The Impact of Implementing Safety Features in Pharmaceutical Packaging and Labelling

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This article explains what labelling and packaging measures should the manufacturers need to implement and how effectively they can do so with advanced packaging technologies to ensure the patient safety. Besides, it explains how it is going to impact on the outcomes of pharmaceutical companies and the need of an optimally designed labelling solution to meet the Regulatory needs without failure. Decode the end-to-end coverage of packaging and labelling safety features to be implemented.

Every year, over millions of dollars are being spent to develop drugs that not only provide the required patient treatment but are also safe for human consumption in a set of forms. With huge investments put-in, at the stage of manufacturing, are companies set to take up equivalent responsibility in following safety standards while marketing them? Several mislabelling and mispackaged instances suggest a big NO. There were instances that confirm poorly worded, unclear or ambiguously presented information of a drug has led to adverse reactions, and critically unfortunate incidents.

To cite a few cases: long ago, a soothing syrup meant for infants had been marketed without prominently labelling 'morphine,' led to numerous untoward incidents; the year 1982 saw another major series of incidents in Chicago due to drug tampering; similarly, in the year 2009, a renowned biopharmaceutical company had to recall a staggering number of its products in the US because it was not adhered to child-resistant packaging that met legal requirements. There have been several product recalls in the recent past due to labelling errors. One recall was initiated by a manufacturer of blood glucose test strips, wherein a labelling error omitted the strips' model number. The omission led to the use of these test strips in the wrong glucose meter which resulted to showcase incorrect results. Another renowned organisation voluntarily recalled a mislabeled lot of its injectable anti-seizure medication following confirmed reports of particulate found in a single unit, that could severely harm patients.

Thus, even when the ever-increasing legislative demands for patient information on pharmaceutical labelling often poses a packaging challenge to both manufacturers and brand-owners, patient compliance is increasingly gaining enough importance beyond functional requirements and fulfilling legal obligations. The annual cost to non-adherence in the US healthcare system alone is close to a whopping US$100 billion, and there is an even

greater responsibility on manufacturers to ensure that drug usage information is presented to the patient in a manner that is easy to understand and easy to refer to, not just when the drug is first used, but throughout the course of time. Fortunately, manufacturers and brand-owners are becoming increasingly aware of the importance of labelling on healthcare products referring to the success rate of a drug.

Today, in most cases, the on-pack information seems to have a direct connection with the patient, helping improve user appeal, and most importantly impacting the direct effect on patient outcomes. Considering the enormous cost of developing, testing and launching an innovative drug in the market, using cheap and potentially less effective packaging that not only risks patient safety, but also questions the efficacy of the drug is not the right approach. With more scope for impactful labelling and packaging techniques than ever before, the growing realisation is that a given drug is only as efficient as the usage information conveyed to the patient. This has resulted in a massive change in the mindsets of brand-owners and manufacturers who recognise the need for clearly-presented, easy-to-follow labelling and packaging measures that is conducive to positive patient outcomes. Some of them could be:

Types of safety measures for labelling

Even when strict guidelines are in place to ensure that the pharmacist provides the respective patient with accurate strength and quantity of a prescribed drug, under most circumstances it is extremely difficult to rest assured that the patient would adhere to the prescribed course. For this reason alone, it is imperative that the guidelines within the labelling make clear the imperative side effects due to incorrect dosage, among several other instructions. Cited below are some of the types of safety labelling measures undertaken by pharmaceutical companies to ensure maximum patient health safety.

• **Boxed Warnings**: A boxed warning consists of a summary of the information that is key for a prescriber to consider, including any restriction on distribution or use. Typically, there is a more detailed discussion of the risk elsewhere in the labelling that must be identified by a cross-reference

• **Contraindications**: These refer to situations in which the medication should not be used. A drug should be contraindicated in those clinical situations for which the risk from use clearly outweighs any possible therapeutic benefit. These are not based on theoretical possibilities but on known hazards

• **Warnings & Precautions**: It is intended to identify and describe a discrete set of adverse reactions and other potential safety hazards that are serious or are otherwise clinically significant because they have implications for prescribing decisions or for patient management

• **Adverse Reactions**: This section lists all side effects observed in all studies of the drug and not just the dangerous side effects which are separately listed in 'Warnings' section. Separate lists are required for adverse reactions identified from clinical trials and those identified from spontaneous reports after a drug has been marketed.

