New solution for old problem: how to reduce the volume of waste medicines

In this article, Liz Breen, Ying Xie and Kuljit Thiaray describe how a reverse logistics framework based on customer relationship management strategy may encourage customer involvement in the reduction of waste medicines in the community, thus lowering risks and saving money.

The economic incentive to engage in reverse logistics activities lies in minimising cost and improving profitability by reducing waste, reusing materials, remanufacturing, recycling or product refurbishing.

Companies that value their own standing as good corporate citizens adopt an approach of sustainable development. They handle the reverse logistics of hazardous materials efficiently and effectively from an environmental and social point of view. Developing an image as a good corporate citizen could open a huge potential market, which eventually makes profit.

The laws and policies imposed by any jurisdiction dictate the legal obligations of a company to take back the returned products. It is possible that effective reverse logistics could save UK business up to £500 million a year. Can it be applied to medicines supply in community pharmacy?

A previous study focusing on reducing waste in community pharmacy suggested that closer professional management at the point of dispensing and an understanding of patient experiences can help reduce the amount of unwanted medicines collected by patients. The study did not investigate medicines retrieval strategies. A thorough review of the literature indicates that there is little research necessary in the reverse logistics system, but others need a one-to-one explanation. A blanket approach, however, would be easier.

Managing customers’ perception and loyalty is critical to the success and sustainability of a reverse logistics system, therefore consideration needs to be given to its objective and design. The final design needs to incorporate the essential elements of both managing customers and managing return logistics.

Environment, economics and safety

The focus on pharmaceuticals in the NHS is mainly on their therapeutic value, but consideration also needs to be given to their impact from an environmental, economic and safety perspective. Studies indicate that the presence of pharmaceutical ingredients in our water supplies and products made using water are potentially harmful to us and our eco-system. A review of related studies indicates that harmful can be economic and environmental.

The economic costs include the cost of collection and disposal of medicines, the scale of which is indicated by the quantity of medicines returned to PCTs, and costs arising from ineffective prescribing.

There is an important safety element, where safe methods of practice can reduce...
the risk of harm, including accidental deaths due to inappropriate medication. Therefore, a properly designed pharmaceutical reverse logistics system for medicines recycling must take account of all of these factors.

In order to introduce an integrative customer relationship management strategy to facilitate effective reverse logistics in community pharmacy, the following three objectives need to be realised:

- An understanding of customer roles in the reverse logistics system in community pharmacy
- Identification of the drivers for increasing customer compliance in returning unused medicines to community pharmacies
- Identification of how to support customer involvement

Roles of customers Previous research has examined industrial reverse logistics practice in business-to-business and business-to-customer relationships (including pharmaceutical wholesalers and manufacturers) to determine the financial and operational impact of customer non-compliance in returning equipment to its source. The study found that the efficacy of reverse logistics can be undermined by a lack of customer compliance, with business-to-business losses of up to £140 million. Non-compliance of this nature can carry a direct cost for manufacturers and distributors. It was advocated that suppliers in industry need to acknowledge this issue and manage their reverse logistics more effectively.

While focusing on efficiencies and reducing waste in the NHS, another study concluded that approximately £800,000 could have been wasted across a single health authority, if figures produced from a study of four pharmacies over a two-month period are representative of overall performance. The findings from a waste audit conducted by Rowlands Pharmacy (personal communication) indicated that when extrapolated, the total cost of returned medicines for a year would have been £4,690,428. The results indicated that the main reason for customers returning a medicine was that they had stopped taking it (49 per cent of returned items). So what role can customers play in reducing waste in this system?

Unlike the traditional model of recycling, where goods can be recovered and reused, pharmaceutical products take a different recycling pathway, that is, to final disposal by a third party. Individual customers can make a strong contribution by returning medicines. All customers are different, so there is no single definitive skill set or expertise that community pharmacies can draw on to design their reverse logistics systems.

