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SUPPORTING INTEROPERABLE EU PATIENT REGISTRIES: SURVEY OF REGISTRY HOLDERS' NEEDS

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OBJECTIVES: Due to the diversity in EU Member States' specific needs and legislation, the complexity of the health domain and the variable progress in IT-implementation there is currently limited standardization across registries and other eHealth tools. PARENT Joint Action (www.patientregistries.eu) aims at supporting the development of comparable and interoperable patient registries, thus enabling secondary data usage for public health and research purposes in a cross-border setting. As part of mapping the EU patient registry landscape, we undertook a survey of registry holders with the purpose of gathering information on current practices, as well as future needs and expectations with regard to IT-supported data exchange. **METHODS:** A survey of EU registry holders (n=177) was conducted and data was collected via an online questionnaire. Gathered information defines additionally patient registry metadata and is part of the development process of the Registry of Registries (RoR) – an envisioned go-to source for up-to-date information about patient registry metadata across Europe. **RESULTS:** We found a high degree of interest (82%) for participation in a single IT-enabled platform on the EU level, indicating IT tools, quality control systems and networking opportunities as the most potentially desirable services of such a system. The registries that indicated an interest to link their data to other data sources were more likely to have previously established standardized data exchange procedures and formats (Pearson $\chi^2=6.909$, $df=1$, $p=0.009$). There were no statistically significant differences in presence of routine data exchange procedures among patient registries according to Registry type (condition-based, product-based or service-based), Geographical coverage and/or Holding institution type. **CONCLUSIONS:** Achieving patient registry interoperability requires a complex service-oriented approach taking into account the whole registry context (political, legal, organizational, semantic and technical levels). Our survey findings will serve more advanced in-depth assessments of registry quality dimensions to be performed through the PARENT Framework.

HEALTH CARE USE & POLICY STUDIES – Population Health

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DETERMINATION OF MAJOR CHRONIC DISEASES BY USING PHARMACEUTICAL REIMBURSEMENT DATA FROM A LARGE BELGIAN HEALTH INSURER CLAIMS DATABASE

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OBJECTIVES: The objective of this exploratory study is to define the (chronic) health status of about 2 million affiliates from the Independent Sickness funds (MLOZ, Belgium). **METHODS:** Data were extracted from the administrative database of MLOZ. Information of specific reimbursed medications was used as proxy for diagnosis of 20 chronic diseases. We processed data of pharmaceutical consumption in the ambulatory sector (minimum 90 DDDs/year) to characterize the health status of patients. **RESULTS:** The analysis included 1,962,526 affiliates. The prevalence of chronic diseases is 23.3% in the population. This population is spending 64.3% of the total health expenditures reimbursed for all affiliates. Hypertension is the most common with 16.2% of the population, followed by depression (5.1%), diabetes (3.8%) and a group called "cardiovascular event" with 2.1%. Patients suffering from respiratory disease represent 3.8% (Asthma (1.7%) and COPD (2.0%)). Regarding the average health care costs, the picture is totally different. Patients with a rare disease induce on average €48,476 health care cost, followed by patients with renal failure (€40,429) or cystic fibrosis (€20,700). Patients with hypertension "only" cost €4,938. **CONCLUSIONS:** Claims databases from health insurers are attractive for researchers because of their size and detailed computerized records of all reimbursed health care procedures on a recipient-specific basis. In terms of public health, it seems interesting to concentrate (public) financial efforts towards chronic pathologies concerning a large number of patients with important average health care costs. Using secondary data of insurer claims databases allows (with some caution) to characterize chronic health status of large populations. Results may help decision-makers in defining priorities in resource allocation.

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USE OF FACTOR ANALYSIS TO OBTAIN INDEPENDENT HEALTH PERFORMANCE INDICATORS

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OBJECTIVES: Health Performance Indicators (HPIs) provide a quantitative tool to assess the performance of health care policies. Available HPIs may be strongly correlated, limiting further inferential use. In this study we converted published HPIs into a set of independent HPIs (iHPIs) using factor analysis. We subsequently used iHPIs to perform regional health care performance comparisons. **METHODS:** We used the set of 27 HPIs on 43 European countries from 7 geographical regions of Mackenbach (Mackenbach JP, McKee M. European Journal of Public Health 23 (2), 195-201, 2013). We extracted only indicators related to direct health care services having limited missing data (< 20%) and applied factor analysis to obtain iHPIs. The performance of the 7 regions was analysed using iHPIs in cluster analysis and non-parametric ANOVA (significance level at 0.05). **RESULTS:** 8 correlated indicators met our analysis criteria: systolic blood pressure, cervical cancer screening, teenage pregnancy, newborn and mother mortality, measles vaccination, mortality and AIDS incidence. The factor analysis reduced the set to 3 components or iHPIs and explained 77% of

the variance. The 3 iHPIs loaded respectively on 'mortality', 'prevention' and 'AIDS incidence'. The 7 European regions differed significantly for 7 of the 8 initial HPIs and for each of the 3 iHPIs (p always < 0.02). Cluster analyses based on the 3 iHPIs, avoiding multi-collinearity, generated regions with different country composition. Both Malta and Georgia became isolated; Finland and Portugal shifted from their geographical region. **CONCLUSIONS:** HPIs are important to assess and compare the impact of health care policies across regions and countries. After extracting 8 correlated HPIs linked to direct health care policies from a published set of HPIs, factor analysis allowed us to convert these into 3 independent components, which were subject to further multivariate analyses offering additional and different insights.

