

lished sources. The zero tolerance MRSA policy set by NHS England, which includes financial sanctions, was implemented in the model. **RESULTS:** Over a one-year time horizon, although prevalence was higher on the high-risk ward, outbreaks occurred most frequently on the low-risk ward due to the higher number of patients. Preliminary results indicate that fewer outbreaks were declared when using WGS to identify the MRSA strain compared to current methods, due to the increased sensitivity of WGS in identifying unrelated MRSA strains and therefore classifying fewer concurrent colonisations/infections as 'outbreaks'. Fewer outbreaks resulted in cost-savings due mainly to a lower cost of fines, and therefore WGS is likely to be cost-effective where the technology and infrastructure is available. **CONCLUSIONS:** This newly developed model is the first formal attempt to evaluate the cost-effectiveness of WGS for detecting and monitoring outbreaks of MRSA. Initial results indicate that WGS will be cost-effective due to fewer outbreaks being declared. Further planned developments include expanding the model to simulate a complete hospital, as well as including start-up costs of setting up WGS services.

PMD35

COST-EFFECTIVENESS OF AQP4 ANTIBODY DETECTION WITH CELL-BASED ASSAY COMPARED WITH ELISA FOR DEVIC DISEASE DIAGNOSIS IN COLOMBIA

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OBJECTIVES: Neuromyelitis optica (NMO) or Devic disease is a rare chronic condition characterized by demyelinating lesions in the central nervous system. The aim of this study was to evaluate cost-effectiveness of the detection of antibodies against the protein aquaporin water channel 4 (AQP4) with cell-based assay (CBA), compared with ELISA, for the diagnosis of NMO in Colombia. **METHODS:** A decision tree model was constructed to compare costs, correctly diagnosed cases and relapses averted in patients with clinical suspicion of NMO, that were subjected to diagnostic tests for the detection of AQP4 antibodies. The analysis was undertaken from a third-party payer perspective, one year time horizon (first year with the disease) taking all costs for treatment and relapses, in 2014 Colombian pesos, from official published prices (1 USD = 2,033 COP). Since the CBA kit is not available in Colombia (currently samples are processed abroad), the price was obtained from the manufacturer and set in a national laboratory. Clinical variables were from a systematic literature review. Univariate and probabilistic sensitivity analyses (a Monte Carlo simulating a cohort of 1000 patients) were conducted. **RESULTS:** Identification of AQP4 antibodies with CBA is a dominant strategy: more effective (855 correctly diagnosed patients compared with 765 detected by ELISA, and 130 avoided relapses), and less costly, with expected yearly costs per correctly diagnosed Devic patient of USD \$14,658 compared with \$15,614 for ELISA. Using CBA may represent savings in terms of reduced costs of treating disease and relapse with hospitalization. **CONCLUSIONS:** AQP4 antibody identification by the CBA method is a cost-saving diagnostic test, dominant over the ELISA method.

PMD36

COST EFFECTIVENESS OF LEFT ATRIAL APPENDAGE CLOSURE VERSUS WARFARIN FOR STROKE RISK REDUCTION IN NON-VALVULAR ATRIAL FIBRILLATION IN CMS PATIENTS

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OBJECTIVES: Stroke is the most severe and debilitating consequence of atrial fibrillation (AF), with many patients ranking the resultant disability as worse than death. Warfarin, the established first-line therapy, is effective at reducing ischemic stroke, but is associated with increased bleeding risk and lower quality of life (QoL). Left atrial appendage closure (LAAC) with the Watchman Device has been found to be superior to warfarin at reducing risk of stroke in AF patients. This analysis sought to assess the cost effectiveness of LAAC versus warfarin for stroke prevention in non-valvular AF from the perspective of the US Centers for Medicare and Medicaid Services (CMS). **METHODS:** A Markov model was constructed comparing clinical outcomes, QoL, and total costs of LAAC versus warfarin using PROTECT AF 4-year data. All clinical events reported in PROTECT AF were modeled over 1-year increments for 20 years to determine time to cost effectiveness. The model was populated with a cohort of 10,000 70-year old patients with a mean CHADS2 score of 2. Cost data were taken from 2015 US DRGs. One-way and probabilistic sensitivity analyses were performed. **RESULTS:** LAAC patients were estimated to live an additional 1.1 quality-adjusted life years (QALYs) compared to warfarin patients. By year six, LAAC was cost effective in terms of QALYs (\$40,221/QALY) and life years gained (\$45,610/LYG). LAAC was dominant over warfarin at 10 years and remained so for the 20-year time horizon. The probability of cost effectiveness at 10 years was 99% given a willingness-to-pay threshold of \$50,000 per QALY. **CONCLUSIONS:** LAAC with the Watchman Device is a cost effective alternative to warfarin therapy for stroke risk reduction in non-valvular AF. LAAC provides improved QoL, increased life expectancy, and offers better value to CMS over a patient's lifetime.

