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CSP1

ANALYSIS AND MANAGEMENT OF NURSES' MEDICATION ERRORS DURING DRUG ADMINISTRATION

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Improving safety is currently one of the priorities in the field of healthcare provision. Medication errors during drug administration (DAMEs) are quite frequent abroad[1]. In the Czech Republic, data resulting from the reporting of adverse drug events are rather underestimated or missing. The aim of this study is to analyze the occurrence of nurses' DAMEs, propose appropriate interventions to minimize DAMEs and assess their effectiveness.

In a prospective interventional study, trained pharmacists observed nurses' DAMEs on seven wards of an inpatient rehabilitation healthcare facility. During April 2018, baseline prevalence and types of DAMEs were determined. Patient risk assessment was performed in order to identify serious DAMEs. An intervention phase was conducted in February and March 2019, including repeated discussions with healthcare professionals and facility management, adjustment of internal guidelines, printed educational materials, and seminars. In May 2019, a postinterventional observation of nurses' DAMEs took place to evaluate the effectiveness of interventions. Data were processed in Wolfram Mathematica using descriptive statistics and chi-square test.

During the baseline and postinterventional observations, 4661 and 4386 individual drug administrations were monitored, respectively. The total number of DAMEs was significantly reduced from 918 (19.70%) to 148 (3.37%) ($p < 0.001$). The prevalence of serious DAMEs (e.g., administration of the wrong drug) decreased from 0.45% to 0.20% of all individual drug administrations.

As a result of interventions, DAMEs were decreased. The sustainability of the interventions will be monitored within one year.

The study was supported by Charles University grant (SVV 260 417).

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DRUG-RELATED HOSPITAL ADMISSIONS FOLLOWING EMERGENCY DEPARTMENT VISIT: A CROSS-SECTIONAL STUDY

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Drug-related hospital admissions (DRA) have attracted much research attention worldwide. The aims of this study are to determine the prevalence and preventability of DRA, to identify the implicated medications in DRA and to examine the preventability aspects of DRA. The methodology of this cross-sectional observational study draws upon the drug-related admissions adjudication guide developed by Thevelin et al.[1] In the first step relevant clinical data are abstracted into an Access database. The second step includes screening for potential adverse drug events which are the main or contributory reason for hospital admissions. The third step is drug-related admission adjudication process, which consists of causality assessment and assessment of contribution to hospital admission. Hospital admissions to University Hospital Hradec Králové in 2018 following emergency department visit are included in this study. So far, 879 hospital admissions have been included, and 147 DRA have been identified (112 related to treatment safety, 35 related to treatment effectiveness). The prevalence of DRA was 16.7% (95% CI 14.3-19.2). Antithrombotic agents, psycholeptics, analgesics, antiinflammatory and antirheumatic products and corticosteroids for systemic use represented the most common medication classes involved in DRA related to treatment safety. Diuretics, antihypertensives, drugs used in diabetes, antithrombotic agents and antibacterials for systemic use represented the most common medication classes involved in DRA related to treatment effectiveness.

The study was supported by Charles University (Project SVV 260 417, PROGRES Q42)

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CSP3

MATERNAL NUTRITIONAL INTAKE IN RELATIONSHIP WITH PREGNANCY OUTCOMES IN CZECH PREGNANT WOMEN

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Optimal maternal nutrition contributes to the maintenance homeostasis of pregnant organism and promotes proper fetal development. The aim of the study was to evaluate the nutritional intake of energy and macronutrients (PNEM) in relation to resting energy expenditure (REE) and birth parameters in Czech pregnant women throughout the pregnancy, what is not well known. Sixty-five healthy Czech pregnant women, with average 29 years old, 166.5 cm and 67.8 kg attended to our study. REE measurements were recorded after 12 h fasting, by indirect calorimetry in three periods: G1 (17-27 gestational week), G2 (28-35 gw.) and G3 (36-38 gw.). PNEM was obtained in weekly records and nutritional analysis was evaluated by the computer program NutriDan. PNEM, expressed per kilogram of woman's weight, was significantly related to REE. Energy intake decreased with increasing of pregnancy state (2061 kcal per day, 1965 kcal per day, 1962 kcal per day). Decreasing trends were reported in the areas of protein intake (79.91 g, 75.63 g, 73.94 g), fat (76.66 g, 75.06 g, 72.4 g) and carbohydrates (239.6 g, 223.3 g, 225.2 g). In all trimesters, PNEM significantly correlated with the birth weight of the newborn ($p < 0.001$). In the 2nd trimester, PNEM positively associated with the birth length ($p < 0.01$) and negative (except for carbohydrates) with the duration of labor ($p < 0.01$). Increased PNEM in the last trimester was significantly associated with a shortening of the pregnancy period ($p < 0.01$).

