day). Overall, the cost was $466 (SD = $1361)/woman ($2.59/woman/day), with productivity loss accounting for 40% of the total, physician visits for 21% and medications for 11.6%. Statistically significant differences were found between pre- and perimenopause (P = 0.003) and between pre- and post-menopause (P = 0.01). **CONCLUSIONS:** This observational study was based on data reported by women 48–54 years of age, presenting at primary care practices in Canada. Perimenopause was the period with the highest burden. The major limitation was recall by subjects but the recall period was limited to a usually acceptable 6-month timeframe.

PIH10

ESTIMATING THE BURDEN OF WOMEN SUFFERING FROM PMS/PMDD: ANALYSIS OF A CROSS-SECTIONAL DATASET

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OBJECTIVES: Pre-menstrual dysphoric disorder (PMDD) is a severe form of Pre-menstrual Syndrome (PMS). Limited data exist to quantify the burden of PMDD on individual women and society, especially in a European setting. To investigate the relationship between symptom severity, cost and impairment in women with moderate/severe PMS or PMDD. **METHODS:** A model was constructed to quantify costs and impairment, based on analysis of a cross-sectional dataset. Heterogeneity was assessed and data included from 9 OECD countries. Analyses were reported applying Swedish cost from a societal perspective to the cross-sectional dataset. Data were analysed according to categories of symptom severity based on the DRSP total luteal symptom score. Five severity categories were defined: Category 1 comprised women with DRSP scores 21–41.9, Category 2, 42–62.9, Category 3, 63–83.9, Category 4, 84–104.9, and Category 5 scores of 105+. The output of the analysis was an estimate of mean annual cost and impact on quality of life (measured by utility) by category. Confidence intervals were generated through non-parametric bootstrapping. **RESULTS:** A total of 756 women were included in the analysis, 225 provided data on quality of life. Total annual costs (direct and indirect) were estimated at: SEK 8894 (95% CI 7137, 10,745), SEK 14,393 (95% CI 11,629, 17,505), SEK 24,178 (95% CI 17,961, 30,819), SEK 23,809 (95% CI 12,740, 40,144) and SEK 48,201 (95% CI 26,103, 75,635) for categories 1 to 5 respectively; utility at 0.81 (95% CI 0.78, 0.84), 0.72 (95% CI 0.67, 0.76), 0.71 (95% CI 0.64, 0.77), 0.63 (95% CI 0.47, 0.76) and 0.78 (95% CI 0.70, 0.93). **CONCLUSIONS:** Our analysis, modeled from a Swedish societal perspective, found a substantial burden associated with moderate/severe PMS and PMDD increasing with severity of symptoms. Further quantification of the monetary impact and research into geographical interactions is needed to better understand the burden of PMDD.

PIH11

SOCIO-ECONOMIC ASPECTS OF THE PRENATAL DIAGNOSIS OF CYTOMEGALOVIRUS (CMV) INFECTION IN GERMANY: A BURDEN OF DISEASE STUDY

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OBJECTIVES: Cytomegalovirus (CMV) can be transmitted to a developing child during pregnancy. In Germany, seropositivity rate is around 50%, risk of seroconversion during pregnancy 1% and congenital infection resulting from primary infection about 50%. Every year 495 infants will be born with congenital CMV-syndrome and 186 infants are infected but asymptomatic at birth and will develop a multitude of abnormalities (hearing loss, mental retardation etc.) due to primary CMV infection just as well as 750 children from seropositive mothers. The disease burden for affected children and parents is enormous. **METHODS:** The objective of this study was to estimate the total economic impact (lifetime direct and indirect costs based on deliveries p.a.) on society due to CMV-infection based on incidences. Additionally this study shows the positive monetary impact of screening (serologic testing and treatment in case of primary infection). Direct costs comprise all treatment costs of symptoms appearing at birth or later on. The incidences of sequelae were derived from literature. Indirect costs comprise the changed job situation of parents, work absenteeism, nursing leave, lost human capital of dead people, costs of special schools and nursing homes. The resource use was determined by literature and experts. All costs represent data from 2008. **RESULTS:** The total discounted costs of CMV infection from a societal perspective were €243m p.a. (941m€ undiscounted), whereas €225m p.a. (€870m undiscounted) are indirect costs corresponding to €766,444 per child (€2.97m undiscounted). Total costs for diagnosis and prevention are €50.43m. CMV screening and treatment of primary infected mothers by CMV specific hyperimmunoglobulin reduce total societal costs to €152m€ (€444m undiscounted) and prevents infection in 640 children. The budget impact amounts to €91m (€497m undiscounted). **CONCLUSIONS:** CMV-infection causes high disease burden and costs. A screening program is suitable to decrease future costs and disease burden of affected infants and parents.

