experienced and high-quality source for post-approval studies. Elaborated management processes in multi-country panels guarantee a constant quality of the panel over geographies.

PRM18
CLASSIFICATION OF COGNITIVE DYSFUNCTION AND COGNITIVE NORMAL USING SCORES FROM FOUR COGNITIVE ASSESSMENTS IN PATIENTS WITH DEPRESSIVE DISORDER
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OBJECTIVES: Cognitive functioning is a multidimensional attribute comprising various domains including attention, memory, executive function, and psychomotor speed. The number of impacted domains and magnitude of deficits that equate to a classification of cognitive dysfunction (CD) are unclear. This analysis examined criteria used for CD classification in an observational study of depressed patients. **METHODS:** A large US health plan was used to identify depressed patients with a newly prescribed antidepressant. Consenting, eligible patients were interviewed by telephone and completed a structured assessment of cognitive function measuring 4 domains: verbal episodic memory (Hopkins Verbal Learning Test-Revised), attention (Digit Span Forward), working memory (Digit Span Backward), and executive function (D-KEFS-Letter Fluency Test). Patients were classified into 2 groups based on test scores relative to normative data. "CD" was defined as patients with ≥2 scores that were ≥1.5 standard deviations (SD) below the normative mean (criterion 1) or patients with ≥3 scores that were ≥1.0 SD below the normative mean (criterion 2). Patients not meeting either of these were classified as "cognitive normal (CN)." T-tests compared differences between the groups across cognitive domains. **RESULTS:** Of 564 eligible patients who completed the study, 45% met criteria for CD. Among these, 63% met both criteria for classification of CD, 19% met only criterion 1, and 18% met only criterion 2. The percentage of patients with scores ≥1.0 SD below the mean and ≥1.5 SD below the mean were significantly higher in the CD group compared to the CN for all 4 tests. Mean scores on all domains were significantly lower ($P < 0.001$) in the CD group compared to the CN group. **CONCLUSIONS:** Among patients with depression, those with cognitive dysfunction had significantly worse functioning across all domains. This suggests that the criteria appropriately identified a subset of patients with impaired cognitive functioning.

RESEARCH ON METHODS – Cost Methods

PRM19
TIME DEPENDENT RESOURCE USE AND COSTS ASSOCIATED WITH DIFFERENT STATES OF DISEASE IN PATIENTS DIAGNOSED WITH HER-2 POSITIVE METASTATIC BREAST CANCER
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OBJECTIVES: Adequate reflection of disease progression and costs over time is essential in cost-effectiveness analyses (CEAs) based on health state transition models. However costing studies normally investigate the burden of metastatic breast cancer (MBC) without explicitly examining impact of specific disease states on health care costs over time. The objective of this study was to assess time-dependent costs of different health states of human epidermal receptor 2 (HER-2) positive MBC and the factors contributing to these costs. **METHODS:** In The Netherlands, HER-2 positive MBC patients were identified in three different hospitals. Resource use was collected during 24 months, which was linked to unit costs and related to time with respect to date of MBC diagnosis, disease progression and death for each individual patient. Subsequently, monthly costs for different health states were calculated. Finally, a nonlinear mixed effect modelling approach was used to provide a quantitative description of the time course of cumulative progression costs. **RESULTS:** Costs during stable disease were constant over time with a mean of €3,236. In contrast, monthly costs for progressive disease demonstrated a change over time with the largest costs in the first two months after diagnosis ($p<0.005$). The developed mixed effect model adequately described cumulative cost time course and associated variability. During the last months of life, costs varied over time, with the last month of life as the most expensive one with a mean of €4,522 per patient per month. **CONCLUSIONS:** To reflect costs of HER-2 positive MBC accurately in Markov models, costs stable disease can be defined time-independent, however, costs of progressive disease should be defined time dependent, and costs related to the final months of life should be modeled as such. The mixed effect model we have developed could now be considered for adequate description of the time-dependent cost of progressive disease.

PRM20
ASSESSING THE FUTURE BURDEN OF RENAL REPLACEMENT THERAPY IN THE UNITED KINGDOM
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OBJECTIVES: The UK has an ageing and growing population and the prevalence of renal replacement therapy (RRT) has grown by 5.0% annually since 2000. RRT accounts for over 2% of the current NHS expenditure. Transplantation increases survival, improves quality of life and maintenance costs are less than dialysis. Despite increasing rates of transplantation, an estimated 7,000 patients remain on the waiting list. The objective of this study was to quantify the relationship between graft survival time, total estimated cost and the number of projected patients on the transplant waiting list. **METHODS:** We utilized a population based simulation model with published disease progression, incidence and prevalence parameters specific to the UK. We evaluated the number of years of functioning graft required for transplantation to remain cost saving compared to dialysis; the number of future transplants or improvement in graft survival required to avoid the transplant waiting list increasing. The study utilises UK costs and future costs and benefits were discounted at 3.5% **RESULTS:** Over a 10-year projected time horizon the total per-patient cost saving associated with remaining on dialysis compared to transplant was £276,330; however, a cost saving was conditional upon achieving at least 3-years of functioning graft. In order to maintain the transplant waiting list at approximately 7,000, the number of annual transplants conducted would need to increase from 2,645 in 2010 to 3,640 by 2022 (a 37.6 % increase). At current activity levels the transplant waiting list is projected to increase by approximately 1,983; improvement in graft survival could potentially reduce this by 941. **CONCLUSIONS:** For kidney transplantation to be cost saving recipients must maintain at least 3 years of functioning graft. As early graft failure also impacts on future transplant waiting time, management strategies that maximize graft survival will reduce costs and improve service delivery targets.

