INTERNATIONAL SOCIETY FOR PHARMACOECONOMICS AND OUTCOMES RESEARCH
ISPOR NEW ZEALAND CHAPTER

ISPOR (NZ) NEWS ● ISSUE 2, 2018

ISPOR (NZ) NEWS

Our second issue of *ISPOR (NZ) NEWS* for 2018 opens with a summary of the first ISPOR (NZ) webinar this year held on Wednesday 16 May. Professor Haxby Abbott and Mr Jason Chua from the Department of Surgical Sciences, University of Otago, reviewed their work to date developing an evidence-based framework that matches best-evidence about treatment options for management of osteoarthritis with the preferences of stakeholders.

This edition then continues with a report from the health technology assessment (HTA) focused seminar which ISPOR (NZ) hosted alongside its April 18, 2018 AGM held at Auckland City Hospital.

This seminar included four presentations on the use of HTA in New Zealand practice and the measurement of patient preferences, critical for HTA use to improve population health. It highlighted the depth and range of research, data collation and other activity taking place in New Zealand to inform application of HTA.

This edition includes summaries of presentations from Professor Stephen Munn and Carsten Schousboe.

Our earlier summary of the balance of presentations, from Professor Nick Wilson and Professor Carlo Marra, can be found in Issue 1, 2018 (http://www.ispor.org.nz/sites/default/files/ISPORNZ_Newsletter_Issue01_2018.pdf).

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MANAGEMENT OF OSTEOARTHRITIS IN NZ: A MULTIPLE CRITERIA DECISION-MAKING APPROACH

Haxby Abbott is Research Professor in the Department of Surgical Sciences at the Dunedin School of Medicine. With PhD student Jason Chua, he demonstrated the use of MCDM (multiple criteria decision making) to develop an evidence-based, stakeholder-informed framework to prioritise interventions for osteoarthritis.

Osteoarthritis represents a significant social and economic burden for New Zealand. It is the 16th highest contributor to disability in New Zealand affecting 370,000 people (10%).[1] Osteoarthritis accounts for 79% of public inpatient costs for arthritis, 71% of which is for hip and knee osteoarthritis. Total costs of $2.24b represent 1.2% of GDP and indirect costs outweigh health costs by about 3.6 times.[2]

Management of osteoarthritis is guided by evidence-based practice. Clinical practice guideline recommendations are informed by meta-analyses of randomised, controlled trials investigating the safety and effectiveness of interventions. Recommendations enable health care providers and consumers to readily access the underlying body of evidence about interventions, thus allowing informed decision-making to take place.

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High quality clinical practice guidelines for the management of osteoarthritis consistently recommend the tabled interventions.[3]

First line	Conservative non-drug, non-surgical care for management of osteoarthritis in all joints, eg, exercise therapy, self-management and education programmes
Second line	Drug, non-surgical interventions eg, non-steroidal anti-inflammatory drugs, paracetamol and other pain-modifying drugs
Third line	Surgical interventions, eg, total joint replacement

However, an "implementation gap" exists between best-practice management recommendations and delivered care, which translates into lost opportunity to delay the progression of disease and wasted health care resources.

For example, in an analysis of Australian general practitioners' prescribing behaviour,[4] non-pharmacologic treatments as first-line management were low compared with pharmacologic management rates (self-management interventions for ~15% of patient contacts vs ~80% for drugs), and surgical referral rates were high. Other studies have also shown variation in general practitioner attitudes and beliefs about osteoarthritis and practice behaviours that do not align with best-practice.[5,6]

In reality, the factors influencing implementation of best-practice extend beyond healthcare providers, and include factors related to the consumer, health system, intervention and the context within which it is delivered.[7]

Abbott and Chua propose that health policy recommendations in the New Zealand public health system should reflect the interventions for managing osteoarthritis which provide the greatest value in the New Zealand context, informed by the best evidence about the interventions (such as effectiveness and safety), **and** the preferences of stakeholders. The latter includes consumers, health care providers, health system policy-makers and content area experts.

