

The Personalised Reimbursement Models (PRM)

Real world data collection to provide innovative pricing solutions in France

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Introduction

- ➔ Oncology medicines reimbursed in France have one fixed price whereas the benefits vary across patient groups. More and more, voices raise the need to have price per indication accordingly with the value brought by a product.
- ➔ The Personalized Reimbursement Models (PRM) project, active since 2015, is an infrastructure validated by the French National Data Privacy Committee collecting real life data of HER2+ breast cancer (BC) patients receiving Roche targeted therapies. The PRM project is positioned as an innovative drug financing model based on the real benefit for patients in terms of indication, patients profile, disease stages, combination therapies and treatment duration. It aims to routinely collect existing data to construct new pricing models. HER2 positive breast cancer patients (HER2+BC) data were collected and analyzed to confirm the collection's robustness and representativeness of the French patients care.

Objectives

This study aimed:

- ➔ first, to model theoretical personalized reimbursement agreements for Herceptin® using PRM database;
- ➔ and secondly, to assess the impact of Herceptin® price rebate regarding its two first main indications. (HER2+ metastatic breast cancer and HER2+ early breast cancer).

Materials & methods

PRM breast cancer database

- ➔ All breast cancer women from 105 health centers recorded in the Electronic Pharmacy Record (EPR) system with at least one HER2 targeted Roche therapy administration between January 2011 to December 2016 were selected.
- ➔ Data related to demographics, disease description, drug usage and clinical outcomes were collected in the EPR. For each intravenous or subcutaneous HER2 blocking agents, doses and duration were automatically recorded.
- ➔ These data were controlled, cleaned and centralized in an anonymous and secure way through a hosting provider.
- ➔ Data management has been reviewed and validated by the scientific committee.

Theoretical reimbursement agreements

- ➔ Herceptin®, antiHER2 targeted therapy, obtained reimbursement successively for metastatic breast cancer (2002), adjuvant setting (2006) and neoadjuvant setting (2012). Consequently, its price decreased with the reimbursement of label extension in adjuvant setting on a volume based agreement, mainly ignoring the scaling of patients clinical benefit as adjuvant indication was recognized of better value (ASMR I) than the metastatic indication (ASMR II). Theoretically, price could have been revised considering higher list price (Table 1).
- ➔ A 5% price decrease was negotiated when adjuvant indication has been authorized in 2006.

Year	2005	2006
Indication	HER2+ Metastatic breast cancer (ind1)	HER2+ Metastatic breast cancer (ind1)
Improvement in medical benefit (ASMR)	II : important	II : important
Manufacturing price	652.0 €	HER2+ Adjuvant setting breast cancer (ind2)
		I : major
		619.4 €

Table 1: Herceptin's price decrease from 2005 to 2006

PRM offers the opportunity to negotiate separated net prices per indication directly linked to a product's added value, as shown in figure 1 on a theoretical flat revenue basis.

