

# Cost of carcinoid syndrome in France: analysis of the national health insurance database

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## Background

- Carcinoid syndrome (CS) develops in approximately 20% of patients with neuroendocrine tumors (NETs),<sup>1</sup> incurring both direct and indirect healthcare costs.<sup>2</sup>

## Objective

To assess the cost of care among patients with NETs and CS in France using data from the French national health insurance database (SNDS).

## Methods

- This retrospective analysis used data from the SNDS.
- The study period was from January 1, 2012, to December 31, 2017, or the date of death, whichever occurred first.
- Eligible patients had both a hospital stay associated with CS (E34.0 code) and ≥ 1 delivery of a somatostatin analog between January 1, 2012, and December 31, 2016, ensuring patients had ≥ 1 year follow up.
- Mean costs by item of expenditure were described in Euros (€) per person per month (PPPM) and per person per year (PPPY).
- Mean costs were reported in the global population and in the following two periods: the first year in incident patients (i.e. patients with a first recorded event on or after January 1, 2013), and the last year (preceding death).
- Costs were divided into plausibly and possibly related to NETs/CS and 'other'.

## TAKE-HOME MESSAGE

Cost of carcinoid syndrome in France is mainly attributable to drugs and hospital stays. The first year after diagnosis and the last year before death represent periods of particularly high costs.

Figure 1. Mean costs per person per month by study periods

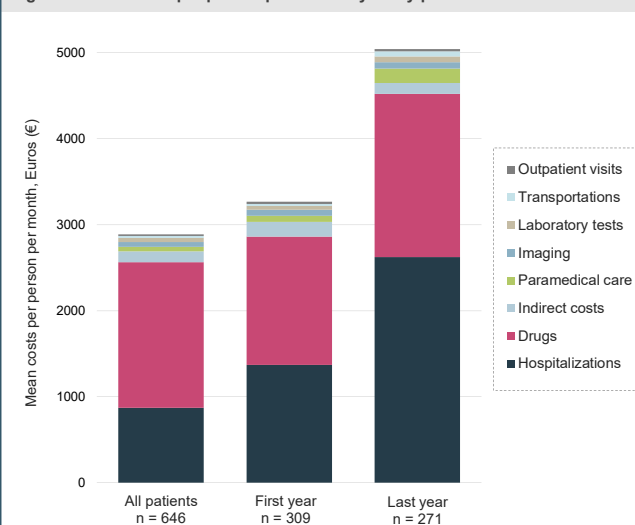
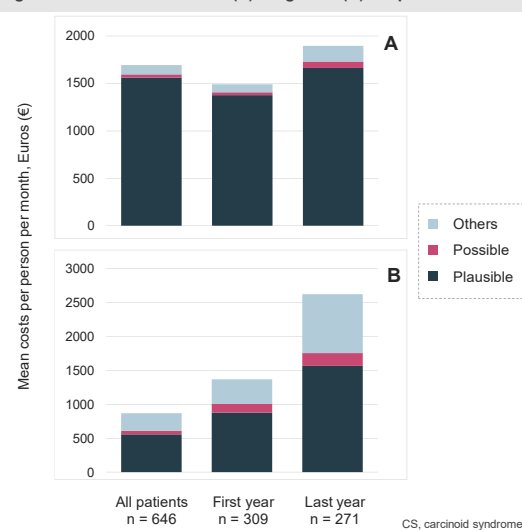


Figure 2. Costs related to CS: (A) drugs and (B) hospitalizations



## CONCLUSIONS

- Cost of care among patients with NETs and CS exceeds €30,000 PPPY in France, mainly attributable to drugs and hospital stays.
- Costs were particularly high during the first year after diagnosis and the year preceding death. Successful disease management, limiting the need for additional treatments and healthcare visits, may contribute to lower costs in the intermediate period.
- The two main study limitations were the selection bias of the population and the lack of NET characterization. Further studies combining data from the SNDS with national specific NET databases are necessary.

## Results

### Patients

- Among 646 eligible patients, 309 patients were incident and 271 died during the study period.
- Median age was 63.8 years, and 353 (54.6%) were men. Median (interquartile range) time of follow-up was 42 (22–62) months.
- Median (95% confidence interval) overall survival was 5.4 (4.91–5.85) years.

### Cost analysis

- Mean overall cost (PPPY) was €34,668 in the global population.
- The highest costs (PPPY) were observed during the first (€39,186) and the last (€60,499) year periods.
- Mean overall costs (PPPM) were €2889, €3266 and €5041 in the global population, the first year period and the last year period.
- Description by study periods and by item of expenditure is reported in **Figure 1**.
- Drugs and hospital stays were the two largest items of expenditure in the global population (59% and 30%), the first year period (51% and 42%), and the last year period (38% and 52%).
- Overall, 92% of drug use and 64% of hospital stays were categorized as plausibly linked to CS (**Figure 2**).

### References

1. Halperin D *et al.* *Lancet Oncol* 2017;18:525–34.
2. Shen C *et al.* *Pharmacoeconomics* 2018;36: 1005–13.

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