They used multiple criteria decision-making (MCDM) to develop a framework that matches best-evidence about treatment options for management of osteoarthritis with the preferences of relevant stakeholders. As such the approach combines:

- best evidence
- acceptability to stakeholders
- feasibility of implementation in the NZ context
- value for money
- equity
- transparency.

MCDM involves three broad steps of problem structuring, model building and recommendation development.

Model building involves measuring the relative value of the intervention attributes and specifying the performance of interventions on these attributes. It is then possible to **indirectly** rank interventions based on attribute weights and intervention performance.

Identifying the intervention attributes

Relevant stakeholders identify, refine and verify the attributes of intervention options across different healthcare settings and across the continuum of the disease. Information generation and consensus development methods include focus groups, nominal group meetings and/or the Delphi method.

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Analysis of factors from stakeholders in New Zealand identified factors in three key themes: consumer factors, New Zealand heath system factors and information about the intervention.

A process of attribute refinement was used to identify specific, non-overlapping attributes that were reflective of the focus groups discussions, including items such as:

- intervention effectiveness
- risk of harm: mild-moderate and severe
- quality of the evidence about the intervention
- recommendation for using intervention now
- cost
- accessibility
- duration of the treatment effect

Specifying the attribute levels

Literature and best evidence review are used to identify defined established levels, such as the GRADE quality of the evidence (high, moderate, low, very low). Where evidence is unavailable or levels undefined, performance-levels are established by engaging with content area experts, again using focus groups and/or Delphi survey.

Measuring attribute preferences

The PAPRIKA (Potentially All Pairwise RanKings of all possible Alternatives) method was used to capture stakeholders' attribute preferences. PAPRIKA uses a process of pairwise trade-offs to elicit weights for each attribute (rather than intervention). An example of a question is shown in Figure 1.

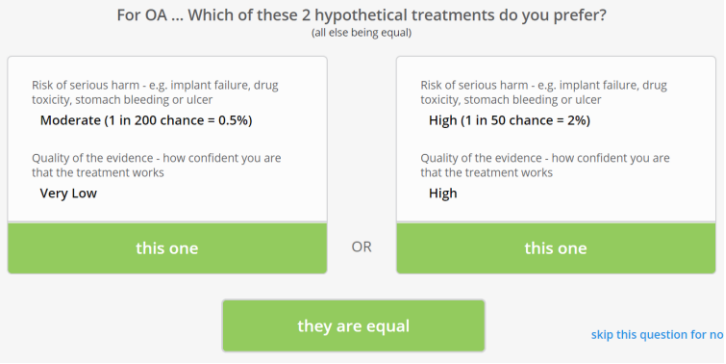

Figure 1: Example question for establishing attribute preferences

Because the PAPRIKA algorithm eliminates implicitly answered trade-offs between attributes, it significantly decreases the question burden, for example reducing a potential ~7000 questions to 50–60 questions.

Specifying the intervention performance

The evidence about the performance of the interventions was mapped on the attributes of the interventions using literature/best evidence review, or, in its absence, by engaging with content area experts. An example of the resulting performance matrix is shown in Figure 2.

Are you a student with a recent PhD submission or degree graduation?

If you have just submitted a PhD or graduated from a Bachelor/Masters/PhD in a research area relevant to IPSOR (NZ), we would be delighted to publish a short summary of up to 300 words outlining your work in our newsletter.

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Prioritising the interventions

Using the findings, it is possible to match evidence with the preferences of stakeholders to identify a coordinated, multidisciplinary, coordinated approach for management of osteoarthritis.

As shown in the example in Figure 3, there was fair level of alignment between preferences and intervention performance across all eight attributes for exercise. But preferences and intervention performance for surgery were only aligned for duration of treatment effect.

