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## BACKGROUND

Cataract is the leading cause of blindness in the world. In fact, it is responsible of half of blindness cases in developing countries. Cataract also represents a serious economic and social problem, as blind people usually remains inactive and under the responsibility of the community.

The cataract treatment is purely surgical. It involves removal of the opaque crystalline nucleus and the correction of the residual aphakia.

Several surgical techniques may be used, but the most practiced techniques are:

-The Extracapsular Cataract Extraction (ECCE) ;

-Ultrasonic Phacoemulsification (UPE).

With more than 1.000 cataract operations performed per year, Specialties Hospital of Rabat (SHR) is considered one of the Moroccan public health reference centers for this surgery.

In contrast to ECCE, UPE is the most used technique at SHR (84% of cataracts operated on) and requires costly consumable contributing to the overall cost of care.

## OBJECTIVES

The objective of this study is to compare the proportion of Pharmaceutical Products (PPs) costs in the amounts billed according to cataract surgery types and to patients' Medical Tariff Categories (MTCs) at the SHR.

## METHODS

□ To collect data on the use of PPs (drugs and medical devices) by surgeons during an uncomplicated cataract surgery with lens implantation by both standard techniques (ECCE and UPE) at the SHR ;

□ To evaluate the cost of used PPs in order to determine their impact on the amount billed to patients' MTCs\* at our hospital.

Information relating to the cost of PPs and billing packages was collected from our hospital's financial department.

The cost of biology tests, paraclinical examinations, hospital stay, some hardware investments (operative microscope, phacoemulsification device, handpieces ...) and staff costs were not included in the study.

We studied data from all patients operated for cataract in 2013. The number of operated patients and their MTCs were provided by the statistics department of our hospital.

\*In Morocco, the basic medical coverage is governed by the law n° 65-00. It institutes :

- The Mandatory Sickness Insurance (MSI) ;
  - The Medical Assistance Regime for Economically Disadvantaged Persons (MAREDP).
- The management of MSI for salaried employees is entrusted to two management agencies :
- The National Fund of Social Foresight Organizations for Public Sector Salaried Employees (NFSFOPSE) ;
  - The National Fund of Social Security for Private Sector Salaried Employees (NFSSPSSE).

