



# Analysis of Access and Availability of Low Molecular Heparins for the Treatment of COVID-19 during Wartime in Ukraine

AbstractID:132492

EE490

**Zaliska O**<sup>1</sup>, Semenov O<sup>1</sup>, Barchuk O<sup>1</sup>, Brezden O<sup>2</sup>, Bryharda E<sup>1</sup>

<sup>1</sup>Danylo Halytsky Lviv National Medical University, Lviv, Ukraine,

<sup>2</sup>Jagiellonian University, Cracow, MA, Poland



**OBJECTIVES:** Coronavirus disease (COVID-19) is associated with an increased risk of venous thromboembolism. Low molecular weight heparins (LMWHs) were included in the European and Ukraine guidelines according to evidence-based data about COVID-19. In Ukraine market were registered LMWHs, so costs are high for patients. Pharmacists must have new knowledge, competences on treatment doses, cost with LMWHs during and after COVID-19.

**METHODS:** We created a questionnaire and conducted a survey of 822 pharmacists, who were managers, hospital pharmacists from 5 regions of Ukraine regarding the awareness of pharmacists about LMWHs, its dosage forms, the market access and availability, patient cost for LMWH treatment. We analysed State Register of medicines of Ukraine dated 06-01-2023.

**RESULTS:** We established the LMWHs for thrombosis treatment in patients with the COVID-19 are represented by 4 INN and 9 trade names with different concentrations. There is one Rivaroxaban in a solution for injections, also in tablets for outpatient treatment. Among 9 LMWHs only 52,6% are domestic manufacturers, they are more affordable for the patient out-of-pocket payment. We established deterioration of supplies from the countries of the European Union, China due to wartime in 2022-2023 as a result of Russian invasion. We analysed cost for inpatient and outpatient treatment according to COVID-19 guideline, which was adopted in Ukraine. These costs were 1524,46 UAH (€38,09 1€=40,02 UAH on 06-01-2023) for LMWHs of domestic manufacturers, more expensive costs were 3666,13 UAH (€91,61) for LMWHs from EU countries. We analysed cost for LMWHs for out-patient care in tablets, 15 mg during 30 days were from 1531,20 UAH (€38,26) till 2067,00 UAH (€51,65), used wholesale prices of LMWHs.

**CONCLUSIONS:** Domestic LMWHs are 2,4 times more affordable per treatment course as imported LMWHs. Therefore, pharmacists should have knowledge about the results of the pharmacoeconomic analysis of LMWHs to improve the provision of patients after COVID-19 in wartime in Ukraine.