

hypertension, serum cholesterol, and diabetes mellitus decreases the risk of Parkinson's disease (PD). We therefore examined the epidemiologic association of PD with hypertension, serum total cholesterol, and diabetes mellitus by conducting a detailed meta-analysis of all studies published regarding this subject. **METHODS:** A systematic comprehensive literature search was performed using PubMed, EMBASE, and CINAHL (until March 2012) for observational cohort and case-control studies using relevant keywords. Pooled relative risk (RR) was calculated using random effects model. Pre specified subgroup analysis was performed to assess the source of heterogeneity, according to study design, number of covariates adjusted and adjusted for BMI and cardiovascular diseases. Subgroup and sensitivity analysis were also done. Heterogeneity and publication bias were also assessed. **RESULTS:** 24 studies were included in the analysis. The pooled risk ratio of PD due to hypertension (n=8) was 0.78 (95% CI, 0.67-0.92, I<sup>2</sup>=71.85%), due to high serum cholesterol (n=7) was 0.95 (95% CI, 0.77-1.17, I<sup>2</sup>= 75.86%), and due to diabetes (n=14) was 0.94 (95% CI, 0.76-1.16, I<sup>2</sup>= 89.62%). Subgroup analysis showed a significant difference in effect estimate pooled by cohort and case-control studies (P-interaction<0.001). Pooled analysis of cohort studies for diabetes showed a pooled risk ratio of 1.34 (95%CI, 1.12-1.60, I<sup>2</sup>=76.77%). We found no significant difference in any subgroup analysis. **CONCLUSIONS:** We found evidence of significant inverse associations of hypertension, hypercholesterolemia, and diabetes mellitus with the risk of PD. Further well-designed investigations of the association of vascular risk factors with the risk of PD are needed, particularly large-scale prospective studies.

#### HEALTH SERVICES - Cost Studies

##### PHS13

#### COSTS ANALYSIS OF A MOBILE PHONE TELEMONITORING SYSTEM FOR GLYCAEMIC CONTROL IN PATIENTS WITH DIABETES MELLITUS (DM) IN SPAIN: PRELIMINARY RESULTS

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**OBJECTIVES:** Technological developments allow remote monitoring of patients and improve diabetes care. A mobile phone telemonitoring system (TM) might improve the ability of DM patients to engage in treatment. The objective is to estimate the annual costs that implementing a TM for glycaemic control in DM patients might represent to the National Health System and to society in Spain. **METHODS:** First, a systematic review of the literature was conducted to determine cost drivers in DM TM. Electronic databases were searched to identify national and international clinical and economic articles, published between January, 2001 and December, 2011, reporting on the clinical benefits, health resources used and costs associated to DM TM. Second, based on the data gathered, and adapted for Spain, and on the assumption that TM favors treatment compliance, a mathematical model was applied to determine the variation in costs associated to macro and micro DM complications risk reduction derived from hypothetically reaching 100% DM treatment compliance in groups of patients: compliant, noncompliant and complications are undiagnosed. **RESULTS:** A total of 3,539 articles were identified; 48 were reviewed. TM decreases emergency visits (83%), disease related hospital admissions (75%), length of hospital admission (51%), visits to the outpatient clinic (40%) and to the specialist (19%). Reduction of indirect costs reaches 120.82 € per DM patient/year due to less travel expenses (-6.30 €/visits) and productivity gain (-54 €/visits). Assuming that 100% of uncompliant DM patients become compliant (n = 1,550,634 patients) costs associated to macro- and micro-vascular complications decreases by 5,500 € (€, 2011) million per year. Higher cost reductions are obtained in the most prevalent vascular complications. **CONCLUSIONS:** These preliminary results show that TM in DM patients reduces direct and indirect costs. Significant costs reduction can be reached if DM treatment compliance is improved with TM in Spain.

##### PHS14

#### CLINICAL AND ECONOMIC ANALYSIS OF "MOLICARE® PREMIUM EXTRA SOFT" DIAPERS EFFICIENT APPLICATION FOR DERMATITIS AND PRESSURE ULCERS' PROPHYLAXIS FOR IMMOBILE URINARY-INCONTINENT PATIENTS

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**OBJECTIVES:** To carry out a clinical-economic analysis of MoliCare® Premium extra soft diapers application efficiency for contact dermatitis\* and pressure ulcers prophylaxis with immobile urinary-incontinent patients. **METHODS:** Estimation of typical management practice with immobile urinary-incontinent patients\* having developed contact dermatitis\* or pressure ulcers was performed by means of experts' questioning. Only direct medical costs were taken into account in the research. A comparative clinical-economic analysis was performed using Markov's model. A sensitivity analysis was performed taking into account retail and wholesale prices for absorbing means and skin care agents. **RESULTS:** Twenty weeks' total costs calculated with Markov's model use for contact dermatitis\* and 1-4 degree pressure ulcers prophylaxis and treatment with one immobile urinary-incontinent patient with absorbent means and skin care agents' application were 5508 € in retail prices and 5276 € in wholesale prices; without their application the costs were 7 446 €. Overall this Analysis shows that medical-prophylactic institutions' costs for contact dermatitis\* and pressure ulcers' prophylaxis and treatment with one immobile urinary-incontinent patient without absorbing means and skin

care agents applying are considerably higher (by 41%) than when they are applied. At the same time indirect costs including linen disinfection, washing, drying and ironing were not taken into account and such costs can increase a costs' total figure. **CONCLUSIONS:** Absorbent means and skin care agents' application for contact dermatitis and pressure ulcers prophylaxis and treatment with immobile urinary-incontinent patients is a dominant technique and cost efficacy of using absorbent means and skin care agents was demonstrated. The Branch standard "Patients' management protocol. Pressure ulcers" (2002) needs actualization taking into account the data obtained in the present clinical-economic research.

