Consideration of the causes of variability and appropriate statistical analyses to generate unbiased estimators and reliable confidence intervals remains a challenge to these studies.

PRM28 WHAT ARE INDIRECT COSTS IN NEURODEGENERATIVE DISEASES? A METHODOLOGICAL REVIEW
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OBJECTIVES: Neurodegenerative diseases (NDs) refer to a group of diseases that affect brain cells. Alzheimer disease (AD), Parkinson disease (PD), Amyotrophic Lateral Sclerosis (ALS) and Multiple Sclerosis (MS) are the most prevalent NDs. NDs cause substantial economic burden worldwide and indirect costs are an important component of total costs. This study aims to review relevant papers to characterize the different components of indirect costs and to identify the weight of indirect costs in total costs in different NDs. METHODS: A systematic bibliographic search was performed on an international medical literature database (MEDLINE). All studies which assessed the social economic burden and indirect costs of different NDs were selected. Indirect costs were characterized into several types (i.e. sick leave, cost-effectiveness of implemented vaccination programs) and it is important that both the benefits and the limitations of these evaluations are considered when assessing the success of public health programs; however relatively little mention has been focused on evaluating the value for money achieved by vaccination programs after they have been introduced. METHODS: We conducted a narrative review of the limited existing economic evaluation literature assessing the cost-effectiveness of implemented vaccination programs. We evaluated the alternative approaches to addressing the challenges that these retrospective evaluations present. These challenges were then contrasted and compared with those of prospective economic evaluations face. RESULTS: The key challenges identified for retrospective evaluations include the estimation of disease changes attributable to vaccination efforts, the hypothetical no vaccination comparator scenario and the full benefits likely to be achieved by implemented vaccination programs along with the other important cost items related to vaccination, such as the evolution of prices over times. CONCLUSIONS: Retrospective economic analyses of vaccination programs are likely to become more frequent and influential and it is important that all the benefits and costs of the evaluations are reported and understood. Further work needs to be done to explore how the practical application of alternative approaches may impact on the results of evaluations in different circumstances.

PRM29 NOT AS EASY AS IT SOUNDS: CHALLENGES IN ASSESSING THE VALUE FOR MONEY OF IMPLEMENTED VACCINATION PROGRAMS
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OBJECTIVES: In this study, we explore the methodological challenges presented by retrospective economic analyses of vaccination programs and offer direction for future evaluations in the area. Post-implementation evaluation should be an important part of assessing the success of public health programs; however relatively little mention has been focused on evaluating the value for money achieved by vaccination programs after they have been introduced. METHODS: We conducted a narrative review of the limited existing economic evaluation literature assessing the cost-effectiveness of implemented vaccination programs. We evaluated the alternative approaches to addressing the challenges that these retrospective evaluations present. These challenges were then contrasted and compared with those of prospective economic evaluations face. RESULTS: The key challenges identified for retrospective evaluations include the estimation of disease changes attributable to vaccination efforts, the hypothetical no vaccination comparator scenario and the full benefits likely to be achieved by implemented vaccination programs along with the other important cost items related to vaccination, such as the evolution of prices over times. CONCLUSIONS: Retrospective economic analyses of vaccination programs are likely to become more frequent and influential and it is important that all the benefits and costs of the evaluations are reported and understood. Further work needs to be done to explore how the practical application of alternative approaches may impact on the results of evaluations in different circumstances.

PRM30 ESTIMATING THE COST OF HEALTH CARE ASSOCIATED INFECTIONS
CONTROLING FOR BOTH PATIENT VARIABILITY AND TIME-DEPENDENT BIASES
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OBJECTIVES: In the current health care environment, it is critical that we obtain better insights into the economic burden of major complications, such as healthcare associated infections (HAIs). Commonly used methods, however, are limited in that they provide cost and length of stay (LOS) estimates, adjusted either for patients’ heterogeneity (generalized linear model (GLM)) or for the time dependency of HAIs (multistate model), but don’t allow adjustment for both. METHODS: We developed an approach that controls for both of these major confounders. METHODS: The approach uses centered residuals from a GLM that account for important covariates. These residuals are then used in a multistate model to estimate the extra-LOS corrected indirect costs of each hospitalization, from which we obtain the dollar value, the extra-days were multiplied by the average cost of a post-infection day. We applied GLM, multistate and our new approach to a prospective multicenter observational study, assessing the incidence of infections during index hospitalization. Patients developing major infection after the surgery had longer and costlier hospitalizations than patients who did not (33 days and $41,520 vs. 15 days and $11,510). The extra-LOS cost and the increased hospitalization costs of each hospitalization, from which we obtain the dollar value, the extra-days were multiplied by the average cost of a post-infection day. RESULTS: Among 4320 patients, 119 (2.7%) developed major infection. Patients in the sedative cohort had a second AUD/SUD claim (43%) had a second AUD/SUD claim