Intake of nutritional energy and macronutrients significantly affects energy expenditure and correlates with birth parameters in all trimesters of pregnancy.

The study was supported by GA UK č. 1306218, SVV/2019/260417, MH CZ –DRO (UHHK, 00179906) and PROGRES Q42

CSP4

DEVELOPMENT, IMPLEMENTATION AND TESTING OF MEDICATION ADHERENCE ENHANCING INTERVENTION IN KIDNEY TRANSPLANT OUTPATIENTS: EFFECTIVENESS–IMPLEMENTATION STUDY (TAKTIS)

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Patients after kidney transplantation (KTx) are on long-term immunosuppression with an emphasis on strict medication adherence. Nonadherence to immunosuppression, which in KTx setting means mainly during implementation phase (e.g. dosing, timing), leads to poor clinical and economical outcomes. This substudy is part of a multiphase project TAKTIS (developing, implementing, and testing an integrated care model for adults after KTx). The ongoing project is single-centre, prospective and interventional. As a part of contextual analysis, this substudy aimed to evaluate the prevalence of nonadherence and attitudes toward immunosuppression. All adults at least 4 weeks after KTx were included, who were on basal immunosuppression and signed a written consent with study participation. Data was collected using questionnaires (e.g. Basel Assessment of Adherence to Immunosuppressive Medications Scale (BAASIS-CZ©); specific subscale of Beliefs about Medicine Questionnaire (BMQ-CZ©)) and a review of medical charts (e.g. imunosuppressives blood levels). Of 415 patients in regular follow up, 390 met inclusion criteria and 359 (92% of 390) patients fulfilled the questionnaires. Main measured immunosuppressives were tacrolimus, cyclosporine, sirolimus, and everolimus in 238, 79, 46, and 4 cases, respectively. According to BAASIS-CZ©, 133 (37% of 359) patients were nonadherent with deviations in taking (45; 12.5%), timing (118; 32.9%), and dosing (3; 0.8%). One patient completely discontinued to take all immunosuppression. Mean necessity score was 4.3 ± 0.57 of 5.0 points (= maximal necessity) and mean concern score was 2.6 ± 0.71 of 5.0 (= maximal concerns). To conclude, prevalence of medication nonadherence in implementation phase was high among patients after KTx with the most frequent deviation in timing of immunosuppression. This information is essential in contextual analysis needed for TAKTIS care model development.

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CSP5

ANALYSIS OF DRUG-RELATED PROBLEMS IN PATIENTS AFTER KIDNEY TRANSPLANTATION

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Patients after kidney transplantation (KTx) in care of nephrologist and other specialists are specific by polypharmacy, long-term immunosuppression and changed renal functions, so they may be in increased risk of drug-related problems (DRPs). The aim of this study was to analyze the prevalence of DRPs and to determine the riskiest areas of their pharmacotherapy. This cross-sectional study was conducted at the University Hospital Hradec Kralove in the Czech Republic. All outpatients aged ≥18 years, at least 3 weeks after KTx treated by maintenance immunosuppression were included. Data were collected during one-year period (2016–2017) from electronic medical records. Personal, family, occupational, allergic and drug related anamnestic data, selected physical as well as laboratory parameters were collected in a pre-created electronic database. The identified DRPs were classified according to the modified Pharmaceutical Care Network Europe classification V5.01 and their relevance was assessed by 2 pharmacists. The data was evaluated by descriptive statistics. Of the total of 412 outpatients at the clinic, 211 were enrolled (123 men; aged 55.8 ± 12.41). Patients were 6.6 ± 5.9 years after KTx and used in average 11.3 drugs/patient/day. The total of 668 DRPs were identified, which was equivalent to 3.17 DRPs/patient. Most frequent DRPs were missing of clearly indicated drugs in 27.4% (e.g. calcium or vitamin D), inappropriate dose timing in 16.0% and no clear indication for the drug in 12.6% of DRPs (e.g. aspirin or gastroprotection). The most relevant DRPs (5.2%) were e.g. contraindicated (CI) combination of cyclosporin and simvastatin, duplicity of betaxolol, CI nitrofurantoin in relation to decreased renal function, etc. DRPs were common in KTx outpatients, the most prone was the long-term pharmacotherapy. Medication review conducted by pharmacists can effectively minimize DRPs and thus enhance safety of pharmacotherapy.