PRM21
COMPARISON OF ALTERNATIVE METHODS OF RESOURCE-USE DATA COLLECTION FOR THE ECONOMIC EVALUATION OF HEALTH CARE INTERVENTIONS: A CASE STUDY IN FRAIL OLDER PEOPLE
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OBJECTIVES: Economic evaluations require patient-level resource-use to estimate patient costs. The National Programme for IT (2002) prompted UK health and social care to record patient-level resource-use using Electronic Administration Records (EAR's). Retrieving EAR's is labour intensive, but may provide better information than self-report methods, such as the Client Service Receipt Inventory (CSRI), particularly in cognitively impaired people. Study objectives are to examine agreement, and associated cost estimates, between resource-use obtained from EAR's or CSRI in frail older (≥70) participants. **METHODS:** Health and social care data for 247 patients (193 cognitively impaired) were sought retrospectively six months post-index hospital admission. Resource-use data were collected using a self/proxy-reported modified CSRI, and EAR systems for primary (PC), secondary (SC), and social (SoC) care. Lin's coefficient (ρc) assessed agreement between methods, where <0.4 = poor agreement. **RESULTS:** Agreement between EAR and CSRI 'per contact' resource-use was: good, primary care ($\rho c = 0.60$); fair, outpatient care ($\rho c = 0.53$). Agreement was incomparable for social care due to different resource-use recording formats; CSRI's inpatient care question was removed due to the preferred detailed information available in EAR's. EAR data provided detailed patient care information, such as diagnosis and procedure type, allowing improved allocation of unit costs. Difference in mean cost per patient between methods varied by service (CSRI/EAR (£): PC = 61/433; SC = 7281/7833; SoC = 252/886); CSRI inpatient costs were simulated assuming perfect agreement with EAR, but using level of information outlined within the CSRI. **CONCLUSIONS:** EAR's provided more complete patient costs. Using EAR's reduces burden upon participants, which is important for frail and cognitively impaired people. Although the CSRI can be modified and simple to administer, poor recall and inadequate detail about patient care contacts prevented accurate patient-level cost estimation. Gaining access to EAR's is labour intensive, but recommended in cognitively impaired participants.

PRM22
CARBON COST-EFFECTIVENESS OF COCOONING IMMUNIZATION AGAINST PERTUSSIS IN ENGLAND AND WALES: AN ECOLOGICAL PERSPECTIVE
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OBJECTIVES: The cost-effectiveness of pertussis vaccination has been demonstrated for various vaccination strategies. However, beyond financial cost expressed in monetary terms vaccines also incur environmental cost expressed in CO_2equivalent (CO_2e) emission. By preventing disease, this cost might be offset by avoided events such as doctors' visits, hospital bed stays, medication, amongst other items. In this exercise we examine the CO_2e savings of a pertussis (dTpa) booster dose for cocooning in England and Wales. We propose a complementary measure to the classical Incremental Cost-Effectiveness Ratio that includes environmental cost instead of monetary cost. **METHODS:** The cradle to gate carbon footprint (from raw material extraction, to manufacturing, to disposal) for a typical dTpa vaccine dose was assessed to estimate the total amount of CO_2e emitted ("carbon cost"). A previously published static epidemiological model was used to account for the reduction in incidence of pertussis. Two scenarios were compared: the current pertussis vaccination schedule and the same schedule with additionally a cocooning strategy. **RESULTS:** For each dose of a dTpa vaccine manufactured, results show approximately 1kg of CO_2e was emitted. The model shows cocooning immunization against pertussis is projected to reduce the reported incidence of pertussis in young infants. Results also show that due to the reduction in emitted CO_2e after the introduction of a cocooning strategy, vaccination is an acceptable alternative to the current strategy to control pertussis infection. **CONCLUSIONS:** The method presented demonstrates how traditional economic models can be utilized to model environment features. Assessment of the cradle to gate carbon footprint of a vaccine provides a preliminary view of both the impact on the environmental in general and on the environment profile of health care in the UK.

PRM23
MODELLING THE COST-EFFECTIVENESS OF FIRST-LINE BIOLOGICS FOR RHEUMATOID ARTHRITIS IN ENGLAND AND WALES
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OBJECTIVES: In 2012, NICE initiated a multiple treatment assessment reviewing all licensed biologics for the treatment of rheumatoid arthritis (RA) previously treated