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IMPACT OF ECONOMIC CRISIS ON THE GREEK HEALTH CARE SYSTEM AND ON THE POPULATION HEALTH

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OBJECTIVES: The aim of the paper is to map the impact of economic crisis on the Greek health care system and on the population health. **METHODS:** A systematic literature review was conducted in databases Pubmed, Embase and Scopus for the years 1980-2013, focusing mainly on the impact of the economic crisis in Latin America, Eastern Europe and Eastern Asia. In order to assess the impact of crisis in Greece, Hellenic Statistical Authority (EL. STAT.), Hellenic Center for Disease Control and Prevention (HCDCP), OECD, Eurostat and World Bank databases were used. **RESULTS:** Greece entered a deep economic crisis in 2009 and in only four years lost more than 25% of its GDP. Unemployment rate exceeded 27% of the population in 2013, the number of uninsured population reached 2 million according to the Ministry of Labour (2014) whereas the rate of population at risk of poverty or social exclusion has increased from 27.6% in 2009 to 34.6% in 2012. Total current health expenditure decreased by €5.4 billion (23.7%) while public current health expenditure fell by a greater proportion, 25.2% or €4bn between 2009 and 2012. At the same time the use of public services (e.g. hospital admissions) and waiting times increased. Regarding the health outcomes, an increase in the incidence rate of HIV/AIDS per million population by 10% was recorded. Incidence of Hepatitis A was increased by 187.5% and meningitis by 87% between 2011-2013. Total mortality rate was increased by 3.2% while expressed unmet health care needs were increased by 55% between 2009-2011. **CONCLUSIONS:** The efforts to reform the Greek National Health System have been focusing mainly on short-term effects by reducing expenditure. However, health-promoting policies providing equitable access, especially regarding the vulnerable groups, and infectious diseases prevention should be considered as a more cost-effective alternative.

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ESTIMATION OF STRESS RESISTANCE OF MEDICAL STUDENTS IN LVIV

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OBJECTIVES: High demands for speed and amount of students' trainings in health care education is one of the stress causes. Presence of stress can negatively affect the state of progress and level of physical health of medical students. **METHODS:** Testing of 275 students III-IV years of studying at medical faculty (145 girls, 130 boys) using methods of Friedman and Rosenman modifications «tendency to stress» and «self-rating of stress resistance». **RESULTS:** Test results revealed: 34% of girls & 29% of boys showed below average level self-rating of stress resistance, including group tendency to stressful situations. Average level was characterized for 39% of girls & 27% of boys. This indicates the sufficient resistance to stress and rejection as failure stress. Higher than average level of stress resistance was observed for 15% of girls & 26% of boys. These students, despite the negative influence of different factors fight stress and try to prevent it. High level of stress resistance was exposed only by 12% of girls & 18% of boys. **CONCLUSIONS:** Gender differences in the aptitude to stress of medical students were established. High aptitude was recorded for 11% of girls & 7% of boys. Relatively high frequency of getting into stress was inherent for 25% of girls & 21% of boys. Presence of stress and attempts to avoid it were found for 29% of girls & 40% of boys. For 22% of girls & 26% of boys was found the ability to resist stress by communicative & harmony lifestyles. High level of self-regulation, the ability to achieve goals as the result of low aptitude to stress was inherent for 10% of girls & 7% of boys. Reducing adaptation to stress among medical students was registered. Formation of skills for stress resistance by implementation of health-saving technologies in student lifestyle is necessary.

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BREASTFEEDING AND ITS EFFECT ON THE PROBABILITY OF OCCURRENCE OF THE PROBABILITY OF OCCURRENCE OF THE DISEASE AND RELATED COSTS

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OBJECTIVES: Breastfeeding and nutrition of a child by breast milk has distinct influence on the child's health during childhood as well as in their adult age. Insufficient nutrition of infants and young children is one of the factors influencing morbidity in children and can cause increased susceptibility for certain chronic, non-infectious (so called civilization) diseases in adulthood, for example allergic diseases, obesity, diabetes mellitus that are closely associated with future costs of health care. **METHODS:** Analysis of medical records of randomly selected children between the age of 1 to 11 (n=100) from four pediatrician offices. The following data was analyzed: age, weight, breastfeeding, duration of breastfeeding and incidence of selected diseases (gastroenteritis, laryngitis, bronchitis, pneumonia,