	D	J	L	N	R	U	W	Y	AA
1	Intervention Name	Recomm-endation	Quality	Effectiveness ($)	Duration	Access	Mild/ Mod SE	Srs Harms	Cost
60	Diacerein	Bad	✓	$	⧗⧗	Ø	⚠	⚠⚠⚠	$
61	Platelet-rich plasma injection [K&H] (In	Neutral	✓	$	⧗⧗	Ø	⚠⚠	⚠	$$
62	Stem cell therapy (mesenchymal stem (	Very bad	✓	$$$	⧗⧗	Ø	⚠⚠	⚠	$$
63	Dextrose prolotherapy [K&H]	Bad	✓✓	$$$	⧗	Ø	⚠	⚠	$$
64	Hyaluronic acid [K] (intra-articular; aka '	Bad	✓✓	$$$	⧗⧗	Ø	⚠⚠	⚠⚠⚠	$$
65	Hyaluronic acid [H] (intra-articular; aka	Bad*	✓*	$	⧗⧗	Ø	⚠	⚠	$$
66	Arthroscopic lavage and debridement [	Very bad	✓	$	⧗	Ø	⚠⚠⚠	⚠	$$
67	Arthroscopic meniscectomy [K]	Very bad	✓✓	$	⧗	Ø	⚠⚠⚠	⚠	$$

Figure 2: Performance matrix each intervention mapped on the attributes of the interventions

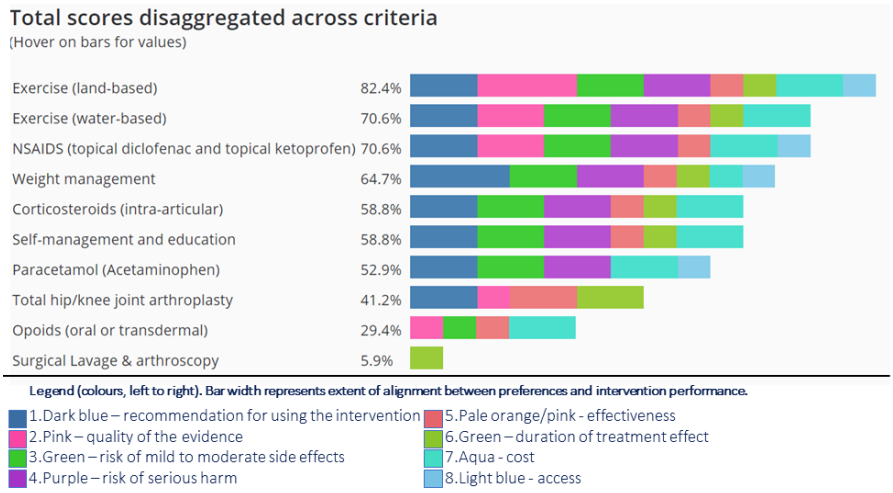

Figure 3: Extent of alignment between preferences and intervention performance

MCDM offers a number of benefits. In particular when new evidence arises about an intervention, recommendations can be updated using the available attribute weights, offsetting the need to re-survey stakeholders. The approach is both explicit (trade-offs between intervention attributes are unambiguous) and transparent (preferences for the intervention attributes are revealed).

Further, the MCDM approach has been proven in other health technology scenarios such as prioritising patients for elective surgery[8] and informing New Zealand policy-makers about what people want from their retirement income policies.[9]

References

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REPORT OF ISPOR (NZ) Seminar, 18 April 2018, Auckland City Hospital

WHAT IS THE RIGHT HR-QOL INSTRUMENT FOR PHARMAC?

Carsten Schousboe is evaluating HR-QoL systems for his PhD with the University of Otago.

His research is an assessment of the most appropriate HR-QoL instrument for PHARMAC to use in economic appraisals.

This work responds to evidence that the 5-domain, 3-level instrument currently preferred by PHARMAC (EQ-5D-3L using NZ Tariff 2) has been identified by others as having some limitations.

His research uses a Multiple Criteria Decision Analysis (MCDA) approach to score different instruments.