Types of Packaging Safety Measures

Effective package management is an increasingly critical capability for pharmaceutical companies. Not only does optimal packaging bring benefits to the patient, but also to nurses, pharmacists, doctors and manufacturers alike. Proper packaging can reinforce brand preference, improve compliance, facilitate consumption, limit dosage errors and help prevent drug counterfeiting. Provided below are measures to ensure maximum patient safety:

Unique identifier: A 2D data matrix code and human readable information which will be placed on medical products that can be scanned at fixed points along the supply chain. It comprises of a product code which allows the identification of at least the name of the medicine, the common name, the pharmaceutical form, the strength, the pack size, and the pack type; a serial number which is a numeric or alphanumeric sequence of a maximum of 20 characters randomly generated; a batch number; an expiry date

Authenticity seals or tamper-evident labels: Packaging having an indicator or barrier to entry which, if breached or missing, should provide visible or audible evidence to consumers that tampering has occurred. Film wrappers, shrinkable seals and bands, breakable caps, tape seals, blister packs, etc. are few examples of tamper-evident labels

Product authentication: Authentication features can be embedded either on the dose or on packaging of the medicines.
These may be overt, covert or forensic features

Anti-counterfeit measures: Another global challenge for this sector is the problem of product piracy. The worldwide trade in counterfeit medicines is a multi-million business that causes considerable loss for the pharmaceuticals industry and, more importantly, puts the health of numerous people at risk. The following are few measures undertaken jointly by the packaging and pharmaceuticals industry to prevent the distribution of counterfeit medicines

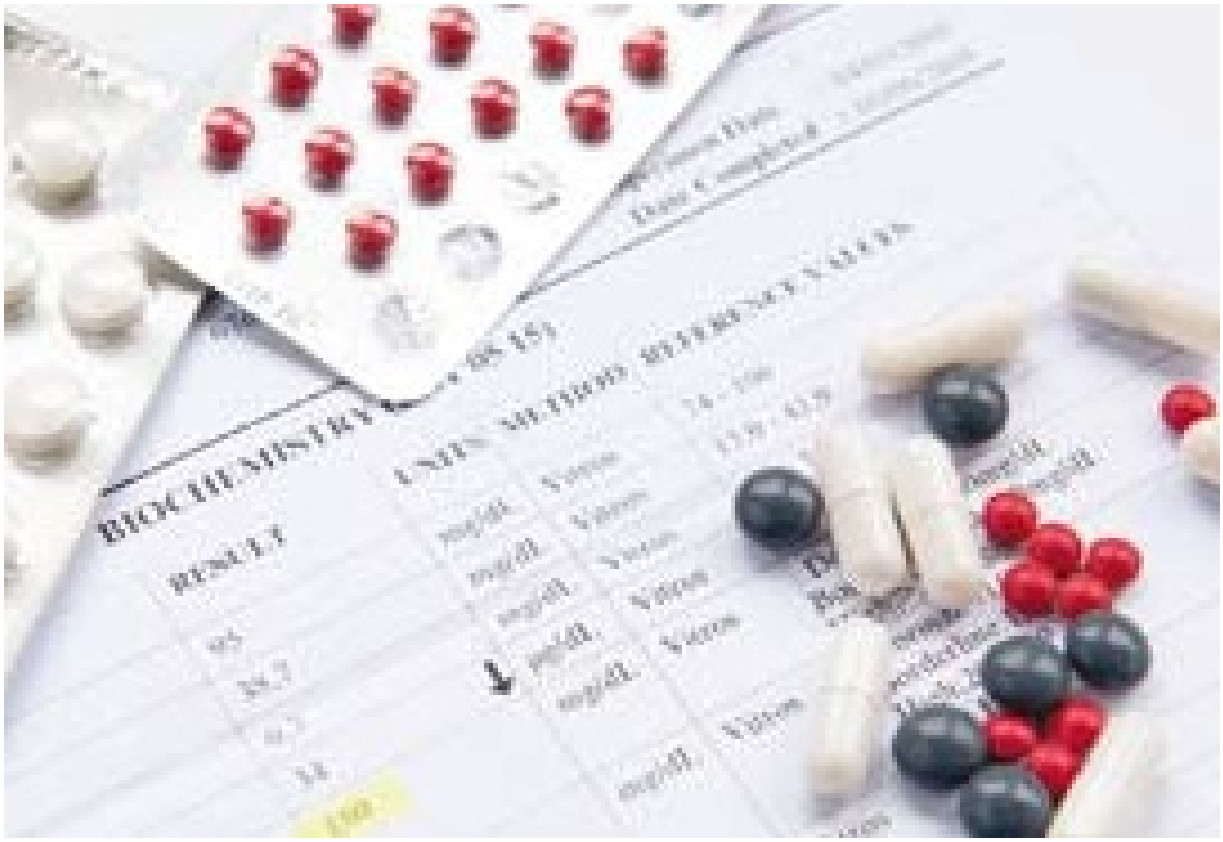
• **Holograms**: Many major drug companies use holograms on at least some of their medicines in the form of labels, seals, hot-stamped patches, and blister-foils. The ability of the hologram to provide effective protection lies in the continuous innovation, invention, and evolution in holographic techniques that have succeeded in creating increasingly complex devices that are easily recognised yet difficult to copy accurately

