Assessment of the safety & financial impact of **Doselock** devices at **University Hospital Leicester**

SUMMARY

Doselock is a device that locks onto the plunger of standard 30ml and 50ml syringes and allows a precise dose to be administered from the syringe. This enables intravenous bolus chemotherapy to be supplied as out-sourced pre-filled syringes using a much smaller range of products to support dose banding.

The number of syringes required for administration or stock holding is reduced and the potential cost savings this releases more than compensate for the cost of the devices.

The introduction of Doselock could enable all chemotherapy units even those with a relatively small turnover to use out-sourced pre-filled syringes to deliver common chemotherapy regimens (e.g. FEC and CHOP) with minimal wastage, making this an economically viable approach whilst releasing capacity from within existing services.

Potential savings across EMCN are at least £50,000.

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BACKGROUND

EMCN contract prices for out-sourced pre-filled chemotherapy bags and syringes have been achieved through a regional purchasing collaborative (previously ReSource) tender. The combination of several sized syringes enables doses to be dispensed for a patient within an agreed 5% of the calculated dose without the need for on site aseptic manipulation. This often requires more than one syringe to be dispensed, especially for Cyclophosphamide, with a cost associated with each syringe used.

It is notable whilst larger centres in EMCN have utilised out-sourced pre-filled chemotherapy doses, many smaller units have found that the minimum order size required increases waste making this approach this less financially attractive.

A Doselock adaptor (above) is available which can be attached to a syringe and precisely locked to ensure only part of the syringe is given. For example, UHL currently buy ten different strengths of cyclophosphamide syringe to deliver a range of doses from 200mg to 1900mg. This presents challenges including

1. storage in a small department (especially as the out-sourced products require refrigeration)
2. a requirement to QA and release 10 different products

Other trusts in the region have adopted different approached and purchase a narrower range of syringes, with an inherent increased cost per dose administered as products are priced per syringe not on the basis of the total dose contained within.

Stock control and short expiry sometimes leads to the need to use more syringes than would ideally be required at additional cost to minimise waste.

Doselock enables the use of only two sizes of syringe to deliver a variety of doses.

Potential savings of £10,500 per annum on cyclophosphamide have been calculated from a pilot undertaken at UHL.

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METHOD

After an initial risk assessment, a pilot study was developed jointly by the nursing and pharmacy teams and undertaken to assess the risks and benefits of using Doselock.

All patients receiving cyclophosphamide on the UHL chemotherapy suite for a 4-week period had their doses delivered in syringes with Doselock attached to the first syringe marking the dose to be given and a second standard syringe. Controls were put in place to minimise risk and guidelines were produced for pharmacy and nursing staff, including

1. Updating the pharmacy SOP for accuracy checking of dispensed outsourced pre-filled aseptic products to include Doselock
2. Staff training to attach Doselock and check doses.
3. Labelling criteria, agreed with the nursing team.
4. Developing checking criteria for the nursing staff, including the residual volume remaining in the dose lock syringe which was always administered first.

The pharmacy MMTs undertook training of the nursing staff after meeting with the chemotherapy sister and lead trainer.

A feedback form was sent with every dose supplied to the nursing team and collated by the pharmacy team. Comments made on the forms were shared with the chemotherapy suite sister.

Verbal feedback from pharmacy and nursing staff was reviewed alongside the questionnaires.

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RESULTS

There were no errors documented for the dispensing or checking processes.

Nurses reported that Doselock was always securely attached to the syringe plunger and locked at the correct volume.

After administering the dose to the patient, all residual volumes were correct.

Most nurses found that using the syringe with Doselock attached acceptable.

One responder found that locating a second checker to check the residual volume immediately was a problem and the same responder sensed some confusion from the patient even though they had explained the new presentation of the drug to them.

Unexpectedly, the pharmacy team reported that the time taken to lock and label individual doses was less than taken to search through different size doses to find the size of syringes required. As the pilot phase always gave two syringes the benefit will be even greater using only one locked syringe for most doses as the system is implemented in practice.

There was also reduced wastage through expired stock as slow moving stock lines were no longer a problem.

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DISCUSSION

Following a successful pilot of Doselock there is interest elsewhere within EMCN to consider using the device.

The pilot phase did not use the minimum number of syringes but a review of the doses supplied demonstrated that the cost of cyclophosphamide dispensed could be reduced by £10,500 per annum. This would further reduce refrigerated storage space required. Using the minimum number of syringes required reduces the numbers administered by 33% although there would be an increased use of 50ml syringes which needs to be considered in terms of repetitive strain and syringe selection as the project rolls out.

The system lends itself well to smaller units where limited stock turnover makes the current outsourced contract less attractive.

With a need to procure only two sizes of cyclophosphamide syringe and one size of 5-FU syringe this potentially becomes viable for smaller units and could allow common regimens such as CHOP or FEC to be supplied from out-sourced (dose banded) products for all sites reducing dispensing times whilst releasing valuable aseptic capacity for other workload. A new size Doselock device suitable for 5FU is anticipated shortly.

This offers the potential to rationalise the product range in the regional contract potentially reducing the unit cost due to increased volume of a reduced product range. Additional savings may be secured through a regional contract for the Doselock device.

The same approach may be applicable to other therapeutic areas e.g. critical care. Potential savings across EMCN are estimated as at least £50,000.