Initially minimum standards (Figure 4) were applied to the multiple options available to create the following short list, which includes the EQ-5D-5L being rolled out by EuroQol as an improvement on EQ-5D-3L:

- AQol-8D
- EQ-5D-5L
- EQ-5D-3L
- HUI3
- QWB
- SF-6D
- 15D

The instruments all rank elements in a similar way to the EQ5D but differ in the domains included.

The instruments were then considered using a set of relative standards (Figure 5), with weights applied to the various criteria assessed.

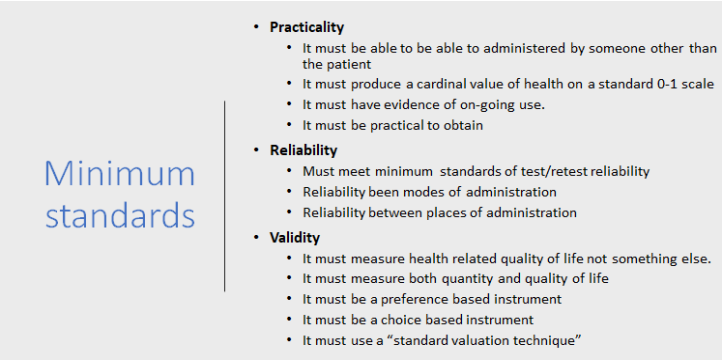


Figure 4: Minimum standards

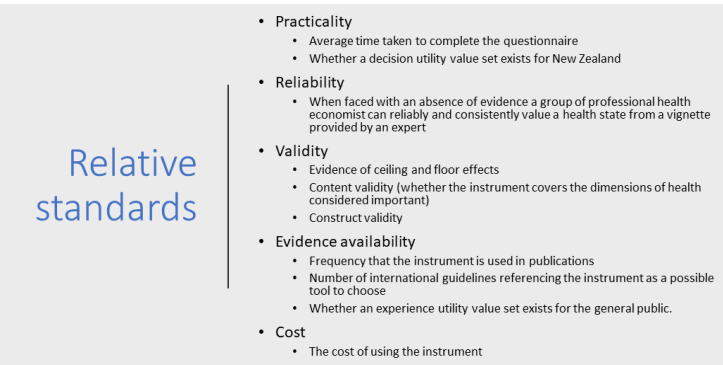


Figure 5: Relative standards

The interim results presented focused mainly on content validity (the extent to which the concepts of interest are comprehensively represented by the items in the questionnaire) and construct validity (the degree to which the test measures what it purports to be measuring).

With regard to content validity, Carsten highlighted that the HR-QoL instruments are deliberately parsimonious in their inclusion of dimensions to avoid excessive questionnaire items and to be applicable as widely as possible. The evaluation of content validity focused on what was an acceptable limit in inclusions. The "super dimensions" of physical health, mental health and social health are consistent across conceptual models but items within those vary.

HEALTH TECHNOLOGY ASSESSMENT

REPORT OF ISPOR (NZ) Seminar, 18 April 2018, Auckland City Hospital

Based on content validity, SF-6D, 15D and AQol 8-D were ranked high (missing nil super dimensions) and QWB, EQ-5D, and HUI3 were ranked moderate (missing 1 super dimension albeit with some debate about possibly ranking HUI3 high and EQ-5D low [2 missing super dimensions] which will be tested in sensitivity analysis).

With regard to construct validity Carsten used pairwise comparisons of instruments using author viewpoints on "best" to identify the more sensitive instruments. The frequency that an instrument was considered best was compared. Carsten ranked the instruments as follows with respect to construct validity:

Low: EQ-5D-3L, EQ-5D-5L, QWB Moderate: HU13 High: 15D, AQoL-8D, SF-6D

Carsten closed by highlighting the need to consider the costs of a possible change in HR-QoL instrument. Alongside licensing costs for some of the instruments there are costs associated with a local valuation study to develop a set of social tariffs and costs to PHARMAC of revising current league tables based on the EQ-5D-3L.

