

CASE STUDY

Recycling Surgical Wrap

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Case Setting

Seven per cent of general waste and 20% of healthcare risk waste produced in acute hospitals in Ireland comes from operating theatres. Surgical wrap comprises 11% of operating theatre waste. The target setting for this study was a single gynaecology theatre at Cork University Maternity Hospital (CUMH). In 2019, the most recent year during which operating theatres ran normally prior to the COVID-19 pandemic, 1909 gynaecological surgeries were performed at CUMH.

Intervention

The polypropylene surgical wrap generated by a single gynaecology theatre at CUMH was prospectively quantified from 24/1/22 to 1/3/22. At the end of the study period, individual sheets of polypropylene wrap were counted and dimensions were measured to calculate the total surface area of surgical wrap saved for recycling. The carbon emissions associated with the projected annual quantity of surgical wrap used in public sector gynaecology surgery cases in Cork was then estimated.

Measurement

A total of 66 surgeries were performed over the 5-week study period. 221 individual sheets of surgical wrap were collected, equating to 282.1m² of polypropylene wrap. An estimated 711.2kg of surgical wrap (11,564m²) could be recycled annually from the gynaecology theatre service in Cork with an associated annual carbon emissions equivalent of at least 2.2 tonnes of CO₂. It was estimated that disposal of 711.2kg of polypropylene surgical wrap in the general waste stream would cost €107 per annum. Disposal of the same quantity of wrap in the recycling stream would cost approximately €35 per annum. The waste management company does not invoice the hospital for recycling of the surgical wrap on the basis that

CUMH are currently renting a baler from them at an annual cost of €840. Thus, ongoing recycling of an unlimited amount of surgical wrap will come at an annual cost of €733.

Challenges and Enablers

There were initial cost and storage implications: A large waste bin was purchased for storage of the surgical wrap in the theatre waste room. It was also necessary to rent and store a baler in the hospital waste yard specifically for baling the surgical wrap. It was not possible to obtain a precise value for the carbon footprint of the surgical wrap. Hospital Green Groups must continue to apply pressure to manufacturers to undertake a complete carbon emissions analysis of their surgical wrap.

Additional Remarks

An analysis of this pilot surgical wrap recycling initiative is currently going through peer review for the Irish Journal of Medical Science.