

# Economic study of medico-surgical strategies in patients with chronic knee or hip prosthetic joint infection

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## BACKGROUND

- **Chronic** prosthetic joint infections (PJI) are a serious complication in arthroplasty leading to potential significant costs for health systems.
- Significant impact on patient care but **few cost data** especially total cost (including follow-up and rehabilitation care).
- Patients are **at risk of a new infection**, following prosthesis reimplantation.
- **Considerable impact of failures (persistent infection or new infection).**

## METHODS

- Patients aged 18 and over, **admitted at the Lyon University Hospital (France) for a hip or knee chronic PJI managed with 2-stage exchange**, between January 1, 2013 and December 31, 2015 were retrospectively identified.
- Following resource consumptions were collected from patients record and taken into account in the evaluation: hospital stays, antibiotic treatments, imagery and biological acts, consultations, **hospitalization at home (HAH) and follow-up and rehabilitation care (FCR).**
- Costs were assessed from the **French health insurance viewpoint over 2-year from prosthesis reimplantation.**
- Treshold analysis :
  - only patients with cemented prosthesis (N = 73).
  - For new infections, analysis of susceptibility of germs to Gentamicin or Vancomycin (antibiogram analysis).
  - Hypothesis = new infection avoided for 80% of active germs.

## RESULTS

- The study included **116 patients** (see table 1).
- Mean cost of knee or hip chronic PJI was estimated over 2 years from prosthesis reimplantation at **21,324 euros for all patients** (see table 2), at **51,697 euros for patients with a new infection after reimplantation** (n=18) and at **15,745 euros for patients without a new infection after reimplantation** (n=98).

**Table 2.** Cost of patient care over the two years following reimplantation

	Mean (SD)
<b>Gender</b>	
Female	22,932 (31,492)
Male	19,660 (35,580)
<b>Infection localization</b>	
Hip	22,152 (32,516)
Knee	20,577 (34,535)
<b>New infection after reimplantation</b>	
yes	51,697 (67,361)
no	15,745 (18,144)
<b>Total</b>	<b>21,324 (33,457)</b>

*SD : Standard Deviation*

## CONCLUSION

- Hospitalization and FCR costs account for the vast majority of costs ≈ 95%.
- Costs are borne mainly in the first year ≈ 80%.
- Very important gap between cost without and with new infection.

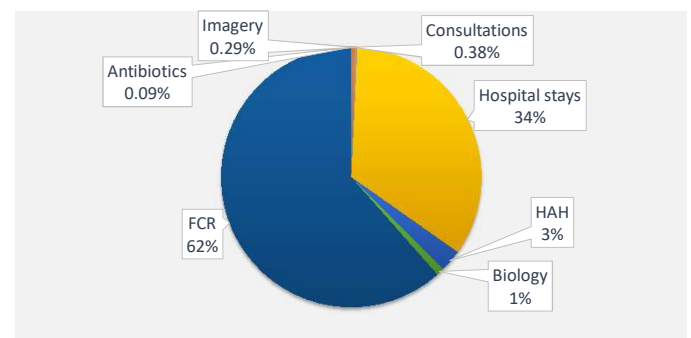
## OBJECTIVES

- To assess the **cost of knee or hip chronic PJI managed in 2-stage exchange** at the Lyon university hospitals, France.
- To conduct a threshold analysis to determine **the reimbursement tariff of a bone cement loaded with antibiotics** (gentamicin + vancomycin) **that would prevent infections while allowing French health insurance to save money.**

**Table 1.** Main characteristics of the study population

Characteristics	N = 116
<b>Age</b>	
Mean (SD)	66 (13)
Median (IQR)	67 (61-74)
<b>Gender</b>	
Female	59 (50.86%)
Male	57 (49.14%)
<b>Infection localization</b>	
Hip	55 (47.41%)
Knee	61 (52.59%)
<b>New infection after reimplantation</b>	
yes	18 (15.52%)
no	98 (84.48%)

**Figure 1.** Repartition of patient care cost by type of resource consumption



- **6 to 7 new infections could have been avoided** by using a bone cement loaded with antibiotics (gentamicin + vancomycin).
- If all patients had benefited from an antibiotic-loaded (gentamicin + vancomycin) bone cement to fix the prosthesis at the time of reimplantation, **at a reimbursement tariff between 2,980 and 3,984 euros, the cost avoided by infections avoided would have been higher than the additional cost related to the medical device.**

**These first cost estimates of knee or hip chronic PJI managed in 2-stage exchange in France underline the economic interest of preventing new infections.**