

ECONOMIC IMPACT OF THE CLINICAL PHARMACIST ON THE REDUCTION OF DRUG-RELATED PROBLEMS BEFORE THE INITIATION OF AN ANTI-TUMOR TREATMENT - A PROSPECTIVE MULTICENTER TRIAL

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Background and importance

Multiple studies have shown a high rate of drug-related problems (DRP) in patients with cancer. To reduce this risk, several oncology departments have set up multidisciplinary assessment programs that includes pharmaceutical consultation.

Aim and objectives

In a context of limited resources allocation, our study aims to evaluate the economic impact of clinical pharmacists' interventions (PIs) on DRP detection from a hospital perspective.

Materials and methods

A French prospective non-interventional double-center study was set up in 2020. Patients treated for solid tumors were included between February 2020 and March 2021.

Pharmaceutical time and costs

- Pharmaceutical time based on consultations and analysis times
- Time has been valued
 - to an average annual full-time equivalent (FTE),
 - by the grade of the contributor (2022 salary scales)

Multiple scenarios have been established:

- low/high salary grades,
- internal organization (involvement of senior or junior pharmacists),
- change in patient numbers

Costs of avoided clinical consequences

- PIs were evaluated by an expert panel (severity, evidence)
- We selected PIs regarding clinically significant (moderate or major severity) drug-drug interactions related to drug toxicity
- We valued the likely "diagnosis related groups" (DRP) of the avoided event thanks to the 2019 national survey on hospital costs.

Avoided hospitalization costs = $\sum(n \times \text{mean cost of DRP} \times \text{occurrence probability})$ for every type of avoided event

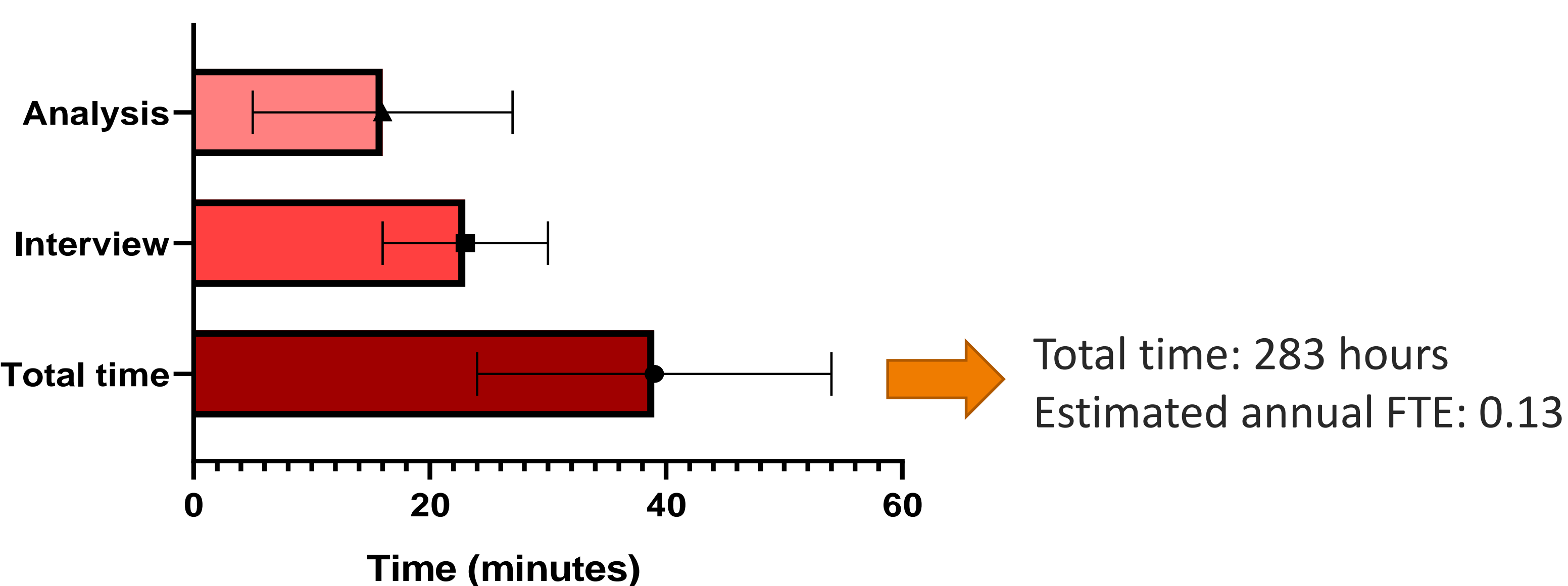
Occurrence probability based on the evidence level

