A6


DB3

A SPATIAL DISTRIBUTION OF ADULT OBESITY PREVALENCE IN DENVER, COLORADO: AN EMPORIAL BASEY APPROACH

Tabano DC1, Barrow Jc1, Daley MF2
1Kaiser Permanente, Denver, CO, USA, 2Kaiser Permanente Institute for Health Research, Denver, CO, USA

OBJECTIVES: Measuring obesity prevalence across geographic areas must take into account environmental and socioeconomic factors that contribute to spatial auto- correlation across neighboring areas. Dependency among observations across a geographic area violates statistical independence assumptions and bias estimates. Empirical Bayes estimates “smooth” variables with spatial autocorrelation, which limits the overall mean square-error and controls for bias estimates. METHODS: Using a new system for BMI surveillance in Colorado, we modeled the spatial auto- correlation of adult (≥18 years old) BMI (BMI ≥ 30 kg/m²) in Denver County using patient-level electronic health record data from Kaiser Permanente Colorado (KPCO) between 2009-2011. Geographical data was linked to calculate smoothed obesity prevalence across census tracts. SAS 9.2 was used to clean and aggregate data. GeoDa was used to calculate the Moran’s I statistic to test for spatial autocorrelation and the Empirical Bayesian approach to calculate smoothed obesity prevalence estimates. RESULTS: Among patients with a valid BMI, we measure patient counts >10 across 143 census tracts in Denver County, for a total sample size of 46,241 adults. Crude obesity prevalence for adults was 27.01% (95% CI 25.50-28.51%) and ranged from 10.98-45.73% across census tracts. Smoothed obesity prevalence was 26.93% (95% CI 25.63-28.24) and ranged from 13.19-42.03%. The Moran’s I statistic for crude obesity prevalence was 0.7407 (p < 0.001) and the Moran’s I statistic for the smoothed obesity prevalence was 0.7469 (p < 0.001), suggesting adult obesity prevalence is not spatially independent. CONCLUSIONS: Results reveal smoothed obesity prevalence for adults are non-random in Denver County; at the census tract level. Clusters of smoothed obesity are highly significant (p<0.05) among different census tracts of high obesity prevalence. Concentrations of obesity are primarily in the west and northeast of the county, with less clustering of obesity in the central and southern parts of the county.

DB4

THE APPLICATION OF NATURAL LANGUAGE PROCESSING (NLP) TECHNOLOGY TO ENRICH ELECTRONIC MEDICAL RECORDS (EMRs) FOR OUTCOMES RESEARCH IN ONCOLOGY

Hirst C1, Hill J, Khosla S1, Schwiekerd A2, Senerich C3, Kittmann K1, Zhang Q1
1AstraZeneca, Maclefield, UK, 2Humedics, Boston, MA, USA

OBJECTIVES: Many studies that use EMRs to evaluate oncology patients and practic- es have caveats around partial/missing observations within patient records. We describe an approach to build a potentially richer oncology dataset, supplementing EMR with case note observations through the use of NLP, applied specifically for the crsar analysis of molecular data. METHODS: NLP techniques are implemented based on broad topics such as medications, signs, disease and symptoms, measure- ments and observations. The data is harvested from the notes fields within the de-identified EMRs (including inpatient, clinics, pathological etc.) provided to Humedics from over 25 large health care systems throughout the United States. Each NLP concept included in the data is associated with a unique subject record and a date of observation, allowing longitudinal tracking of concepts such as a molecular entities. Data from NLP are linked to patient EMR records to allow inclusion of the additional variables in further analyses. The method was applied to identify molecular testing- ing data in a specific cancer type. RESULTS: Of the 18,068 included patients with valid EMR and NLP notes, 114,783 prescribing, pathological and inpatient observations were observed to have a defined observation of a molecular test specific for the target of interest; 46.3% (475) of which were deemed positive (i.e. indicating presence of the molecular tar- get); 41.5% (416) negative; and 12.3% (126) with unknown status. CONCLUSIONS: Innovation in clinical tools and clinical skills and clinical knowledge are required in the generation and analysis of oncology disease data, and NLP can enrich enrollment with variables which are not included in EMR, allowing more detailed understand- ing of patient cohort. We have demonstrated that NLP was deemed to be successful in identifying cohorts of oncology patients with resistant molecular characteristics. Further correlating evidence and cross validation will determine the robustness and representativeness of the data generated with this approach.