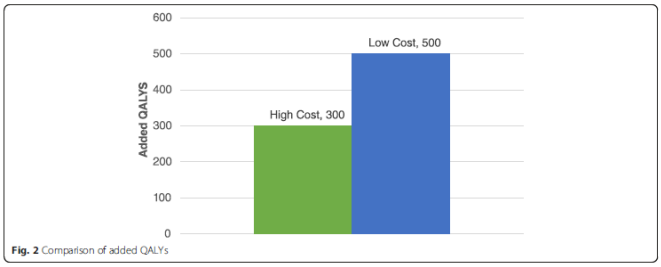
HOSPITAL-BASED HEALTH TECHNOLOGY ASSESSMENT

Professor Stephen Munn is a transplant surgeon at Auckland City Hospital where he chairs the Northern Regional Clinical Practice Committee (NRCPC), a hospital-based HTA programme. Stephen also sits on The Pharmacology and Therapeutics Advisory Committee of PHARMAC, HealthPACT, and The Joint Procurement Authority.

A particular emphasis in the presentation was the impact that a fixed or limited budget has on decisions based on cost-effectiveness. For every health intervention that purchases additional QALYs for additional money there has to be an increment in the health budget. On a fixed budget such as that in the DHB setting, a more "cost-effective" high-cost intervention produces fewer QALYs as illustrated in Figure 6.

The tight financial constraints in the hospital context mean that new technologies can only be introduced if they produce net savings or where existing operational expenditure can be reduced in one area to support its use in another.

In this setting, HTA analysis and advice has to be completed expeditiously, be non-partisan and be able to produce sound and practical advice.



The High cost intervention produces 20% more QALYs than the Low cost one
The High cost intervention costs 100% more than the Low cost one
The High cost intervention is 'cost-effective' at $10,000 per QALY
On a fixed budget of $1M, the High cost intervention produces 40% fewer QALYs

Figure 6: The illusion of cost-effectiveness

The NRCPC, formed in 2005, operates with a remit to assess new and existing health technologies including, devices, diagnostics, services and drugs (although drug assessments are minimal given PHARMAC work in that area). The focus is on safety, efficacy and cost-utility, typically based on comparative effectiveness assessment. Assessment may consider investment decisions or can be used for disinvestment or restriction of eligibility.

HEALTH TECHNOLOGY ASSESSMENT

REPORT OF ISPOR (NZ) Seminar, 18 April 2018, Auckland City Hospital

A bespoke comparative scoring tool allows decision makers to prioritise dissimilar health technologies and to avoid the need to cumulate submissions. Comparisons are primarily with the current treatment pathway. With devices, this is typically a comparison with no device although, in a few cases, it considers replacing a device.

In 13 years of operation, the Committee has heard over 100 submissions, over one-half of which were for medical devices. Stephen reviewed examples of submissions that have been high, mid-range, or low scoring and showed how overall outcomes from submissions relate to these scores. In general, decisions align closely to scores, ie, a high proportion of declined submissions are low scoring whereas a high portion of interventions which have been implemented (or approved but are yet to be funded) are high scoring.

The Committee has also has provided advice on 15 disinvestment proposals including, for example, filter needles for drawing up medications and high dose IV vitamin C administration.

Stephen used the example of transcatheter aortic valve implantation (TAVI) to demonstrate the common phenomena of eligibility creep. A national recommendation for TAVI over surgical aortic valve replacement (SAVR) was made for high risk surgical patients who were the only group where TAVI was less expensive than SAVR. Costs are mainly at the time of the procedure where high risk surgical patients with the less expensive surgical valve ($5000) spend longer in the intensive care unit and have more adverse events than those receiving the more expensive TAVI valve ($30,000).

Over time, however, TAVI was used in higher proportions of low and intermediate risk patients (Figure 7), resulting in increased expenditure without any improvement in outcomes.

