging is one of the best-documented successes in preventing the unintentional poisoning of children.” In 1967, Dr Henri Breault invented the first locking device for medical containers. According to WHO, unintentional poisoning deaths amongst 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 poisoning amongst children. However, with the rise in cases being reported since 2001, there has to be more the industry can do to ensure their 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 pharmaceutical and healthcare industries are realising the necessity of child-resistant packaging, particularly in America where the market is more prevalent than here 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 law 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 the first locking device for medical containers was introduced in 1967. All innovations are subject to the rigorous testing mentioned above, which they can either pass or not, but we can also assess their effectiveness in everyday use by the consumer. Which innovations offer the highest level of child-resistance whilst being convenient and easy-to-use for the adult consumer?

Traditionally, medication is packaged in two formats, blisters and bottles, both of which are available in child-resistant versions. 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. In terms of compliance, there have been a number of studies that have shown child-resistant blister packaging outperforms bottles. The child-resistant features used in bottles often become disabled. Their 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, decreasing 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 also offers improved senior access, by incorporating a peel-and-push
Child-resistant packaging has been a part of the pharmaceutical and healthcare industries for the last forty-five 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, which is 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 in the pharmaceutical and healthcare industries.

Although child-resistant blister packs can be more effective compared to bottled versions, certain blistered solutions can still have their own limitations. Through directly protecting the blister, some manufacturers may force the patient to access the medication by other means than those instructed, for instance with scissors. Solutions that directly protect the blister whilst achieving child-resistance are not the easiest of solutions to access packaged medication. This can prove both problematic and frustrating for the consumer who needs access to their medication when in different environments, like an aeroplane for instance. 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 its contents. Pharmaceutical and healthcare companies find themselves in a situation where they are required by law to produce packaging that is child-resistant, but they have to ensure that the medication is easily accessible to the consumer or patient who needs access to it. Finding this happy medium is what makes a successful child-resistant package.

Child-resistant packages that are able to offer ease of access to patients whilst keeping young children out will be successful within the marketplace. But child-resistant packs need both to offer increased portability, for those who need their medication on the move, and also to 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 in comparison to traditional pharmaceutical and healthcare packaging. This makes it easier for the patient to carry their medication with them, which again increases the likelihood of them complying with their treatment.

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