

# Economic and environmental impact of decentralized cancer care (DCC) in oncology: an innovative approach in the French Alps

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## Objectives

The Centravie project aims to assess the constraints that concentrating cancer care in major regional cities places on patients who live in more remote areas. Innovative approaches that seek to overcome these potential vulnerabilities need to be evaluated. The aim of this study was to measure the economic and environmental impact of decentralized cancer care (DCC) in Savoy, France [1].



## Methods

- Study population:** Disease management was based on a cohort of patients who underwent DCC at the Albertville Moutiers, Bugey-sud or the Vallée de la Maurienne hospital.
- Economic evaluation:**
  - Information on resource use was provided by local hospital discharge databases. This study was conducted retrospectively (CNIL MR004 R201-004-471, 30/07/2024).
  - Costs (in EUR 2022) were assessed for each pathway from the perspective of the French National Health Insurance (NHI) and with a time horizon of 12 months.
  - Total costs per patient included the cost of hospitalizations, decentralized medical specialists' consultation fees, transportations based on the distance (in km) between the municipality of residence and the place where the DCC was delivered compared to the Centre Hospitalier Métropole Savoie. Medical specialists' travel costs were also included.
- CO<sub>2</sub> emissions** were measured using values provided by the European Environment Agency.
- One-way sensitivity analyses** were conducted by varying resource consumptions and unit cost parameters by plus or minus 20%. They were then illustrated graphically in a tornado diagram using Treeplan SensIt®. All statistical analyses were performed using R® software.

**Reference:** [1] <https://commons.wikimedia.org/wiki/File:Savoie-Position.svg>

**Ethical statement:** CNIL MR004 R201-004-471, 30/07/2024).

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## Results

**Study population:** A total of 252 patients underwent DCC between January 1 and June 30, 2023. Six patients were excluded upon withdrawing consent.

**Economic evaluation and CO<sub>2</sub> emissions:** Mean total costs (SD) per patient were €8,312 (19,238) when disease management was based on DCC and €9,515 (20,204) when not ( $p < 0.001$ ) (cf. Figure 1)<sup>1</sup>. Across the sample as a whole, DCC reduced travel by 282,861 km, resulting in a cost saving of €290,279 and a reduction of 34.6 tons of CO<sub>2</sub>. Figures 2 and 3 detail transport costs.

**Sensitivity analysis results:** The most sensitive parameter on incremental costs was the number of hospitalizations per patient (cf. Figure 4).

<sup>1</sup>The number and cost of hospital admissions in Bugey-sud were estimated on the basis of averages for Albertville Moutiers and the Vallée de la Maurienne hospitals.

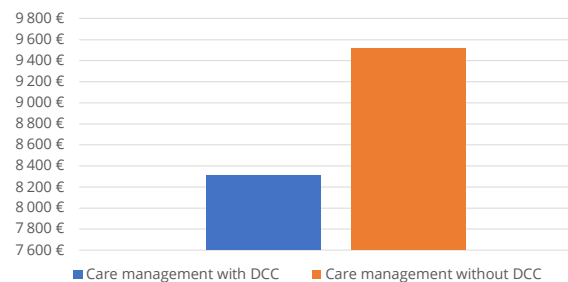


Figure 1: Average total cost per patient

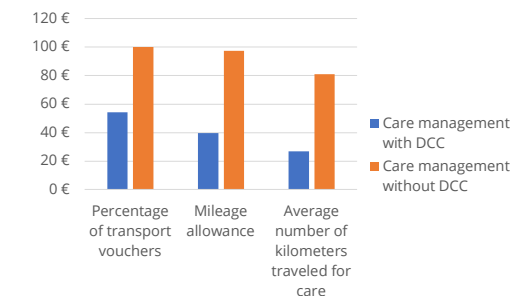


Figure 3: Cost difference for transport

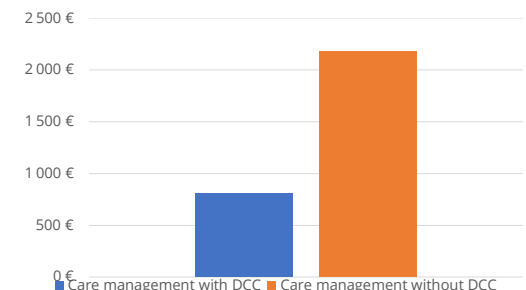


Figure 2: Average transport costs

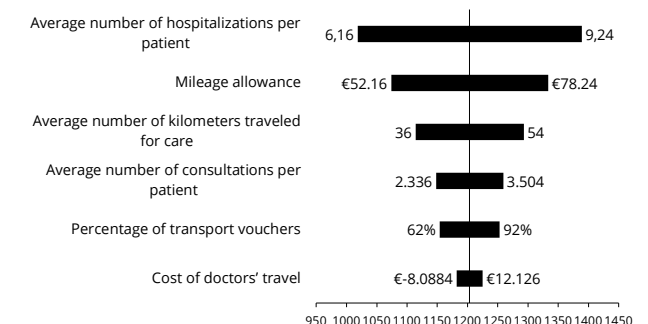


Figure 4: One-way sensitivity analysis

## Conclusion

Our study demonstrated that DCC is likely to provide cost savings for the French NHI and help fight climate change. Further research conducted within the Centravie project would consider the impact of DCC on the quality of life of both patients and healthcare professionals.