various methods for adjusting confounders in estimating comparative effectiveness. **METHODS:** Systematic literature review in PubMed was conducted to identify published articles with the key words such as propensity score, instrumental variable analysis, inverse probability, Propensity Instrumental, Propensity Inverse probability, machine learning, support vector machine, CART (Classification And Regression Tree) is decision tree learning. Trend analysis was performed by comparing proportions of methods before 2008 and after 2008. **RESULTS:** 5021 articles were found with the key word of comparativeness effectiveness. 227 articles had the key word of propensity. 56 articles had the key word of instrumental. 29 articles had the key word of inverse probability. 20 articles had key words of both propensity and instrumental. 12 articles had key words of both propensity and inverse probability. 6 articles had key word of machine learning. 6 articles had key word of CART. No article was found to have the key word of support vector machine. Overall 6.2% of articles had one of the key words, indicating usage of confounder adjustment methods in comparative effectiveness research. Two articles had three key words of propensity, Inverse probability, and instrumental. Based on Chi-square test, significant increase of usage with P-value < .05 in trend has been observed. **CONCLUSIONS:** Based on search result, significant increase in usage of confounder adjustment methods was observed since 2008. In a few articles, results from a few instrumental variable analyses were conflicting with propensity score method warranting sensitivity analyses by employing various methods for adjustment of confounders. Also application of machine learning methods is recommended to find stable estimates of models used, especially to adjust for time dependent confounders.

PRM11
EVALUATING CONTENT VALIDITY OF PERFORMANCE OUTCOMES (PERFOS): ESTABLISHING THE PATIENT-RELEVANCE OF THREE PERFOS IN ELECTIVE TOTAL HIP REPLACEMENT (ETHR)

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OBJECTIVES: Performance Outcomes (PerfOs) measure tasks performed by a patient under the instruction of a health-care professional. PerfOs used to support FDA label claims now require content validity evidence. This study explored patient experience and relevance of three elective total hip replacement (eTHR) PerfOs: the timed up and go (TUG), four step stair climb (4SC) and long stair climb (LSC). **METHODS:** Eight recent eTHR patients in the US were interviewed by telephone within 7 days of completing three PerfOs. Participants discussed their experience of completing the PerfOs; and how the movements, speed and level of difficulty corresponded to activities in their everyday lives. Interviews were audio-recorded, transcribed and systematically coded. Saturation was assessed by tabulated patient summaries from which new elements reported in each interview were identified. **RESULTS:** The sample comprised six females and two males, with mean age 67 years. All participants related TUG movements to activities in their daily life (e.g. getting up to turn on the television) and most regularly climbed a few steps at home and in a similar way to the 4SC (e.g. use of handrail). Climbing 12 or more steps (LSC) was less common. However, the majority recalled examples of this and felt the LSC accurately reflected movement and ability in their replaced hip. Two participants reported LSC completion increased their confidence and staircase use. Small differences between PerfOs and everyday activities/function were reported (e.g. TUG: the type of chair and turning towards rather than away from the replaced hip). Assessment of saturation suggested additional interviews might yield further varieties in patient experience but that sufficient consensus and depth was achieved to understand the relevance of the PerfOs to everyday function. **CONCLUSIONS:** New methodological approaches developed to explore content validity of PerfOs demonstrate the connection between three PerfOs and daily function of eTHR patients.

PRM12
CLINICAL TRIALS REGISTRIES FOR SYSTEMATIC REVIEWS – AN ALTERNATIVE SOURCE FOR UNPUBLISHED DATA

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OBJECTIVES: When conducting a systematic review it is common practice to search for peer-reviewed publications and conference proceedings to identify studies relevant to a research question. However, information about studies is increasingly available through other sources and can be of importance in systematic reviews. Clinical trials registries (CTRs) are increasingly providing unpublished results of studies that can be used in systematic reviews. Clinicaltrials.gov is one of the most commonly used CTRs and provides search facilities that enable the identification of trials through common search terms. In addition, there is the potential to request information from study sponsors through clinicalstudydatarequest.com. This website is supported by several prominent study sponsors and allows reviewers to request access to unpublished data which may be of importance in a systematic review. **METHODS:** We searched two disease areas (melanoma and juvenile idiopathic arthritis (JIA)) for instances where there were discrepancies in reporting of endpoints between peer-reviewed publications and the clinicaltrials.gov webpage for corresponding trials. We submitted requests to clinicalstudyrequest.com for additional information on trials in both disease areas. **RESULTS:** We identified additional reporting of subgroups as well as efficacy endpoints in clinicaltrials.gov that were not available in peer-reviewed publications. Results included one trial in melanoma (METRIC) which reported on only mixed line patients in a peer-reviewed publication; results stratified by previous therapy were available from the CTR. In addition, results from our search in JIA included additional reporting of efficacy outcomes such as change in component scores from baseline. We detail length of time for response and issues with submission of data requests to clinicalstudyrequests.com. **CONCLUSIONS:** We conclude that sources other than peer-reviewed articles and conference abstracts should be considered when identifying study information that may be relevant to a particular review. Unpublished data may be available that can impact a systematic review and evidence synthesis.

