Assignment 4

The environmental footprint of Interventional Radiology: Towards a sustainable Interventional Radiology department

Problem statement

Interventional radiology (IR) is a significant contributor of hospital waste. It uses many items that are single-use or which contain extensive packaging. The reduction of energy and material waste is often not high priority for interventional radiologists. In the context of transitioning towards sustainable hospitals, it is becoming increasingly important that we all contribute to the reduction of hospital waste. The first step is understanding where the environmental footprint of the department originates. Therefore, this research assignment is an exploration of where the material-energy nexus in the IR department.

Research question(s)

What are the drivers, barriers, challenges, and opportunities in improving the environmental sustainability of the IR department?

- What is the energy consumption of the IR department, and how can it be reduced?
- What are the material flows within the IR department, and how can waste be reduced?

Expected type of work

Interviews with IR employees; Life cycle assessment of products; Material flow analysis, cost-benefit analysis

Suggested academic background

This research assignment is open to any graduating Master students from Leiden University, TU Delft and Erasmus Rotterdam

- MSc Healthcare Management, for multi-criteria analyses
- MSc Global Business and Sustainability, for cost-benefit analyses
- MSc Industrial Ecology students, for life cycle assessment / material flow analyses
- MSc Population Health Management
- MSc Health Sciences
- MSc Industrial Design Engineering

Available data/reports or other relevant information sourcees for the assignment

Chua ALB, Amin R, Zhang J, Thiel CL, Gross JS. The Environmental Impact of Interventional Radiology: An Evaluation of Greenhouse Gas Emissions from an Academic Interventional Radiology Practice. J Vasc Interv Radiol. 2021 Jun;32(6):907-915.e3. doi: 10.1016/j.jvir.2021.03.531. Epub 2021 Mar 29. PMID: 33794372.

Brassil MP, Torreggiani WC. Recycling in IR, What IR Specialists Can Do to Help. Cardiovasc Intervent Radiol. 2019 Jun;42(6):789-790. doi: 10.1007/s00270-019-02206-9. Epub 2019 Mar 18. PMID: 30887103.