

## Euro Diabetes 2019: Business model "Decision tree" as a method of rational choice of combined therapy of type 2 diabetes mellitus- Ivko Tanyo- National Pirogov Memorial Medical University

Ivko Tanyo and Germanyyuk T

National Pirogov Memorial Medical University, Vinnytsya, Ukraine

Type 2 diabetes is the very most common type of diabetes these days. Initially, high blood glucose level is the result of the inability of the body's cells to respond fully to insulin, a situation termed 'insulin resistance'. Type 2 diabetes may be a longstanding metabolic turmoil that's pictured by, insulin resistance, high aldohexose and relative absence of insulin. Simple aspect effects incorporate expanded thirst, incessant pee, and unexplained weight reduction. Signs could likewise incorporate swollen desire, feeling tired, and bruises that don't recuperate. Regularly indications go ahead gradually. Complexities from high aldohexose incorporate strokes, diabetic retinopathy which can bring about visual impairment, kidney problems, and poor blood stream which may prompt removals. Type 2 diabetes is mostly preventable by continuing a typical weight, practicing consistently, and eating legitimately. Treatment includes activity and dietary alterations. Numerous individuals may in the end likewise require insulin infusions. In that on insulin, routinely check glucose levels is exhorted, in any case this may not be required in taking pills. Bariatric surgery of times enhances diabetes within the people UN agency. Diabetes mellitus may be a upsetting and metabolic disorder, expected to affect over 500 million people worldwide by the year 2030; up from 350 million in 2010. Approximately 96% of patients suffer from type 2 diabetes, and its prevalence is expected to increase in the future. Type 2 diabetes mellitus (T2DM) is an important medical and social problem. The rational choice of pharmacotherapy should take into account the results of pharmacoeconomic researches using business model "Decision tree". The purpose of the research was the graphical construction of a model "Decision tree" with results of the pharmacoeconomic investigations.

**The research materials:** 1792 medical histories of the inpatients with type 2 DM who were treated at the Vinnytsya regional endocrinology clinic, endocrinological department of Khmelnytsky hospital and Ternopol regional hospital.

**Research Methods:** Frequency analysis; ATC/DDD-methodology; cost-effectiveness analysis; sensitivity analysis; mathematical modeling.

**Results and discussion:** The frequency analysis showed that the most frequently used combined schemes of pharmacotherapy were: Metformin + glimepiride – in 45% of cases, metformin + gliclazide – in 14.5 % of cases, metformin + glibenclamide – in 6.1%. When comparing the indicators of groups of patients to

whom combined therapy were prescribed it was found that the patients with metformin + glibenclamide were significantly older, with the largest disease duration of T2DM, with the highest body mass index (BMI) and lowest levels of fasting plasma glucose (FPG) on admission ( $p > 0.05$ ). When comparing the indicators of groups of patients who received combined therapy of metformin + glimepiride and metformin + gliclazide it was found significantly longer duration of disease in the patients with the scheme metformin + gliclazide and more FPG on admission in the patients with scheme metformin + glimepiride, it was not found significant differences in other analyzed indicators. Only direct costs are taken into account. The cost of treatment was estimated on the basis of the average price list of wholesale state medicines as on 11.11.2018. Sensitivity analysis was performed to determine the stability of results. ATC/DDD-methodology showed that the cost for DDD of combination metformin + glimepiride ranges from 4.75 to 13.6 UAH, metformin + gliclazide – from 4.10 to 13.34 UAH, metformin + glibenclamide – from 2.22 to 11.67 UAH.

It has been found that clinical efficacy of combination metformin + glimepiride is 50.3%, metformin + gliclazide – 59.1%, metformin + glibenclamide – 49.1%. Cost-effectiveness analysis showed that the cost of costs-efficiency ratios CER for metformin + glibenclamide ranges from 44.81 to 225.72 UAH, metformin + gliclazide – from 66.37 to 237.68 UAH, metformin + glimepiride – from 94.43 to 270.38 UAH, in the context of minimal and maximal price of the generics.

**Conclusions:** According to the graphical construction of the "Decision tree" model it was shown that the metformin + glibenclamide scheme has the greatest advantage.