

trusts and organisations. Leadership qualities were displayed by the pharmacist taking responsibility for a medication related issue, but one which was not necessarily part the core job role and would usually be done by the medical team. The logistical management improved rapport with various groups and ultimately boosted the reputation of pharmacy within the hospital teams. Other pharmacy departments could learn from this example and take the lead on novel aspects of medicines management within their sectors.

SP6

### ORAL LIQUID MEDICINE CONTRIBUTION TO THE CARBON FOOTPRINT OF HEALTHCARE SYSTEM: SCOPING REVIEW

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**Aim** Medicines account for 25% of NHS England's carbon footprint.<sup>1</sup> By exploring a carbon footprint breakdown of oral liquid medicines (OLMs), their contribution to the carbon footprint of healthcare systems can be described. Carbon-intensive aspects can be highlighted, and recommendations can be hypothesised to achieve a more sustainable pharmaceutical supply chain. This scoping review aimed to explore what constitutes the carbon footprint of OLMs and the extent of their contribution to the carbon footprint of healthcare systems.

**Method** A systematic search of studies published in English language was conducted on EMBASE, PubMed, Scopus, and grey literatures. Data screening and extraction were performed independently by two reviewers. The quality of included studies was assessed using modified-NIH (National Institute of Health) and modified-AACODS (Authority, Accuracy, Coverage, Objectivity, Date, Significance) quality assessment tools.<sup>2,3</sup>

<sup>3</sup> The review was conducted in accordance with the PRISMA guidelines for systematic reviews.<sup>4</sup>

**Results** In total, 65 articles were identified for full text review. None of them fully met the inclusion criteria, however 20% (13/65) of them provided data for our outcomes of interest: those reporting on the contribution of pharmaceuticals and chemicals to healthcare's carbon footprint (n=5); those reporting on the pharmaceutical waste by dosage form and packaging (n=4); and those described the causes of pharmaceutical waste and potential waste-minimising recommendations (n=4). Evidence showed that the contribution of pharmaceuticals and chemicals to the greenhouse gas emissions of the NHS in England was reported to have decreased by 26%, while anaesthetic gases and metered-dose inhaler emissions decreased by 75%, between 1990 and 2019. Wasted OLMs were largely associated with medicine non-adherence and inappropriate dosing frequencies. Medicines packaged as liquids were found to be the most wasted due to packaging size, inappropriate prescribing, and inadequate disposal procedures. Prescriptions that were no longer required and inadequate storage were found to be the main reasons reported for accumulating medicines.

**Conclusions** This review showed that there was no doubt that medicines and chemicals have had a substantial impact on the carbon footprint of healthcare systems over the past three decades, although no definitive conclusion could be made on the contribution of OLMs. However, OLMs were found to have a higher wastage and non-adherence compared to oral solid

medicines. We know that unused and wasted medicines cause unwarranted pressure on the environment and carbon footprint and thus these two aspects need to be reduced.

Further research on the sustainability and carbon footprint of all medicines including OLMs in health care systems is warranted. The implementation of end-to-end traceability and an absolute record of carbon emission data across the life cycle of medicines might enable identifying the root cause of carbon-intensive dosage forms.

### REFERENCES

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SP7

### MEDICINES OPTIMISATION ACROSS CARE BOUNDARIES: EXPERIENCE FROM A TERTIARY PAEDIATRIC ASTHMA CLINIC

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**Background** Regular reviews of children with asthma are essential to ensure adherence to medication and correct use of delivery devices. Any medication changes made in hospital clinics should be continued in primary care. Transfer of information about medications across care boundaries can be challenging; between 30 and 70% of patients have either an error or an unintentional change to their medicines when their care is transferred.<sup>1</sup>

**Aims** i) To determine whether medication changes made in a tertiary hospital asthma out-patient clinics are continued in primary care and ii) to explore parents/carers experience on medicines optimisation across care boundaries.

**Methods** Mixed-methods service evaluation using qualitative and quantitative methods. Electronic patient records were used to identify children who had medication changes made in clinic between September-November 2020 and to see if this change was reflected on GP summary care records (SCR) three months later.

Telephone interviews using semi-structured questionnaires were conducted with parents/carers of children in whom medication changes had been made in an out-patient clinic in a tertiary paediatric asthma centre, exploring their experiences and categorized into themes.

The service evaluation was registered with the Trust clinical audit department.

**Results** 23 parents/carers provided SCR consent to view their child's prescribing data. Children with a median age of 9 (4-16) years of which 14 were males and 9 females', prescription records were analysed.

52% (12/23) of changes were accurate on SCR records, 35% (8/23) of changes were inaccurate and in 13% (3/23) no changes appeared on SCR.

Patient's responses in the interviews were grouped into themes:

1. Medication supply issues: