Methods: Based on the literature and expert opinion, we developed a level of oral health risk model from the claim records of 2019. The model uses oral outpatient claim data to analyze: (i) the degree of caries disease; (ii) the level of dental fear or cooperation; and (iii) the level of tooth structure. Each factor was given a score from zero to four and a total score was calculated. Low-, medium-, and high-risk groups were formed based on the total points. The oral health risk capitation models are estimated by ordinary least squares using an individual's annual outpatient dental expenditure in 2019 as the dependent variable. For subgroups based on age group and level of disability, expenditures predicted by the models are compared with actual outpatient dental expenditures. Predictive R-squared and predictive ratios were used to evaluate the model's predictability.
Results: The demographic variables, level of oral health risk, preventive dental care, and the type of dental health care predicted 30 percent of subsequent outpatient dental expenditure in children with autism. For subgroups (age group and disability level) of high-risk patients, the model substantially overpredicted the expenditure, whereas underprediction occurred in the low-risk group.
Conclusions: The risk-adjusted model based on principal oral health was more accurate in predicting an individual's future expenditure than the relevant study in Taiwan. The finding provides insight into the important risk factor in the outpatient dental expenditure of children with autism and the fund planning of dental services for people with specific disabilities.

OP63 Incorporating Machine Learning Methods In Health Economic Evaluations: A Case Study On Depression Prevention

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Introduction: New methodologies such as machine learning are becoming widely available and are increasingly used. However, more guidance on their role in the context of economic evaluations would be beneficial.
Methods: We developed a machine learning model to predict recurrent depressive episodes and incorporated the model outcomes in a health economic model to assess the cost effectiveness of offering targeted prevention of recurrent depression. We considered the impact on cost effectiveness (defined as cost per quality-adjusted life-year) for machine learning models with different thresholds for classifying a patient as being at risk, resulting in different precision-recall pairs.
Results: Targeted prevention of recurrent depression could enhance the cost effectiveness of depression treatment by preventing a small number of recurrent depressive episodes in patients where the estimated risk of recurrence is relatively high. More depressive episodes could be prevented with the trade-off of less cost effectiveness for the healthcare system.
Conclusions: Health economic modeling approaches can be augmented with machine learning methods, which broadens the areas in which evidence can be generated for policy makers to base their budget allocation. The precision of such predictive machine learning models must be high enough to be able to improve a care-as-usual healthcare system. Machine learning models generally let you set the level of precision acquired, at the cost of a possibly low recall, thereby limiting the impact on the healthcare system as a whole. More and better data for training these machine learning models will allow developed models to better distinguish patients who will and won't develop a recurrent depressive episode, and for higher recall given a desired precision threshold. This will translate into a more substantial improvement in the treatment of depressive disorders in the healthcare system.

OP66 Adoption Of The World Health Organization Algorithm For Essential Medicines In The Philippine National Formulary Listing Process

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Introduction: The Philippine National Formulary (PNF) System preceded the health technology assessment (HTA) process in the Philippines, which was institutionalized in 2019. The transition led to previously prioritized topics of expert bodies overseeing the PNF System being endorsed to the HTA Council. However, the advent of COVID-19 forced the HTA Philippines to focus on emergency assessment needs and financing recommendations for the national government, resulting in limited capacity to assess non-public health emergency topics. To address this and improve patient access to medicines, we adopted the World Health Organization (WHO) process for evaluating and selecting medicines in the National Essential Medicines List (NEML).
Methods: In assessing the pre-pandemic topics, we matched the population, intervention, comparator, and outcomes of the WHO clinical evidence reviews with those scoped with relevant stakeholders and performed local costing analyses to ensure applicability of findings to the Philippine setting. When needed, we subjected the topics to price negotiation or conducted qualitative assessments.
Results: We found the method efficient in expediting the decision-making process of the HTA Council. However, given the limited internal capacity of the HTA Philippines to conduct assessments for all ongoing HTA tracks, some of the topics responsive to Universal Health Care will be outsourced to the HTA Research Network, which is yet to be established. There is also a need to improve alignment among the topics being assessed, since the priorities of the proponents, national health program, and national payer have already evolved.

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Conclusions: It is important to identify the priority areas for stakeholders as part of the topic nomination process, account for analytic capacity when setting the number of topics for HTA, establish mechanisms to allow proponents to conduct HTAs based on the HTA Council's methodological standards, and proactively work with the national regulatory agency on horizon scanning and early HTA. We also recommend efficient monitoring, evaluation, and updating of the Philippine HTA guidelines so that they are more responsive to the needs of the healthcare system and the Filipino people.

