

Sustainable practice in ophthalmology: principles and considerations

The concept of 'sustainability' in healthcare is wide-ranging. An effective core principle can be defined as the reconciliation of the financial, societal and environmental pressures that influence current resource use without depleting those available for future generations. To be sustainable, a healthcare system must adequately deliver to this 'triple-bottom line' [1].

Despite increasing knowledge and growing desire for action within the profession, many clinicians remain unsure how to tackle climate change within the clinical space. By leveraging the 5Rs of sustainability (refuse, reduce, reuse, repurpose and recycle), the ophthalmic community can develop healthcare practices that are sustainable, scalable and transferable. Interventions must of course be carefully selected to avoid conflict with other important concerns including infection control and prevention, clinical and visual outcomes, cost, employee workload, and regulatory requirements.

This good practice document outlines general principles and practical considerations for sustainable practice in ophthalmology.

Principles of sustainable practice

1. **Champion sustainable procurement by** selecting suppliers that prioritise sustainability and products with minimal environmental impact, including instruments designed for durability and reusability. Clinicians can also use their collective voice to engage in discussions with suppliers, manufacturers, and product representatives to successfully advocate for more sustainable products [2]. Shorten the supply chain by sourcing supplies locally whenever possible to reduce the carbon footprint associated with transportation.
2. **Efficient models of care** may incorporate telemedicine and patient initiated follow-up to reduce travel for patients and clinicians [3,4]. For surgeons in higher-volume settings, a hub-and-spoke organisational framework can improve operational efficiency and reduce energy and transport emissions, as exemplified by the Aravind Eye Care System in India, which for many years has provided high volume, high-quality, accessible and efficient eyecare [5]. In Tayside, the ophthalmology service has doubled the number of cataract surgical procedures carried out in a day, by implementing simultaneous bilateral surgery, minimising time between patients, and avoiding slow-acting pupil drops to reduce waiting times, as recommended by NHS Getting It Right First Time (GIRFT) [6,7].
3. **Reduce surgical waste** by properly segregating and disposing of medical and non-medical waste to ensure that recyclable materials are not unnecessarily sent to landfill. Unused surgical supplies that are routinely discarded in operating rooms, should be removed from surgical custom packs to save costs, waste generation and embodied emissions. In one example, the Delphi process was used to drive an 'eco-packs' project in collaboration with suppliers (Bausch and Lomb), saving 675kg of waste and 350 kg of CO2 equivalent annually [2]. It is also worth considering the need for patient and clinician drapes and gowns, opt for reusable clothing and equipment and multi-use

droppers when appropriate, and ensure proper inventory management to avoid overstocking disposable items.

4. **Minimise energy use** by implementing energy-efficient lighting, heating, and cooling systems, as well as upgrading to energy-efficient ophthalmic equipment. Consider occupancy sensor lighting and remember to turn off equipment, computers, air exchange and lighting at the end of the day. When constructing or renovating ophthalmic facilities, incorporate green building principles by using sustainable materials, renewable energy sources, improved insulation and maximising natural light.
5. **Carbon offsetting** can be considered for unavoidable emissions. The NHS Forest is an initiative run by the UK charity Centre for Sustainable Healthcare to support healthcare sites in planning, planting and managing trees and woodlands to provide cleaner air, create wildlife habitats, and store carbon.

Putting theory into action

Health system sustainability is difficult to measure in practice and requires long-term monitoring and evaluation of appropriate indicators. The plan, do, study, act (PDSA) model of change provides a cyclic framework for continuous system improvement, enabling clinicians to test and refine solutions before wider implementation, thereby promoting more effective and sustainable improvements [8]. Conducting an environmental audit to understand the carbon footprint and hotspots of current practices is a vital first step to identifying the most impactful areas of improvement. Prioritise actions according to impact and feasibility, and assign individuals specific responsibility for change. Benchmark against industry standards to aid in setting specific, measurable, achievable, relevant and timely (SMART) goals. Implement the changes, measure and document the savings, and celebrate achievement over time.

Advocacy and education to garner support among colleagues and departments are key, recognising that individual clinicians alone cannot tackle climate change. Clinicians can engage in educational activities within their institutions including grand rounds and peer training focused on sustainable practice. Additionally, advocating for the inclusion of formal coursework on climate change into medical curricula can better prepare early career ophthalmologists to engage, adopt and promote sustainable practices.

Final thoughts

Although addressing the climate crisis may feel overwhelming for the individual clinician, research suggests that climate action and activism can help to build resilience, and help to mitigate climate-related anxiety and depression [9]. Moreover, creating a sense of shared responsibility between colleagues will engender collective activism to tackle this critical challenge. We hope this good practice document provides clinicians with some guidance to support climate action within their institutions. Further detailed resources can be accessed through our sustainability website section.

References

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