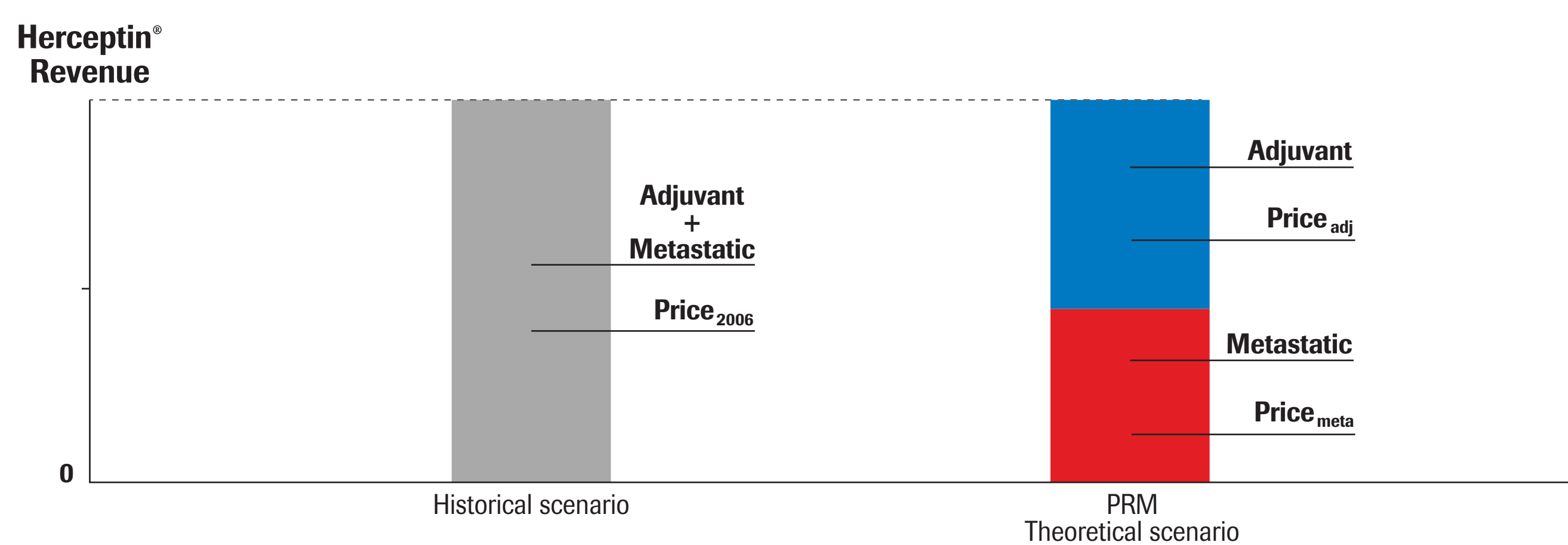


Figure 1: PRM theoretical scenario to maintain flat revenue

Historical scenario

Herceptin® revenue is the number of injections without distinction of indication (adjuvant or metastatic) multiplied by the price of Herceptin® in 2006 (after adjuvant indication and 5% rebate).

$$Revenue = Injections' number_{(meta+adj)} * Price_{2006}$$

PRM theoretical scenario

Herceptin® revenue is the sum of injections in adjuvant multiplied by the price of Herceptin® in adjuvant before rebate (2005) and, injections in metastatic multiplied by the price calculated in order to maintain Herceptin® revenue. According to the following formula:

$$Revenue = Injections' number_{adj} * Price_{2005} + Injections' number_{meta} * Price_{meta}$$

Based on flat revenue, PRM scenario was simulated to calculate prices flexibility between adjuvant and metastatic indications of Herceptin®.

PRM scenario hypothesis

According to recognized added value (ASMR I) for adjuvant indication, we assume to maintain the adjuvant indication price to stay equal to first price negotiated in 2005 (Price₂₀₀₅)

Following this hypothesis, price flexibility for metastatic indication was estimated according to the formula:

$$Price_{meta} = \frac{Revenue - Injections' number_{adj} * Price_{2005}}{Injections' number_{meta}}$$

For the exercise, we used PRM database assuming 2016 split by indication as an acceptable estimate of 2006 market shares following adjuvant indication reimbursement.

Results

PRM breast cancer database characteristics

From >18,000 HER2+BC women files extracted, 13,535 patients from 97 centers were analyzed, accounting for around 45% of all 2011-2016 French HER2+BC.

In 2016, breast cancer was early in 2 patients out of 3. One percent of patients have both early and advanced treatments. Average age of early treated patients is 56 years old when age of advanced treated patients is significantly higher: around 60 years (p<0.001, Anova). (Table 2). Average Body Mass Index is higher for patients treated with early treatments than for patients treated with advanced treatments (28 versus 26, P=0.011, Anova).

2016	Patient's number %	Age Year	Body Mass Index Kg/m ²
Early treatment	3,432 64%	56.37 12.87	28.31 170.43
Advanced treatment (metastatic)	1,885 35%	59.16 13.53	25.61 5.44
Both early and advanced treatment	80 1%	57.45 15.17	26.40 6.74
Total	5,397 100%	57.36 13.20	27.34 135.95

Table 2: HER2+ breast cancer patients characteristics (2016)