• **Track & trace system**: Another recent trend is the serialisation of holograms as part of systems that combine authentication with traceability. These systems link on-pack security devices with database management and field-tracking services. Manufacturers can tell where a pharmaceuticals consignment has been, where it is located, and where it is headed. This is particularly important in identifying the source and provenance of products.

• Synthetic DNA and laser codes or special printing inks invisible to the naked eye.

The impact of implementing safety measures

Having taken care of all the safety features to be incorporated with the packages and labels, there is going to be a huge impact on the outcomes for pharmaceutical companies. Right from streamlining procedural hiccups to reducing product recalls to saving costs to companies, safety best practices for packaging and labelling are set to be driving factors for pharma industry.



No scope for product recalls: With the information provided in an accurate manner adhering to HA standards and with products are packed with contaminant-free packages, companies can obtain approvals in minimal times making the drugs available in the market in quick TAT.

Ensuring the patient safety standards are met through with resistance towards external influences like moisture, oxygen, biological contamination, adulteration, and mechanical damage, the quality of the pharmaceutical products maintained as is as in production thus striking off any untoward events and product recalls.

Not only the patient safety, but also the brand identity will be safeguarded with advanced pharmaceutical packaging technology like tamper-evident features and integrated capsule sealing technology. There will be no counterfeits and brand value will stay secured.

Referring to the labelling information, organisations must take care of the medicinal information put out through labels. The information provided on labels should not only ensure the safety and efficacy but should also be clear and accurate.

Emphasising the same, health authorities worldwide released many safety measure guidelines for labelling and packaging best practices which the manufacturers could consider for integrated patient safety and for successful compliance. Some of them include:

• Health Canada has released a guidance document for Palin Language Labelling which came in effect from June 13, 2015, for Prescription drugs, and is expected to come in effect from June 13, 2017, for non-prescription drugs

• Australian Government Department of Health, the Therapeutic Goods Administration (TGA) followed suit and announced new labelling requirements which went effective from 31st August 2016. With new labelling requirements for Australian Medicines coming after so many years, a four-year transition time has been given to be compliant with the improved standards. That suggests the sponsors will have enough time for transition and from 1 September 2020, their new medicine labels will need to comply with the new improved regulations

• The highly-debated FDA generic-drug labelling rule, which was due to be passed in mid-2016, has been further delayed and is now expected to be finalised in 2017. If the proposed rule is passed, generic-drug companies across the globe must strengthen their pharmacovigilance operations right from assessing safety signals to ensuring label compliance

• To better protect children from serious risks, the FDA sought label changes for two types of opioid medications, codeine & tramadol with additional contraindications & warnings.

• The motto behind frequent labelling guidelines is to ensure labels should not only convey accurate drug information to the end user, but should also ensure drug safety by making the information easy to understand by the physician as well as patients.

The Challenges in Implementing Safety Features

The global nature of the pharmaceutical industry, with manufacturing sites and markets all around, results in a constantly evolving regulatory landscape. New regulations emerging with increased pace call for frequent label and packaging changes. Moreover, entering new markets means accommodating new languages and country-specific rules.

To consistently meet regulatory compliance standards in terms of both labelling and packaging, an optimally designed labelling solution is the right resort. Pharmaceutical companies also require a solution that is standardised and centralised, to be more operationally efficient and saving on organisational costs, avoiding expensive mistakes, and ensuring that even the most remote facility follows governmental and industry, and health agency regulations, while also meeting overall internal branding standards.

Labelling and artwork pack management is perhaps one of the most challenging functions to be effectively handled, managed and run by most life sciences and Pharma companies. With touch points across most of the major divisions, the function requires implementing a robust Artwork Management System (AMS) that can scale and evolve at the same time to be effective with the growing needs of the pharma companies.

Author Bio

Sathyanarayanan Krishnamurthy is a Regulatory Operations and Strategy specialist with experience across Regulatory Information Services, Packaging, Labelling, Life Cycle Management of Artwork Creation, Systems and Tools implementation.