

# Appraisal of Environmental Impact of an Inpatient Bed Day (low intensity)

ULS de Braga  
Portugal



AstraZeneca 



**Sustainable  
Healthcare  
Coalition**

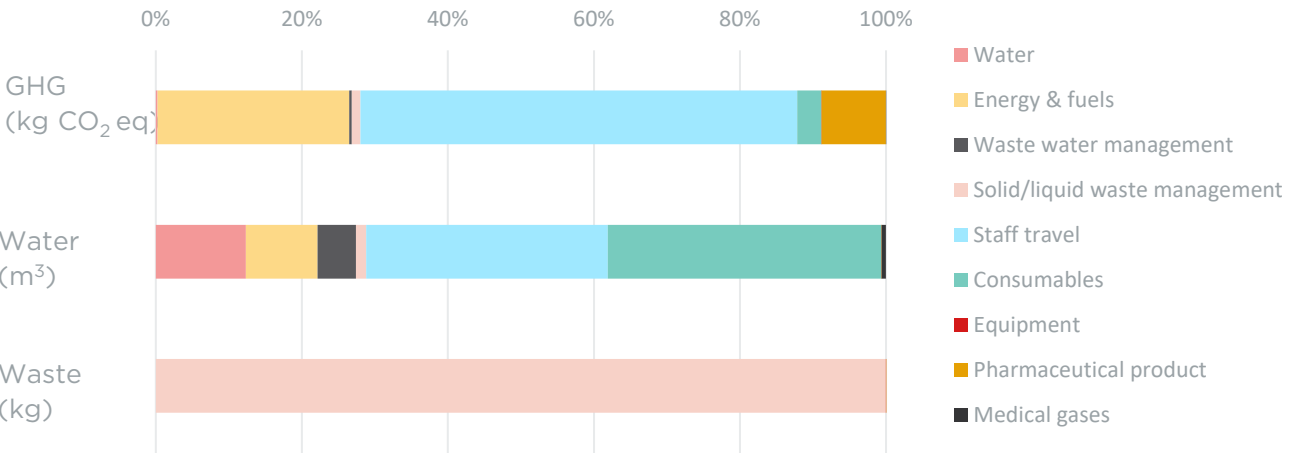
|                                                                                    |                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title                                                                              | Low intensity bed day at ULS Matosinhos – ULS de Braga, Portugal                                                                                                                                            |
| Organisation and role                                                              | AstraZeneca UK Limited initiated and funded this work, but it was not involved in collecting and analysing the hospital data. AstraZeneca UK Limited saw only the aggregated output.                        |
| Company website                                                                    | <a href="http://www.astrazeneca.com/">www.astrazeneca.com/</a>                                                                                                                                              |
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| Completion date                                                                    | September 2023                                                                                                                                                                                              |
| Assurance                                                                          | Internal assurance                                                                                                                                                                                          |
| Supporting information                                                             | Operational data from Unidade Local de Saúde (ULS) de Braga, Portugal                                                                                                                                       |
| Data gathering and analysis contact                                                | Michael Collins, Partner, ERM ( <a href="mailto:michael.collins@erm.com">michael.collins@erm.com</a> )                                                                                                      |
| Hospital contact                                                                   | Marco Sameiro ( <a href="mailto:marco.sameiro@hb.min-saude.pt">marco.sameiro@hb.min-saude.pt</a> )                                                                                                          |
| Conformance with Care Pathways: Guidance on Appraising Sustainability <sup>1</sup> | Adheres to the principles of the Guidance                                                                                                                                                                   |
| Care pathway description                                                           | Low-intensity inpatient bed day at ULS de Braga                                                                                                                                                             |
| Environmental issues appraised                                                     | Global warming potential (IPCC, CO <sub>2</sub> eq, 100-year), water use, waste                                                                                                                             |

This resource is supplementary material for the care pathway study of ULS de Braga and activities within the hospital, ‘Appraisal of Environmental Impact of ULS Matosinhos.’<sup>2</sup> Refer to that document for a description of the assessment procedures.