PRM31 PERFORMANCE COMPARISON OF DIFFERENT TYPES OF PROPENSITY SCORE MATCHING ALGORITHMS IN A STUDY OF RARE DISEASE TREATMENT COST COMPARISON USING REAL WORLD EVIDENCE
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OBJECTIVES: It is well accepted that data pre-processing and the creation of matching data sets may provide a more balanced assessment in real world evidence analysis. The objective of this study is to show that proper selection of a propensity score matching (PSM) algorithm can significantly enhance the sensitivity of treatment comparisons using claims data. Five years of retrospective inpatient commercial insurance claims data from Truven MarketScan™ were used to compare the six-month drug cost of ‘Drug X’ to ‘Drug Y’ for a rare disease, with Drug Y being the market leader. Within this study, three variants of PSM techniques were used (naive matching, logit and recursive partitioning) to determine the impact of matching algorithms on the sensitivity of final comparison. A 2:1 matching ratio was used to take advantage of much larger patient pool for Drug Y. RESULTS: Without PSM, the difference in cost of the two treatments was not statistically significant, although these results show that the spending for Drug X patients is approximately $200 less than Drug Y users over a 6 month period. In the naive matching method, the drug cost of treatment X was $294 lower than treatment Y, although the observed difference was not statistically significant. Using the logit regression algorithm, it was found that the mean cost of Drug X was approximately $368 lower than Drug Y (p=0.028). Lastly, with non- linear matching partitioning the treatment costs of Drug X was $356 lower than Drug Y (p=0.045). CONCLUSIONS: The use of PSM in studies can help to remove potential confounders and produce unbiased results. Model-based PSM outperforms naive matching in terms of enhancing sensitivity analysis. The care selection of a matching algorithm can play a pivotal role in economic investigations for rare diseases using real world evidence.

PRM32 NON-ALCOHOLIC STEATOHEPATITIS CLINICAL DEVELOPMENT: AN OPPORTUNITY FOR NON-INVASIVE SERUM OR IMAGING BIOMARKERS FROM A COST-EFFICIENCY PERSPECTIVE
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OBJECTIVES: Non-alcoholic Steatohepatitis (NASH) is the hepatic manifestation of metabolic syndrome, not related to viral infection. We estimated current development costs, related length of clinical programs, and research activities in relation to epidemiology and clinical knowledge. We included studies in our analysis that were: "Interventional, Phase 2, 3 or 4, known status", from Europe or North America, and NASH fibrosis and/or inflammation. Results: Non-interventional studies (NIS) had the highest development costs. A total of 20 studies with 319 patients post-index. The sedative cohort had a second AUD/SUD claim

PRM34 ALCOHOL AND SUBSTANCE USE DISORDER COMORBIDITY MEASURES: WHO IS BEING COUNTED?
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OBJECTIVES: Patients with comorbid alcohol use disorders (AUD) and substance use disorders (SUD) may be identified in administrative claims data using a range of codes (eg ICD-9 303-305), but it is not clear this yields a homogeneous group. The objective of this analysis is to characterize patients with AUD/SUD to better understand the resulting comorbidity measures. METHODS: Patients with ≥1 claim indicative of AUD/SUD between 2005-2012 were identified in the Truven MarketScan™ databases and further grouped into diagnoses (DSM-IV), treatment (methadone), cost and resource use data. RESULTS: The sample included 476,628 patients, most (73%) with an AUD diagnosis. Overall, the sample was mean age 39 and 63% male. Total post-index costs were mean $17,481 and median $7,332. Other cost measures were similarly skewed. Less than half (43%) had a second AUD/SUD claim ≥30 days post-index. The sedative cohort had a second AUD/SUD claim

RESEARCH ON METHODS – Databases & Management Methods

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