

27 November 2019

NHS Improvement

Dear Colleague

### **Pharmacy aseptic services review**

The Royal Pharmaceutical Society (RPS) is the professional membership body for pharmacists and pharmaceutical scientists in Great Britain. We are the only body that represents all sectors of pharmacy in Great Britain. The RPS leads and supports the development of the pharmacy profession including the advancement of science, practice, education and knowledge in pharmacy. In addition, we promote the profession's policies and views to a range of external stakeholders.

We have identified evidence for the pharmacy aseptic services review through a literature search of online databases (Medline and PubMed). Evidence was identified in the following areas:

- Collaboration
- Workforce
- Workflow management
- Technology

#### **Collaboration**

NHS aseptic units across geographies are collaborating by reviewing their portfolios to promote batch production of products. Benefits have been cited as achieving the right economies of scale from overheads and costs (staffing, licencing and quality assurance). Organisations are potentially able to share an aseptic unit to provide services which improve patient safety through the manufacture of high-risk medicines. Risks have been identified as resilience of service critical function if a unit is non-operational.

Access to advanced therapy medicinal products are a good example of where collaboration between organisations could be beneficial.

#### **Workforce**

Workforce gaps amongst technical staff have been approached with the development of new roles in some organisations. This has included the development of a science manufacturing technician apprenticeship for licensed units (because aseptic manufacturing is no longer a compulsory area in the initial education and training of pharmacy technicians). Better use of existing roles such as assistant technical officers in aseptic services is being achieved through additional training. Some employers are also enabling access of their staff to Pharmaceutical Technology and Quality Assurance qualifications – this enables succession planning<sup>1</sup>.

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<sup>1</sup> Health Education England. Advancing pharmacy education and training a review. London: Health Education England; 2019 Available at: <https://www.hee.nhs.uk/sites/default/files/documents/Advancing%20Pharmacy%20Education%20and%20Training%20Review.pdf>



## Workflow management

Dose-banding parenteral chemotherapy has been found to be efficient cost-saving strategy which also can help to increase the capacity of the aseptic unit. Expenditure on 17 medicines identified in the 2016/17 for dose standardisation reduced by approximately £100,000 per month over the year despite an increase in the number of prescribed doses of these medicines. At the beginning of the year, the percentage of work compounded in house was 60%, which was reduced to 51% of total workload at the end of the year due to outsourcing commonly prescribed doses from commercial pharmaceutical aseptic manufacturers<sup>2</sup>.

Overall safety of a parenteral chemotherapy ordering processes within a hospital's electronic health record was improved after the implementation of automated dose-banding. By standardising the administered doses for three chemotherapy agents, savings on medicines were made<sup>3</sup>.

An evaluation of the potential impact of implementation of Logarithmic dose-banding and using criteria to identify antineoplastic agents and preparations in order to establish the number and standard doses that could be compounded in advance concluded that this approach could contribute to rationalise antineoplastic production and increase compounding capacity<sup>4</sup>.

An organization was able to achieve its purpose and goal of improving the provision of quality pharmacy care through optimal medication use and safety by reducing aseptic medicines preparation errors. Error rates decreased and the workflow processes were streamlined, which led to seamless operations within the pharmacy department. There has been significant cost avoidance and waste reduction<sup>5</sup>.

## Technology

In 2016, an international panel of experts shared knowledge, experience and best practices regarding the optimal use of IV preparation robots, and furthermore to envision the future role of robotics and technologies in hospital pharmacy. 35 recommendations dedicated to automated IV compounding in (hospital) pharmacies have been made<sup>6</sup> including:

- Automation will play an important role for aseptic preparation (hazardous, non-hazardous parenterals) and compounding of non-sterile dosage forms, either automation should improve the quality of products by standardisation and automated control of every production step in order to avoid potential human errors. Moreover, automated preparation of advanced therapeutic medicinal products (ATMPs), for example, oncolytic virus and cell therapies will be feasible;
- New training methods and skills based on technological education will facilitate specialisation of technicians and the future role of the pharmacist. Change management tools can be used to overcome the hesitation of some staff members to apply the modern technologies. The skill-mix of a department with

<sup>2</sup> Finch M, Masters N. Implications of parenteral chemotherapy dose standardisation in a tertiary oncology centre. *J Oncol Pharm Pract.* 2019 Oct; 25(7):1687-1691

<sup>3</sup> Fahey OG, Koth SM, Bergsbaken JJ, Jones HA, Trapskin PJ. Automated parenteral chemotherapy dose-banding to improve patient safety and decrease drug costs. *J Oncol Pharm Pract.* 2019 May 2:1078155219846958

<sup>4</sup> Albert-Marí A, Valero-García S, Fornés-Ferrer V, Poveda-Andrés JL. Exploratory analysis for the implementation of antineoplastic logarithmic dose banding. *Int J Clin Pharm.* 2018 Oct;40(5):1281-1291

<sup>5</sup> Davis SJ, Hurtado J, Nguyen R, Huynh T, Lindon I, Hudnall C, Bork S. Innovations in Medication Preparation Safety and Wastage Reduction: Use of a Workflow Management System in a Pediatric Hospital. *Hosp Pharm.* 2017 Jan;52(1):54-59

<sup>6</sup> Yaniv AW et al. Robotic i.v. medication compounding: Recommendations from international community of APOTECA chemo users. *Am J Health Syst Pharm* 2017;74: e40–46

automation is different than before automation. Engineers and IT experts now play a role as trainers and corporate partners;

- Electronic Medical Records containing the medical history of the patients and the outcome of the medical therapy is integral to automated clinical support;
- Effective control systems and complete traceability of the preparation processes ensure a high level of safety and dosage accuracy of the preparations. The possibility to trace medications through barcode scanning, to record the compounding steps, to store the preparation data, to check the final weight of the preparations and to identify the active ingredient by IR/UV spectroscopy will increase the quality and safety of preparations;
- Identification and preparation tools will support dose calculation and automatic computing of drug and vehicle volumes, provide a complete list of all components needed for compounding (including the type of needle to be used on vials and final containers and type of filters to be added to infusion lines) and detailed preparations instruction via text messages, videos and pictures;
- Devices for coding and tracing of lot numbers and expiry dates, automatic reordering of drugs and consumables will facilitate the stock inventory and strategies to avoid errors or inattentions;
- Increased knowledge on drug's stability will shift the preparation from just-in-time to batch production;
- Standardisation of procedures, protocols, therapeutic pathways through the implementation of a technology platform is necessary to achieve centralisation of the services;
- Strict and stream-lined workflow to optimise the management of pharmacy's activities such as procurement, preparation, distribution and clinical decisions;
- Staff flexibility is a key issue for an efficient execution of the centralised model.

Yours sincerely



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Royal Pharmaceutical Society