

Background Non-communicable diseases are increasingly recognised as the major health issue facing many governments. Brazil has observed a rapid change in the weight profiles of its population, with the prevalence of obesity and overweight increasing partly as a result of the well documented effect of the nutrition transition. Obesity-related diseases are placing a substantial health and economic burden on the country. While the problem has been recognized, the implications of current trends on future overweight and obesity rates, BMI-related disease and costs associated with that disease burden have not been considered.

Methods A previously developed micro-simulation model was used to project through the year 2050 the extent of obesity, BMI related diseases, and associated health care costs in Brazil. A Monte-Carlo simulation method has been utilized to simulated BMI related diseases. In total, thirteen conditions were modelled: coronary heart disease, stroke, hypertension, diabetes, knee osteoarthritis, and eight cancers (breast, kidney, colorectal, oesophageal, endometrial, gallbladder, liver and pancreas). The authors also projected a possible decrease in the BMI and its impact on health and health care costs.

Results In 2010, nearly 45% of the Brazilian male population were overweight or obese (BMI $\geq 25\text{kg/m}^2$), but by 2050 we project rates as high as 95%. A slightly less pessimistic picture is observed among females: 42% in 2010 increasing to 52% in 2050. The disease incidence figures increase considerably due to obesity patterns. However, BMI reduction across the population will alter these disease projections. Nearly three million diabetes cases and USD 388 million in health care expenditure can be avoided with a five percent reduction in BMI alone by 2050.

Conclusion Obesity rates are rapidly increasing in Brazil creating a high burden of diseases and associated health care costs. However, even a one and percent reduction in prevalence rates will substantially reduce the disease and cost burden. Though some steps have been taken for tackling the obesity problem, Brazil still needs a strong, comprehensive policy involving multiple agencies and institutions with strong leadership.

OP22 PROJECTIONS OF HEALTHCARE COSTS IN THE LAST YEAR OF LIFE FOR OLDER CANCER PATIENTS IN EUROPEAN UNION MEMBER STATES (2008-2030)

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Background Despite advances, cancer remains a major cause of pain, suffering and death. The highest incidence and mortality occurs in older people (≥ 65), and given demographic change the numbers are expected to rise in the coming years. This has financial consequences and key implications for service planning. We estimated the current and future cost of providing care for older cancer patients in the last year of life (LYOL) in the 27 European Union (EU) member-states between 2008 and 2030.

Methods Our cost projection models combined: a) WHO-GLOBOCAN mortality data; b) an average UK-based estimate of the cost of care per cancer patient in the LYOL; c) country-specific adjustment factor; d) annual cost inflation correction range 5%–15%: 5% (conservative scenario), 10% (realistic scenario), 15% (highest expected increase scenario), and e) an adjustment for ageing to reflect the increasing life expectancy (LE) and the related morbidity expansion.

Results The total EU cost of care for older cancer patients in the LYOL is expected to increase by 48% (2008–2030) reflecting

mortality rates only (baseline model). Assuming 5% cost rise per year (model 1), we projected more than a two-fold increase in the total EU cost by 2030 at an average annual rate of 9.6%. Model 2 involved 10% inflation and no ageing-adjustment, predicting a 3.7 times cost rise during the next two decades. This equated an annual average increase at 16.9%. We predicted a slightly higher cost rise when we allowed for ageing in addition to the 10% annual inflation (model 3) at approximately 17% increase year on year. This represents \$81 billion absolute increase during the projected period or \$3.6 average annual increase for Europe as a whole. The highest cost increase is expected in model 4 (15% inflation with ageing-adjustment). Costs are predicted to rise more than five times between 2008 and 2030, marking a 24.3% average annual increase. There is a marked cost variation across Europe.

Conclusion Costs of care for older cancer patients in the LYOL are projected to rise substantially in the foreseeable future. Our models outline cost variation between 2.2% and 24.3%, with the most realistic increase expected at 17% annually. This has key implications for short and medium-term service planning of how to provide care in the LYOL for the rising number of older citizens dying from cancer, taking into account the current economic climate in Europe.

