**Title:** Analysis of the use of potentially inappropriate cardiovascular drugs in seniors in acute care in the project EUROAGEISM H2020

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## ABSTRACT

**INTRODUCTION:** Population aging is a global problem for which all health and social systems of all countries needs be prepared, including the Czech Republic. It is assumed that in 2050 every third citizen of the Czech Republic will be 65 years and older. The group of seniors is characterized by high polymorbidity and polypharmacotherapy. Prescription of drugs is also very complicated in seniors due to changes accompanying aging (at the level of pharmacokinetics, pharmacodynamics and homeostasis). The aim of this diploma thesis was to determinate the prevalence of potentially inappropriate medications (PIMs) from the cardiovascular system (CVS) using the best-known explicit criteria of PIMs in the Czech sample of seniors in acute care assessed during the FIP7 program of the EUROAGEISM H2020 project.

**METHODOLOGY:** Data collection was held during the FIP7 program of the EUROAGEISM H2020 project in acute care in seniors aged 65 years and over in two health facilities in Brno and Hradec Králové (HK) in the Czech Republic from August 2018 to January 2019. All patients in stable health status and able to give informed consent and relevant responses when interviewed by a researcher were included in the study (excluded were patients with severe memory impairment (MMSE, Mini-Mental State Examination <10 points), having hearing and speech impairment, terminal illness and patients at intensive care units). Data were anonymously collected from written medical records and clarified by interviews with healthcare professionals and patients. Basic descriptive statistical analysis evaluating the prevalence of cardiovascular PIMs using the START/STOPP criteria (2008), the EU (7)-PIM list and the Beers criteria (2019) were conducted (99 criteria were evaluated overall). Using Fisher's exact test differences between facilities were compared at a level of statistical significance $p < 0.05$.

**RESULTS:** The study involved 288 subjects aged over 65 years (57 % of women

and 43 % of men). The prevalence of at least 1 cardiovascular PIMs using all explicit criteria was 77.6 %. The most sensitive criteria appeared to be START criteria, which showed the occurrence of at least 1 CVS PIMs in 63.2 % of individuals, followed by EU (7)-PIM criteria – 31 % and the least sensitive were Beers criteria – 16.1 %. According to the START criteria, the most common problems were the underuse of aspirin (ASA) and statins in secondary prevention of cardiovascular diseases (>25%), but also the underuse of ASA and statins in diabetics (>20 %). According to the STOPP criteria, the most common problems were the use of ASA without indication (3 %) and the use of loop diuretics in monotherapy of arterial hypertension (AH) (3 %). Of the EU(7)-PIM criteria, the most problematic areas were use of short-term insulins only (9 %) and amiodarone at higher doses (>200 mg/48 h) (9 %). According to Beers criteria, use of short-term insulins only (9 %) and the administration of $K^+$ sparing diuretics with sartans and spironolactone in patients with renal insufficiency (3 % in both cases) were the most common dyscrepancies.

**CONCLUSION:** Analyses showed a high prevalence of cardiovascular PIMs in the study of seniors (77.6 %) using combination of 3 most commonly used explicit criteria of PIMs. The results varied significantly according to individual criteria (16 % – 63 %). The limitation of this study and consequently limitations of interpretation of results is a small sample of 288 seniors from 2 regionally different centers, which however was not randomized and thus cannot fully represent the population of seniors in the Czech Republic (even if the main sample characteristics correlated with main characteristics of seniors in the Czech Republic). The results of this diploma thesis provide only pilot findings. Final analyzes will be processed after completion of data collection in the international sample of FIP 7 program of the EUROAGEISM H2020 project.

**Key words:** potentially inappropriate medications, explicite criteria, rational pharmacotherapy, seniors, acute care, cardiovascular PIMs

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