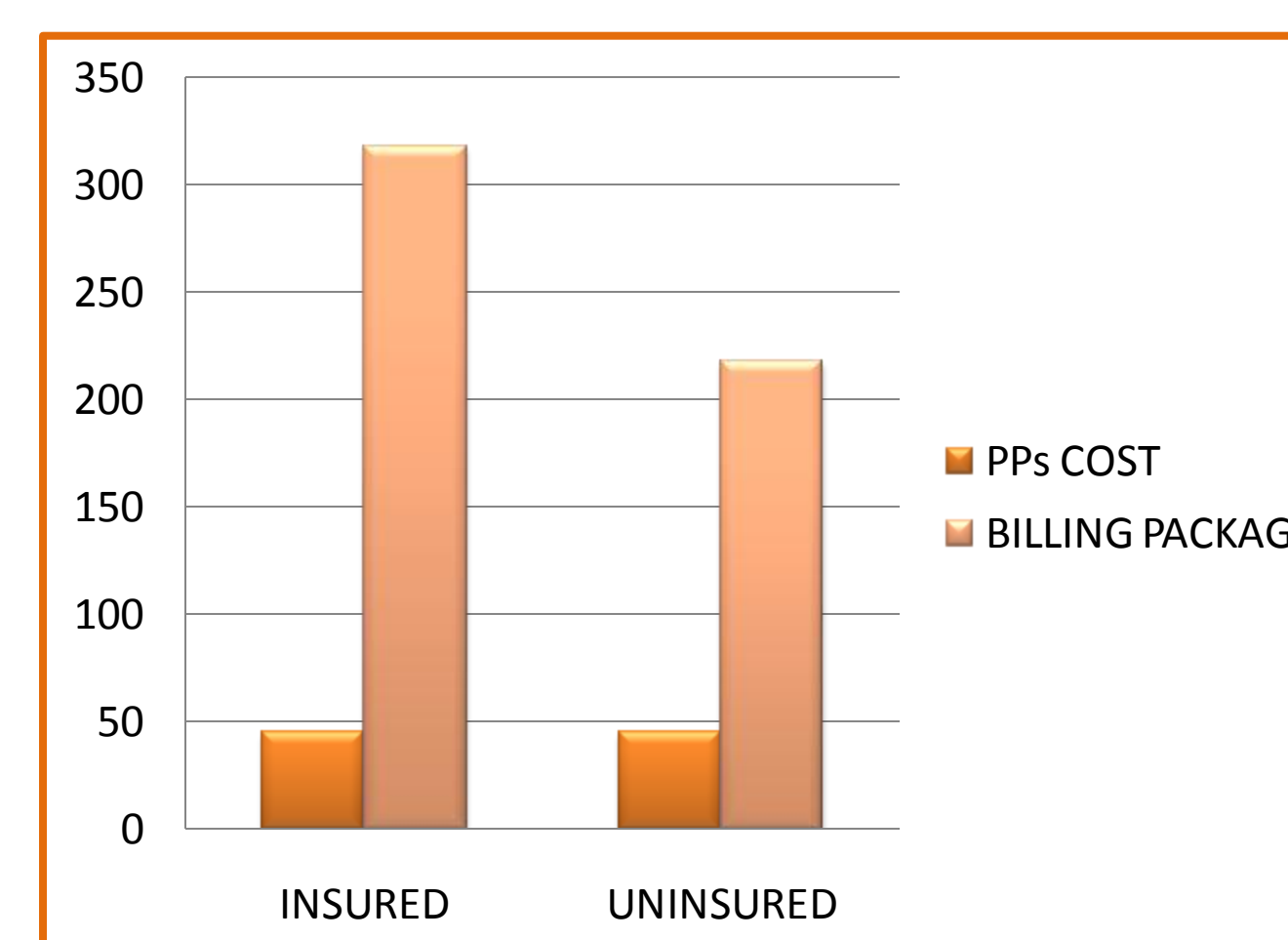
In public hospitals, the same billing packages are used for invoicing among both paying patients and economically disadvantaged ones. Therefore we grouped them in the same billing category (uninsured patients category).

Direct cost per patient of used PPs compared to the overall billing package and according to patients' MTCs and used surgical technique is shown in Table I.

