

process. According to G-BA's and IQWiG's point of view, randomized controlled trials (RCTs) are the "gold standard" for a benefit assessment of new therapies, including ATMPs. However, conduction of RCTs is not always possible for ATMPs which creates a disadvantage in the assessment right from the beginning. Otherwise no distinction is made between drugs and ATMPs in terms of reimbursement modalities. Outcomes based agreements could help overcoming inequalities and lead to quality-oriented reimbursement.

**Conclusions.** ATMPs represent a grey zone causing difficulties in classifying them either as method or drug. For individualized therapies evidence beyond RCTs and new reimbursement possibilities should be considered. Until new regulations are in place it is advisable to enter early into respective discussions with authorities.

## PP62 Cost-Effectiveness Of Cervical Cancer Screening In Estonia

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**Introduction.** In Estonia, organized cervical cancer screening program is targeted at women aged 30–55(59) years and Pap-tests are taken every five years. Since cervical cancer is associated with human papillomavirus (HPV), a number of countries have introduced the HPV-test as the primary method of screening. The objective of this study was to evaluate the cost-effectiveness of organized cervical cancer screening program in Estonia by comparing HPV- and Pap-test based strategies.

**Methods.** For the cost-effectiveness analysis, a Markov cohort model was developed. The model was used to estimate costs and quality-adjusted life-years (QALYs) of eight screening strategies, varying the primary screening test and triage scenarios, upper age limit of screening, and testing interval. Incremental cost-effectiveness ratios (ICERs) were calculated in comparison to current screening practice as well as to the next best option. Sensitivity analysis was performed by varying one or more similar parameter(s) at a time, while holding others at their base case value. The analysis was performed from the healthcare payer perspective adopting a five percent annual discount rate for both costs and utilities.

**Results.** In the base-case scenario, ICER for HPV-test based strategies in comparison to the current screening practice was estimated at EUR 8,596–9,786 per QALY. For alternative Pap-test based strategies ICER was estimated at EUR 2,332–2,425 per QALY. In comparison to the next best option, HPV-test based strategies were dominated by Pap-test based strategies. At the cost-effectiveness threshold of EUR 10,000 per QALY Pap-testing every three years would be the cost-effective strategy for women participating in the screening program from age 30 to 63 (ICER being EUR 3,112 per QALY).

**Conclusions.** Decreasing Pap-test based screening interval or changing to HPV-test based screening can both improve the effectiveness of cervical cancer screening program in Estonia, but based on the current cost-effectiveness study Pap-test based screening every three years should be preferred.

## PP64 Economic Evaluation For Esophageal Cancer Screening In China

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**Introduction.** The aim of the study was to estimate the cost-effectiveness of esophageal cancer (EC) screening compared to non-screening in China.

**Methods.** A Markov model was conducted that followed the history of EC. Screening strategies targeted a population aged 40-69 years, classified into six age groups. Each age group had three cohorts: screening without follow-up, screening with yearly follow-up for low-grade intraepithelial neoplasia (LGIN), and non-screening. Life years (LYs) and quality-adjusted life years (QALYs) presented the effectiveness and utility. The incremental cost-effectiveness ratio (ICER) and incremental cost-utility ratio (ICUR) were evaluating indicators. Eighteen cohorts from 100,000 hypothetical individuals were used to run the model, until aged 79 years or death. Costs were changed into USD using the purchasing power parity of 3.506 in 2017. The willingness-to-pay was set as three times the gross domestic product per capita (USD 51,340.6) in 2017. A sensitivity analysis was introduced to assess model robustness.

**Results.** Screening with follow-up compared to non-screening, ages 40-44, 45-49, and 50-54 years, showed cost-effectiveness, with one LY gained costing USD 6,875.0, USD 9,204.6, and USD 25,278.6, respectively. Ages 40-44 and 45-49 years explained cost-utility, with ICURs of USD 6,709.4/QALY and USD 13,991.4/QALY, respectively. Screening without follow-up compared to non-screening, ages 40-54 years, addressed cost-effectiveness, with one LY gained costing USD 6,934.8, USD 9,760.0, and USD 35,126.0 in ages 40-44, 45-49, and 50-54 years, respectively; the 40-44 years age group demonstrated cost-utility with an ICUR of USD 8,512.3/QALY. Screening with follow-up compared to screening without follow-up, all ages, explained cost-effectiveness and cost-utility. The probabilistic sensitivity analysis supported the outcome of the base cohort analysis.

**Conclusions.** Compared to non-screening, screening with follow-up targeting ages 40-54 years was highly recommended with the ICER as the evaluated indicator, whereas it targeting ages 40-49 years was suggested with the ICUR as indicator.

## PP65 Methods Applied For Systematic Reviews Of Economic Evaluations In Health Technology Assessment

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**Introduction.** When making decisions in health care, it is essential to consider economic evidence about an intervention. The objective of this study was to analyze the methods applied for systematic reviews of economic evaluations in Health Technology Assessment (HTA) and to identify common challenges.