OP70 Treating Patients With Hormone-Sensitive Cancer On Endocrine Therapy With Denosumab (Prolia®): A Systematic Review And Network Meta-Analysis

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Introduction: Patients receiving endocrine therapy for hormone-sensitive cancers, such as men with prostate cancer (MPC) on hormone ablation therapy (HAT) and women with breast cancer (WBC) on adjuvant aromatase inhibitor therapy (AAIT), have an increased risk of developing osteoporosis. The aim of this study was to compare the safety and effectiveness of denosumab (Prolia®) with selective estrogen receptor modulators (SERMs) (raloxifene and bazedoxifene), bisphosphonates (zoledronate, ibandronate, alendronate, and risedronate), and placebo for the treatment of osteoporosis in patients receiving endocrine therapy for hormone-sensitive cancer.
Methods: Systematic literature searches were conducted in three biomedical databases (PubMed, the Cochrane Library, and Embase) to identify randomized controlled trials (RCTs). Only RCTs that investigated MPC on HAT or WBC on AAIT allocated to denosumab, SERMs, bisphosphonates, or placebo were included. RCTs were appraised using the Cochrane Risk of Bias 2.0 tool. Frequentist network and pairwise meta-analyses were performed on predetermined outcomes of vertebral or nonvertebral fractures, treatment-related adverse events (AEs), bone mineral density (BMD), mortality, withdrawal due to treatment-related AEs, and serious AEs.
Results: A total of 14 RCTs (15 publications, 6,463 participants) were included. Relative to placebo, denosumab was found to prevent vertebral fractures in cancer patients receiving endocrine therapy. Moreover, denosumab, alendronate, and zoledronate increased femoral neck (FN) and lumbar spine (LS) BMD in MPC on HAT, compared with placebo, whereas denosumab, risedronate, and ibandronate improved LS and total hip BMD in WBC on AAIT. Similarly, denosumab and risedronate increased trochanteric BMD in WBC on AAIT, compared with placebo. In WBC on AAIT, only denosumab increased FN BMD relative to placebo.
Conclusions: Denosumab was more effective than placebo in preventing vertebral fractures and improving BMD at the LS and FN in MPC on HAT, and in preventing vertebral fractures and improving FN, trochanteric, total hip, and LS BMD in WBC on AAIT. From a policy perspective, the continued reimbursement of denosumab needs to be reviewed.

OP71 Road To Public Funding Of Cancer Codependent Technologies In Australia In The Last Ten Years

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Introduction: In Australia, cancer codependent technologies (cCDTs) mostly comprise a biomarker targeting medicine and a companion diagnostic test (CDx). Health technology assessment (HTA) of cCDTs is carried out to inform funding deliberations on CDxs by the Medical Services Advisory Committee (MSAC) and on personalized medicine by the Pharmaceutical Benefits Advisory Committee (PBAC). To understand the strengths and weaknesses of this dual assessment mechanism, we studied the journey of cCDTs in getting funding support from the two committees since the introduction of the codependent technology evaluation framework.
Methods: Public summary documents summarizing deliberations by each committee were reviewed from 2012 to 2022. Information was retrieved on the patient indication, date, biomarkers related to the tests, and PBAC or MSAC funding outcomes. The alignment of HTA decisions, time taken until dual funding approval (if approved), and the reasons for discrepant and negative decision-making were determined.
Results: From 2012 to 2022, a total of 26 cCDT applications were submitted to PBAC and MSAC, corresponding with 43 paired PBAC/MSAC considerations and 11 single committee considerations. Non-small cell lung cancer and programmed cell death ligand 1 were the most frequently nominated cancer and biomarker test, respectively. When a cCDT was submitted in the same decision round to both committees, 60 percent of funding decisions were aligned, reaching 73 percent when the considerations were made separately (resubmissions). Only 9 percent of considerations received polarized, where one committee supported and the other committee rejected funding. After multiple resubmissions, 73 percent of cCDTs obtained dual funding support after an average of 34.8 weeks, with considerations by PBAC and MSAC occurring an average of 2.3 and 1.9 times, respectively.
Conclusions: Most cCDTs obtain funding support, but only after multiple resubmissions to PBAC and MSAC. Polarized decisions are rare. Reasons for rejection primarily relate to uncertain clinical benefit and an unacceptably high incremental cost-effectiveness ratio.

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