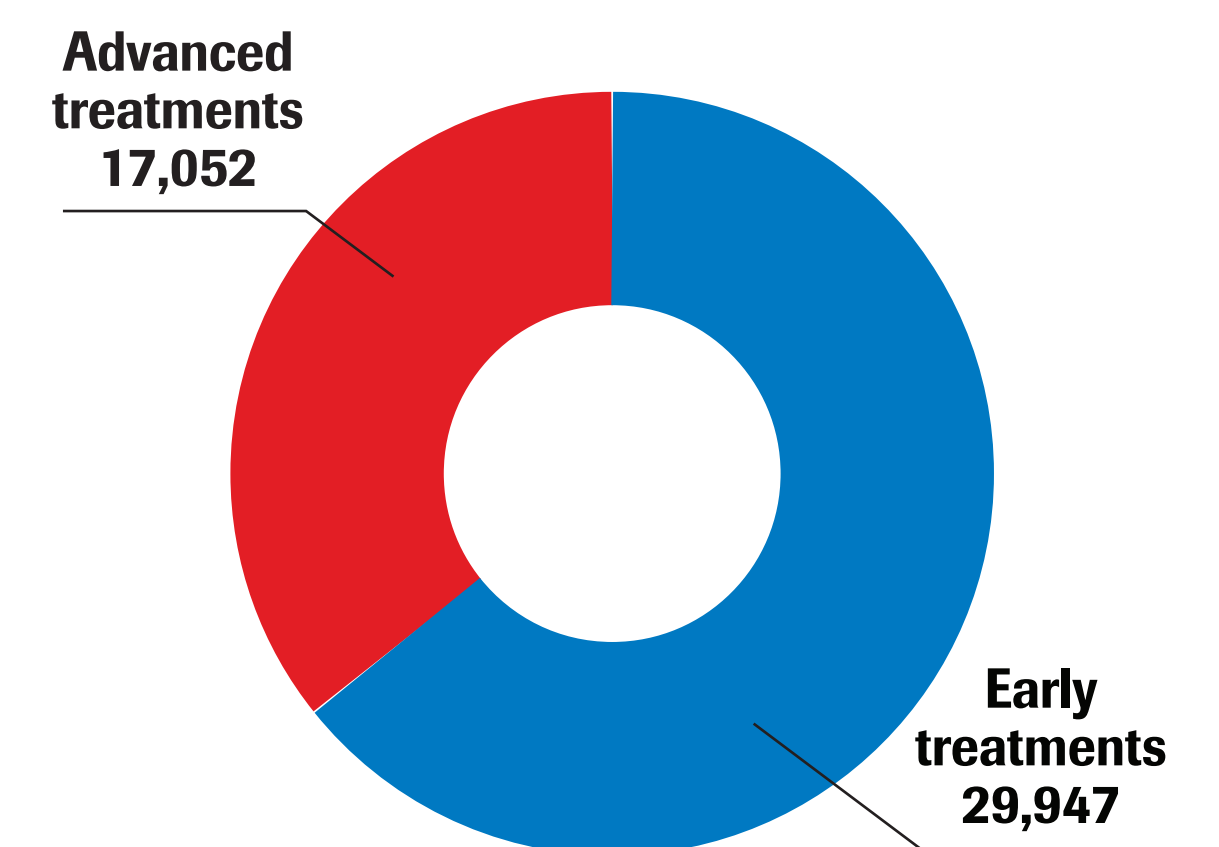


Figure 2: 2016 Herceptin injections' disease stage distribution in PRM database

PRM theoretical scenario

The following results are a theoretical price decrease negotiation for Herceptin® indications in 2006. Assuming ASMR is a reliable proxy for the added value delivered to the patients by the therapy, here it's considered that the benefit delivered by the adjuvant indication is superior than the one delivered by the metastatic indication. Herceptin® indications could have been priced accordingly.

According to price decrease over time and assuming that Herceptin turnover was maintained as the initial price for the adjuvant indication, PRM agreements could have resulted in a potential 14% price flexibility for metastatic price setting.

The acceptability of such flexibility could be addressed to the French payer and could be completed by a proper and comprehensive cost-effectiveness assessment.

Conclusion

PRM database provides a reliable reference basis for substantial and relevant price agreements in HER2+ breast cancer drugs opening innovative pricing solutions based on in real life care practices that could be extended to new therapies in breast cancer. PRM is an efficient system that could enable negotiation directly linked to the value and ensure sustainability of healthcare system.

With the arrival of new expensive treatments used in combination with other medicines and in multiple indications with different clinical values, it is evident that a volume-based pricing is not suitable. A personalized reimbursement model by indication is a valid option that will allow a fair pricing and consequently ensure the financing model sustainability. Additionally price flexibility should be discussed with a complete cost-effectiveness and budget impact assessment.

Perspectives

With a rapidly increasing healthcare costs, governments face an important challenge giving access to innovative medicine. Meanwhile, scientific progress in medicine is leading to new immunotherapies used in multiple indications and in combination with other medicines. PRM is particularly suited for those treatments. In fact, with the data collected by PRM it is possible to propose models where price is differentiated by indication, by combination or even by treatment duration reflecting the actual patient benefit.

It is necessary to consider the need to keep the system sustainable while valuing in a more differentiated way the value of the products by indication or sub-population.

In the current context, PRM is essential to propose innovative pricing solutions which can move pricing from volume-based to value based approach, give payers and healthcare authorities more flexibility when it comes to reimbursement decisions, and ensure continued and sustainable access to innovative medicines for patients. Convinced of the interest of this approach, Roche extend PRM to lung cancer data collection.

References

Internal document: PRM January 2017 extraction.

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