

DECARBONISING CHEMOTHERAPY PRODUCTION: THE CASE OF READY-TO-USE GEMCITABINE BAGS

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Context

Increase in activity:

- +35% increase in chemotherapy-related stays since 2014.

Human constraints:

- Shortage of qualified professionals, activity exposed to musculoskeletal disorders.

High cost:

- Expensive preparation equipment.

Standardization as a solution:

- Introduction of ready-to-use industrial Gemcitabine bags in 2017 at the Bergonié Institute.

The objective is to assess the **ecological impact of this practice** through collaboration with Gap Hospital, an expert in environmental analysis.

Method



Extraction of Gemcitabine production data from January 2024 to March 2025.



Calculation of the environmental impact of each production method using the validated Ecovamed®, Carebone® tools and internal data, and manual measurements (weight and volume of consumables).



Extrapolation of results based on data extracted via Noxelia® (analysis tool for CRUs), and calculation of the overall environmental impact over the period analyzed.

Results

Dosage (mg)	Savings in kg CO ₂ eq mean ± SD (rounded)	Savings in % (compared to <i>in house</i> reconstitution)
1200	250 ± 80	~ 45%
1400	360 ± 190	~ 45%
1600	640 ± 390	~ 50%
1800	900 ± 550	~ 50%
2000	500 ± 320	~ 55%
2200	200 ± 115	~ 55%

Table 1: Results of the comparison, at equivalent doses, between the two production methods

	01/2024- 03/2025 results	Concrete equivalent
Number of industrial bags used	~ 2000 bags	82% production coverage
CO₂ eq. savings	~ 3 tons eq. CO ₂	≈ 22 days in hospital, 45 iPhones
Waste avoided	0,9 ton	≈ €250 saved on infectious medical waste

Table 2: Overall impact of implementing ready-to-use industrial bags on our production flow

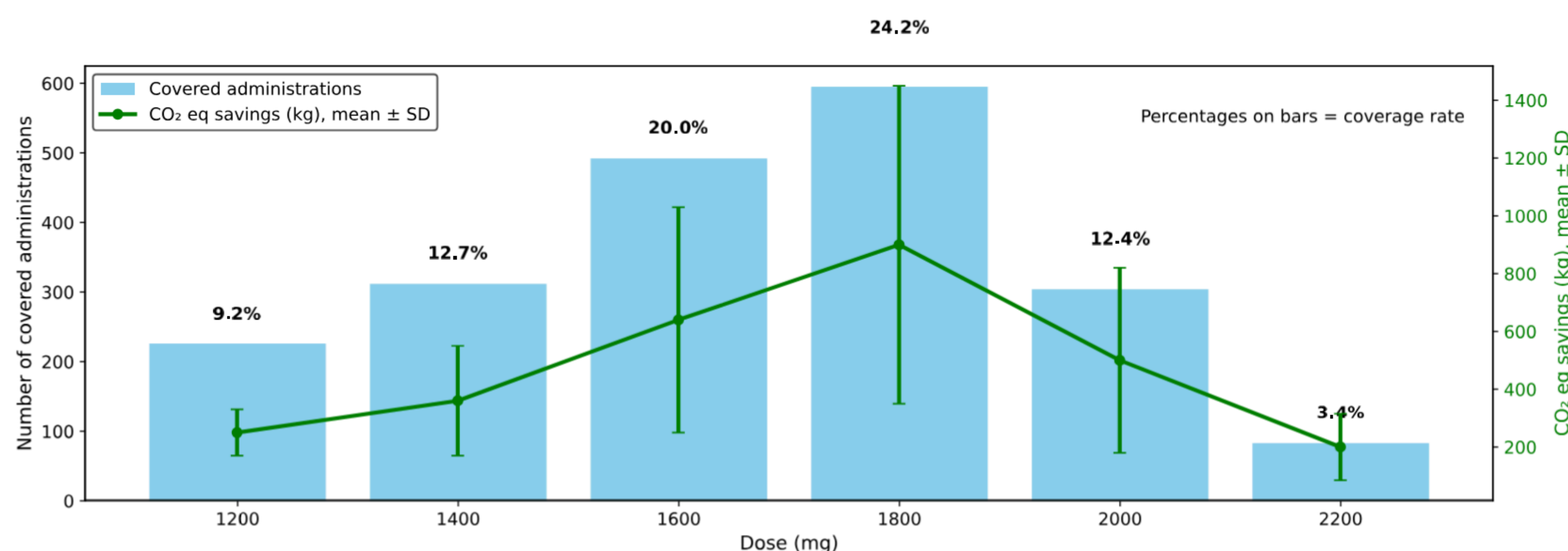


Figure 1: Coverage rate and environmental impact of ready-to-use Gemcitabine bags between January 2024 and March 2025, by dosage

Discussion

- The use of ready-to-use industrial Gemcitabine bags has reduced the environmental impact of our URC by approximately 50% for this molecule.
- The development of new molecules (Pemetrexed) would extend these benefits.

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