GREEN CHAMPIONS

A SCOPING REVIEW OF ENVIRONMENTAL HARMS IN CLINICAL LABORATORIES

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I started to scroll down my inbox this week and saw that what is now the Green Champions started as a small band of keen LabMed members just over three years ago. The time has flown by since, and we have moved on, including an organisational rebrand and name change to LabMed. Since the publication of the Delivering a Net Zero NHS in late 2020, there has been increased interest in, and progress towards, reducing the environmental harms as a by-product of what we do to care for our patients. With laboratory audit tools, such as the LEAF pilot, and the establishment of the Clinical Labs Sustainability Network of the Centre for Sustainable Healthcare, there seems to be some momentum in awareness and resources to help diagnostic laboratories to do better.

However, there is still much work to do. Many labs are experiencing an extremely busy time. Increased workloads, budget cuts and recruitment freezes mean that additional 'asks' such as sustainability often take a back seat. The Green Champions are frequently contacted by labs who want to do better but don't know where or how to start. You may already be aware that sustainability has been added to all existing domains of NHS England's Pathology Network Maturity Matrix. Whilst these targets are not being scored in this financial year, it is anticipated that these will become mandatory at some stage. Therefore, it is incumbent on us to grasp this challenging problem, as the sooner we start, the better. One tool that should help us to do this is currently being piloted by NHS Pathology. Ashling Coakley-Burns is a chief sustainability officers clinical fellow who is working with NHS Pathology, UKRI and the Peninsula Pathology Network to design an audit dashboard that aims to help pathology labs in a standardised way. You can read about this on pages 42-43 in this edition of *LabMed News*.

While most agree that we need to improve, it is not possible to measure our progress if we don't know the current state. We know that the NHS contributes approximately 5% of the UK's carbon footprint. However,

we have no real idea how much laboratory testing contributes to these emissions. Given that pathology testing is involved in virtually every patient pathway, the scale is likely to be vast. Therefore, we wanted to ascertain a more accurate picture of the environmental impact of diagnostic laboratories.

Fellow Green Champion, Anna Sanders, together with colleagues from Lancashire Teaching Hospitals, the University of Central Lancashire and Martin Farley (UKRI, and the originator of LEAF) worked together to undertake a scoping review on this subject. For those who are not aware, there are various types of systematic review, depending on the research question, and the types of existing published evidence. A scoping review was chosen in this case, as we felt that there was not an enormous amount of published literature, and we wanted to establish a broad overview of the subject area and to establish gaps in knowledge that will inform future research questions. We are delighted that this review is now online in *The Annals of Clinical Biochemistry*.

The team worked together to establish the study protocol, including the fundamental concepts of what 'diagnostic laboratories' and 'environmental harm' may encompass. Once these were established, we began the literature search. This returned 2,217 unique papers that were screened at the title and abstract level, with 322 papers undergoing full text screening for a quantified environmental impact related to laboratory diagnostics. We finally whittled these down to 43 papers to be data-extracted and reviewed.

We found that, whilst the earliest paper was from 1975, the vast majority were published in the last 10 years, with increased activity from 2021. The location of the papers was globally diverse, but the majority were published in developed nations, such as the US, UK and Australia. Furthermore, these studies were largely not inter-connected, i.e. they did not often cite each other, suggesting that this subject area is being researched by various teams in isolation. Most studies were observational in design, with very few describing an intervention to reduce the environmental impact of laboratory testing. Some studies looked at individual tests, such as vitamin D or prostate biopsies, while others focussed more widely on energy use and waste production.

What was clear is that the outcomes described across these studies varied widely, so direct comparison between them was not possible. Additionally, those studies that did undertake life cycle assessment (the method used to calculate a carbon footprint) used different parameters for what was measured, so comparison between these was also not possible.

This scoping review demonstrates an increasing interest and awareness in this important field. However, the heterogeneity of reported measurements and limited interconnectivity of the studies suggest that this is still a developing area. With a lack of consensus in methodologies and outcomes, this baseline analysis of the environmental impact of clinical laboratories seems distant. Future efforts should focus on enhancing the assessment of individual laboratory tests, promoting greater standardisation of methodologies and outcomes, and repeatability to improve the reliability of environmental impact evaluations.