##### PHS15

#### RECOMMENDATION FOR ROTAVIRUS VACCINATION AND HERD EFFECT: ANALYZING COST DATA FROM A GERMAN STATUTORY HEALTH INSURANCE

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**OBJECTIVES:** To quantify the financial effects of the introduction of a recommendation for rotavirus vaccination in Saxony, Germany, in 2008 using a retrospective data analysis. Special emphasis is given to the herd effect. **METHODS:** We analyzed the costs of rotavirus infection between 2007 and 2010 based on 360,000 observations from the AOK Plus of children under 5 years for Saxony. To investigate the cost impact of the regional recommendation, we compared the associated costs of the expected annual RVGE cases derived from 2005 when rotavirus vaccination was not yet available, with the actual annual number of RVGE cases, vaccinations and associated costs per age cohort. A decrease in RVGE cases in not vaccinated cohorts was attributed to herd effect. We make distinction between in- and outpatient cases, societal and SHI perspective as well as different age groups. **RESULTS:** Given that the vaccination rate has increased from 5% to 61% in the observed period, we obtained following estimates: the mean total cost reduction per year attributable to introducing a recommendation for rotavirus vaccination is 4.5 million € (2.4 million €) from the societal (SHI) perspective. The mean cost savings of vaccination per avoided case rise from 572 € (291 €) in 2007 to 718 € (375 €) in 2010. The overall share of outpatient costs is about 72% (60%). About 45% of the total savings is attributable to herd effect. The herd effect per avoided case decreases over time while immunity increases. **CONCLUSIONS:** A recommendation for rotavirus vaccination in Saxony turns out to be cost saving from the SHI as well as the societal perspective. This is mainly attributed to the herd effect being present when having high vaccination rates.

##### PHS16

#### RELATIONSHIP OF POLYMEDICATION IN CONTROLLING BLOOD PRESSURE: COMPLIANCE, PERSISTENCE, COSTS AND INCIDENCE OF NEW CARDIOVASCULAR EVENTS

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**OBJECTIVES:** To determine the relationship of polypharmacy on blood pressure (BP) control, compliance, persistence, the cost and incidence of cardiovascular events (CVD) in patients with moderate/severe hypertension. **METHODS:** An observational multicenter retrospective study. We evaluated patients > 30 years who started a third antihypertensive treatment during 2004-2006. Depending on the number of chronic medications, we established 3 groups: regular consumption of 3-6 drugs, between 7-10 and ≥11. Top measures: sociodemographic, comorbidity, BP, compliance and persistence. For each group we determined the incidence of new CVD and total costs. Patients were followed for 4 years. **RESULTS:** We evaluated 1,906 patients, 765 between 3-6 drugs, 624 between 7-10 and 517 in ≥ 11 (P < 0.001). Overage age: 69.4 years and 55.5% women. The group of 3-6 drugs showed better BP control (51.8 vs. 47.0 and 41.1%, P < 0.001), compliance (71.4 vs. 69.9 and 67.1%, P = 0.017), persistence (50.1 vs. 45.5 and 46.2%, P = 0.044) and lower incidence of CVD (12.2 vs. 19.7 and 30.2%, P < 0.001), respectively. The average/unit total cost was 3,369.1 vs. 4,362.1 and 4,902.3 (P < 0.001). The presence of CVD was associated with therapy non-compliance (odds ratio [OR] 1.9, 95% confidence interval [95% CI] 1.1 to 3.6) and lower BP control (OR 1.4 [95% CI 1.1-2.0], P < 0.05). The use of anti-hypertensive fixed dose has greater compliance (72.8 vs. 68.2%), persistence (64.4 vs. 39.3%) and degree of BP control (52.6 vs. 43, 8%), P < 0.001. **CONCLUSIONS:** Polypharmacy is associated with lower compliance and persistence to antihypertensive treatment, cardiovascular disease and increased health care costs.

##### PHS17

#### COSTS OF INFLUENZA A(H1N1)2009 INFECTION DURING THE PANDEMIC AND THE POSTPANDEMIC-SEASONAL WAVES

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**OBJECTIVES:** We estimated the impact of influenza A(H1N1)2009 infection in terms of patient's health care services utilization, work absenteeism and costs, both during the pandemic (2009-10) and postpandemic-seasonal (2010-11) waves in Spain. **METHODS:** Longitudinal, multi-centre study of in- and outpatients with RT-PCR confirmed diagnosis of influenza A pandemic (PAND) and postpandemic-seasonal (POST) waves. Health care and social resources utilization were the main variables, together with clinical and sociodemographic characteristics. Evaluations were conducted at hospital-admission or ambulatory index-visit, and after recovery (median = 100 days). Unitary costs and Monte Carlo simulation were applied to