PRM13
DATA EXTRACTION FOR SYSTEMATIC REVIEW – WHERE TO LOOK FOR DATA OUTSIDE THE PRIMARY PUBLICATION

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OBJECTIVES: A common problem in systematic reviews are incomplete data extraction forms resulting in problems attempting evidence synthesis; we rarely have all the data for the endpoints of interest for all studies, and parameters that inform meta-analysis or connect networks are missing. Increased transparency in clinical trial reporting means this problem is slowly disappearing. From January 2015 the European Medicines Agency (EMA) will publish clinical study reports submitted with marketing-authorisation applications for human medicines. **METHODS:** We identified several data sources outside the primary publication. Standard data sources for systematic reviews of interventions include peer-reviewed publications, conference abstracts and clinical trial registries. Clinical study protocols are often published but are not identifiable through searches in online databases, therefore, to find these, systematic reviewers must visit the journal website. Manufacturer submissions to health regulators are also increasingly made available; these give detailed trial descriptions and results presented are more likely to be comprehensive. **RESULTS:** In a recent example in Hepatitis-C we utilised several additional data sources in our evidence synthesis. Clinical trial protocols were used to identify definitions of endpoints included and to fulfil aspects of the critical appraisal. Fibrosis stage is an accepted treatment effect modifier in Hepatitis-C; our review therefore collected subgroup data for this. However, this was not readily available in peer-reviewed publications; we thus obtained data from EMA submission documents and UK and German reimbursement submissions. Other examples include a 2013 COPD systematic review which retrieved mortality data from the FDA website for three studies reporting cardiovascular-related death and for one study reporting overall death. **CONCLUSIONS:** Systematic reviewers should be aware of additional data sources that are publically available. Whilst peer-reviewed data is preferential, incorporation of this grey literature into an evidence synthesis could lead to a more informed overview of clinical efficacy and thereby healthcare decision making.

PRM15
INVESTIGATION OF RELATIONSHIPS BETWEEN BIOMARKERS OF POTENTIAL HARM AND CIGARETTE SMOKING MEASURES AMONG CURRENT, PAST, AND NON-SMOKERS BASED ON NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY 2007-2012

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OBJECTIVES: Assess the potential relationships between Biomarkers of Potential Harm (BOPH), specifically WBC, Apo lipoprotein, C-reactive protein, HDL, LDL, total cholesterol, and biomarkers of cigarette smoke exposure (BOE), specifically serum cotinine, creatinine adjusted urinary total NNAL and 1-hydroxypyrene (1-OHP), using National Health and Nutrition Examination Survey (NHANES) data from 2007 till 2012. Secondary objective was to assess the relationship between BOPH and smoking status (past, current or never), and cigarette per day (CPD) use in current smokers. **METHODS:** Data were obtained from NHANES 2007 to 2012. The study sample included 17,293 respondents age 21 years and above who had answered questions on cigarette smoking and had complete laboratory values for their biomarkers measurement. The population was categorized as current (CS), past (PS), and never smokers (NS), based on self-reported responses. The exposure variables were the BOE, smoking status and CPD. The outcome variables were levels of the BOPH listed above. Weighted survey linear regression was used to estimate the association between exposure and outcome variables. The models were adjusted for age, gender, race and body mass index (BMI). **RESULTS:** The mean concentrations of WBC (1000 cells/uL) in CS, PS and NS were 8.15, 6.97 and 6.82 respectively, and that of HDL (mg/dL) were 49.92, 53.23 and 53.53, respectively. A statistically significant correlation was observed for WBC and HDL with serum cotinine (R^2=0.133 and 0.222), Total NNAL (R^2=0.072 and 0.210) and 1-OHP (R^2=0.090 and 0.186). Similarly, significant correlations for WBC and C-reactive protein with smoking status (R^2=0.060 and 0.101), and for WBC and HDL with CPD (R^2=0.098 and 0.160) were observed. **CONCLUSIONS:** Among all the BOPH, the correlation between WBC and HDL were significant with all the cigarette smoking measures. This analysis suggests that WBC and HDL would be useful BOPH in studies addressing health risks of cigarette smoking.

PRM16
COMBINING MCDA WITH ADVANCED STATISTICS TO TACKLE CHALLENGES OF DATA AND JUDGMENT UNCERTAINTY: CASE STUDY OF SAFETY ASSESSMENTS

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OBJECTIVES: Comparative safety assessment can be challenging due to differences in safety profiles between comparators, scarcity of data, difficulty in establishing causality, and deficiencies in reporting. To address this, a method combining pragmatic MCDA and advanced statistics was developed and tested by a panel of methodologists and clinical and policy decisionmakers using a case study. **METHODS:** The pragmatic MCDA model categorized adverse events (AEs) generically by their clinical consequences into three criteria: 'non-serious AEs' (AEs), 'Non-fatal serious AEs' (SAEs) and 'Fatal AEs' (FAEs). Panelists weighted criteria using point allocation. Efalizumab for plaque psoriasis, withdrawn in 2009 due to reports of deaths associated with progressive multifocal leukoencephalopathy (PML), was selected as case study. Odds ratios (ORs) for SAEs and AEs were estimated using Bayesian network meta-analysis. Incidence of PML was estimated using Poisson modelling. Panelists assessed efalizumab safety using a constructed scoring scale for each criterion. The approach was re-tested by panelists. **RESULTS:** Weights for AEs, SAEs and FAEs ranged widely between panellist with means (ranges) of 0.06 (0.01-0.1), 0.22 (0.09-