

More than boxes and bottles

Pharmaceutical packaging is a potential lifesaver





Although it is a common poison of choice in murder mysteries, arsenic was used as a cure for disease in the late Victorian era. From the questionable rituals of the Tudor period to lobotomies of the 1900s, through history we have seen too many crazy medical practices. Thankfully, today's pharmaceutical industry is far more sophisticated and more heavily regulated. However, it is not just medicine itself that has advanced, so has the pharmaceutical packaging designed to protect and store these products.

Here, Oliver Pittock, managing director of specialist packaging supplier, Valley Northern, explains the importance of pharmaceutical packaging and what pharmacies should consider when choosing what to invest in. The pharmaceutical packaging market is currently experiencing an annual growth rate of around five per cent a year, and is now estimated to be worth over £15 billion. However, as community and hospital pharmacies suffer under pressure to meet budgetary expectations, packaging selection can often fall to the bottom of the priority list.

Like other packaged goods, pharmaceuticals need reliable and cost-effective packaging solutions. However, the industry has more complex requirements for packaging than your average consumer products. Due to the sensitive nature of the industry, pharmacists must pay careful attention when choosing their packaging options.

In the United Kingdom, all medicines must meet guidelines set by the Medicines and Healthcare Products Regulatory Agency (MHRA). The Government agency is part of the Department of Health and regulates medicines, medical devices and blood components for transfusion. The MHRA was formed in 2003 and has since developed documents that set out the legal framework for labelling and packaging according to UK and EU legislation.

The most recent MHRA best practice guidelines, which were published by the agency in 2014, were written as part of a move towards an increase in self-regulation of pharmaceutical packaging. The document was developed to assist the decisions of pharmaceutical packaging manufacturers that are responsible for their own medicine labelling and packaging artwork.

Pharmaceutical packaging could be mistaken as a simple collection of bags and boxes to store medicines. However, the phrase actually defines the collection of components that protect a pharmaceutical product from its initial production, right up until its use by the patient.

For pharmaceutical packaging manufacturers, packaging should always to meet regulations and ensure patient safety. Packaging should offer product protection, high quality, patient control and be able to meet the associated regulations and security measures.

Product containment and protection

For liquid medicines, it is important for pharmacies to insist on high quality packaging that can hold contents safely and securely.

The packaging cannot be susceptible to accidental leaking, or for solid medicines, allow for any kind of diffusion or permeation of the product. The packaging should also protect the product against any external influences that can damage the quality or potency of the medicine. These influences could include light, moisture, oxygen or potential contamination.

For example, uncapped medicine bottles used to be standard practice for the pharmaceutical industry. However, storing bottles and their caps separately raises the potential risk of

contamination — especially if the products are stored in an unsterile environment.

Now, it is industry standard to use pre-capped medicine bottles as a measure to protect the cleanliness of the bottle itself. In comparison with uncapped bottles, pre-capped bottles guarantee contamination-free products and — from an efficiency perspective — reduce wasted time, as there's no need for pharmacists to have to match caps with bottles.

What's more, this method ensures that bottles comply with BS1679 Part 8 1992. Clause 7.1.2 of the standard looks at light transmission and ensures that the product inside packaging are not adversely affected by external factors.

Protection from counterfeiting

As with any lucrative industry, counterfeit products also affect pharmaceutical packaging manufacturers. The issue is not commonly reported in the United Kingdom, but counterfeit drugs are a reoccurring problem around the world — particularly in developing countries.

Sometimes, patients are buying and using completely useless or incredibly dangerous drugs, without knowing the difference between the fake product and the real thing. In fact, according to the World Health Organisation (WHO) more than 120,000 people die in Africa each year as a result of taking fake anti-malaria medication. Some of the drugs were not only a substandard product, but some contained no active anti-malaria ingredients whatsoever.

Most medication in the United Kingdom is available on prescription by the National Health Service (NHS), and over-the-counter products are subject to strict industry regulations. As a



result, counterfeit drugs are not such a highly reported problem. However, the industry should still take steps to tackle this potential risk.

According to statistics by the NHS, a colossal 2.7 million items are dispensed from pharmacies in England every day. Despite the large number of prescriptions dispensed, many pharmacists continue to select plain

white boxes to store the majority of their medicines. This basic design might be a stockroom staple, but they may not be best option for the patients using them.

For patient safety, pharmaceutical packaging manufacturers should make efforts to customise packaging, making it more difficult for fraudsters to replicate products for profit. Custom package seals, authentication labels, embossing, holographic markings and bespoke printing can all be valuable ways to increase the security of pharmaceutical packaging. Not only will this reduce the risk of pharmacies purchasing counterfeit goods, but protect patients from potentially dangerous fake medication.



Patient information and safety

Aside from the functionality and design of pharmaceutical packaging, it is also imperative for pharmaceutical packaging to provide patients with the necessary information to take the medicine correctly. Many pharmacies use plain white pharmaceutical packaging boxes, relying on package inserts and labels to deliver product details. By law, the ingredients and dosing information must be available. However, inserting a leaflet into an unambiguous white box is not the most reliable way to ensure patients read and acknowledge the information.

By comparison, a carton that is branded clearly as pharmacy medication with dedicated space for labels provides much higher levels of patient safety.

