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It is our great pleasure to present this Supplement Issue on “*Macedonian Pharmaceutical Bulletin*” to the scientific and professional community. This supplement includes the short communications from the *Sixth Congress of Pharmacy in Macedonia with International participation*, as the largest gathering for the pharmacy profession held in the Republic of Macedonia. The main theme of the Congress was “Modern pharmacist - bridging science with practice”.

A broad spectrum of topics within the pharmaceutical sciences and practice carefully selected for this special occasion in order to build up a highly interesting and comprehensive program were covered. The contributions submitted to the Congress included 6 plenary lectures, 84 section lectures, and more than 240 posters. This Congress, followed the excellent international tradition, was attended by close to 1000 domestic and foreign participants. We received 326 short paper submissions from more than 25 countries. These numbers show that our Congress is aiming for the highest scientific standards, and that it can be considered a well-established venue for researchers in the broad fields of Pharmaceutical sciences and practice.

We would like to thank all internationally prominent researchers for their contribution to reinforcing the overall quality of the Congress. They give the state of the art of the recent advances in the field of pharmacy research.

Sincere thanks to the hosts of the Sixth Congress of Pharmacy in Macedonia with International participation, Macedonian Pharmaceutical Association and Faculty of Pharmacy, Ss Cyril and Methodius University in Skopje for their vision and commitments.

We acknowledge the sponsoring companies: the platinum sponsor AD ALKALOID, Skopje, the golden sponsor PLIVA, the silver sponsor EUROFARM and the bronze sponsor SEPTIMA, for the permanent support to our efforts during the organization.

We would also like to thank our members of the Scientific Committee for their volunteer time and dedication to the critical peer review process and in the organization of the program. We also wish to thank all the members of the Organizing Committee, whose work and commitment was invaluable.

On behalf of the Advisory and Scientific Committees, we would like to especially thank the authors, whose work was the essential part of the congress and contributed to a very successful event. Besides the many academic staff and professionals who contributed to the success of the Congress, we are grateful to the students who participated with oral presentations and posters.

The pharmaceutical sciences continue to grow as dynamic scientific interdisciplinary fields. We believe that published short communications will be an excellent source of scientific material in the fast evolving fields in Pharmaceutical sciences and practice.

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The present issue of *Macedonian Pharmaceutical Bulletin* is a special issue of the 6th Congress of Pharmacy in Macedonia with international participation.

This issue of *Macedonian Pharmaceutical Bulletin* contains short papers accepted by the scientific committee for the presentation at the Congress.

The authors are fully responsible for the contents of their short papers.

All reviewers that were involved in the short papers revision process are sincerely acknowledged.



Opening lecture

Analysis of consumption of insulin in the municipality of Stip from 2011 to 2014

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Introduction

Diabetes mellitus is a syndrome characterized by chronic hyperglycemia and disorder of the metabolism of carbohydrates, protein and fat associated with a relative or absolute lack of insulin secretion and insulin action. Diabetes is one of the most common endocrine disorders, with a tendency of increased growth. It is a consequence of modern lifestyles and the increasing number of internal, genetically conditioned and external etiological triggers. Diabetes is not only medical but also economic and social problem (Brunton, 2008).

Diabetes mellitus - type 1 is a disease of the young people - children, adolescents and adults. Insulin is part of their daily treatment because without it the outcome is fatal (Haycox, 2004; Heise et al., 2004).

Diabetes mellitus - type 2 covers 90% of all cases, 90% of insulin therapy, while the rest use the pill therapy. Average daily dose of insulin is about 40 IE (International Units) (Alberti and Zimmet, 1998).

The optimal insulin therapy should induce physiological insulin secretion. Insulin analogues have different absorption, distribution, metabolism and elimination in terms of human insulin. This enables the analogues to get approximately closer to the human insulin (Nathan et al., 2009).

Insulin that are required for patients in the Municipality of Stip are obtained and issued by the hospital pharmacy at PHI Clinical Hospital Stip. Until 2012 year they were obtained under the Law on public procurement, through tenders organized by the hospital. Since 2012, insulins strips to measure blood sugar, insulin needles, pens and kits are obtained through centralized procurement by the Ministry of Health.