The role of the patient in the management of pharmaceutical waste has been a passive one in some respects, as it is controlled by professionals. Under the reverse logistics system proposed in Figure 1, where customers return the medicines to community pharmacies, GPs or recycling centres via different channels, there a need for active participation by patients.

Figure 1: A proposed pharmaceutical recycling system for community pharmacy

Figure 2: Drivers of customer compliance (adapted from De Brito et al.)
Drivers of customer compliance

New guidelines have been published outlining the need to improve patient involvement in decisions about their medicines and thus promote adherence. The pharmaceutical reverse logistics system should be designed in such a way that consumer compliance is enhanced through customer recycling behaviour. Customer recycling behaviour is driven by various factors, and it is necessary to develop a model (Figure 2) for better understanding of the drivers before constructing the pharmaceutical reverse logistics system.

The drivers of generic reverse logistics systems are corporate citizenship, economic concerns, and legal frameworks, which are also identified as the drivers of customer compliance in pharmaceutical reverse logistics systems, as shown in Figure 2. In addition, environmental considerations, health and safety, individual circumstances and financial incentives are identified as the other four drivers to customer compliance. The legal framework, corporate citizenship, economic concerns, environmental considerations, and health and safety are classified as perceptional drivers. Economic incentives represent conventional operational drivers. The environmental, economic, and safety considerations have been justified above.

Laws and regulations governing the disposal of household pharmaceutical waste can impose a legal obligation on customers to return unused medicines. In Jefferson County, Wisconsin, prescription medicines have to be separated from household pharmaceutical waste when being returned, and the medicines accumulated from more than one source have to be disposed of according to national regulations.

Corporate citizenship requires customers to handle pharmaceutical waste from an environmental and social point of view. Having the initial motivation for environmental protection, customers recycle unused medicines properly. If individual customers have positive environmental attitudes and active concerns about health and safety, then higher levels of recycling behaviour should happen.

Considering the hazards that out-of-date and unused medicines pose for children and other vulnerable people, customers will have enhanced compliance in recycling the excess medicines in households to reduce the risks. Customers should not need training and education to perform their role as reverse logistics agents (delivering part of the service on behalf of the pharmacy) because they cannot be expected to separate out hazardous waste. The responsibility for decision-making on medicines resides with pharmacy staff so all patients should be advised to return unused medicines.

Supporting customer involvement

To make the reverse logistics system operate properly, individual circumstances have to be taken into account when encouraging customer compliance. From a customer's perspective, individual circumstances refer to:

- Access to recycling services via the medicines retailer, the manufacturer, or other providers; maximised recycling provision should result in enhanced customer compliance.
- Socio-demographic variables, such as age and knowledge: individuals with greater environmental consciousness and more knowledge on how and what to recycle should have enhanced compliance.
- Recycling experiences: positive experiences can promote enhanced customer compliance.

It should be noted that incentive schemes can underpin and stimulate compliance; for example, customers could be rewarded, by giving them vouchers for returning unused medicines, or perhaps exchanging them for other medicines.

The same logic can be applied to internal reverse logistics practice. In 2005, Coventry PCT introduced a local enhanced service called the “not dispensed” scheme. This service allowed pharmacists at the time of dispensing a prescription to ensure the patient received all the medicines. For every “not dispensed” noted on the prescription an extra fee could be claimed from the PCT. The same practice has been adopted elsewhere. Pharmacists in the Republic of Ireland, for example, can claim a fee of €1.87 for not dispensing a prescription after the “exercise of professional judgement.”

Some might believe this to be a regressive action since it does not tackle the root cause: ineffective prescribing. They might argue that the action taken by pharmacists in this example masks the problem and incurs a double cost — the cost of prescribing more medicines that may be unnecessary and not used, and the cost of rewarding pharmacists.

System framework

Based on the drivers identified in Figure 2, a framework has been developed to provide key components to be considered in the design of a pharmaceutical reverse logistics system (Figure 3). Considering the unique characteristics of the medicines, five central areas are recommended in designing a reverse logistics system for community pharmacy:

1. Customer advice and support

Customer compliance in returning unused medicines should be advocated and stimulated via different communication channels, such as the internet, broadcast and print media, and pharmacy or NHS leaflets. The need for more visual information such as recycling logos and alerts such as “Keep out of reach of children” should be considered to maximise the usefulness of the packaging and raise customer awareness of the product they are handling.

