



FACULTY OF PHARMACY
IN HRADEC KRÁLOVÉ
Charles University

13th Postgraduate and Postdoc Conference

1. – 2. February 2023

Abstracts

Section 4 - Clinical and Social Pharmacy



EFSA-CDN

This conference is supported by the EFSA-CDN project (Reg. No. CZ.02.1.01/0.0/0.0/16_019/0000841)
co-funded by the European Union



EUROPEAN UNION
European Structural and Investment Funds
Operational Programme Research,
Development and Education


MINISTRY OF EDUCATION,
YOUTH AND SPORTS

MEDICATION ADHERENCE OF PATIENTS USING DIRECT ORAL ANTICOAGULANTS FOR ATRIAL FIBRILLATION

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We aimed to examine electronic and self-reported medication adherence (MA) to DOACs in outpatients with atrial fibrillation (AF). A prospective single-center follow-up study (May 2021 to June 2022) consisted of adult outpatients visiting University Hospital Brno. After meeting inclusion criteria, structured interview with a pharmacist consisting of questions reflecting the use of DOACs and Czech validated version of MARS-CZ was held (baseline visit). Patients were given devices to track electronically monitored (EM) MA to DOACs at home. Visits after three and six months were scheduled by physicians. Data were analyzed using IBM SPSS Statistics software (version 27.0.1), MEMS Adherence software (Aardex group) and Microsoft Excel. Of 101 enrolled patients, five patients discontinued the study. MA data was assessed in 96 patients. Most participants were 73.30 years old (SD=8.07), men (55.21%), retired (84.38%), with secondary education (62.50%). Self-reported MA by MARS-CZ was increasing from baseline to 6 months (68.75% vs. 80.21%; $p=0.132$), however the mean value of EM MA for 190 days (SD=17.07; 90.91%) was decreasing between two-time checkpoints (92.07% vs. 89.80%; $p<0.001$). Other performed analysis of EM MA reflected the use of specific DOACs (*rivaroxaban* 91.61%; *apixaban* 91.15%; *dabigatran* 88.31%). MA to DOACs treatment was high, despite a statistically significant decline during the six-month follow-up. This phenomenon was even more pronounced in a subsequent analysis of EM MA regarding drug half-life, and regularity of use, where MA rates were generally lower for monitored period.

The study was supported by GAUK 328 322, SVV 260 551.

MEDICATION ADMINISTRATION ERRORS IN CZECH HEALTHCARE FACILITIES

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Medication administration errors (MAEs) are common in healthcare facilities and are associated with increased morbidity, mortality, and excessive costs. The aim of our study was to explore those MAEs in Czech hospitals, identify their prevalence, and analyze the determinants of those MAEs.

We have run a prospective, observational study in four Czech hospitals, three departments (surgical, internal, and follow-up care) at each. We have used the direct observation method,¹ a team of nurses and pharmacists, a structured form, and a specialized web database for data collection and MAE evaluation. We have used the methods of descriptive statistics for MAE occurrences presentation, a generalized linear model for MAE-associated factors identification. This paper presents data from the first phase, which was carried out from June to August 2021.

We have observed 6356 drug doses administered (or omitted) by 58 nurses to 331 inpatients. Mostly oral drugs were administered (91.2%), followed by subcutaneous drugs (5.9%), the other drugs were rather rare. The overall prevalence of major MAEs (most dangerous, associated with all drug forms) was 6.9% and 22.5% for specific MAEs (associated with a specific drug form). We have found the determinant “unclear prescription” the riskiest, with a relative risk of 7.3 of any major MAE, followed by the determinant “different drug strengths used” with a relative risk of 4.4. For both major and specific MAEs, we found current hospitals were the most important associated factor with some individual MAEs.

We have found, that MAEs are common in Czech hospitals and their’ prevalence is in accordance with the current literature.^{2,3} We have identified risk areas, which will be intervened in the following study phases. Our results indicate, to reduce MAE prevalence a complex and multidisciplinary approach, using modern technologies are needed to create a better safety culture in our facilities to improve inpatient safety.