HEALTH CARE POLICY STUDIES

HC1

CADTH RECOMMENDATIONS AS PREDICTORS FOR DRUG AVAILABILITY IN BRITISH COLUMBIA AND ONTARIO

Liden D, Jaksa A, Daniel K, Ho Y

OBJECTIVES: The Canadian Agency for Drugs and Technologies in Health (CADTH) conducts health technology assessments and provides recommendations for drug listing and reimbursement. However, the health care providers of individual Canadian provinces are not obligated to follow CADTH recommendations. The aim of this study is to examine the value of CADTH recommendations as predictors for drug availability in British Columbia and Ontario. METHODS: This study included 95 CADTH recommendations for 88 drugs across 30 disease conditions. The British Columbia Drug Policy and Therapeutic Services Branch and the Ontario Drug Policy and Therapeutic Services Branch were each used to validate if these 88 drugs (some drugs were included more than once as CADTH reviewed them for multiple indications). Agreement was defined as any case in which drugs received positive CADTH recommendations and were listed by a province’s health care policy and therapeutic services branch as available. A cadth recommendation was accepted when both British Columbia’s drug listings (p<0.01) and Ontario’s drug listings (p<0.01). CADTH recommendations agreed with British Columbia listing decisions for 74% of the drugs reviewed by CADTH. Ontario agreed with CADTH for 72% of the drugs. Positive CADTH recommendations in particular were often translated to availability in British Columbia and Ontario. The 57 drugs that received positive CADTH recommendations, 82% (47) are available in BC and 93% (53) are available in Ontario. Of the 36 drugs receiving negative CADTH recommendations, 61% (22) are unavailable in BC and 50% (18) are unavailable in Ontario. CONCLUSIONS: Positive CADTH recommendations are a good predictor of drug availability in British Columbia and Ontario. A drug that receives a nega- tive CADTH recommendation, however, still has a significant probability of being listed by each province’s health care system, especially through their special access programs.

HC2

THE IMPACT OF NICE’S END-OF-LIFE THRESHOLD ON PATIENT ACCESS TO NEW CANCER THERAPIES IN ENGLAND AND WALES

Stewart G, Edelweiss J, Hamann K

OBJECTIVES: In January 2009 NICE introduced supplementary advice to aid patient access to end-of-life treatments. The advice allowed existing cost-effectiveness evaluations (Woolliscroft)1, with an estimated upper limit of £50,000 per QALY, to be extended to treatments indicated for patients with a short life expectancy, providing they apply to small patient populations and are shown to extend life by at least 3 months. Previous research has determined this extended threshold to be around £50,000 per QALY. The aim of this study was to investigate the trends in end-of-life appraisals and recommendations since their introduction in 2009. METHODS: NICE single tech- nology appraisals for cancer therapies were reviewed from 2008 to 2013. ICERs were calculated from appendices against the end-of-life criteria: during the timeframe considered, 31 appraisals were evaluated against the end-of-life criteria. Of the 21 appraisals considered to meet the criteria, 13 were recom- mended by NICE. RESULTS: Of the 13 NICE recommendations on the NICE, 10 across 143 census tracts in Denver County, for a total sample size of 8,181,800 to £5,800 per QALY. However, between 2009 and 2013, the average yearly ICERs for end-of-life appraisals increased from £41,633 to £72,667. This general increase was reflected by a subse- quent decrease in approved treatments over time. Between 2009 and 2013, 23% of end-of-life treatments were approved, this is compared to 5 recommendations issued in 2009 alone. In 2013, no new end-of-life treatments were approved by NICE, with a lowest ICER in the submitted appraisals of £50,200 per QALY. CONCLUSIONS: The general trend of increasing ICERs for end-of-life appraisals has resulted in fewer treatments being approved by NICE in recent years. Given the limiting effect this could have on improving patient access, this may mean that patients need to rely on other funding sources, such as the Cancer Drug Fund in England, to access novel cancer therapeutics.