## Findings

This study appraised the environmental impact of a low-intensity inpatient bed day visit at ULS de Braga in Portugal. The study found a greenhouse gas (GHG) emission impact of 18.8 kg CO<sub>2</sub> eq, water use of 6.2 m<sup>3</sup> and waste of 2.0 kg per inpatient bed day (24 hours).

Staff travel was the most significant contribution to the GHG emissions impact,



<sup>1</sup> Care Pathways: Guidance on Appraising Sustainability. (SHC, 2023). <https://shcoalition.org/sustainable-care-pathways-guidance/>

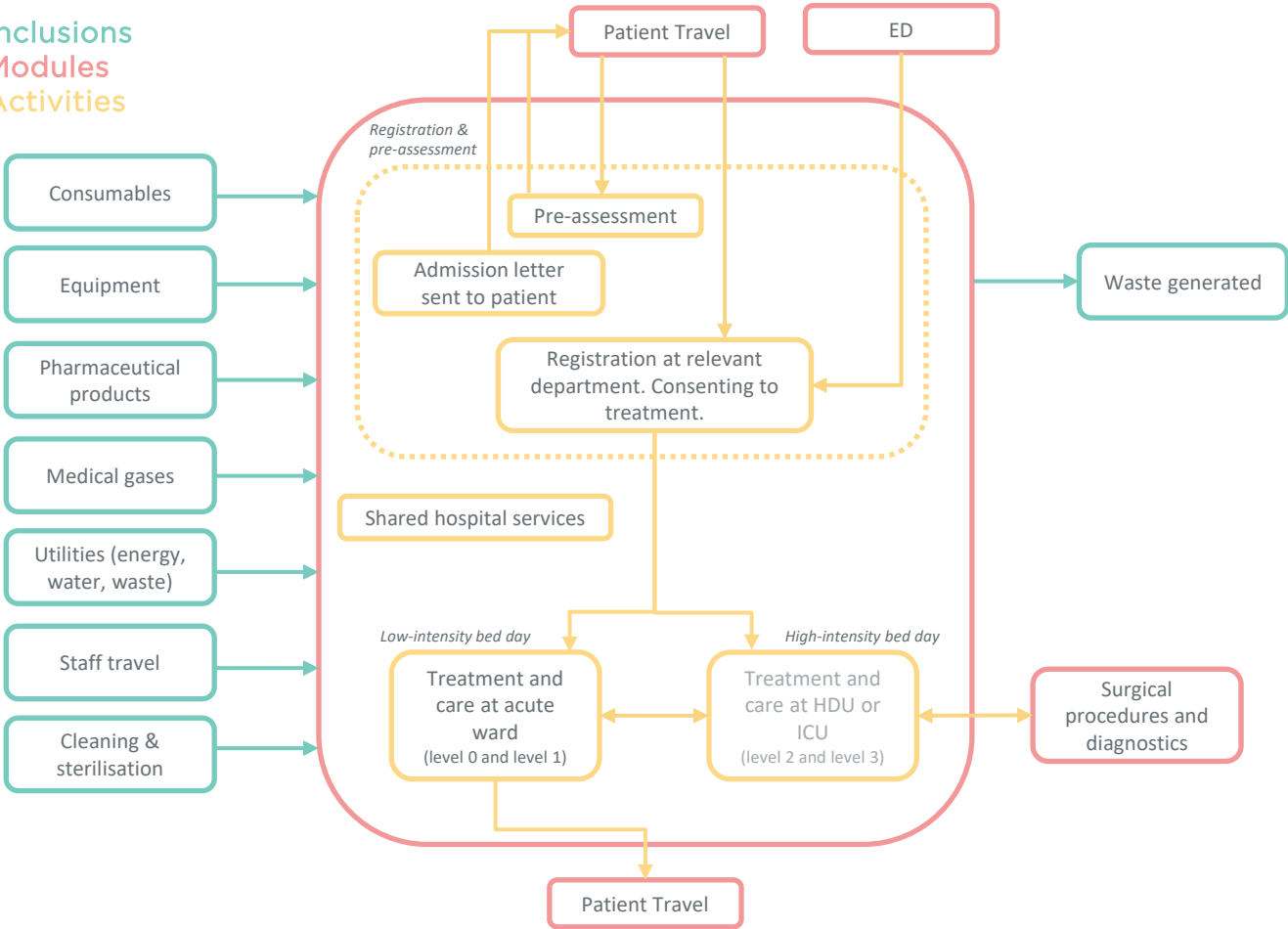
<sup>2</sup> ERM (2025) Appraisal of Environmental Impact of ULS Matosinhos, <https://shcoalition.org/https-shcoalition-org-appraisal-of-environmental-impact-of-hospital-activities-at-uls-braga/>