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Mgr. Ondřej Tesař was supported by Charles University SVV project (SVV 260 551). The study was supported by Ministry of Health of Czech Republic (grant nr. NU20-09-00257).

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POTENTIALLY CLINICALLY SIGNIFICANT DRUG-DRUG INTERACTIONS IN OLDER PATIENTS ADMITTED TO UNIVERSITY HOSPITAL HRADEC KRÁLOVÉ

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An international consensus list of potentially clinically significant drug-drug interactions (DDIs) in older people has been recently validated. Our objective was to describe the prevalence and characteristics of potentially clinically significant DDIs identified in the medication history of older patients admitted to the hospital and the prevalence and characteristics of manifest DDIs. The data were obtained from our previous study that examined the drug-relatedness of hospital admissions to University Hospital Hradec Králové via the department of emergency medicine in the Czech Republic.¹ Patients ≥ 65 years old were included. Potentially clinically significant DDIs were identified using the international consensus list of potentially clinically significant DDIs in older people. Of the 812 older patients admitted to the hospital, 46% were exposed to potentially clinically significant DDIs. The results confirm the findings from the European OPERAM trial, which found that potentially clinically significant DDIs are very common in older patients. Manifest DDIs were present in 4.3% of older patients admitted to the hospital. In 3.3%, manifest DDIs contributed to drug-related hospital admissions. Manifest DDIs that most frequently contributed to drug-related hospital admissions involved antithrombotic agents and central nervous system depressants. The difference in the rates of potential and manifest DDIs highlights the limitation of using computerized decision support systems alone for alerting potentially clinically significant DDIs and suggests that there is an essential role of pharmacists who can interpret identified DDIs (e.g., by taking concomitant medications, doses of medications, laboratory values, and patients' comorbidities into account).

The study was supported by Charles University (Project SVV 260 551, Project GA UK 14120).

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INFLAMMATORY BLOOD PARAMETERS AS PROGNOSTIC FACTORS FOR IMPLANT-ASSOCIATED COMPLICATION AFTER PRIMARY TOTAL HIP OR KNEE ARTHROPLASTY

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Total hip (THA) or knee (TKA) arthroplasty are still a traumatic and challenging operations that induce inflammation, with particularly high risk of acute-phase reaction. This study aimed to compare the predictive value of reference standard with other inflammatory blood parameters (IBP) for implant-associated complications (IAC) after THA or TKA. This prospective study has started in March 2020 at the Department of Orthopedic Surgery, University Hospital Hradec Kralove. Patient aged ≥ 18 years who underwent primary THA or TKA and met the entry criteria were included. IBP, namely white blood cell counts (WBC), neutrophile-to-lymphocyte ratio, prognostic inflammatory and nutritional index (prealbumin, albumin, orosomucoid, c-reactive protein), intensive care infection score (ICIS) and nutritional risk index (NRI) were analyzed one day before surgery, two days after surgery and during outpatient check after discharge (six to seven weeks). Postoperative complications were evaluated by orthopedists. Furthermore, the sensitivity, specificity and area under the curve using the receiver operating characteristic curve function were calculated. A total of 159 patients were included in the final analyses. IAC were identified in 12 patients. The best predictive values were observed for albumin, ICIS, prealbumin, NRI and WBC. This study demonstrated that different IBP could be used to identify patients at risk for IAC. Nevertheless, further extensive studies with long-term follow-up are needed to decide which IBP are the most appropriate for these purposes.

The study was supported by Charles University (Project SVV 260 551).

POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER PATIENTS IN
EUROPE: THE RESULTS FROM 7 COUNTRIES PARTICIPATING IN THE
EUROAGEISM H2020 PROJECT

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Potentially inappropriate medication (PIM) use can have serious negative consequences on older people's health and quality of life.¹ Thus, the aim of our study was to assess the prevalence of PIM use and associated risk factors in older adults in several European countries. We conducted a cross-sectional, multicentric study in seven European countries: Bulgaria, Croatia, the Czech Republic, Estonia, Serbia, Spain, and Turkey. Patients aged 65 years and older visiting community pharmacies were assessed using a structured comprehensive protocol based on Comprehensive geriatric assessment (CGA). We determined the PIM use prevalence using Norwegian General Practice (NORGE) criteria², Laroche's list³, EU(7)-PIM list⁴, and PRISCUS⁵ list; and risk factors using stepwise logistic regression. We assessed 2865 older patients, most of whom were women (61.2%). The PIM prevalence in all countries was: using all sets of criteria- 60.2%, NORGE criteria- 7.6%, Laroche's list- 24.4%, PRISCUS list- 26.1%, and EU(7)list- 60.1%. The PIM prevalence differed across countries from 38.4% (Czech Republic) to 74.4% (Croatia). Risk factors for PIM use were (p<0.05): higher age (75+ years) (OR=1.3; 95% CI (1.1-1.6)), polypharmacy (5+ medications) 6.3 (5.2-7.5), depression 2.4 (1.6-3.5) and country of residence (reference – Czech Republic, results: Bulgaria 2.1 (1.6-2.7), Croatia 2.8 (2.0-3.9), Estonia 1.4 (1.1-1.9), Serbia 3.5 (2.5-4.7), Spain 2.5 (1.8-3.7), and Turkey 1.7 (1.3-2.3)). The findings of our study show that PIM use is still highly prevalent in Europe and associated with general risk factors.

The study was supported by projects: EuroAgeism Horizon 2020 MSCF-ITN-764632, START/MED/093 CZ.02.2.69/0.0/0.0/19_073/0016935, Inomed NO.CZ.02.1.01/0.0/0.0/18_069/0010046, -ICARE4OLD H2020 No 965341 project, Cooperatio research program KSKFI.- Faculty of Pharmacy, Charles University, and SVV260 551 project.

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RATIONALITY OF PSYCHOTROPIC DRUG USE IN NURSING HOME RESIDENTS- ACTIVITIES AND FINDINGS FROM THE START RESEARCH PROJECT

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Psychotropic medications pose a risk of various adverse drug events (ADEs) in residents of the NHs, and the use of these medications is often associated with e.g. higher risk of falling and occurrence of geriatric syndromes, increased frailty, hospitalisations, and mortality. This study aimed to investigate the prevalence of polypharmacy and the use of psychotropic drugs (N05A antipsychotics, N05B anxiolytics, N05C hypnotics, N06A antidepressants and N02A opioids) in the NH residents in Croatian sample of the START project. The results present preliminary findings. Data from 226 NH residents 65+ were collected using the interRAI LTCF assessment from Aug-Dec 2022 in three regions of Croatia (City of Zagreb, Dalmatia and Slavonia). Most participants were females, 173 (76.5%) and 111 (49.1%) pertained to the age group 75-84. 111 (49.1%) were prescribed polypharmacy (5+ drugs) and 60 (26.5%) hyperpolypharmacy (10+ drugs). Anxiolytics were the most prevalent psychotropic drugs used by 54.0% of NH residents, followed by opioids (31.0%), hypnotics (23.0%), antidepressants (13.7%), and antipsychotics (10.5%). The high use of BZDs in Croatia was consistent throughout the regions, ranging from 45.3% (Slavonia) to 63.2% (Dalmatia). The most prescribed benzodiazepines (BZDs) were diazepam (29.6%), alprazolam (15.9%), oxazepam (8.8%), and lorazepam, bromazepam (2.7%, respectively). It is essential to detect residents of NHs using polypharmacy, hyperpolypharmacy, and psychotropic drugs to prevent ADEs. Clinical pharmacists should review the necessity for the use of such drug regimens.