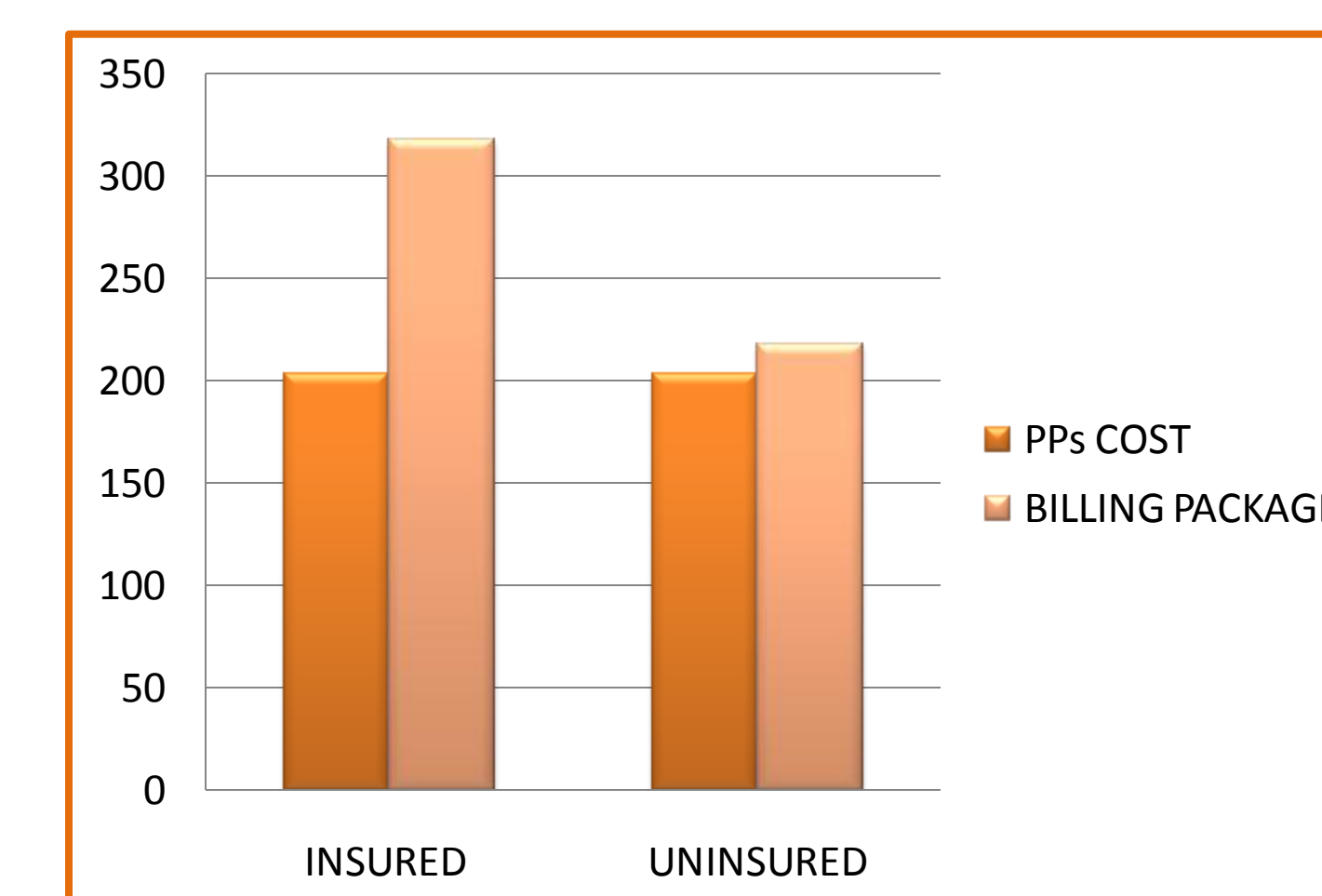
**Table I.** Cost per patient of PPs compared to the overall billing package

MTCs	ECCE		UPE	
	PPs cost	Billing package	PPs cost	Billing package
Insured patients	45 €	227 €	203 €	318 €
Uninsured patients	45 €	218 €*	203 €	218 €*

\* Excluding hospitalization fees (€9 per day), radiology and medical biology fees.