HC3

INCENTIVIZING VALUE IN MANAGED CARE DRUG FORMULARIES: DESIGN, IMPLEMENTATION, AND FIRST-YEAR OUTCOMES OF A VALUE-BASED FORMULARY


1Premera Blue Cross, Mountlake Terrace, WA, USA, 2School of Pharmacy, University of Washington, Seattle, WA, USA, 3University of Washington, Seattle, WA, USA, 4Fred Hutchinson Cancer Research Center and FredUniversity of Washington, Seattle, WA, USA, 5School of Medicine, University of Washington, Seattle, WA, USA

OBJECTIVES: Increases in drug cost sharing without regard to value may provide physicians with incentives to prescribe less costly but less effective medications. Many successful state and health plans have incorporated value-based drug formularies (VBF) to align utilization with value, Premera Blue Cross, a large not-for-profit health plan in the Pacific Northwest, implemented a value-based formulary (VBF) which utilizes cost-effectiveness analyses to determine the value-based value of each individual drug. The value of each drug is used to determine the corresponding formulary tier placement for the drug. The objective of this study is describe the design, implementation and first-year outcomes of Premera’s VBF. METHODS: We compared observed pharmacy cost per member per month (PMPM) in the year following VBF implementation to observed pharmacy costs twelve months prior to and to an expected counterfactual estimate if no changes were made to the pharmacy benefits. The counterfactual estimate was generated using autoregressive integrated moving average applied to prior thirty-six months pharmacy costs. We assessed drug use and adherence among individuals with diabetes, hypertension, or dyslipidemia utilizing an inter- rupted time series design with a comparison group composed of members from three employer groups which had the same pharmacy copay increases but did not implement a VBF. RESULTS: Premera pharmacy costs decreased by 3% or 11% PMPM compared to the twelve months prior to counterfactual estimate respectively. Among individuals with diabetes, hypertension, or dyslipidemia in the VBF cohort, there was no significant decline in adherence or number of users of medications for the treatment of diabetes, hypertension, or dyslipidemia. CONCLUSIONS: Despite an overall higher member cost share structure and potential health plan savings, the VBF was potentially able to maintain medication utilization in key disease states. Subsequent analyses utilizing longer follow-up and greater control for confounding will establish more valid estimates of outcomes and costs.

HC4

THE POTENTIAL IMPACT OF RECOMMENDATIONS MADE THROUGH THE COMMON DRUG REVIEW PROGRAM AT THE CANADIAN AGENCY FOR DRUGS AND TECHNOLOGIES IN HEALTH

Arapo AK1, Coyle DT, Lee KM1, Lee KM1

1Canadian Agency for Drugs and Technologies in Health, Ottawa, ON, Canada, 2University of Ottawa, Ottawa, ON, Canada

OBJECTIVES: The Common Drug Review (CDR), a pan-Canadian program at the Canadian Agency for Drugs and Technologies in Health (CADTH), assesses the clini- cal effectiveness, cost effectiveness and patient evidence of new drugs to provide
formulary listing recommendations to publicly funded drug plans. This study aims to determine the implications of implementing CDR recommendations. METHODS: CDR reviews from December 2010 to December 2012, for which an economic evaluation was submitted by the manufacturer, were assessed. A framework was developed where templates were created in Microsoft Excel for each drug submission to consider two scenarios: an uptake scenario (no CDR recommendation implemented) and a counterfactual scenario (CDR recommendation not implemented). Drug costs and quality adjusted life years (if applicable) for both scenarios were determined at the population level using numbers reported in the manufacturer’s budget impact analyses. The incremental net benefit was calculated, based on a willingness-to-pay of $50,000. In addition, sensitivity analyses were conducted to consider variation around the counterfactual scenario. RESULTS: Based on the results for the 55 drugs for which cost-utility or a cost-minimization analysis was submitted, the total incremental net benefit of implementing a CDR recommendation was calculated to be over 1 billion dollars over a 1-year time frame for participating provincial drug plans. Details on each CDR and the health technology assessment (HTA) process were identified using an HTA survey, which was and were supplemented with separate manual searches for CD-related reports on each HTA organization’s website. When additional context was needed to evaluate the HTA with the most recent recommendations, older HTAs were identified and the incremental net benefit and the inclusion of all participating drug plans to provide broader implications of overall CDR impact in Canada.

HEALTH TECHNOLOGY ASSESSMENT STUDIES

HT1 RECENT HEALTH TECHNOLOGY ASSESSMENT DECISIONS ACROSS THE GLOBE: A FOCUS ON ONCOLOGY
Clark BS, Zagzagdy F, Brandwein T, Xendra, Palm Harbor, FL, USA
OBJECTIVES: Due to a substantial oncology burden across the globe, there is an increasing need for effective, more evidence-based oncology decision-making. How decision-making processes differ among nations, health technology assessments (HTAs) aim to produce policies that achieve optimal value while improving patient care and health outcomes. The objective of this analysis was to evaluate recent patterns in oncology-based HTA decisions in selected countries. METHODS: HTAs surveillance was conducted for Australia, Canada, France, Germany, and the United Kingdom (UK) from January 1, 2012 to August 31, 2013 (19 months). Oncology-based HTAs were evaluated by therapeutic area, decision, and rationale for the decision. Decisions were categorized as favorable, unfavorable, mixed (ie, both favorable and unfavorable), and neutral (ie, deferral). RESULTS: 67 oncology-related HTAs were published in the study timeframe. Across studied nations, 38 (57%) decisions were categorized as favorable, 13 (20%) as unfavorable, 1 (4%) neutral, and 15 (23%) unfavorable decisions, 13 were rejected for insufficient justification to the high cost (ie, improperly high incremental cost-effectiveness ratio [ICER]), 9 for insufficient or unconstitutional clinical benefit vs the most comparable comparator, and 3 for incomplete or improper submission. Excluding neutral and mixed decisions, France was associated with the highest percentage of favorable decisions (14 of 15, 93%), followed by Germany (9 of 14, 64%), Australia (11 of 20, 55%), and the UK (4 of 14, 29%). CONCLUSIONS: Analysis of recent HTA surveillance evidenced the varying decision-making processes across nations and highlights the need for a structured and transparent approach to HTA for oncology products.

HT2 ASSESSING THE VALUE OF TREATMENTS FOR RARE DISEASES USING AN MCCDA-BASED APPROACH: METHODOLOGICAL AND ETHICAL FOUNDATIONS OF CRITERIA SELECTION AND FRAMEWORK DEVELOPMENT
Wagner M1, Khoury H2, Willet J3, Rodin D4, Goetgebuer M4
1LASEE Analytica, Montreal, QC, Canada, 2LASEE Analytica, New York, NY, USA
BACKGROUND: Appraising rare disease treatments involves multiple issues and represents a significant challenge for HTA agencies. Multicriteria approaches are uniquely suited to assess their real-life value. OBJECTIVES: to develop a framework adapted to rare diseases while remaining compatible with other therapeutic areas for broad application. METHODS: Adaptations of the framework to rare disease was based on methodological and ethical principles underlying the EVIDEM framework, informed by issues and policies specific to rare diseases, which were identified through literature review and survey, and guided by pragmatic considerations of real-life application in participatory processes. Criteria selection followed MCCDA principles: completeness, non-redundancy, operationalizability, and independence. Model median mechanisms and sensitivity analyses were designed based on a review of MCCDA modeling. RESULTS: Quantitative criteria of the framework are organized into a hierarchical MCCDA model consisting of six domains of value (top-level criteria): Need, Type of benefit, Outcomes, Economic consequences, Knowledge, and Ethical aspects. Each domain includes criteria and subcriteria, each contributing to the final output of the model, i.e., the Value Estimate. The model explicitly takes into account aspects of rare diseases, including disease complexity, treatment outcome, and patient needs. Sensitivity analyses are performed to explore uncertainties and the impact of contextual issues. CONCLUSIONS: This framework promotes a comprehensive, transparent and systematic appraisal of rare disease treatments while remaining applicable to rare therapy. Although numerous outputs are produced, the framework is intended to support deliberative processes that allow sharing of perspectives and rationales for decisions. Intended to measure value in its broad sense, the framework supports sustained application of MCCDA in health care decisionmaking.