OP23 DEVELOPING A SINGLE, EVIDENCE-BASED APPROACH TOWARDS DISINVESTMENT: IS A NICE WAY THE RIGHT WAY?

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Background With the NHS currently facing one of its toughest periods financially, most, if not all, PCTs in England have started to prioritise services and sought to identify those which are either ineffective or of low clinical value for disinvestment. Yet the absence of a nationally accepted list of identified procedures has resulted in PCTs developing their own approaches, with many applying different priority thresholds to different procedures. This has created numerous “black lists” of interventions which will either not be funded or their commissioning severely curtailed. As these decisions are being based on the affordability of procedures rather than clinical efficacy, a post-code lottery in provision has ensued across the UK. Therefore to ensure equitable access to healthcare resources, an evidence based approach towards disinvestment is imperative.

Methods Working in collaboration with NICE R&D, the project used NICE's ‘do not do’ (DND) database to identify topics based on rigorous evidence for potential disinvestment. DNDs based upon those treatments with evidence suggesting they are ineffective or of low-clinical value were identified from the 850 + DND database. DNDs relating solely to clinical safety were excluded from the study. Procedures were further prioritised by 34 clinical experts in participating ‘pilot’ implementation sites in the SW Peninsula, who were asked to review populated lists of DNDs to ensure: clinical soundness; practicality of implementation; and any DND of potential high impact locally. Using HES data, volumes of DNDs still being performed in the NHS were also collated to give an estimate of overall usage and potential impact. Each DND identified was subjected to a cost analysis to provide an estimate of potential savings at both a local and national level.

Results 209 DND topics developed between 2007 and 2012 were identified for use in the study. Following local clinical prioritisation, cost analysis and exploration of HES data to give an estimate of usage, 30 procedures for a pilot disinvestment programme were identified solely from the NICE DND database.

Conclusion The study successfully developed a single, evidence-based approach towards disinvestment through the identification of ineffective and low clinical value treatments from the NICE DND database. Additional planned research which will implement the ‘pilot’ list across the SW Peninsula, will provide valuable information

on the practical implications of disinvestment initiatives and identify any incentives/disincentives for future developments.

OP24 ASSESSING THE COST-EFFECTIVENESS OF ALTERNATIVE CARE PATHWAYS: A CASE STUDY EVALUATING EARLY TRANSFER TO NEUROSCIENCE CENTRES FOR CRITICALLY ILL PATIENTS WITH ACUTE TRAUMATIC BRAIN INJURY

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Background Acute traumatic brain injury (TBI) is a major cause of death, disability and cost. For critically-ill adult TBI patients who present outside a neuroscience centre, and do not require neurosurgery, there is little evidence on whether early transfer to a neuroscience centre is worthwhile. NICE guidelines list the issue as a key research topic. We aimed to assess the relative cost-effectiveness of 'early transfer' (within 18 hours of hospital presentation) versus 'no or late transfer' (after 24 hours) for these patients.

Methods The Risk Adjustment In Neurocritical care (RAIN) Study validated risk prediction models following TBI. The RAIN Study recruited admissions following acute TBI to 67 adult critical care units during 2009–11. Detailed information was collected on baseline prognostic factors, the time of transfer to neuroscience centres, and mortality. Resource use data were recorded for six months, and combined with unit costs to report total hospital and community health service costs. At the six month follow-up, data were collected on health-related quality of life (HRQoL), by the EQ-5D-3L. The lifetime cost-effectiveness analysis extrapolated from six month endpoints, informed by the literature. We report lifetime incremental cost per QALY of 'early' versus 'no or late transfer', overall and for subgroups (age ≤ 70 , vs >70 ; mild/moderate, vs severe TBI; major extracranial injury, vs none). To adjust for baseline differences we used the previously validated risk prediction models in regression analyses. In sensitivity analyses we considered alternative approaches for extrapolating from the six month endpoints and undertaking risk adjustment.