Level of evidence	Very low	Low	Moderate	High
Probability	P=0.01	P=0.1	P=0.4	P=0.6

Results

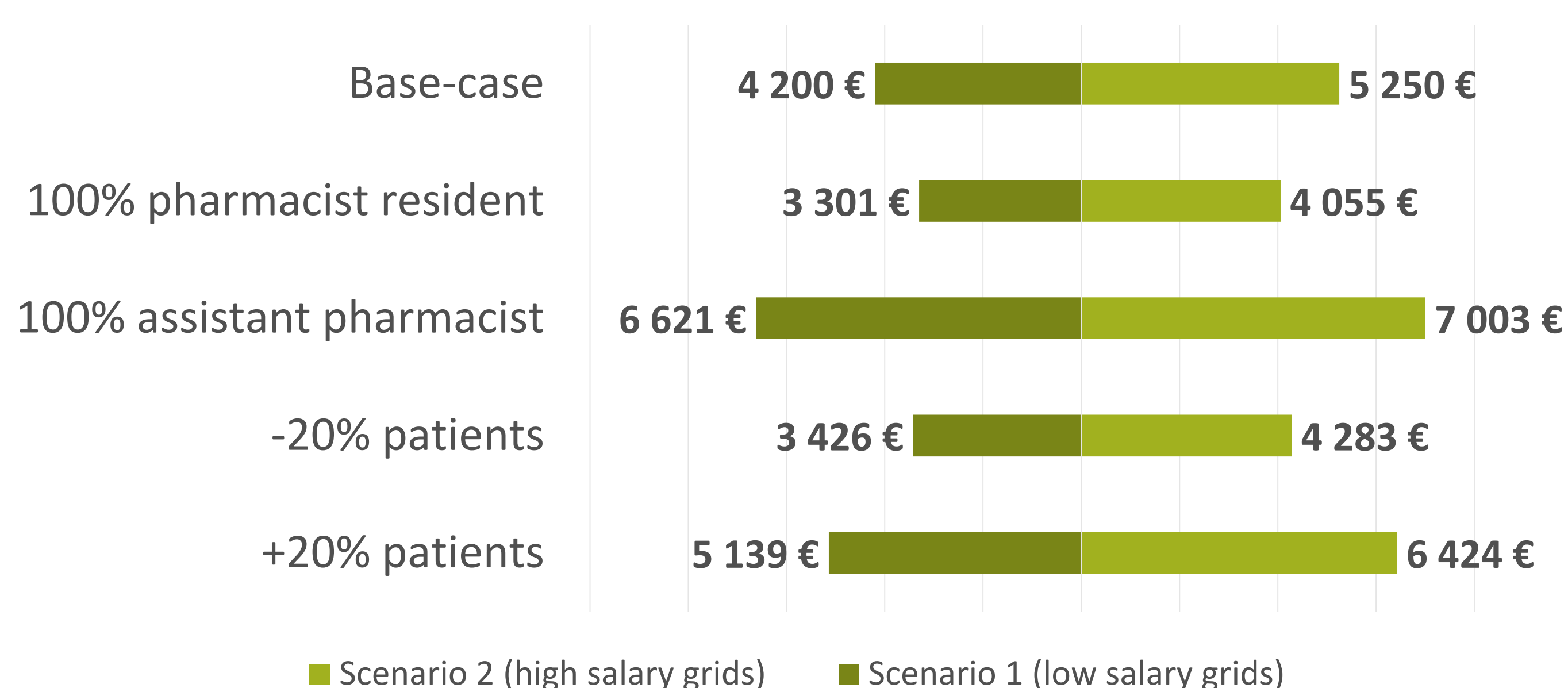
Inclusion over the 14-month study period : 438 cancer patients, 62% of males, mean age of 65+/-13 years.

