Cancer - Clinical Outcomes

PCN1
CONCORDANCE OF DEATH DATE ASSESSMENTS BETWEEN THE SOCIAL SECURITY DEATH MASTER FILE AND ELECTRONIC HEALTH RECORDS IN A US COMMUNITY ONCOLOGY SETTING

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Objectives: Electronic health records (EHR) data are increasingly used for real-world oncology studies, which require accurate dates of death to assess survival outcomes. Access restrictions for use of Social Security Administration's Death Master File (DMF) were implemented in 2011. The current study compared availability and accuracy of death date information from DMF to that recorded in US Oncology Network's (USON) EHR. ***Methods:*** Data pooled from 32 completed retrospective studies with observation periods spanning 2008–2019 were examined. All studies sourced data from EHR structured fields and a subset of 4 studies also included unstructured data sourced from chart review. Death dates from the EHR (in structured and unstructured fields) were compared with those recorded in DMF to assess concordance. ***Results:*** Overall, 102911 patients were evaluated using structured data and a subset of 826 patients were further evaluated using unstructured data. Among patients with death dates reported by either structured data or DMF (n=36,941), 93.3% were captured by structured data, with DMF providing dates for an additional 6.7%. Among patients with dates reported by both structured data and DMF (14.9%), concordance was 88.0%. Among subset of patients with unstructured data (n=358), 99.4% of death dates were captured from structured and unstructured data, with DMF providing dates for an additional 0.6%. Death dates were reported by all three sources for 16.2% with concordance of 94.8%. Over the period from 2015 to 2019, proportion of death dates reported exclusively by structured data trended upward (slope = 4.04) while proportion reported exclusively by DMF trended down (slope = -0.52). ***Conclusions:*** Death dates captured in the USON EHR data exhibit high concordance with DMF, and higher capture rate, suggesting they may serve as a primary source of death data for real-world research studies. Additional yield of death dates from DMF is low, reducing its utility.

PCN2
PROJECTED LIFETIME CLINICAL VALUE OF A MULTICANCER EARLY DETECTION TEST

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Objectives: Earlier detection is a critical step to improving cancer care. This analysis assessed the potential clinical value to patients of expanding current U.S. guideline-recommended cancer screening (ie, breast, cervical, colorectal, and lung cancers) to include a multi-cancer early detection (MCED) test. ***Methods:*** A health economic model with a lifetime time horizon was developed comparing the clinical outcomes of adding a MCED test to current cancer screening with current screening alone. The model considered a cohort beginning screening at age 50. Current screening practices reflected observed adherence to USPSTF recommended (grade A or B) cancer screening. In the MCED arm, the MCED test was added to current screening annually from ages 50 to 79. The model projected cancer incidence for each arm and, for those diagnosed with cancer, quality of life and survival. Cancer incidence in the current screening arm was derived from SEER data. The effects of the MCED test were represented as shifts in cancer stage and time of diagnosis based on the stage and cancer type-specific sensitivity of an MCED test with an overall sensitivity of 55% (Liu, 2019). Survival following diagnosis of cancer was based on five year stage-specific survival from SEER. Quality of life for patients with cancer was estimated from published literature. ***Results:*** A cohort receiving an annual MCED test was predicted to experience an incremental gain of 0.35 life-years and 0.34 quality-adjusted life-years (QALYs) per person. These clinical gains were primarily due to detection of cancers at earlier stages leading to improved survival outcomes. At willingness-to-pay thresholds of $100,000 to $150,000/QALY, this translates to a benefit of $34,400 to $51,600 per person. ***Conclusions:*** Adding a multi-cancer early detection test to current USPSTF-recommended cancer screening enables the detection of multiple additional cancer types and offers substantial value to patients.

PCN3
RETROSPECTIVE ELECTRONIC HEALTH RECORDS STUDY IN THE CANCERLINQ DISCOVERY DATABASE OF TREATMENT PATTERNS AMONG PATIENTS WITH CHRONIC LYMPHOCYTIC LEUKEMIA