HT3 IDENTIFYING RECENT TRENDS IN HEALTH TECHNOLOGY ASSESSMENTS FOR CROHN’S DISEASE
Mahendraratnam N, Inocencio T, Gaffney J, Agatep BC, Hughes KE
National Health LLC, Washington, DC, USA
OBJECTIVES: To identify the types of coverage recommendations made by key ex-US health technology assessment (HTA) organizations for biologic treatments in Crohn’s disease (CD) and to understand how these organizations interpret evidence to support these recommendations. METHODS: Publicly available HTAs on CD from January 2009 to June 2013 for the following organizations were reviewed: CADTH (Canada), CONITEC (Brazil), HAS (France), IQWiG (Germany), NICE (UK), PBAC (Australia). HTAs were identified using an HTA survey, which was supplemented with separate manual searches for HTA-related reports on each HTA organization’s website. When additional context was needed to evaluate the HTA with the most recent recommendations, older HTAs were identified and the incremental net benefit and the inclusion of all participating drug plans to provide broader implications of overall CDR impact in Canada.

HT4 COST-EFFECTIVENESS REVIEWS BY HTA AGENCIES: A COMPARISON OF FACTORS LEADING TO UNFAVOURABLE REVIEWS FOR ONCOLOGY AGENTS
Smith N., Beckerman R.
CIB Partners, New York, NY, USA
OBJECTIVES: The purpose of this study was to identify factors leading to unfavourable reviews of cost-effectiveness analyses (CEAs) for oncology products by commonly scrutinized by HTA organizations for their high costs. The expiration of patents and the introduction of biosimilars will likely shift how HTA entities evaluate clinical, economic, and humanitarian evidence for biologic treatments for CD in the future.

MEDICATION ADHERENCE STUDIES

MA1 NON-ADHERENCE IS ASSOCIATED WITH POORER HEALTH OUTCOMES AMONG WOMEN CURRENTLY TREATED FOR BREAST CANCER WITH ORAL ENDOCRINE THERAPY
Goren A1, Geynisman DM2
1Kantor Health, New York, NY, USA, 2Fox Chase Cancer Center Temple Health, Philadelphia, PA, USA
OBJECTIVES: - Non-adherence rates with oral endocrine therapy (ET) in women with breast cancer (BC) are 25%-50% and lead to inferior survival. Understanding the factors associated with non-adherence and their consequences is necessary to develop effective interventions. This study examined real-world non-adherence and health outcomes among women using ET. METHODS: Female respondents from the 2010-2012 U.S. National Health and Wellness Survey were included if reporting a diagnosis of breast cancer and treatment with hormone inhibitors (n=261), selective estrogen receptor modulators (n=113), or their combination (n=7). The Morisky Medication Adherence Scale (MMAS-4 or MMAS-8, modified for use in oncology) was used to assess adherence, standardized using t-scoring. Descriptive analyses examined adherence, sociodemographics, and health behaviors. Bivariate analyses com-