OBJECTIVES: Five polychemotherapy regimens: gemcitabine-cisplatin (GC), vinorelbine-cisplatin (VC), docetaxel-cisplatin (DC), paclitaxel-cisplatin (PC) and paclitaxel-carboplatin (PCa), are commonly used in first-line treatment of advanced non-small cell lung cancer. Whereas taxanes have to be administered within a conventional day-hospitalization setting [1,2], gemcitabine and vinorelbine could be administered without platinum in home-hospitalization. The purpose of the study is to find out which case management minimizes costs for the French National Health Insurance while ensuring patient safety.

METHODS:

5 Therapeutic Options compared :

- Gemcitabine-Cisplatin (GC)
- Vinorelbine-Cisplatin (VC)
- Docetaxel-Cisplatin (DC)
- Paclitaxel-Cisplatin (PC)
- Paclitaxel-Carboplatin (PCa)

As per the simplified Markov model:

- 13 Clinical States:
  - Treatment without reduction dose (T100), Severe Toxicities (TOX1: Febrile Neutropenia FN1, Blood transfusion BT1, Nausea/Vomiting NV1 not showed in the graph, and possible reappearances (TOX2: FN2, BT2, NV2), Early treatment stop because of progression or severe toxicities (DO), Treatment with 75% or 50% reduction dose (T75, T50), Remission (REM: OR-SD), Progression (PD), and Death (D).
- Cycle duration: one week Follow-up period: 52 weeks

Assumptions:

- At each cycle: Remission (CR+PR+SD), Progression, Death occurs
- Probability of relapse obtained from the Time To Progression (TTP) - probability of death [3]
- Probability of overall survival obtained from the Median Survival (MS) and live expectancy of a healthy patient
- At each state of health, is associated a chemotherapy cost with or without reduction dose, and at a cost of severe toxicity.

Efficacy and safety:

The measure of the cost effectiveness between treatments lead us to assume that all the products have the same effectiveness. Therefore we choose to carry a cost minimization study.

RESULTS:

With the assumption of no difference of therapeutic efficacy, over a period of 52 weeks,

- The annual hospital and ambulatory follow-up costs of GC and VC are of 7,281 and 7,442 €. Administered within a conventional day-hospitalisation, their annual follow-up costs are 8,408 and 9,831 €.
- Taxanes hospital administration have annual follow-up costs of 10,066 €, 10,999 €, and 12,280 € respectively.

It is observed that:

- The costs of IV hospital treatments were calculated, in the perspective of the Health Care System, by adding DRG costs (TZA, GHS 2004) [9], myriad drug reimbursed over DRGs, and transportation expenses.
- Platinum components included in DRG costs were not added.
- The costs of chemotherapy courses administered at home were based on the IRDES charges model [10].
- Costs of febrile neutropenia, blood transfusion, nausea and vomiting, diagnosis and palliative care were estimated by DRG costs and transportation expenses.
- A univariate sensitivity analysis was performed, in order to identify the main cost drivers.

CONCLUSION: When the patient’s safety and his will to receive chemotherapy at home are met in an environment where equivalent efficacy exists between chemotherapy regimens, an economic analysis can quantify the financial consequences on the French Health Insurance, of the drug choice made by prescribers.

References:

In order to obtain equivalent cost between GC and DC, the cost of docetaxel should be divided by 1.6 or gemcitabine cost multiplied by 2.