

community and hospital-acquired infections. A comprehensive microbial resistance surveillance has identified high rates of resistance in some regions of Croatia. This study has examined the use of antibiotics in Croatia and estimation influence of therapeutic antibiotics on total consumption. **METHODS:** This study surveyed pharmacies in Croatia in period 2011 - 2015 using the data from wholesaler pharmacies to obtain a complete picture of antibiotic use over a Anatomical Therapeutic Chemical (ATC) classification and the (DOT) measurement units were assigned to the data. Antibiotic use as DOTs and DOTs per thousand inhabitants per day (DOTs/TID). The total utilization from 2010 to 2015 was 23,20 DOTs/TID. The highest was in 2011 - 23,87 DOTs/TID. Penicillins represented the highest 12,73 DOTs/TID, followed by cephalosporins (3,21 DOTs/TID) and DOTs/TID). Amoxicillin + clavulanic acid was leading antibiotic followed by amoxicillin (3,22 DOTs/TID) and azithromycin (1,77 DOTs/TID). **CONCLUSIONS:** Very high consumption of antibiotics was observed in Croatia with high use of broad spectrum and newer antibiotics. The risk of antimicrobial resistance is expected. Suitable antibiotic education of physicians and pharmacist should be implemented to reduce use of antibiotics. This study could be early warning for the antimicrobial resistance and more focused studies are needed.

GENERIC DRUG UTILIZATION AMONG THE ELDERLY WITH MULTIPLE CHRONIC DISEASES IN THE UNITED STATES

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Elderly people with multiple chronic conditions usually take a substantial amount of medication every year. Thus in order to decrease the out-of-pocket cost of prescription drug, they may choose generic alternatives over brand-name drugs since generics cost less. The objective of this project aims to examine the association of number of chronic conditions and generic utilization among elderly people in the United States. **METHODS:** We used 20% Medicare data from the Prescription Drug Event file, and other files containing information on the beneficiary and their health status. The outcome is defined as the share of the total drug use at the person-year level. We used multinomial regression to categorize claims of generic and branded drug. The main outcome is the number of chronic conditions of the beneficiary, which was categorized into the number of different chronic diseases according to Chronic Disease Definition. Other covariates include age, gender, out-of-pocket cost, insurance type, whether the beneficiary received any subsidy for health care services, and a multivariate linear regression model to examine the association between the mean age of the sample population is 69.7 years old and on whether the beneficiary had more than 6 chronic conditions and about 72% of the total drug use was generic drug. The coefficient on comorbidity is 0.008 and is statistically significant, indicating that with one more chronic conditions, the probability of using generic drug may increase by 0.8%. **CONCLUSIONS:** Elderly people with multiple chronic conditions may tend to use more generic drug in order to save on the out-of-pocket cost.

COMPLIANCE OF PHARMACISTS IN PUBLIC PHARMACIES IN RELATION TO COLD CHAIN DRUGS

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Pharmacists are responsible to maintain the quality and safety of drugs and medical devices. They must comply with all the procedures prescribed by the manufacturer to store and transport them. Therefore the cold chain of drugs must be respected from the production site to the user. It is important to provide the right information to the user on further handling this drug. **METHODS:** The prospective cross-sectional study was conducted in the first half of the year 2016, using specially created questionnaire on compliance of pharmacists in the primary level of health care system. The questionnaire approved by the Ethics Committee for biomedical research of Pharmacy. The informed consent was obtained by participating pharmacists at 32 healthcare institutions; Most participants had an average age of 44.64±9.04 years. Almost all pharmacies (99.30%) use cold chain regime (99.30%) and 98.8% claim that they use the method and frequency of temperature checking in the cold chain regime from pharmacy to pharmacy. 33.2% of pharmacists check temperature twice a day, while 2.2% do that once or twice a week. In 98.8% of cases, the procedure with products that require special handling in case of disasters does not exist, while for 4% of them the procedure does exist. **CONCLUSIONS:** It is necessary to define uniform procedures for handling cold chain drugs on the primary level of health care system on handling cold chain drugs. The informed consent was obtained by participating pharmacists at 32 healthcare institutions; Most participants had an average age of 44.64±9.04 years. Almost all pharmacies (99.30%) use cold chain regime (99.30%) and 98.8% claim that they use the method and frequency of temperature checking in the cold chain regime from pharmacy to pharmacy. 33.2% of pharmacists check temperature twice a day, while 2.2% do that once or twice a week. In 98.8% of cases, the procedure with products that require special handling in case of disasters does not exist, while for 4% of them the procedure does exist. **CONCLUSIONS:** It is necessary to define uniform procedures for handling cold chain drugs on the primary level of health care system on handling cold chain drugs. **ACKNOWLEDGEMENTS** Ministry of Education, Science and Technological Development of the Republic of Serbia (project No. 41004 and No. 41005).