PIH12

ECONOMIC BURDEN OF POSTMENOPAUSAL OSTEOPOROSIS IN GERMANY: A SYSTEMATIC REVIEW

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OBJECTIVES: Postmenopausal osteoporosis (PMO) increases the risk of fractures. However, studies have shown that only 20% of German osteoporosis patients receive osteoporosis-specific therapy and for many the adherence to medication is poor. This study assessed the economic burden of PMO in Germany. **METHODS:** We applied a systematic review of literature utilizing German based data to quantify osteoporosis-related costs. Our analysis considered both direct costs (inpatient care with/without fracture, rehabilitation, medication, nursing care) and indirect costs (absence from work, early retirement and mortality) attributable to PMO. **RESULTS:** We identified and analyzed eight cost studies and two administrative databases published between 1999 and 2009. Administrative data sources revealed annual direct and indirect costs of PMO amounting to €2205 million (direct costs: €1697–1879 million). Direct inpatient costs resulting from osteoporosis-related fracture are three times higher than osteoporosis without fracture. Mean hip fracture costs were €7,109–€12,526 and mean costs of vertebral fractures were €4400–€6171. Ambulatory nursing care results in about €132 million per year. Annual inpatient rehabilitation costs add up to €147 million. Annual costs of medication range between €338 million and €664 million. Annual indirect costs due to sickness absence were calculated at €146 million early retirement at €144 million and early death at €34 million. **CONCLUSIONS:** PMO currently has a considerable economic impact on the German health care system, which will increase with projected demographic changes. Strategies should be aimed at improving the management of this disease.

PIH13

COST-EFFECTIVENESS OF REDUCING MULTIPLE BIRTHS: IN-VITRO FERTILIZATION STRATEGIES IN CANADA

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OBJECTIVES: As the goals of in-vitro fertilization (IVF) treatments are to deliver a healthy child, where even a twin pregnancy is regarded as an adverse outcome, the economic impact of multiple births is an important policy consideration. **METHODS:** We estimated the potential cost savings by reducing the number of multiple pregnancies and births in Canada over the next five years. The direct medical costs included clinical management costs of singleton, twin and higher order multiple (HOM) pregnancies, hospital delivery costs of mothers and their offspring by multiple birth, term and pre-term birth and the costs of disabilities due to pre-term/low weight birth. The analysis was conducted from the perspective of a third party payer in Canada. All parameters were based on recently published literature. The results were expressed as age-specific incremental costs per live birth. **RESULTS:** Given the reductions in multiple birth rate equivalent to those reached recently by selected European countries, we estimated that, over the next five years in Canada, the proportions of singletons, twins and HOM could be reduced from 71.2%, 27.5% and 1.3% to 86.6%, 12.8% and 0.6%, respectively. The potential cost savings are estimated to reach $266 million. The over-all incremental cost per live birth could be reduced by $15,228. For women under 35, aged 35–39, and over 40, the incremental cost reductions would be $17,023, $13,860 and $10,749, respectively. The bulk of cost reductions (over 70%) would be attributable to reductions in disability costs related with preterm/low weight births. Extensive sensitivity analysis has been provided. **CONCLUSIONS:** In the context of limited resources and ever-expanding need for health care services, prudent policies regarding multiple birth reductions are highly desirable.

PIH14

THE COST-EFFECTIVENESS OF ETONOGESTREL/ETHINYL ESTRADIOL VAGINAL RING IN SCOTLAND

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OBJECTIVES: With increasing numbers of termination of pregnancies in Scotland, offering a broader range of contraceptive options can increase the number of women satisfied with their method, leading to reduced discontinuation and the resulting positive consequences. This study aimed at assessing the cost-effectiveness of the etonogestrel (ENG)/ethinyl estradiol (EE) vaginal ring from the Scottish National Health Service (NHS) perspective. **METHODS:** A decision-analytic model was constructed to estimate the relative cost-effectiveness of the ENG/EE vaginal ring and a weighted, average second-line method (including the transdermal patch, long-acting methods, barrier and natural methods) following the use of oral contraceptives. Effectiveness data were derived from a systematic literature review and clinical trials for the vaginal ring. Costs were based on UK National sources. **RESULTS:** Versus a weighted, average second-line method, the vaginal ring cost an additional GBP£53 per woman and reduced the rate of unintended pregnancy by 0.0158. The incremental cost-effectiveness ratio (ICER) of the vaginal ring versus a weighted, average second-line method was GBP£3337 per pregnancy averted. This ICER can be viewed as a conservative estimate as this study only assessed the weighted cost per pregnancy and was unable to address the psychological and physical implications which may result from an unintended pregnancy. Discontinuation and failure rates were a key determinant of the cost-effectiveness of the vaginal ring. **CONCLUSIONS:** Whilst the vaginal ring is more effective and more costly than a weighted, average second-line method from the Scottish NHS perspective, a lack of information surrounding indirect costs, compliance impact and health state utilities warrants further analysis to determine the full cost implications. Collection of quality of life data for unintended pregnancies could assist in deriving an appropriate cost-effectiveness threshold.