PD25 Use Of Real-World Evidence In The Reimbursement Assessment Of Medical Devices

Amy Crompton,
Tom Macmillan (tmacmillan@source-he.com),
Jen Ferris and Isobel Munro

Introduction. Randomized controlled trials (RCTs) are typically considered the gold standard source of clinical evidence for reimbursement submissions, but they can often be resource-intensive, expensive, and may not always be appropriate. For example, it may be unethical to assign patients to an untreated or undiagnosed control group, or blinding may not be feasible when assessing medical devices. Evidence for medical devices is therefore often limited to nonrandomized studies. We explored the use and value of real-world evidence (RWE) in the reimbursement of medical devices across several health technology assessment (HTA) agencies.
Methods. A narrative review was completed to compare the acceptability of RWE for the HTA evaluation of medical devices across a convenience sample of countries. English-language published guidance documents were reviewed, and study design preferences extracted.
Results. In Australia, France, Germany, Ireland, Norway, and Scotland, HTA agencies prefer RCT evidence but accept RWE as supporting data. In England, there is no preferred study design, with directly observed clinical outcomes, evidence syntheses, nonclinical, and modelling studies accepted. Notably, methods and processes for HTA programs are being reviewed and are expected to place a greater emphasis on RWE. In Australia, pseudo-randomized trials, comparative cohort studies, case series, and other study designs are permitted. In France, nonrandomized or nonblinded trials, patient preference cohorts, prospective comparative observational studies, and propensity score matched cohorts are permitted, accompanied by justification. In Scotland, lived experiences, RWE, and systematic reviews are accepted. In Germany, nonrandomized studies are deemed to provide "minimum", "very low" or "low" certainty of results. In Norway, RWE may be accepted if no RCT data are available, or to support RCTs.
Conclusions. In the assessment of medical devices, where RCTs are unsuitable, RWE can form a feasible alternative. Real-world evidence is increasingly being recognized as a valuable source of evidence for medical interventions and is accepted by a number of HTA agencies.
No funding was received for this study.

PD26 Overscreening For Older Women In Cervical And Breast Cancer Screening In Japan

Chisato Hamashima (chamashi@med.teikyo-u.ac.jp)

Introduction. Appropriate resource utilization is crucial for cancer screening programs. Overscreening is defined as screening provided beyond the upper age limit of the target age or at a shorter interval than recommended in national programs. In Japan, there are no upper age limits set for cancer screening programs, and the recommended screening interval for cervical and breast cancer screening is 2 years. To examine the efficient use of resources for cervical and breast cancer screening, we investigated how often overscreening occurred in both programs.
Methods. The target age for this study was defined as 20-69 years for cervical cancer screening and 40-69 years for breast cancer screening. We used the national report for cancer screening in 2017 in Japan and estimated the number of participants over 70 years old or those who participated in screening annually. The percentage of overscreening was compared between cervical cancer and breast cancer screening by chi-square test.
Results. The number of participants was 4,294,127 for cervical cancer screening and 3,087,781 for breast cancer screening in 2017. The percentage of overscreening in total participants was 38.0 percent for cervical cancer screening and 35.7 percent for breast cancer screening ($p<0.01$). The percentage of screening at overage was higher in breast cancer screening than in cervical cancer screening (21.1% vs. 13.9%, $p<0.01$), whereas more frequent screening was seen more often in cervical cancer screening than in breast cancer screening (29.7% vs. 19.6%, $p<0.01$). If the resources used in overscreening could be used for the target population, it was estimated that the participation rate could increase by 4.1% for cervical cancer screening and 4.3% for breast cancer screening.
Conclusions. In Japan, screening for overage participants and short intervals may have contributed to unnecessary screening for cervical cancer and breast cancer. These resources used for overscreening could be allocated to screening for the target population.

PD28 Cost-Effectiveness Of Selective Internal Radiation Therapy Using Y-90 Resin Microspheres For Unresectable Hepatocellular Carcinoma In Brazil

Ion Agirrezabal, Victoria Brennan,
Phuong Lien Carion (phuonglien.carion@sirtex.com) and
Suki Shergill

Introduction. Hepatocellular cancer (HCC) is a severe condition with poor prognosis and a significant burden. Selective internal radiation therapy (SIRT) is recommended as an alternative treatment option to overcome some limitations of current treatments. This analysis estimated the cost-effectiveness of SIRT using Y-90 resin microspheres for the treatment of unresectable HCC in Brazil.

https://doi.org/10.1017/S0266462322002884 Published online by Cambridge University Press

Methods. This study was conducted from the Brazilian payer perspective according to local guidelines, with a lifetime horizon. The use of SIRT in patients with intermediate- or advanced-stage HCC, without extrahepatic disease and ineligible to transarterial chemoembolization, was compared with sorafenib, the commonly used HCC systemic treatment in Brazil. A sensitivity analysis included the subgroup of patients with low tumour burden and preserved liver function.