accounting for 60% of the impact. The GHG emissions impact of staff travel is driven by the number of staff in the department. It should be noted that the emission factor for staff travel was based on average GHG emissions associated with commuting, using a mix of UK and European data, as local data were unavailable. A dedicated staff travel survey would provide data to enable a more accurate appraisal of staff commuting impacts. Energy, fuels and refrigerants, and consumables and equipment were also identified as GHG emissions hotspots.

# Scope

- This assessment appraises the environmental impact of a low-intensity inpatient bed day at ULS de Braga.
- The functional unit of the system studied is an inpatient bed day in 2021.
- The scope includes pre-assessment, registration and patient treatment and care. The scope does not include surgical procedures and diagnostics.

## Inclusions Modules Activities



## Data

The following data were collected for all relevant activities for 2021, and are described in the diagram:

- Utilities data (fuels, electricity renewable or not, water use, and waste generated)
- Department consumables, such as trochanteric pins, multiaxial screws and repair kits
- Medical gases, including oxygen and nitrogen

- Pharmaceutical products, including painkillers, propofol and sedatives
- Annual equipment purchases and replacements, such as disposable electrode ECG cards, perfusion pump systems and blood pressure monitors
- Staff travel
- Linen use and cleaning and facilities cleaning

The environmental impact of the low intensity inpatient bed day visits for 2021 were modelled and then divided by the total amount of bed days in 2021. The hospital’s utilities data were provided and allocated to the general ward based on floor space.

## Results

- Results are the environmental impact of a low-intensity inpatient bed day (24 hours) in a general ward at ULS de Braga.

| Module                         | GHG<br>kg CO <sub>2</sub> eq | Water m <sup>3</sup> |             | Waste<br>kg |
|--------------------------------|------------------------------|----------------------|-------------|-------------|
|                                |                              | Direct               | Indirect    |             |
| Water                          | 0.04                         | 0.12                 | 0.65        | -           |
| Energy & fuels                 | 4.94                         | -                    | 0.61        | -           |
| Waste water management         | 0.07                         | -                    | 0.33        | -           |
| Solid/ liquid waste management | 0.22                         | -                    | 0.09        | 2.00        |
| Staff travel                   | 11.3                         | -                    | 2.06        | -           |
| Consumables                    | 0.62                         | -                    | 2.33        | -           |
| Equipment                      | <0.01                        | -                    | <0.01       | -           |
| Pharmaceutical products        | 1.66                         |                      |             |             |
| Medical gases                  | <0.01                        | -                    | <0.01       | -           |
| <b>Total</b>                   | <b>18.8</b>                  | <b>0.12</b>          | <b>6.09</b> | <b>2.00</b> |

## Acknowledgements

This document has been developed collaboratively with ULS de Braga and the Sustainable Healthcare Coalition. The coalition comprises a range of organisations within the healthcare sector, including pharmaceutical and medical device companies, trade bodies, procurement, government organisations and other stakeholders. The Sustainable Healthcare Coalition operates with the aim of facilitating the journey towards good health and wellbeing on a finite planet, through open-minded collaboration across public and private healthcare.