The impact of a phototherapy service on carbon emissions and suggestions for the future delivery of sustainable care

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Dear Editor, The impact of the delivery of healthcare has been identified as a contributing factor in the environmental threat to human and planetary health.¹ The Health Service Executive in 2017 outlined a commitment to leading the development of sustainable healthcare and reducing carbon emissions while promoting the delivery of high-guality care for patients.² Although there is increasing interest in the development of sustainable practices in surgical dermatology,^{3,4} significant opportunities remain in medical dermatology to address our impact on carbon emissions by considering service delivery, models of care and clinical decision making.³ The delivery of phototherapy is one such area where our environmental impact may be lessened. In Ireland, phototherapy is not currently available nationwide, as it is predominantly centralized in urban settings.⁵ This represents a significant barrier, not only to the promotion of sustainable healthcare but also to the equitable delivery of healthcare nationwide.

We performed a cross-sectional study of patients requiring phototherapy attending our dermatology department in an urban hospital between October 2020 and February 2023. Google MapsTM was used to calculate distances travelled by patients. Carbon emissions produced during this commute were calculated using an online calculator, based on the assumption of travelling in an average car with unknown fuel. In total, 96 patients were identified, 51% of whom were female. Diagnoses were varied, including psoriasis (55/96), eczema (20/96), nodular prurigo (10/96), vitiligo (4/96) and mycosis fungoides (2/96). Five patients were excluded because of incomplete records.

The average distance travelled to our phototherapy department was 16.2 km (range 1.9–159 km). We assumed a treatment range of 6–12 weeks for our patients currently undergoing phototherapy, although we acknowledge that treatment duration may be significantly longer for those patients with vitiligo.⁶ Based on this duration, the total cumulative distance travelled amounted to 26 496–53 028 km. This equates to cumulative emissions of between 4.52 and 9.05 metric tonnes of carbon dioxide. The average carbon footprint for an adult in Ireland is 7.62 metric tonnes of carbon dioxide emissions per year.

The limitations of this study include the assumption that all patients travelled by car and that they travelled from their listed address. Furthermore, many of the patients included in this study attended for phototherapy during the COVID-19 pandemic, when patient numbers were significantly reduced to allow for social distancing. With patient attendances now reinstated to pre-COVID levels, we must consider that the impact on carbon emissions may now be greater than those observed during this study.

Our study demonstrates a significant environmental impact from the delivery of phototherapy within our department. We must remain cognisant of this in the organization and planning of dermatology services at a

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national level and endeavour to maximize access to phototherapy services for patients nationwide. The development of phototherapy at home may represent a potential avenue to address concerns surrounding access and sustainability.⁷ However, this form of phototherapy is currently limited in the UK and Ireland. Safety and governance are of paramount importance, and appropriate patient selection and training are essential.⁷

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