**Figure 4.** Gap between PPs cost and invoiced billing package for an ECCE

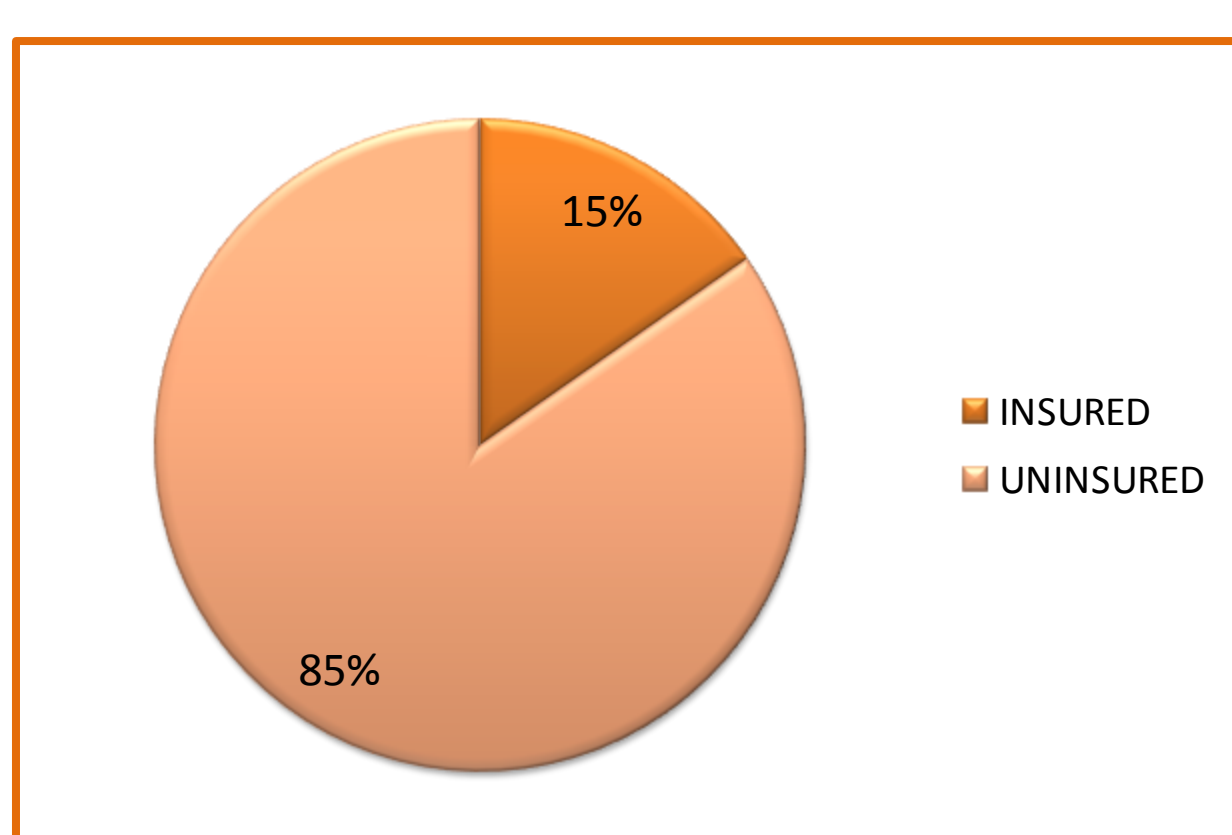


**Figure 5.** Gap between PPs cost and invoiced billing package for an UPE

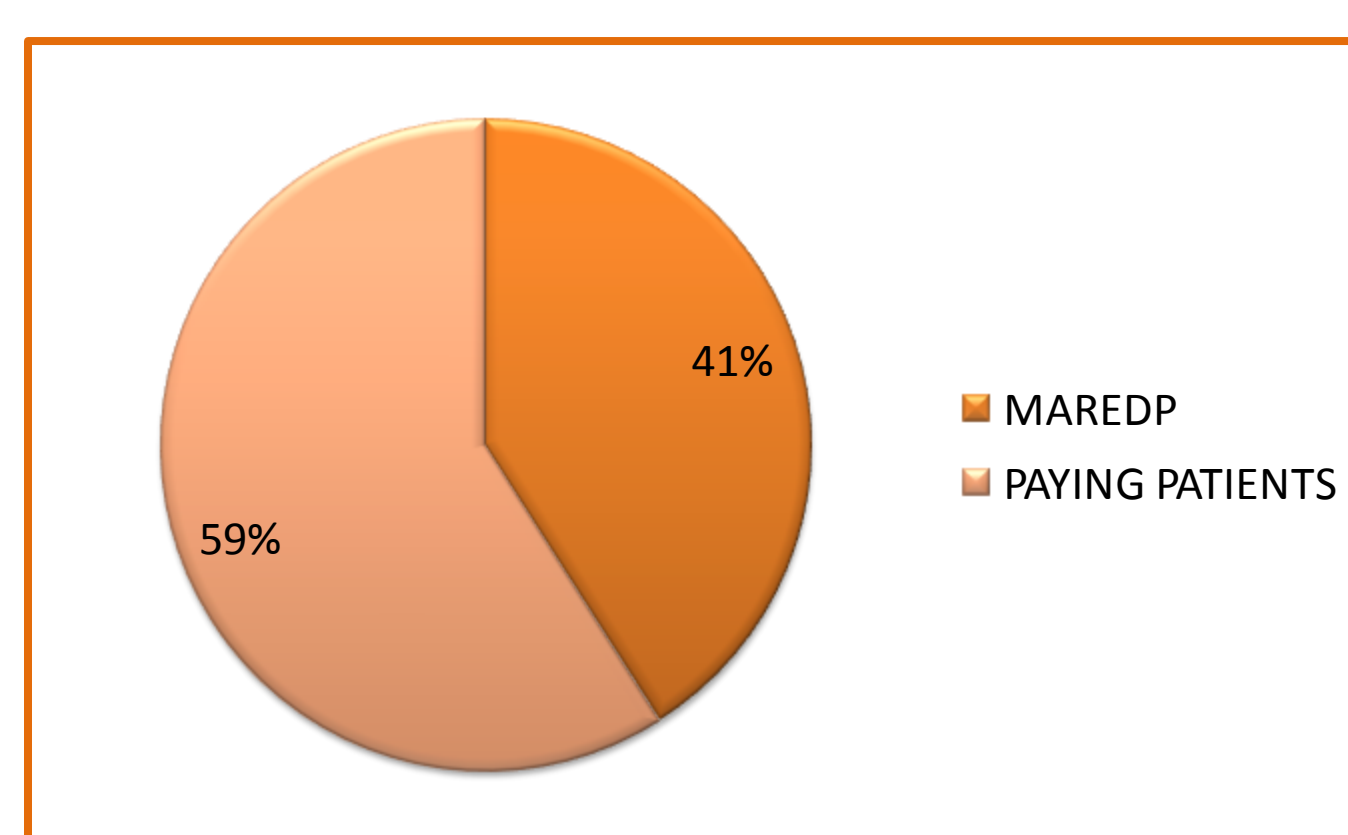
## RESULTS

- The total number of patients operated for cataract in our establishment