The study was supported by projects: project START/MED/093 "Grant Schemes at the Charles University" (reg. no. CZ.02.2.69/0.0/0.0/19_073/0016935), I-CARE4OLD H2020 -965341 project, Cooperatio research program KSKF-I- Faculty of Pharmacy, Charles University and SVV260 551 project

COMPARATIVE ANALYSES OF THE USE OF MEDICATIONS WITH SEDATIVE AND ANTICHOLINERGIC PROPERTIES IN SENIORS IN THE INOMED PROJECT

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Older adults are more sensitive to adverse events associated with sedative and anticholinergic drugs. Their prescription contribute to negative outcomes in seniors, associated with more pronounced sedative and anticholinergic activity of drug regimen, often presented as e.g. drug-related falls, exacerbation of chronic diseases, cognitive deficit, excessive sedation, dry mouth, blurry vision, etc. The aim of our study was to analyse the prevalence of sedative and anticholinergic drug use in Czech seniors assessed in acute and ambulatory care settings. Data were collected by using comprehensive geriatric assessment protocols of the EUROAGEISM H2020 project in 438 acutely hospitalised and 563 ambulatory care geriatric patients (≥ 65 years) from regionally different study sites in the Czech Republic. There were 16.7% of patients in ambulatory care and 18% of patients in acute care using sedatives. The significant prevalence of anticholinergic medications was documented in acute and ambulatory care: 1 drug: in 33.6% and 26.6% patients, 2 drugs: in 23.3% and 23.6% and $>$ than 3 drugs: in 24.3% and 21.1% patients, respectively. The results of association analyses confirmed that there was a high correlation particularly between number of anticholinergic drugs prescribed and negative complications in older patients. The most frequent potential side effects were tachycardia in both types of care (34.1% and 21.3%, respectively) and constipation (14.6% and 8.5%, respectively). Clinical pharmacy drug revisions helping to reduce particularly anticholinergic drug burden might significantly improve health outcomes of seniors.

The study was supported by projects: EuroAgeism Horizon 2020 MSCF-ITN-764632, Inomed NO.CZ.02.1.01/0.0/0.0/18_069/0010046, Cooperation research program, Faculty of Pharmacy, Charles University, START/MED/093 CZ.02.2.69/0.0/0.0/19_073/0016935 project, SVV260 551 and ICARE4OLD H2020 -965341 projects.

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ANALYSES OF DRUG-DRUG INTERACTIONS IN COMBINED DRUG REGIMENS IN OLDER ADULTS

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Age-related physiological and pathological changes in older adults are accompanied with polypharmacy and higher risk of drug-drug interactions (DDIs). Hence, we aimed this study to determine the prevalence and most common DDIs in the Czech sample of seniors assessed during the EuroAgeism H2020 project and describe mechanisms of most common DDIs, their clinical relevance and available evidence. Seniors 65+ (in total N=1602) participating in the EuroAgeism H2020 project (data collection period: 2018-2021) in 3 different settings of care – acute care (N=589), ambulatory care (N= 563) and community pharmacies (N= 450)- were assessed using GCA (Comprehensive Geriatric Assessment) protocols of the EuroAgeism H2020 project. Medscape, UptoDate and Micromedex databases were used to compare the information on risks and available evidence about most common DDIs. R-software ver 4.0.3. (χ^2 -test or Fischer's exact test) were used for comparisons of prevalences in various categories. The average age was (78±7.6 years), with higher values in ambulatory care (82.8±8.5 years) and lower in community pharmacies (71.7±6.3 years) (p<0.001). Polymorbidity (6+ chronic disorders) and hyperpolypharmacy (10+ medications) were identified in total sample in 48.4% and 26.4%, in acute care in 62.9% and 47.4%, in ambulatory care 60.7% and 22.6%, and in community pharmacies in 24.9% and 3.8% seniors, respectively (p<0,001). The average number of DDIs identified in 3 different settings of care were (6.6±6.2 years) in acute care, (4.3±4.9 years) in ambulatory care and (1.8±3.6 years) in community pharmacies (p<0.001). The prevalence of 1+ DDIs were determined as 90.5% in acute care, 78.7% in ambulatory care and 43.8% in community pharmacies, with the prevalence of serious DDIs 43.6%, 32.7% and 15.1%, respectively. Most frequently prescribed serious DDIs might potentially lead to increased risk of hyperkalemia, bleeding or drugs' toxicity. DDIs were identified in the sample of Czech seniors with a very high prevalence (> 70%), as well as serious DDIs (>30 %), particularly in acute and ambulatory care. None of identified DDIs were contraindicated for use, but majority required close monitoring of therapy. Clinical pharmacist's interventions may help to improve the quality of care and quality of life of older adults.

