Background
The evaluation of the economic impact of therapies has become mandatory to guarantee sustainability to the health service since neoplasms have assumed considerable economic burden in the Industrialized Countries: 42% of the expenditure for high cost therapies is for the most common pathologies, including lung.

Purpose
The goal of our work is to estimate a hypothesis of future expenditure for the immunotherapy in second-line treatment of non-small cell lung cancer (NSCLC), through a Budget Impact Analysis (BIA).

Materials and Methods
The analysis was carried out adopting a time horizon of 13 months, the Hospital’s perspective and considering only direct costs of drugs’ purchase (fig 1). The population corresponds to patients with a diagnosis of NSCLC, eligible for second-line immunotherapy. The model used was defined basing on real clinical data: patients actually treated were selected from August 2017 to August 2018, a period in which both nivolumab and pembrolizumab were available in the hospital.

The annual cost of therapy was calculated based on the milligrams of drug consumed, (thus considering the drop-in and drop-out rate) and the price of the drug sale according to the regional public tenders.

To calculate the drop-in drop-out rate for atezolizumab reference was made on overall survival data of the pivotal trial. Therefore, as shown in figure 2, three theoretical scenarios were considered: without introduction into therapy of atezolizumab (1st scenario); all naive patients received atezolizumab (2nd scenario); 50% of the naive received pembrolizumab and 50% atezolizumab (3rd scenario).

Results
In the first scenario, the initial distribution of patients treated with pembrolizumab compared to nivolumab is 3 vs 17 (month 1), to reach 28 vs 24 (month 13), and the consequential cumulative costs are (€1,131,240 and €1,481,196 respectively), for a total of €2,612,435.

In the second scenario the cumulative costs are €272,526 for pembrolizumab, €623,831 for nivolumab, €1,692,250 for atezolizumab, (total of €2,588,607, +0.9% compared to the first) while in the third the costs are €1,804,842, €623,831, €680,406 respectively for a total of €3,279,079 (+20% compared to the second).

Conclusions
Based on our setting, costs are comparable in the three scenarios even if the cost per administration is almost double for pembrolizumab compared to atezolizumab.

One main limitation of the study is that in the near future new indications and new therapies may be approved.