is 1073, of which 901 (85%) underwent an UPE and 172 (15%) underwent an ECCE (Figure 3).

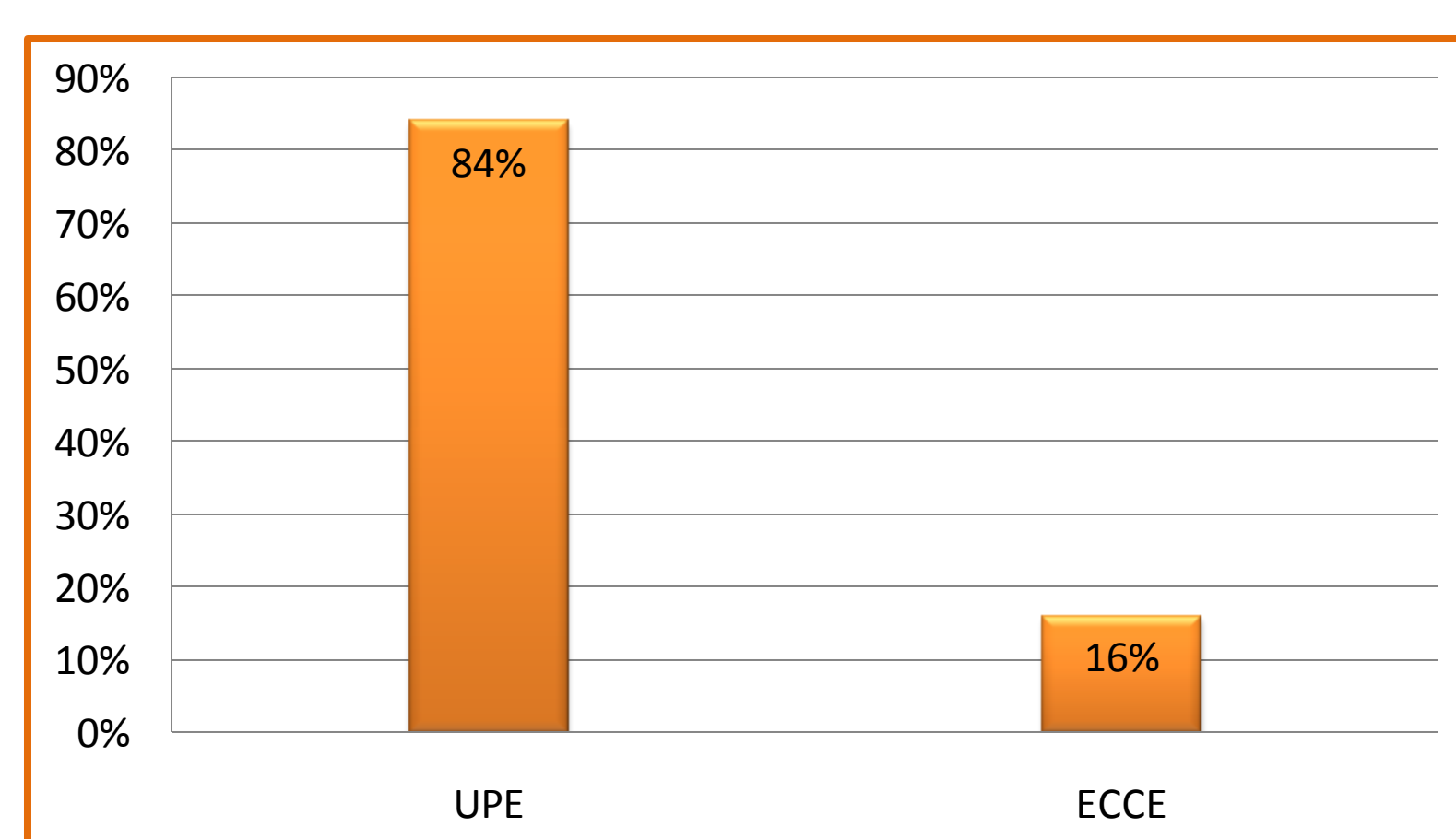
- The percentage of insured patients category (NFSFOPSE, NFSSPSSE) and uninsured patients category that underwent cataract surgery in our institution is represented in Figures 1 and 2.



