framework for modelling the innovative activities such as CDSS implementation across the digital health landscape which minimizes the operational and strategic fragmentation of different organizations.

OP208 Did Health Technology Assessments Make the Wrong Call? Quantitative Bias Analysis: Alectinib versus Ceritinib in Non-Small Cell Lung Cancer

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Introduction. The German health technology assessment (HTA) rejected additional benefit of alectinib for second line (2L) ALK+ NSCLC, citing possible biases from missing ECOG performance status data and unmeasured confounding in real-world evidence (RWE) for 2L ceritinib that was submitted as a comparator to the single arm alectinib trial. Alectinib was approved in the US and therefore US post-launch RWE can be used to evaluate this HTA decision.

Methods. We compared the real-world effectiveness of alectinib with ceritinib in 2L post-crizotinib ALK+ NSCLC using the nationwide Flatiron Health electronic health record (EHR)-derived de-identified database. Using quantitative bias analysis (QBA), we estimated the strength of (i) unmeasured confounding and (ii) deviation from missing-at-random (MAR) assumptions needed to nullify any overall survival (OS) benefit.

Results. Alectinib had significantly longer median OS than ceritinib in complete case analysis. The estimated effect size (Hazard Ratio: 0.55) was robust to risk ratios of unmeasured confounder-outcome and confounder-exposure associations of <2.4.

Based on tipping point analysis, missing baseline ECOG performance status for ceritinib-treated patients (49% missing) would need to be more than 3.4-times worse than expected under MAR to nullify the OS benefit observed for alectinib.

Conclusions. Only implausible levels of bias reversed our conclusions. These methods could provide a framework to explore uncertainty and aid decision-making for HTAs to enable patient access to innovative therapies.

OP218 Searching Preprint Repositories For COVID-19 Therapeutics Using A Semi-Automated Text-Mining Tool

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Introduction. The COVID-19 pandemic led to a significant surge in clinical research activities in the search for effective and safe treatments. Attempting to disseminate early findings from clinical trials in a bid to accelerate patient access to promising treatments, a rise in the use of preprint repositories was observed. In the UK, NIHR Innovation Observatory (NIHRIO) provided primary horizon-scanning intelligence on global trials to a multi-agency initiative on COVID-19 therapeutics. This intelligence included signals from preliminary results to support the selection, prioritisation and access to promising medicines.

Methods. A semi-automated text mining tool in Python3 used trial IDs (identifiers) of ongoing and completed studies selected from major clinical trial registries according to pre-determined criteria. Two sources, BioRxiv and MedRxiv are searched using the IDs as search criteria. Weekly, the tool automatically searches, de-duplicates, excludes reviews, and extracts title, authors, publication date, URL and DOI. The output produced is verified by two reviewers that manually screen and exclude studies that do not report results.

Results. A total of 36,771 publications were uploaded to BioRxiv and MedRxiv between March 3 and November 9 2020. Approximately 20–30 COVID-19 preprints per week were preselected by the tool. After manual screening and selection, a total of 123 preprints reporting clinical trial preliminary results were included. Additionally, 50 preprints that presented results of other study types on new vaccines and repurposed medicines for COVID-19 were also reported.

Conclusions. Using text mining for identification of clinical trial preliminary results proved an efficient approach to deal with the great volume of information. Semi-automation of searching increased efficiency allowing the reviewers to focus on relevant papers. More consistency in reporting of trial IDs would support automation. A comparison of accuracy of the tool on screening titles/abstract or full papers may help to support further refinement and increase efficiency gains.

This project is funded by the NIHR [(HSRIC-2016-10009)/ Innovation Observatory]. The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

OP220 What Factors Do Clinicians Value Most In Selecting Physician Preference Items? A Survey Among Italian Orthopaedists

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Introduction. Physician preference items (PPIs) are high-cost medical devices on which clinicians express firm preferences with respect to a particular manufacturer and a specific product. The aim of this research is to understand what are the most important factors, as well as their relative importance, in the choice of new PPIs (that is, hip or knee prosthesis) adoption on behalf of orthopaedic clinicians in Italy.