2. Customer relationship management

A comprehensive customer relationship management programme based on the reverse logistics system can have a significant...
impact on increasing customer compliance. It is needed to provide customer support and service, answer customer enquiries, and take customer feedback when handling the return of medicines.

A sustainable pharmaceutical supply chain cannot succeed without the contribution of its customers. Customers are already asked to return medicines, but no effort is made to encourage or manage their involvement. Customer involvement must be prompted and supported through the use of information systems and technology. Indeed, findings from a Swedish study indicate that a customer-centric approach — which a reverse logistics system should be — should be devised.23

Customers have more power collectively than as individuals,24 however an individual approach to managing the customer could be facilitated with better technological resources. From an operational point of view the more standardised the approach the better, as it would require less resources and funding.

3. Product management Medicines should be designed to facilitate the returns process.

The design and packaging should facilitate carriage and return.

GPs should write prescriptions for shorter periods. Shorter prescription periods (seven to 14 days) have been successfully trialed in Canada.25

Reviews of the use of dispensed medicines are regularly conducted by GPs and community pharmacies as part of their NHS contract obligations. These should help to reduce unnecessary medicines in circulation and promote informed decisions about pack sizes and synchronisation, as advised by the National Prescribing Centre.

Allowing customers to collect repeat prescribed medicines from community pharmacies without consulting a GP each time allows pharmacists to ensure patients are taking their medicines correctly and find out if they are experiencing any side effects. Such a service reduces the amount of medicines in circulation.

4. Effective inventory management

Returned medicines need to be properly classified, stored and disposed of. Therefore, proper inventory management should be in place in the reverse logistics system.

5. Drivers of customer compliance

Enhanced customer compliance, spurred on by the drivers of environmental concerns, individual circumstances, health and safety, corporate citizenship and legislation, will help ensure the success of a pharmacy reverse logistics system.

Conclusion

The aims and objectives of any reverse logistics system need to be realistic. While the return and recycling of pharmaceuticals is desirable in reducing waste and encouraging efficiencies in prescribing, especially in the light of the economic downturn, where the NHS is facing a reduction of between £8 billion and £10 billion in the three years from 2011,26 it is not a critical objective for the average household. UK families have more pressing issues this being the case, needs to be a concerted effort for the reverse logistics agenda for pharmaceuticals to plug into personal agendas to ensure that returns actually take place.

Consideration needs to be given to the breadth of this issue. Ultimately, the focus of this article is the reverse logistics system. If well designed it could provide a safer, medicine-free domestic environment and help lead to more effective prescribing, thereby generating cost savings. A broad approach needs to be adopted in relation to medicines design, manufacture, distribution and disposal.

We cannot forget that there is a cost to design and delivering an effective reverse logistics system. Pharmacies encourage patients to return medicines, but do not reward them for doing so. Considering that costs are incurred in designing and publicising such activities and there are charges for final disposal, the purpose of the reverse logistics system for pharmaceuticals in community pharmacy could be questioned. Not everything service-related can be costed. The potential savings derived from prescription data and reduction of potential hazards or accidents are valuable considerations. In summary, an effective reverse logistics system can influence the following:

• The return of potentially hazardous materials to pharmacies, reducing the risk of accidental injury, misuse or abuse
• Awareness and social consciousness of medicines recycling
• Patient engagement with the NHS
• Improved prescribing practice whereby patients are prescribed medicines more frequently, ensuring more contact time with health professionals
• Information gathering, by providing valuable information, which can promote effectiveness in practice and efficiencies for the NHS
• Improved collaboration among medicines supply chain stakeholders

The success of a reverse logistics system lies in its execution and this is dependent on the approach taken by the NHS to managing customer involvement and behaviour.

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References