INFLUENCE OF DRUG LAUNCH ACROSS EU5

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Pharmaceutical companies are increasingly using parallel export as part of the strategy of pharmaceutical companies to enter new markets. An important factor in this strategy is the order of launch across these markets. This research investigates the order

of launch in France, Germany, Italy, Spain and the United Kingdom. **METHODS:** Pharmaceutical products subjected to health technology assessments (HTAs) in the EU5 since 2011 were identified. Products that were launched in at least four out of five markets were selected. Countries were ranked (1-5) in order of launch, with automatically rate 5 when a product was not launched. The year of first launch was used to categorize products into four periods: A) prior to 1999, B) 1999-2003, C) 2004-2008 and D) 2009 onwards. Launches in the same month were considered simultaneous launches and were given the same rank. **RESULTS:** 305 products met the inclusion criteria. France was mostly the last country in row (rank 4 or 5 in 77%). Germany's first launches increased: the country was first or second for 29% of products from period A (1999-), but this rate increased to 56% for products from period D (2009+). The UK's first launches peaked between 1999 and 2003, but the rate of first-or-second to market decreased to a stable level in the two most recent periods. **CONCLUSIONS:** The order of launch across the EU5 has changed over time. Germany's dominance in first-in-row increased from average to first or second in more than half of all launched products. Meanwhile, the rate of simultaneous launches in multiple markets increased drastically over time, implying a change in strategy by grouping launches.

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EXPLORING DETERMINANTS OF POLYPHARMACY IN THE ELDERLY POPULATION IN AUSTRIA

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OBJECTIVES: Elderly people are likely to take several medicines at the same time (polypharmacy) which may carry the risk of adverse drug events and drug-drug interactions. The study aims to explore the prevalence and possible socioeconomic and institutional determinants of polypharmacy in the Austrian non-institutionalized population above 60. **METHODS:** Cross-sectional data from the first wave of the European Health Interview Survey (2006/2007) for Austria were analysed through multivariate logistic regression analyses. Prescribed and non-prescribed medication was measured by self-reported consumption of groups of medicines in the last two weeks. Explanatory variables included socioeconomic factors (measured by education), institutional factors (measured by contacts with hospitals and physician practices), controlling for health needs factors and demographic characteristics. **RESULTS:** 15% of the surveyed elderly population reported using no medication at all. 24% took medication from one group of prescribed or non-prescribed medicines, 38% of two or three groups and 23% of four or more groups of prescribed or non-prescribed medication. Most frequently taken were medications to treat high blood pressure, joint pain, and other pain medication. In terms of non-prescribed medicines, vitamins and minerals were consumed most commonly. Polypharmacy was mostly associated with deteriorated health status, higher age, follow-up outpatient visits, previous hospitalization and lower education. **CONCLUSIONS:** The use of a higher number of medicines is not only related to health needs, but also other factors, including socioeconomic status. Further research is needed to understand whether or not medicines are prescribed and used in an efficient and equitable way.

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REGIONAL TIME TO MARKET OF INNOVATIVE DRUGS IN ITALY

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OBJECTIVES: Following marketing authorization by the Italian Medicines Agency (AIFA), drugs need an approval step at regional level before being available to patients. The main purpose of this research is to define time to market (TTM) for innovative drugs, from the AIFA Pricing and Reimbursement (P&R) assessment, to regional patient access. A selection of new molecular entities (NMEs), which received a P&R assessment by AIFA in the 2012-2016 period, was considered. The sample included 39 drugs with different characteristics: innovative (n=17), non-innovative (n=22) and belonging to different therapeutic areas (i.e. antivirals, oncologic, cardiometabolic, and Central Nervous System). A desk research on the Italian Official Journals (Gazzette Ufficiali) was carried out to collect P&R approval dates. The dates of first regional dispensation were obtained through the IMS Health Hospital database, which gathers data on hospital and local healthcare unit direct distribution. **RESULTS:** The TTM is more rapid for innovative drugs compared to the non-innovative ones. The national average for TTM is 2.8 months; 3.7 and 1.8 for non-innovative and innovative drugs respectively. Regions show a high variability in the mean time (months) required for patients access. The regional analysis on innovative drugs shows a north-south gradient. The Northern regions (i.e. Lombardy, Piedmont-Valle d'Aosta, Tuscany) have shorter TTM (1-1.3 months). On the contrary, the southern regions (i.e. Sicily, Calabria, Basilicata, Molise) show longer TTM (>2.1 months). TTM is shorter for antivirals (1.4 months) compared to oncologies (2.4 months). **CONCLUSIONS:** The regional access is an important additional step that new molecules have to go through, towards final patient access. This process appears to be particularly time consuming especially in some regions. Regional measures and clear access pathway for drug formulary inclusion, while having a fundamental assessment role, should also be particularly devoted to guarantee a fast patient access especially for innovative molecules.

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PARALLEL EXPORT AND ITS IMPACT ON AVAILABILITY OF DRUGS IN SLOVAKIA

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OBJECTIVES: Slovakia is an attractive base for exporting drugs to those countries where prices are higher. Due to parallel export of drugs, Slovakia has a recurring problem with insufficiency of drug supply. The aim of this work is to estimate the share of parallel export on the whole turnover of pharmaceuticals and point out those drugs where the highest risk of export exists due to big difference of price