**Figure 1.** Percentage of insured patients category and uninsured patients category at SHR (n=1073)



**Figure 2.** uninsured patients category at SHR (n=912)



**Figure 3.** Surgical techniques used for cataract surgery at SHR (n=1073)

## DISCUSSION

In our study, the most used operative technique in cataract surgery is the UPE. In fact, this technique enables a considerable time saving in terms of hospitalization days and surgery duration. It also improves the patient quality of life. On the other hand, constraints related to this technique are first the necessity of a specialized training of the surgeon regarding this surgical approach (in order to prevent perioperative complications that may generate extra costs), and then the cost of different PPs consuming in our case about 64% of the billing package in insured patients and 93% of the billing package in uninsured patients representing 85% of all operated patients, in contrast to the ECCE for which the cost of PPs consumes only 20% of the billing packages in both patients' MTCs.

41% of patients belonging to the uninsured patients billing category are economically disadvantaged patients. They benefit from the MAREDP, which is a basic medical coverage founded on the principles of social assistance and national solidarity. It is funded by taxation and by the governmental budget.

In our country, patients with MAREDP are oriented towards public hospitals and have a billing mode different from insured patients.

Paying patients (59% of uninsured patients) benefit from the same package than the economically disadvantaged patients, which is not beneficial for our institution. This finding leads us to review and to discuss the billing method in this category of patients by proposing "invoicing by act" as an alternative billing mode.

The next step would be to conduct a study that would try to approach the real cost, while taking into account all other expenses. This would allow a more accurate comparison with the current billing modes, in order to discuss the re-evaluation of these acts in the context of access to innovation, while taking into account specifications of all MTCs and also the continuous technological development which generates an extra cost that remains to date not taken into account.

## CONCLUSION

UPE is the most used technique, preferred for its many advantages. However it requires costly PPs that consume the greatest share of billing packages, especially in uninsured patients. These findings require the billing of this surgical act to be re-evaluated and a revision downwards of the necessary PPs acquisition prices. This study also confirms the role of the hospital pharmacist as an adviser to the administration in the orientation of the hospital strategies.