

PACKAGING NEWS

Can smart technologies really improve patient adherence??



NFC enabled smart packaging increasing adherence for the consumer <https://goo.gl/M6l5XU>

Its official, we live in an ageing world...

With the percentage of over 60's projected to reach 22% Globally by 2020, the increased loading on health service resources and expertise will become ever more significant.

Figures from the US attribute poor medicinal adherence as the primary cause of some 125,000 deaths per annum, accelerating the requirement for simple, easy-to-dose prescription medicines for all ages.

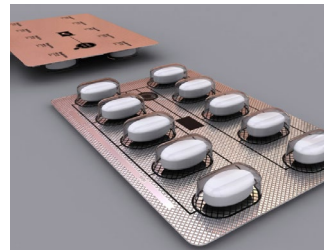
Medicinal non-adherence is widely attributed to a variety of factors; inconvenience, cost, complex dosing schedule (of key concerns for the 25% of over 60's with multiple conditions), lack of perceived benefit, unwanted side effects and also forgetfulness.

These reasons can be broadly grouped in two "buckets"; communication and complexity, both of which can be addressed; collation of individual patient data, and access to further information resources.

Introduction of smart technology, specifically through smart packaging systems, can provide these requirements and ultimately improve the patient experience via integration with the Internet of Things (IoT).

NFC (Near Field Communication) and RFID (Radio Frequency Identification) chips can be embedded into almost any packaging format or substrate. We are all working with NFC powered contactless card payment and are becoming ever more familiar with scanning or

'tapping' known symbols with our smart devices to gain information, obtain discounts, and pay for purchases. Applications for pharmaceuticals might include links to drug or condition specific microsites providing usage instruction, video, Doctor advice, access to support groups etc.....its information! It is however understood that the most needy often lack the tech tools to support the information flow.



Digitally printed electronics used in blister packs <https://goo.gl/jTRuI3>

Recent advances in digital print technologies are further opening the door for communication through packaging with the ability to "print" electronics. Application of an electronic circuit printed onto blister pack foil permits the capture of compliance data by producing time stamps which are recorded when breaking individual blister pockets. Perhaps when uploaded to a cloud based tracker this data can confirm patient adherence, accuracy of dose... alternatively,

the data could be used by physicians to review treatment regimen and results during patient check-ups.

Smart technologies utilising augmented reality (AR) technology is also proving valuable within the wider medical field. VIPAAR are successfully utilising AR technology to provide a platform for remote video support providing training aids and real-time overlays during surgical procedures. It is perhaps but a matter of time before this technology is utilised for 'at-home' medication uses, maybe visual overlay guides for newly diagnosed diabetics to assist with rotation of insulin injection sites.



Increased stewardship achievable through AR <https://goo.gl/hRLg94>

Along with these benefits, there are inevitably some challenges attributed to the implementation of smart packaging. A key factor being the investment required surrounding the development of mobile applications and user interfaces. Whilst smart packaging technologies already exist, it is a matter of scale and time that the on-cost per unit allows

implementation across an increasingly wide range of packaging components. Any additional cost should be carefully evaluated against gains achieved by improved patient outcomes, increased sales, and overall cost savings that of maybe up to \$289 billion per annum (US only) currently attributed to medicinal non-compliance. With the level of technology development ongoing in this area, we expect that smart technology on-costs will continue to fall and the benefits to accelerate. Accessibility is a further consideration

for the success of smart packaging, and is particularly important for the pharmaceutical market.....the likelihood of chronic illnesses and regular continuous medication increasing with age. Smart packaging relies largely on access to IoT and data via smart devices. Whilst it is reported that 56% of over 55's own a smartphone, some thought must also go to the provision of smart devices for those who do not, and also where regional infrastructure doesn't effectively exist. The known benefits of

improved medicinal compliance are far reaching; improved quality of life for patients, decreased pressure on country the health services, improved patient outcomes, increased sales figures for pharmaceutical manufacturers and improved perceived value by medical practitioners to name but a few. Implementation of smart packaging technologies can however also provide benefits to other business areas and consumers. Smart sensor labels can be added to cold chain packaging, these change

colour at a certain pre-defined temperature to highlight product spoilage or safety issues; alternatively smart sensors (NFC or RFID) can be scanned with smart devices to confirm product authenticity for patients and consumers, the potential is endless.....

Secondary Use Packaging

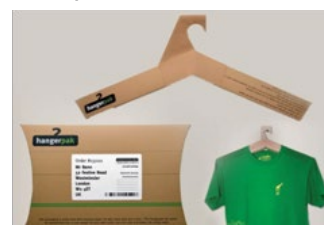
People are often so focused on whether a product or material is recyclable that it is often forgotten that reuse of the items maybe more environmentally responsible. Recycling, after all requires considerable investment of energy and resources into collection, transportation, cleaning, sorting and reprocessing of materials. Considering the hierarchy of waste reduction, reuse is second only to reduce (which for packaging is limited by requirements to successfully preserve and protect the product). Extending the useful life of the material or item through reuse, means the resources and energy used for the original manufacture are more effectively used. Reuse can also reduce the amount of waste sent to landfill (or to other waste streams), and may reduce the consumption of additional resources by preventing the need for new products.

With a growing concern

for the environment and sustainability, designing packaging with a secondary use is a great way in which companies can put their corporate social responsibility views into practice, create visibility and improve their brand image.

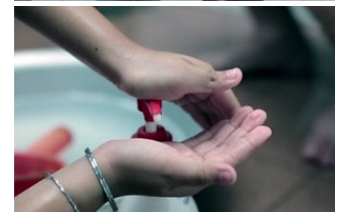
There are many different streams of packaging reuse, starting from simple things such as reusing a glass jar or bottle as a vase, to packs that have been specifically engineered to become something useful - often related to the product packaged. A great example is Hanger Pack, where the corrugate packaging of the T-shirt you ordered online becomes a hanger for clothing contained within. Not only does this divert the material from landfill and other waste streams but if this prevents the consumer from buying a new set of hangers then raw material consumption is also reduced. In fact, the benefits go further than the material savings of the hangers since all

energy and resource inputs required through the whole life of the product must be considered - as well as the waste and emissions that will inevitably also be produced during material extraction, processing and manufacture and transport.



Hanger Pack
<https://goo.gl/cQF1sz>

The secondary packaging use can also be completely unrelated to the original product, for example, Coca Cola's fun and novel 2nd lives campaign. 16 bottle caps were designed that enable empty bottles to have 2nd lives as useful, reusable products, such as a water-pistol or a soap dispenser. Not only does this provide environmental benefits through extending the life of the packaging, it was also a great marketing campaign in itself - adding value to the brand!



Fun concept enables the pack to have a second life
<https://goo.gl/dwtDcu>

Surprising and delighting customers by exceeding expectations is a great way to reinforce product and brand loyalty and designing an unexpected secondary use to your packaging is one way this can be done. With the right brains and design skills, the possibilities, resource savings and waste reductions to be had are all immense!