Results There were 584 patients in the 'early' and 263 in the 'no or late transfer' group. After risk adjustment, early transfer was associated, at six months, with lower mortality (odds ratio 0.52, 95% CI 0.34 to 0.80), higher HRQoL for survivors (mean gain 0.13, 0.032 to 0.225), but positive incremental costs (£15,000, £11,123 to £18,880). The lifetime cost per QALY for 'early transfer' was £11,000. For patients older than 70, 'early transfer' was associated with higher mortality, and was unlikely to be cost-effective (probability 0.15 at £20,000 per QALY). For other subgroups, the corresponding probabilities that 'early transfer' is cost-effective were between 0.7 and 1.

Conclusion For critically-ill patients with acute TBI aged 70 or less, early transfer to a neuroscience centre appears cost-effective. While this finding is robust to alternative methodological assumptions and choice of risk prediction model, further research is required to investigate the potential impact of unobserved confounding.

Thursday, 13 September 2012

Parallel Session B

Diet and Obesity

OP25 USING LINEAR SPLINE MULTILEVEL MODELS TO ASSESS SOCIOECONOMIC DIFFERENCES IN TRAJECTORIES OF DIET, PHYSICAL ACTIVITY AND FAT MASS ACROSS CHILDHOOD

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Background Lower socioeconomic position (SEP) is a risk factor for obesity in children and adolescents in high-income countries. Since diet and physical activity are the main drivers of obesity, the socioeconomic differential in obesity is likely to arise through SEP differences in one or both of these.

Methods We explored SEP differences in trajectories of fat mass, energy intake and physical activity (PA) across childhood and early adolescence, using maternal education as a measure of SEP, in the Avon Longitudinal Study of Parents and Children. Fat mass was measured by DXA scans at mean ages 10, 12, 14, 15 years. Energy intake was assessed using food frequency questionnaires (FFQs) at 3, 4.5, 7, 8.5 years and 3-day diet diaries at 3.5, 5, 7.5, 10, 13 years. PA was assessed by accelerometers worn for 7 days at 12, 14, 16 years, used to calculate mean total counts per minute (CPM) and mean minutes of moderate to vigorous PA (MVPA). Energy intake (adjusted for FFQ vs diary), % fat mass, CPM and MVPA were all modelled using linear spline multilevel models.

Results 5739 individuals had data on maternal education and at least one measure for each of fat mass, energy intake and PA. The sons of women educated to degree level (highest maternal education category) had consistently lower % fat mass across childhood and early adolescence, but differences between the 3 lower SEP categories only began to emerge from age 14. In females there was a stepwise increase in percent fat mass for each decreasing category of maternal education, and the SEP gradient remained largely stable between 10 and 15 years. The SEP patterning in trajectories of energy intake and PA (CPM and MVPA) did not resemble the SEP patterning in trajectories of fat mass. For energy intake, no SEP differences were observed. For PA in males, there was little SEP patterning in MVPA, but for CPM there were higher levels of activity in lower maternal education groups, i.e. the reverse of the fat mass gradient. For females, CPM and MVPA were both higher in the highest maternal education category, but contrary to the fat mass trajectories, differences between the lower three SEP categories were not consistent.

Conclusion Socioeconomic differences in trajectories of energy intake and PA do not resemble the patterns observed for fat mass. Potential explanations for this finding, including measurement error, will be discussed.

OP26 BY-STATE COMPARISON OF OBESITY TRENDS IN THE ADULT POPULATION OF THE UNITED STATES OF AMERICA

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Background Excess bodyweight is associated with negative effects on longevity, disability-free life-years, quality-of-life, and productivity. High prevalence of obesity and over-weight is often related to socioeconomic status, educational attainment, and ethnic group. The combination of rising obesity prevalence and increased spending on obese people has been estimated to account for 27% of the growth in US health-care expenditure between 1987 and 2001.

Methods The Behavioral Risk Factor Surveillance System (BRFSS) is the world's largest, telephone health survey system, collecting cross-sectional data on health conditions and risk factors in all states of the US yearly since 1984. Telephone interviews provide a cheap alternative to physical examinations and are often used as a way to increase the number of participants in observational studies. Data for 3,814,344 adults from BRFSS were used to investigate trends of obesity levels in each US state. Over the period 1999–2010, the