Methods. Based on a literature review and clinical experts' opinions, we identified a number of key factors (for example, health technology assessment (HTA) recommendation) and their corresponding levels (for example positive HTA recommendation). We

https://doi.org/10.1017/S0266462321000805 Published online by Cambridge University Press

administered an online survey to hospital orthopaedists using two experimental techniques for preference elicitation (that is, discrete choice experiment (DCE) and case 1 best-worst scaling (BWS)). BWS data were analysed through descriptive statistics (that is, best-minus-worst score) and conditional logit model. A mixed logit model was applied to DCE data, and a willingness-to-pay (WTP) was estimated. All analyses were conducted using Stata 16.

Results. A total of ninety orthopaedists (95% male; mean age: 52.8 years) were enrolled in the survey. In BWS, the most important factor was 'clinical evidence', followed by 'quality of products', 'HTA recommendations' and 'previous experience', while the least important was 'cost'. DCE results suggested that orthopaedists prefer high-quality products with robust clinical evidence, positive HTA recommendation and affordable cost, and for which clinicians have a consolidated experience of use and a good relationship with the sales representative. The WTP for a high-quality product was estimated at EUR1,733, and for a good relationship at EUR2,843.

Conclusions. This is the first study aimed at analysing the multidimensionality of clinician's decision-making process in selecting new PPIs in orthopaedics in Italy. Despite the quality of products being declared as one of the most important dimensions in BWS, when other factors populate a hypothetical DCE scenario, physicians are not willing to accept quality at any cost (for example, high quality and very bad support from the producer or with uncertain clinical evidence).

OP223 A Semi-Automated Process To Monitor The Clinical Development And Regulatory Approval Pathway Of Innovative Medicines

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Introduction. Early identification of innovative medicines is crucial for timely health technology assessment (HTA) and efficient patient access. The National Institute for Health Research Innovation Observatory (NIHRIO) identifies, monitors and notifies key HTA stakeholders in England of 'technologies' (innovative medicines) within three to five years of regulatory approval. Increasing numbers of innovative medicines and significant uncertainties in clinical and regulatory pathways are major challenges in the monitoring and notification process. An active monitoring framework using pre-defined predictive criteria has previously been developed. This framework provides a standardized and consistent process, but is highly resource-intensive, requiring manual review of individual records.

Methods. Using the previous active monitoring framework, a scoring matrix was calculated and used to prioritize individual technologies using available data in the NIHRIO database: estimated regulatory timelines, regulatory awards/designations, innovative medicine type (for example gene therapies) and clinical trial phase, completion dates and results. A threshold for automatic and manual reviewing of technologies was developed and tested by NIHRIO analysts.

Results. The scoring system identified approximately ninety percent of technologies meeting the threshold for semi-automated reviewing. The review period for these technologies are set automatically according to predefined criteria depending on data availability. The review periods are updated automatically until the record reaches the threshold that triggers manual reviewing. The remaining ten percent had estimated regulatory timelines necessitating the need for manual reviewing and early engagement with companies to verify regulatory timelines and/or notify HTA stakeholders.

Conclusions. Preliminary analysis indicates that each technology is routinely and automatically updated. The semi-automatic updating represents a significant improvement in the efficiency of the monitoring of the large volume of technologies on the NIHRIO database. Ongoing work is being undertaken to further refine, pilot and test the system.

This project is funded by the NIHR [(HSRIC-2016-10009)/ Innovation Observatory]. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

OP227 Exploring The Value Of Soft-Intelligence: A Case Study Using Twitter To Track Mental Health During The COVID-19 Pandemic

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Introduction. There is increasing pressure to rapidly shape policies and inform decision-making where robust evidence is lacking. This work aimed to explore the value of soft-intelligence as a novel source of evidence. We deployed an artificial intelligence based natural language platform to identify and analyze a large collection of UK tweets relating to mental health during the COVID-19 pandemic.

Methods. A search strategy comprising a list of terms relating to mental health, COVID-19 and the lockdown was developed to prospectively identify relevant tweets via Twitter's advanced search application programming interface. We used a specialist text analytics platform to explore tweet frequency and sentiment across the UK and identify key topics of discussion for qualitative analysis. All collated tweets were anonymized.

Results. We identified 380,728 tweets from 184,289 unique users in the UK from 30 April to 4 July 2020. The average sentiment score was fifty-two percent, suggesting overall positive sentiment. Tweets around mental health were polarizing, discussed with both positive and negative sentiment. For example, some people described how they were using the lockdown as a positive opportunity to work on their mental health, sharing helpful strategies to support others. However, many people expressed the damaging impact the pandemic (and resulting lockdown) was having on

https://doi.org/10.1017/S0266462321000805 Published online by Cambridge University Press