Pharmaceutical time and costs



Total pharmaceutical cost was estimated between :
€4,199 (low salaries) and €5,250 (high salaries) per year

- Between **€11.4 and €14.3 per patient**
- Between **€18.4 and €23.0 per drug-drug interaction**



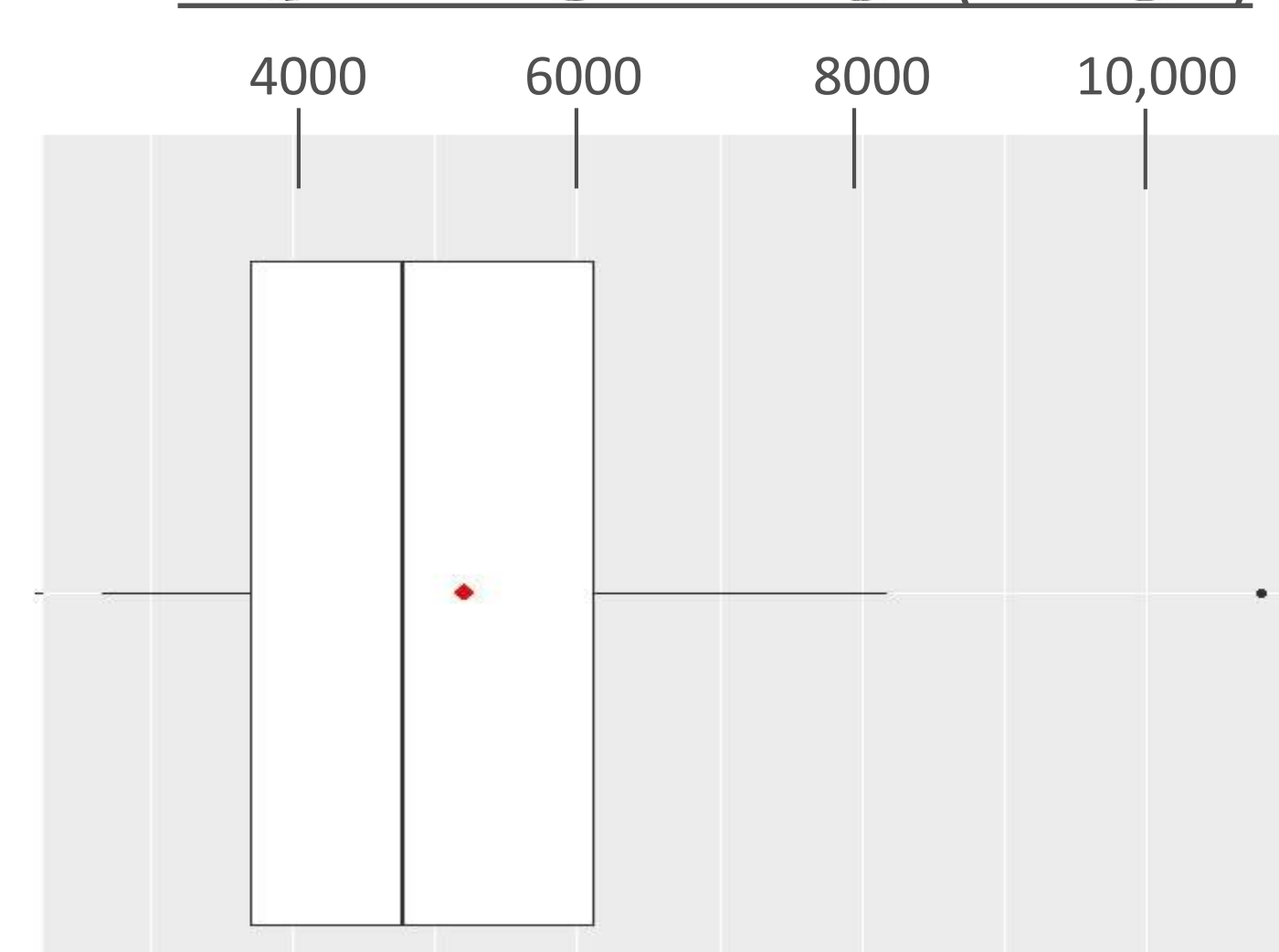
Costs of avoided clinical consequences

122/266 PIs were evaluated to be about clinically significant drug-drug interactions related to drug toxicity that could have caused a hospitalization or emergency room (ER) stay

Severity	Moderate		Major		Total	
	n	%	n	%	n	%
Very low	17	14%	4	3%	21	17%
Low	24	20%	8	7%	32	26%
Moderate	12	10%	52	43%	64	52%
High	3	2%	2	2%	5	4%
Total	56	46%	66	54%	122	100%

=> Cost of hospitalization or ER stay for these serious avoidable adverse events was estimated on average at €4,869

Unweighted hospitalization costs for the various DRGs identified (in euros)



Avoided hospitalization costs were estimated at **€180,633**

Conclusion and relevance

Clinical pharmacists are an indispensable and legitimate member of therapeutic assessment programs for cancer patients. They help in reducing drug-related problems in a cost-effective manner.