PMD37

A SYSTEM DYNAMICS MODEL FOR THE COST-EFFECTIVENESS EVALUATION OF BACTERIAL WHOLE-GENOME SEQUENCING FOR MONITORING OUTBREAKS OF CLOSTRIDIUM DIFFICILE

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OBJECTIVES: To develop a system dynamics model to analyse the cost-effectiveness of bacterial whole-genome sequencing (WGS) versus current typing methods (ribotyping) alone in monitoring outbreaks of *Clostridium difficile* (C.diff) in the UK National Health Service (NHS). **METHODS:** The model, constructed using Insight

Maker (insightmaker.com), simulated a 33-bed ward. Patients were assumed to move between five states: susceptible, susceptible and vulnerable due to antimicrobial use, colonised, colonised and vulnerable, or infected (symptomatic). Clinical inputs were identified from peer-reviewed primary research papers, systematic reviews, published models, data published by the NHS and from clinical experts. Relevant costs were identified from Department of Health guidelines on C.diff infection management and other published sources, and inflated to 2014 values where necessary. We assumed that a fine of £10,000 per case was issued when evidence of hospital transmission was found, indicating that the infection was hospital-acquired; English hospitals are fined for hospital-acquired cases above an annual threshold, which varies between hospitals. **RESULTS:** As a result of the low prevalence of C.diff, no outbreaks were observed over the one-year time horizon. There were 2.95 cases of C.diff in the base case, equivalent to 2.68 cases per 10,000 bed days. Fewer cases showed evidence of transmission when using WGS, which resulted in lower fines for the hospital (assuming a zero case tolerance policy). Annual C.diff-attributable costs for the ward were therefore £1,490 lower when WGS was used compared to ribotyping alone, although initial setup costs and service running costs were not included. **CONCLUSIONS:** This system dynamics model is the first formal attempt to evaluate the cost-effectiveness of WGS for monitoring connections between C.diff cases. Depending on the annual threshold for cases and the availability of WGS, initial results indicate that WGS may be cost-saving at a hospital level due to fewer cases being subject to a fine.

PMD38

COSTS AND CONSEQUENCES OF DIALYSIS RELATED INFECTIONS: IMPLICATIONS FOR THE BUNDLED PAYMENTS FOR CARE IMPROVEMENT INITIATIVE

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OBJECTIVES: Treatment for post dialysis infections imposes a significant economic burden on the national health care system. The rate of hospitalization for bloodstream infections for Hemodialysis (HD) alone has increased 51 percent with an estimated cost in excess of \$US 23,000 per hospitalization. The new bundled payments for care improvement (BPCI) initiative, promotes healthcare interventions that improve patient outcomes at a lower cost. Peritoneal dialysis (PD) has been purported to lower the risk of bloodstream infections, which could potentially reduce hospitalization costs. The purpose of this study was to estimate the cost per hospitalizations averted by substituting PD for HD. **METHODS:** Data on treatment costs, and hospitalization rates for HD and PD were obtained from the USRDS registry. Using a payer perspective, a decision tree model was used to estimate the ICER. Univariate sensitivity analysis was done to assess the robustness of the results. **RESULTS:** Using PD was clearly cost-effective with an average cost of \$50,320.08 per patient per year and resulted in 1,202 dialysis related hospitalizations; compared to HD which cost \$69,916.28 per patient per year and resulted in 1,462 dialysis-related hospitalizations. **CONCLUSIONS:** PD resulted in overall lower mean costs and hospitalization rates compared to HD. Considering the "payment for results" nature of the BPCI, PD has a high likelihood of being adopted as the preferred intervention in ESRD.

PMD39

A COST-EFFECTIVENESS ANALYSIS OF BIOMARKER TESTING TO TARGET TREATMENT TO PATIENTS WITH MILD COGNITIVE IMPAIRMENT AT INCREASED RISK OF ALZHEIMER'S DISEASE

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OBJECTIVES: To quantify the potential value of cerebrospinal fluid (CSF) biomarker testing for patients with mild cognitive impairment (MCI). Biomarkers provide information about a patient's risk of developing AD and can allow for early targeted interventions for those patients found to be at higher risk of AD than others. **METHODS:** We developed a state-transition Markov model to project lifetime AD-free life years, costs and quality-adjusted life years (QALYs). We conducted a cost-effectiveness analysis of using CSF biomarker testing combined with the subsequent treatments to delay the clinical diagnosis of AD (test-treat) compared to no treatment, and treatment strategies. For the test-treat strategies, we considered treating by different levels of risk, varying from treating only the highest risk group to treating all but the lowest risk group (total 5 risk levels). We performed deterministic and probabilistic sensitivity analyses (PSA) and conducted an expected value of perfect information (EVPI) analysis to estimate the value of eliminating uncertainty of all parameters. **RESULTS:** We found that treating MCI patients by their risk levels produced extra 0.9-3.8 AD-free life months compared to no treatment. Three out of four test-treat strategies were ruled out by extended dominance. No treatment resulted in the highest cost and the highest effectiveness, with an incremental cost-effectiveness ratio of \$30,000 per QALY compared to treating all patients. No treatment was optimal in 63% of the PSA iterations over 37% of the treatment strategy at willingness to pay of \$50,000/QALY. The total EVPI was \$3,512 per patient. **CONCLUSIONS:** This study illustrates the potential for early targeted interventions for MCI patients who are at increased risk of developing AD. The design of this model and the findings could also be used to guide further research evaluating the cost-effectiveness of other biomarkers used to identify MCI patients at increased risk of progression to AD.

PMD40

COST-EFFECTIVENESS ANALYSIS OF EXTERNAL LOOPING RECORDING COMPARED TO HOLTER MONITORING FOR SYNCOPE IN COLOMBIA

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OBJECTIVES: Cardiac rhythm diseases related to syncope are of increasing incidence and prevalence worldwide including Colombia. Diagnosing transient arrhythmia is difficult with short term monitoring methods. We sought to compare cost-effective