The study was supported by Charles University grant (SVV 260 417).

CSP6

POTENTIALLY INAPPROPRIATE PRESCRIBING IN OLDER ADULTS IN CENTRAL AND EASTERN EUROPE AND ASSOCIATED RISK FACTORS - PRELIMINARY RESULTS OF TWO SYSTEMATIC LITERATURE REVIEWS

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Potentially inappropriate prescribing (PIP) in older adults is highly prevalent in Europe and risk factors (RFs) of PIP have been described by several studies1,2,3,4. The aim of our study was to conduct two systematic literature reviews determining 1) the prevalence of PIP in Central and Eastern European Countries (CEECs) participating in the Horizon 2020 EUROAGEISM FIP7 project (Albania, Bulgaria, Croatia (HR), Czech Republic (CZ), Estonia, Lithuania, Serbia and Slovakia), and 2) to document social, economic and healthcare-provision related RFs of PIP.

We searched in SCOPUS and MEDLINE databases (papers published by 2019) and included only primary studies published in English as full-texts. Of 146 and 2740 studies in primary literature search, 14 and 69 were selected using pre-defined criteria, respectively.

The prevalence of PIP ranged from 15.7% (CZ) to 68.8% (HR). In total, 72 RFs were analyzed. Among economic and social RFs, “patients’ low income” reached the highest odds ratio (OR=2.48 (1.82-3.39), $p<0.001$) and “not having a partner” (OR=1.50 (1.10-2.10), $p<0.05$). Among care-related RFs these were ”residency in long-term care institutions” and “admission to acute care” (OR=2.29 (2.25-2.33), $p<0.001$ and OR=3.35 (2.43-4.62), $p<0.05$, respectively), as well as “care provided by non-geriatricians” (OR=5.54 (1.62-18.89), $p=0.01$) or “by more prescribers” (OR=1.40 (1.29-1.51), $p<0.001$).

Results create an important base for the started EUROAGEISM H2020 FIP7 project, assessing PIP in older adults in 10 European and other countries. This project supports the development of geriatric clinical pharmacy in different settings of care.

The study was supported by the EUROAGEISM H2020 project, FIP7 program (ITN-MSCF No764632), INOMED project reg. No.CZ.02.1.01/0.0/0.0/ 18069/0010046, SVV 260 417 and PROGRESS Q42 program at the Department of Social and Clinical Pharmacy, Charles University - Scientific group “Ageing and Changes in the Therapeutic Value of Drugs in the AgeD” chaired by Assoc. Prof. Daniela Fialová, PharmDr., Ph.D.

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CSP7

INITIAL EXPERIMENT WITH THE LEFT ATRIAL APPENDAGE OCCLUSION WITH THE AMPLATZER AMULET™

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Atrial fibrillation is the most common rhythm disorder in clinical practice. Stroke is one of the most severe thromboembolic disorders associated with atrial fibrillation.[1] The CHA_2DS_2VASc scoring system assess the risk of stroke in patients with atrial fibrillation.[2] Oral anticoagulation is recommended in atrial fibrillation patients at moderate to high risk of stroke and thromboembolism.[3] The HAS-BLED scoring system evaluates the risk of bleeding in patients receiving anticoagulation therapy.[4] Percutaneous left atrial appendage occlusion provides a treatment alternative for patients with atrial fibrillation at high risk of stroke in whom anticoagulation therapy is associated with high bleeding risk.[5]

Goals of our observational, retrospective, multi-centre, case-series study were: 1) describe the initial experience with Amplatzer Amulet™ the left atrium appendage occlusion in Slovakia; 2) evaluate the effectiveness and safety of the procedure in stroke prevention in patients with atrial fibrillation.

We analyzed 93 patients with atrial fibrillation at high risk of stroke undergoing left atrial appendage occlusion from June 2015 to October 2018. The mean patient age was 70.9 ± 8.6 years. The mean CHA_2DS_2VASc and HASBLED score was 4.4 ± 4.4 and 3.5 ± 0.9, respectively. The left atrial appendage was successfully closed in 98.9% (92) of patients. The mean total procedural time was 110.4 ± 54.5 min. Periprocedural complications were observed in 5.4% (5) of patients. Three months after the procedure, small postprocedural leaks up to 3 mm were observed in 89.2% (83) of patients.