**Methods.** We manually searched the webpages of HTA organizations and included HTA-reports published since 2015. Prerequisites for inclusion were the conduct of a systematic review of economic evaluations in at least one electronic database and the use of the English, German, French, or Spanish language. Methodological features were extracted in standardized tables. We prepared descriptive statistical (e.g., median, range) measures to describe the applied methods. Data were synthesized in a structured narrative way.

**Results.** Eighty-three reports were included in the analysis. We identified inexplicable heterogeneity, particularly concerning literature search strategy, data extraction, assessment of quality, and applicability. Furthermore, process steps were often missing or reported in a nontransparent way. The use of a standardized data extraction form was indicated in one-third of reports (32 percent). Fifty-four percent of authors systematically appraised included studies. In 10 percent of reports, the applicability of included studies was assessed. Involvement of two reviewers was rarely reported for the study selection (43 percent), data extraction (28 percent), and quality assessment (39 percent).

**Conclusions.** The methods applied for systematic reviews of economic evaluations in HTA and their reporting quality are very heterogeneous. Efforts toward a detailed, standardized guidance for the preparation of systematic reviews of economic evaluations definitely seem necessary. A general harmonization and improvement of the applied methodology would increase their value for decision makers.

## PP66 Increasing Burden Of Out-Of-Pocket Healthcare Expense On Patients

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**Introduction.** We conducted an analysis of the key factors triggering cost-sharing mechanisms to understand the status of out-of-pocket (OOP) healthcare expense in the United States (US), Europe, and emerging markets and better appreciate the implications of OOP healthcare expense on patients' health management.

**Methods.** A review of literature and databases including The Organisation for Economic Co-operation and Development (OECD) and World Bank was performed to understand different cost-sharing mechanisms, factors triggering OOP expenditure and the country-wise trends of OOP expenditure. Additionally, the impact of OOP expenditure on healthcare budget and on patients in terms of medication adherence, uptake of newer therapies and generic substitution was explored.

**Results.** The findings reveal that patients are concerned about rising healthcare OOP costs, and we observed an increase of 134 percent in the number of articles published on OOP from 2005 to 2017. The percentage of household spending that goes OOP as healthcare expense is higher in Brazil, Russia, India, and China (BRIC countries; ~11 percent) compared to France, Germany, Italy, United Kingdom, US, Japan, and Canada (G7 countries; ~2 percent). In addition, OOP expenditure increased with age (1.9 percent of take home income in 55-64 age group versus 1.2 percent in 18-25 age group) and is higher in the low-income population (2.8 percent of take home income versus 1

percent in high-income group). Whereas, increasing OOP expenditure reduces the overall healthcare expenditure due to generic substitution (28 percent reduction) and reduction in excessive consumption of supplementary medicines, it also reduces patient adherence (~20 percent decline in dispensed prescriptions) and may foster a reluctance to adopt newer therapies.

**Conclusions.** The population groups most impacted by increasing OOP expense are the older population, those in the low-income bracket and in poorer countries. While OOP expense may help in the effective and judicious utilization of healthcare system resources and medicines usage, its implementation requires a cautious and considered approach.

## PP68 Indicators From The Real World Data To Improve Opioid Use

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**Introduction.** Opioids are being used increasingly to treat chronic noncancer pain despite the uncertainty regarding its long-term benefits. This study served to determine if problems are associated with opioid use in Québec for new users from 2006 to 2013 without history of cancer.

**Methods.** A retrospective longitudinal cohort study was conducted using administrative databases stored at the Régie de l'assurance maladie du Québec (RAMQ) to describe the annual proportion of new users to whom at least one of the five indicators of potentially inappropriate opioid use applied was estimated. These indicators are (i) overlapping opioid prescriptions, (ii) overlapping opioid and benzodiazepine prescriptions, (iii) the use of long-acting opioids at the start of treatment, (iv) a high mean daily dose, and (v) a rapid increase in the opioid dose.

**Results.** The annual proportion of new users to whom at least one of the five indicators of potentially inappropriate opioid use applied decreased from 15.4 percent in 2006 to 12.3 percent in 2013. It was mainly the following three indicators that contributed the most to these proportions in 2013: (i) overlapping opioid prescriptions (5.8 percent), (ii) overlapping opioid and benzodiazepine prescriptions (8.2 percent), and (iii) the use of long-acting opioids at the start of treatment (1.8 percent).

**Conclusions.** The vast majority of new users with no history of diagnosed cancer used opioids adequately according to the five indicators of potentially inappropriate opioid use applied. Improvement could still be made to decrease mainly overlapping opioid prescriptions and overlapping opioid and benzodiazepine prescriptions.

## PP69 Potential Gains In Health-Adjusted Life Expectancy From Reducing Four Non-Communicable Diseases Among Chinese Elderly

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