A partitioned-survival model was developed, which included a tunnel state for patients downstaged to receive a treatment with a curative intent such as liver surgery, transplantation or ablation. Survival curves, utilities and adverse events incidence were extracted from published sources of pivotal randomized control trials. Effectiveness of health interventions was measured in quality-adjusted-life-years (QALYs) and life-years (LYs). Local costs from Brazil were applied. Future costs and effects were discounted at five percent. A willingness-to-pay threshold of USD 53,936 was used, based on a 2017 review of healthcare technology adoption in Brazil.

Results. LYs and QALYs were higher for SIRT using Y-90 resin microspheres versus sorafenib (0.27 and 0.20 incremental LYs and QALYs, respectively) and costs were slightly higher for SIRT (USD 3,056 incremental costs). The incremental cost-effectiveness ratio (ICER) was USD 14,948 per QALY in the basecase.

One-way and probabilistic sensitivity analyses confirmed the robustness of the analyses. Scenario analyses tested different model assumptions and reinforced the basecase results indicating that SIRT using Y-90 resin microspheres was highly likely to be cost-effective compared with sorafenib. Also, the ICER was lower in the subgroup compared with the overall population.

Conclusions. SIRT using Y-90 resin microspheres represents a cost-effective option compared with sorafenib in Brazil.

PD29 Systematic Review With Meta-analysis Of Pharmacokinetic Parameters Of Tyrosine Kinase Inhibitors Used In Chronic Myeloid Leukemia

Mariana Fachi, Michel de Campos, Allan Junkert, Raquel Vilhena, Beatriz Böger, Alexandre Cobre, Eric Domingos, Leticia Leonart, Fernanda Stumpf Tonin (stumpf.tonin@ufpr.br) and Roberto Pontarolo

Introduction. Therapeutic drug monitoring (TDM) is a cost-effective tool to increase treatments' efficacy and safety. Analyses of pharmacokinetics proprieties of tyrosine kinase inhibitors (TKI) used for chronic myeloid leukemia (CML) can contribute towards effective TDM, development of tailored treatments and new dosing regimens. We aimed to synthesize the available evidence on pharmacokinetic parameters of imatinib, nilotinib, bosutinib, ponatinib in healthy individuals vs. CML patients.

Methods. Systematic searches were conducted in PubMed, Scopus and Web of Science. We included in vivo studies addressing TKIs' pharmacokinetics, including maximum observed concentration (Cmax), time of maximum observed concentration (Tmax) and half-life (t1/2). Meta-analyses of event rates (mixed-effect models) were performed for the parameters of interest: area under the concentration-time curve from time zero to the last measurable concentration (AUC0-t) and from time zero to infinity (AUC 0-∞). Results were presented as event rates with 95 percent confidence intervals. Heterogeneity was assessed using chi-square and I2 statistical tests and considered significant when $p<0.05$ and high when I2>75 percent (Comprehensive Meta-Analysis v.2 Biostat-Englewood, NJ).

Results. Overall, 50 articles were included for analyses (n=26 imatinib, n=11 nilotinib, n=8 bosutinib, n=5 ponatinib). Most studies were performed in the United States (46.0%), designed as open-label trials (70.0%). Several significant interactions between TKI with enzyme inhibitors (ketoconazole, midazolam, aprepitant, metoprolol, grapefruit juice), proton pump inhibitors (esomeprazole, lanzoprazole, omeprazole), antacids, H2 antagonists (famotidine) and enzyme inducers (St. John's, rifampicin) were found ($p<0.001$). Given the significant increase in AUC and Cmax in patients with hepatic/liver impairments currently using TKI, strict therapeutic monitoring is paramount to maintain safety. The between study heterogeneity was rated as moderate to high (I2=75-90%) due the limited number of trials for some drugs, different study design, and populations.

Conclusions. The co-administration of TKI with hepatic enzyme inducers or inhibitors, proton pump inhibitors, antacids, H2 antagonists, as well as in patients with hepatic/liver failures requires caution and additional monitoring. Further well-designed trials are needed to strengthen this evidence for some TKIs, namely bosutinib and ponatinib.

PD30 Radioactive Seed Localization And Radio-Guided Occult Lesion Localization For Non-Palpable Breast Cancer Surgery: A Meta-Analysis

Hortência Ferreira (hortenciaferreira.radiologia@gmail.com) and Maria Rostelato

Introduction. Non-palpable breast cancers require intraoperative localization to guide the surgical procedure. The radio-guided occult lesion localization (ROLL) and radioactive seed localization (RSL) techniques use radioactive material (technetium-99m labeled macroaggregated albumin and iodine-125 seeds, respectively) implanted at the lesion site. The success of conservative surgery depends on complete tumor excision with negative surgical margins. The objective of this study was to perform a meta-analysis of the surgical effectiveness of the ROLL and RSL techniques with respect to rates of positive surgical margins, reoperation, and recurrence.

https://doi.org/10.1017/S0266462322002884 Published online by Cambridge University Press