The purpose of this paper is to realize the changes in the variety and number of consumed units of insulin PHI Clinical Hospital Stip given the type of mostly used insulin per producer, strips to measure blood sugar, insulin needles, pens and whales in Stip diabetes center in the period from 2011 to 2014.

Materials and methods

The research and evaluation of the spent insulin's is based on the data of the consumption of insulin in the period from 2011 to 2014 received from the Hospital pharmacy in PHI Clinical Hospital Stip.

The data is arranged by type and origin of insulin preparations, summed by year and made a comparison of consumption and variety. The results are expressed in number of packages.

Descriptive method was used in data processing.

Results and discussion

According to data from the Diabetes Centre in Stip, insulin's consumption in 2011, 2012, 2013 and 2014 continues to grow. The hospital has purchased various types of insulin, according to the events, and generics manufacturer.

Insulin consumption in 2011 was 34932 insulins units from different manufacturers with different types of action, with 16 trade names. Over the coming years, the consumption increased. In 2012 was 36932 packages from 16 trade names, in 2013 increased to 41597 packages from 12 trade names, while in 2014 the consumption of insulin reaches up to 46460 from 11 trade names. The highest consumption in all four years has insulin NovoMix "30" / Flexpen 3 ml / 300, which is a generic Insulin aspart, and belongs to a group of

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insulin's with average-long acting and it is combined with long-acting insulin's. It's consumption in 2011, 2012, 2013 and 2014 was 9656, 13573, 18426 and 15950 respectively.

Since 2013, there was reduced range of insulins used under the trade name and manufacturer, as a result of the centralized supply of insulin from the Ministry of Health. This measure is taken because of the steady rise in consumption of insulin, which is probably due to the increased number of patients with diabetes, early detection and timely same passage of patients with insulin dependent diabetes treated with insulin. With centralized procurement there is provided lower range of branded insulin, low prices, total costs and reliability in the supply of sufficient quantities to meet the increased needs.

In the research there are processed the spending strips to measure blood sugar, needles and other accessories. In 2012 and 2013, we issued a number of different types of strips to measure blood sugar depending on the type of the glucometar. While in 2014 was issued only one type of strips for measuring blood sugar and it is called Trueressult. In 2012 there are issued 63600 boxes of strips to measure blood sugar, while in 2013 consumption increased by 29% and amounted to 89650. In 2014 there are issued 115620 strips to measure blood sugar levels from Trueressult and that consumption increased by 22%. The highest consumption of strips to measure blood sugar levels in 2012 are from Roche Accucheck Nano 1/50 and it was 28250.

Consumption needle apparatus for measuring blood sugar in 2011 was 67711. In 2012 the use of the needles increased by 16.8% and amounted to 81391, in 2013 increased by 22.6% and amounted to 105178 needles. In 2014 we have reduced the use of needles by about 10% and it amounts to 94639 needles.

The rising use of bands for measuring glucose in the blood and needle apparatus for measuring the sugar is partly due to the growing number of diabetics, and it is a part of a program of measures introduced by the Government of the Republic of Macedonia by introducing centralized procurement of insulin and stripes for measuring blood sugar.

Conclusion

Consumption of insulin in 2011, 2012, 2013 and 2014 PHI Clinical Hospital Stip continues to grow. The highest

consumption of fast-acting insulin, while the consumption of insulins intermediate - long action in the last two years completely replaced with insulins medium - long-acting combined with long-acting;

Since 2013, decreased variety of insulins used under the trade name and the manufacturer, which is a result of the centralized supply of insulin from the Ministry of Health

Increasing use of strips to measure blood sugar and needle apparatus for measuring glucose on blood level which is partly due to the growing number of diabetics, part of a program of measures introduced by the Government of the Republic of Macedonia by introducing centralized procurement of insulin strips to measure blood sugar.

By tracking the consumption of insulin improves the basics for quality procurement and reliable supply of quality and reliable insulin.

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