In this initial experience study, left atrial appendage occlusion was shown to be an effective and safe alternative to anticoagulation therapy in patients with atrial fibrillation at high risk of stroke for whom anticoagulation therapy is associated with high bleeding risk.

The study was supported by Faculty of Pharmacy, Comenius University, Bratislava

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CSP8

IMPACT OF A COMPUTERIZED PROTOCOL ON THROMBOPROPHYLAXIS USE IN GENERAL SURGERY: STUDY DESIGN

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A large proportion of hospitalized patients are at risk for venous thromboembolism (VTE), but there is a low rate of appropriate prophylaxis in clinical practice[1]. According to the American College of Chest Physicians (ACCP) guidelines, all hospitalized patients admitted in a surgical ward should be assessed for the risk of VTE[2]. Various strategies to improve the use of thromboprophylaxis have been recommended including the computerized systems[3]. To our knowledge, there is no protocol standardization or any other active strategy leading to the appropriate thromboprophylaxis in surgical patients described in the Czech literature. In the past, there was also a lack of standardization in prescribing thromboprophylaxis to the surgical patients in our hospital. Therefore we decided to create and implement the VTE prophylaxis computerized protocol (VTEP-CP) as a decision support tool for physicians. After the protocol has been routinely used by physicians for several years, we decided to analyze the rate of compliance with the guidelines on VTE prophylaxis and to determine the incidence of VTE and major bleeding before and after implementation of VTEP-CP. The list of patients admitted in the surgical ward that underwent elective general surgery was provided through the hospital information system for a period of eleven months in 2012 (group A = before VTEP-CP implementation) and eleven months in 2014 (group B = before VTEP-CP implementation). We were able to obtain some of the required data of the patients in electronic form directly from the hospital information system and thus create a baseline database that we now must complete with the data from the patient medical records. Patients in group A are scored by the VTEP-CP using the data from the hospital admission form. For group B, the data from the VTEP-CP are used and also medical records are reviewed. The risk score, the dose and type of LMWH recommended by the VTEP-CP, the dose and type of LMWH administered to the patient and usage of mechanical prophylaxis is registered for both groups. We also review the documentation of patients for the diagnosis of VTE and signs or diagnosis of major bleeding.
In the presentation, we will discuss the study design, its limitation and the possible benefit of the research in the field of clinical pharmacy.

The study was supported by Project SVV 260 417, PROGRES Q42

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CSP9

NEUTROPHIL-TO-LYMPHOCYTE RATIO AND PROGNOSTIC INFLAMMATORY AND NUTRITIONAL INDEX AS THE PREDICTORS OF POSTOPERATIVE INFECTION AFTER KNEE OR HIP ARTHROPLASTY

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Surgical site infection (SSI) is a potential complication of all surgical procedures and also the second most common type of nosocomial infection. The very presence of SSI leads to an increase in mortality. In patients with developed infection who underwent a surgical procedure, there is double mortality compared to non-infected patients. SSI prevalence may be reduced by various preoperative and postoperative measures. One of the ways in which SSI is affected is antibiotic prophylaxis (AP). It is desirable to adjust AP length for arthroplasty, according to individual SSI risk estimated by appropriate processes. The aim of this study is to stratify patients based on the risk of postoperative infection and to verify the findings in clinical practice on the basis of examinations focusing mainly on laboratory tests, especially neutrophil-to-lymphocyte (NLR) ratio and prognostic inflammatory and nutritional index (PINI). NLR is an easily verifiable, easy, broadly robust and appropriate laboratory test. Neutrophil levels in the blood are increased due to cytokines, while lymphocyte counts are reduced by surgical trauma. The increase occurs within 2 days after surgery and the return to physiological values takes place in a matter of days. It depends on the nutritional status of the patient, therefore its use in combination with PINI seems appropriate. These properties have been demonstrated in the diagnosis of cardiovascular diseases. In 2020, we plan to perform a prospective interventional study with an approximate number of 300 patients. In addition to the systematic literature review, we will collect patient and surgical procedure data before, during and after surgery. The usability of NLR and PINI will be evaluated with the postoperative complication analysis. Complications will be monitored 28–35 days after the surgery. Regarding these results, the interventions will be arranged to optimize and individualize the use of AP.