By selecting more distinct packaging, pharmacies can be assured that the medications they are dispensing to customers are clearly distinguishable from other boxed goods. Printing the word 'prescription' on a carton, while being a seemingly obvious inclusion, can often be overlooked by packaging providers, yet can help patients keep their vital medications in check. Other

simple additions to carton design, like including a pre-defined space for labels that give administrative or storage instructions, can make a real difference in patient safety.

Accidental overdoses also can also be avoided by using clearer labelling on pharmacy products. Particularly for elderly patients, clear labelling of pharmaceutical products can help to avoid accidentally mixing medicines or taking the incorrect prescription. If the patient is required to take multiple boxes of medication away from the pharmacy at one time, it is vital that the differences between each prescription is distinct and that the product name and dosing requirements are presented clearly.





Accurate dosing and child safety

Clear labelling is not just important for elderly patients. According to research by the Child Accident Prevention Trust (CAPT), 500 children under five are rushed to hospital in the UK every week because they may have swallowed something poisonous. Spotting a child with a plain white box is not an immediate alert to be concerned, but seeing them with a box that is clearly printed as a prescription item is.

By using clearly printed medicine cartons that are branded well when dispensing prescriptions, it is obvious that medicine is medicine, not a toy. This gives parents a greater chance to confiscate the product before any accidents happen and helps them to educate their child.

Cutting corners to reduce packaging costs can also lead to problems for parents associated with accidental incorrect dosing. Take precision syringes as an example, paediatric medicines are typically described in liquid form using these precision syringes. These plastic measuring tips are used to ensure accurate dosing for children's medicine. However, studies have shown that more than

40 per cent of parents commit dosing errors when dispensing liquid medicines to children.

In 2014, the Ministry of Health was forced to issue a warning to pharmaceutical giant GlaxoSmithKline, due to inaccurate dosing concerns by parents. The company was swamped with complaints that the syringe the company supplied with a children's pain relief product, Panadol, did not provide accurate measurements.

Parents were measuring the medicine dosage from a ridge around 1.5 millilitres higher than the tip of the syringe plunger, rather than the end of the plunger, as the company had intended. The confusion was not intentional, but naturally, it created confusion and anger among concerned parents.

Thankfully, the difference in volume for any potential incorrect measure of Panadol was incredibly small and the discrepancy fit comfortably within an accepted level of tolerance for the medicine. As a result, the syringe design was not recalled. However, there is still a valid argument that some parents may use the same dosing syringe for

other medicines, with a much smaller tolerance for inaccurate dosing.

Dosing errors are often blamed on poor drug labelling, packaging errors and incorrect dosing tools. Paediatric medicines are often adorned with colourful packaging, inviting mascots and a sweet, strawberry flavour. Because of this, parents are almost always advised to use plastic measuring syringes when administering the medicine to children. However, as the Panadol story suggests, this does not always guarantee a completely accurate dose.

Even when using an accurate plastic dosing syringe, the tools are not renowned for their high quality. Many brands of plastic dosing syringes have poor markings that can easily rub off after multiple uses. In these cases, each new dose can become less accurate.

To counteract this, pharmacies are encouraged to invest in high precision oral syringes — even for use with seemingly weak or paediatric medicines. Precision syringes should be designed in such a way that the markings are clear, with no room for confusion.

However, it is not just accidental overdosing of medicines that is a risk, but under dosing too. Many pharmaceutical syringes will leave traces of the medicine inside the syringe itself. While it may seem like a small amount, this can affect the effectiveness of the medicine itself as the patient will not receive a full dose. By investing in precision syringes, this can ensure more accurate dosing for parents administering liquid medicines to their children.



Pharmacy convenience

Delivering patient safety is a major concern for pharmaceutical packaging manufacturers, but as a result, the convenience of packaging for pharmacists is often overlooked. Opting for packaging suppliers that not only think about patient safety, but operational efficiencies too will significantly help save space and keep pharmacies running smoothly.

For example, most pharmaceutical packaging providers don't offer dedicated dispenser systems, however, these systems can be incredibly helpful to keep tablet cartons and bags neatly organised on counter tops, separating different sizes to help bring time saving opportunities to the staff administering the medications. These dispensers not only keep the workspace neat and tidy and avoid pharmacy teams being flustered when trying to source the right size box or bag, it also helps pharmacy managers keep track of stock levels to ensure there are enough supplies to meet demand.

Improving convenience for pharmacists may seem like a drop in the ocean compared to the safety requirements associated with pharmaceutical packaging. However, as government funding for pharmacies is set to change, probably to a performance-based model, these funding cuts mean that pharmacies should begin examining their procedures carefully and making all the efficiency improvements possible.

Hospital pharmacies in particular could benefit from great speed and efficiency when dispensing medication. Hospital discharge can be pressured time for hospital pharmacists. At discharge, patients may be given medication to take out (TTO). On average, TTOs used to take three hours to process. However, with increased pressures, this time has been compressed to 90 minutes.



This time cannot be compressed too much, as this is when pressures peak and mistakes are made.

Medical practices have come a long way since the plant-based remedies and herbal superstitions we have seen documented throughout history. Today, modern innovations in medicine and pharmaceutical manufacturing are set to change the way we fight disease, manage symptoms and, ultimately, transform the way we live.

As today's pharmaceutical industry becomes more sophisticated, the pharmaceutical industry must invest in the packaging that is designed to protect and store these products — not only to shield the medicines enclosed, but to protect the patients that these medicines serve.

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