The study was supported by grants of the Research group "Aging, polypharmacotherapy and changes in therapeutic value of drugs in the aged" (chair: Assoc. Prof. Daniela Fialova, PharmD., Ph.D.), namely by: the European Union research and innovation project called EuroAgeism H2020 under the grant agreement of the Marie Skłodowska-Curie Foundation number MSCF-ITN-764632, Research program Cooperation of the Faculty of Pharmacy, Charles University in Hradec Kralove, by INOMED project NO.CZ.02.1.01/0.0/0.0/18.069/

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POLYPHARMACY AND HYPERPOLYPHARMACY IN OLDER INDIVIDUALS WITH PARKINSON'S DISEASE : A SYSTEMATIC REVIEW AND META ANALYSIS

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Polypharmacy (concomitant use of 5–9 medicines) and hyperpolypharmacy (concomitant use of over 10 medicines) were observed to be more frequent in older adults (≥ 65 years) and associated with adverse outcomes. Their prevalence and risk in older patients with Parkinson's disease (PD) remain unknown. We aimed to synthesize the extant evidence on the prevalence and risk of polypharmacy and hyperpolypharmacy in older adults with PD. A systematic literature search was performed in PubMed/MEDLINE, Scopus, and Embase databases to identify pertinent studies published from 2000 to July 2021. Observational studies reporting the prevalence and association with disease of polypharmacy/hyperpolypharmacy in older adults with PD were meta-analyzed. Pooled prevalence and odds ratio (OR) with 95% confidence intervals (CIs) were calculated. Out of the total 499 studies identified, 6 fulfilled the inclusion criteria and comprised 7,171 participants. The overall prevalence of polypharmacy and hyperpolypharmacy was 40% (95% CI: 37–44) and 18% (95% CI: 13–23), respectively. A meta-analysis of 4 studies indicated a significant association between polypharmacy (OR: 1.94, 95% CI: 1.26–2.62; $p < 0.001$) and PD. Hyperpolypharmacy was also strongly associated with PD (OR: 3.11, 95% CI: 2.08–4.14; $p < 0.001$). Polypharmacy (40%) and hyperpolypharmacy (18%) are highly prevalent and eventually increase the risk of drug-related problems in older adults with PD. Therefore, interventions that ensure rational geriatric pharmacotherapy are of critical importance for the older population with neurodegenerative disorders.

The study was supported by grants of the Research group "Aging, polypharmacotherapy and changes in therapeutic value of drugs in the aged" (chair: Assoc. Prof. Daniela Fialova, PharmD., Ph.D.), namely by: the European Union research and innovation project called EuroAgeism H2020 under the grant agreement of the Marie Skłodowska-Curie Foundation number MSCF-ITN-764632, Research program Cooperation of the Faculty of Pharmacy, Charles University in Hradec Kralove, by INOMED project NO.CZ.02.1.01/0.0/0.0/18.069/0010046, project START/MED/093EN.02.2.69/0.0/0.0/19_073/0016935, SVV program 260 551 and I-CARE4OLD Horizon 2020 project no.: 965341.

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