The study was supported by Charles University (Project SVV 260 417).

CSP10

AVAILABILITY OF INFORMATION ON LOWER GERIATRIC DOSING OF POTENTIALLY INAPPROPRIATE MEDICATIONS (PIM_S) IN NATIONAL DRUG FORMULARIES AND SUMMARY OF PRODUCT CHARACTERISTICS (SPC_S)

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One of the main public health concerns nowadays is the appropriate prescribing for older patients [1]. The concept of potentially inappropriate medications in the aged (so called PIMs-medications having higher risks than benefits in older adults or potentially ineffective in the aged) was defined to better ensure the medication safety in older adults [2]. The aim of our study was to clarify for how many PIMs (potentially inappropriate medications) geriatric dosing is stated in official drug information sources. Information on recommended single and daily geriatric dose for all PIMs (364) identified by expert panels in different explicit criteria has been searched between March–May 2019 using AIFA website (Agenzia Italiana del Farmaco), BNF (British National Formulary) and US PDR (US Prescriber's Drug Reference). The same single dose for middle age and geriatric population was found in all SPCs for 234 (64.3%) PIMs, lower single dose for geriatric patients was clarified for 61 (16.8%) PIMs in all SPCs and for 19 (5.2%) in some SPCs. For daily geriatric dosing, 3 above stated results were 212 (58.2%), 69 (19.0%) and 33 (9.1%), respectively. For 50 (13.7%) PIMs no information was found about specific approaches in geriatrics and for 6.9% PIMs only ''general warnings to be more cautious in older adults'' were available. Recommendation of geriatric dosing was stated in less than 30% of SPCs of PIMs. In the majority of SPCs, the geriatric dose was not clarified. Therefore a new evidence on appropriate geriatric dosing from clinical and/or observational studies is needed to clarify specific aspects of the use of PIMs (indications, single and daily dosing) in order to better ensure higher safety of medications in geriatric patients.

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CSP11

SPECIFICITY OF THE EU(7)-PIM LIST OF POTENTIALLY INAPPROPRIATE MEDICATIONS FOR THE EVALUATION OF RATIONALITY OF DRUG PRESCRIBING IN OLDER ADULTS IN EUROPEAN COUNTRIES

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The EU(7)-PIM (potentially inappropriate medication) list presents nowadays the most comprehensive and up-to-date tool for evaluation of PIM prescribing in Europe.[1,2] The aim of our study was to determine the specificity of EU(7)-PIM list in ten European countries.

Research teams from Czech Republic, Croatia, Estonia, Hungary, Poland, Serbia, Slovak Republic, Spain, Portugal and Turkey participated in this study conducted by WG1b group of the EU COST Action IS1402 initiative. Data on approval rates of PIMs and their availability on pharmaceutical markets have been obtained from databases of national drug regulatory authorities in the period October 2015-November 2018. The EU(7)-PIM list was applied in this study as a research tool.

Approval rates for EU(7)-PIMs ranged from 39.0% in Estonia to 71.4% in Spain. Higher percentages of approved PIMs were documented in Spain (71.4%), Turkey (67.5%), Portugal (67.1%), and Poland (60.6%), lower in Hungary (55.5%), Czech Republic (51.1%), Slovak Republic (47.9%), Serbia (42.8%), Croatia (41.5%) and Estonia (39.0%). The majority of approved PIMs were also currently marketed in all countries except in Turkey (19.8–21.7% not marketed PIMs) and less than 20% of PIMs were available as over-the-counter medications (except in Turkey, 46.4–48.1%).

Applicability of the EU(7)-PIM list is limited in some countries. The EU project EUROAGEISM H2020 (2017–2021) that focuses on PIM prescribing and regulatory measures in Central and Eastern European countries must consider these limits.

The study was supported by the EU COST Action IS1402, EUROAGEISM H2020 project (ITN-MSCF No764632), INOMED project reg. No.CZ.02.1.01/0.0/0.0/ 18069/0010046, SVV 260 417 and PROGRESS Q42 at the Department of Social and Clinical Pharmacy by Scientific group "Ageing and Changes in the Therapeutic Value of Drugs in the AgeD" (chaired by Assoc. Prof. Daniela Fialová, PharmDr., Ph.D).

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