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Objectives: The CancerLinQ Discovery® database, launched by the American Society of Clinical Oncology in 2016, consists of longitudinal, demographically and geographically diverse data aggregated from oncology practice electronic health records (EHR). Treatment patterns for patients with chronic lymphocytic leukemia (CLL) have changed significantly with approval of novel targeted therapies. The study objective is to generate contemporary data on treatment patterns using CancerLinQ Discovery because CLL treatment pattern data are limited in the community oncology clinic setting. ***Methods:*** Adults with CLL who initiated treatment between August 1, 2013 and September 19, 2018 were identified retrospectively from EHR in CancerLinQ Discovery and followed up until September 19, 2019. Index date was the date of first CLL treatment. Baseline demographics, comorbidities and treatment characteristics were derived from structured data elements of the EHR or were extracted from clinical notes in the EHR. ***Results:*** In total, 837 patients were included. Median age at index was 71.0 years; 62.7% were male. Of patients with a known Eastern Cooperative Oncology Group (ECOG) score at index (n=366), 44.3% and 39.6% had an ECOG performance status of 0 or 1, respectively. Comorbidities at index (≥ 5%) were hypertension (31.5%), anemia (30.1%), thrombocytopenia (15.8%), fatigue/asthenia (12.8%), renal failure (9.6%), nausea/vomiting (9.3%), neutropenia (7.6%), arrythmia (6.3%), atrial fibrillation (5.5%) and infection (5.4%). Bendamustine-rituximab (21.5%), ibrutinib (18.6%), rituximab (17.8%), chlorambucil-obinutuzumab (8.2%) and fludarabine-cyclophosphamide-rituximab (7.9%) were the most common first observed regimens. Ibrutinib was the most common therapy in the second (30.9%) and third (22.5%) observed regimens. ***Conclusions:*** This is the largest CLL real-world study using the CancerLinQ Discovery rapid learning environment. Analyses evaluating treatment-related adverse events and outcomes are ongoing. Additional research is needed as treatment patterns continue to evolve in CLL with increased use of novel agents.

PCN4
ACCURACY OF LIFE YEAR GAIN PREDICTIONS FOR NIVOLUMAB MONOTHERAPY IN THE LONG TERM: AN ANALYSIS ACROSS FOUR INDICATIONS

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Objectives: Survival profiles for immunotherapies such as nivolumab may exhibit a plateau or a delayed effect, leading to complex long-term hazard functions. We aimed to retrospectively analyze the accuracy of overall survival (OS) extrapolations of interim data cuts in predicting realized long-term life years (LYs), to ascertain whether certain survival models might better predict long-term survival with nivolumab across indications. ***Methods:*** Standard parametric models, spline models (1–2 knots; normal, odds and hazard) and mixture cure models (MCMs) were fitted to digitized published OS data for nivolumab from successive interim data cuts of CheckMate 057, 017, 067 and 141. Models were tested for statistical fit using Akaike and Bayesian information criteria. Cumulative LYs were estimated for each model over a time horizon corresponding to the longest duration of published OS data and compared to realized LYs over this period. ***Results:*** Considering standard parametric models, statistical fit to interim data cuts appeared to correlate with accuracy of LY predictions. The LogNormal and LogLogistic models provided best statistical fit and most accurate LY predictions, on average, with a mean absolute percentage difference between predicted and realized LYs across indications of 2.0% and 1.6%, respectively. Statistical fit to interim data cuts was not necessarily an indicator of LY prediction accuracy for spline models and MCMs. For interim data cuts with limited follow-up, MCMs were poor predictors of long-term survival, substantially overestimating LYs. However, these models became better predictors at successive data cuts with longer follow-up, suggesting a minimum follow-up requirement for MCMs to accurately predict long-term survival. ***Conclusions:*** Models reflecting non-monotonic hazards were consistently associated with better statistical fit and more accurate predictions of long-term survival for nivolumab across indications than alternative standard parametric models. MCMs may also be appropriate to model long-term survival for nivolumab, but only if data with sufficient follow-up are available.

PCN6
REAL-WORLD CLINICAL OUTCOMES AND HOSPITAL COSTS ASSOCIATED WITH POWERED STAPLER IN VIDEO-ASSISTED THORACIC SURGERY LOBECTOMY FOR LUNG CANCER IN A CHINESE TERITARY CARE HOSPITAL

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Objectives: To compare clinical outcomes and hospital costs associated with powered stapler and manual stapler used in lobectomy for lung cancer through video assisted thoracic surgery (VATS) in a Chinese tier III hospital. ***Methods:*** This retrospective cohort study identified patients who received lobectomy for lung cancer through VATS from January 2016 to December 2018 in a Chinese tier III hospital. The identified patients meeting inclusion and exclusion criteria were used to create two study groups by the type of stapler: powered stapler group (ECHELON FLEX™ ENDOPATH®) vs. manual stapler group (VICTOR MEDICAL). The medical and billing records associated with the included patients in the hospital episode for VATS were reviewed to extract patient baseline characteristics, utilization of staplers and cartridge, clinical outcomes related to the use of stapler, and hospital costs. Multiple linear regression analyses with varied distribution assumptions were conducted to explore the differences in the measured clinical outcomes and hospital costs associated with using two types of staplers after adjustment of patient baseline