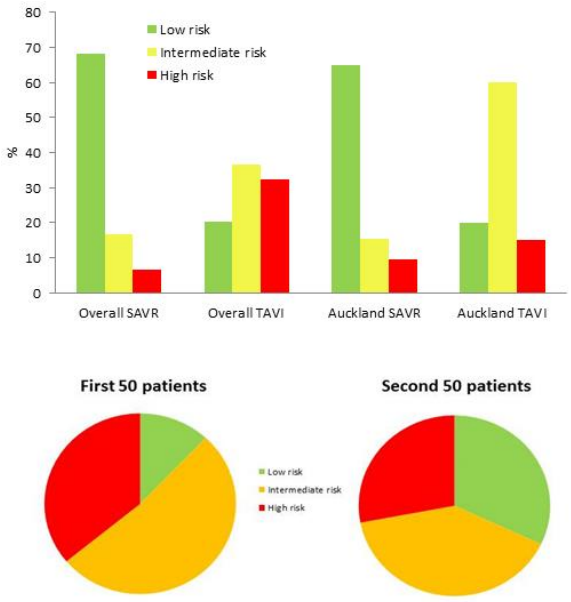


Figure 7: Post-implementation audit findings of TAVI recommendation

In its first 11 years, the NRCPC cost $1.3 million to operate and generated savings plus revenues which conservatively provided an additional $25.75 million to Auckland and Waitemata DHBs or $2.3 million per annum, a return on investment of approximately 1880% (based on 14 measurable outcomes only; a further 33 submissions that resulted in advice expected to save money could mean as much as three times this savings estimate).

Stephen concluded that hospital-based HTA using utilitarian principles, analysis of the extant literature, and local data concerning resource utilisation can provide advice that facilitates the choice of more cost-effective or, even better, cost-saving new health technologies. It may also result in net cost-savings for DHBs.

He highlighted the need for some standardisation but not necessarily centralisation of this approach, noting the sometimes quite extreme variation in practices across DHBs. The greatest need is for HTA to be applied to new and existing medical devices, diagnostics, and services, the latter being the most difficult to assess.

ISPOR (NZ) CHAPTER ANNOUNCEMENTS:

ISPOR (NZ) CHAPTER WORKSHOP
October 2018
"Front + Centre", Wellington

PREVIEW ANNOUNCEMENT **AND** CALL FOR STUDENT MEMBER PRESENTATIONS

USE OF CODING METHODOLOGY IN HEALTH ORGANISATIONS & ECONOMIC EVALUATION

An invitation is extended to our student members, currently undertaking or completing any research that is relevant to ISPOR (NZ). Present a ten minute summary of your research progress or findings, to a collegial and collaborative audience. Travel costs for presenters will be covered by ISPOR (NZ). **Student membership is free, join now!**

If you are interested in presenting, please email us on **ispornewzealand@gmail.org** with your name, institution, and a brief topic overview.

UPCOMING ISPOR (NZ) WEBINARS

Planning is underway for ISPOR (NZ) webinars for the next few months.

Look out in your emails for notices for webinars and educational workshops.

Webinars are FREE for members or $25 for non-members.

Australasian Epidemiological Association News

AEA NZ Chapter Annual Symposium 2018

Monday, August 27, 2018 – Waikato-Tainui College for Research and Development, Ngaruawahia

How can epidemiology help to address inequities in New Zealand and the Pacific?

With minimal social statistics in New Zealand outside of economics, epidemiology is going to be the primary source of applied skills for using the incredible data resources that are becoming available. However, epidemiology in New Zealand is faced with the challenge of how to change mainstream practice and support indigenous epidemiology to answer some of our most pressing questions around addressing inequities. In this symposium, the AEA NZ Chapter will be opening our doors for the challenge. We expect a lively meeting with open debate about how we can do epidemiology better, support the development of epidemiology that is reflective of, and responsive to, Māori and Pasifika world views, and exploring what our discipline can do, what its current capability is and what it needs to effect change.

On the symposium programme:

Associate Professor Sue Crengle (University of Otago)

Dr Emma Wyeth (University of Otago)

Dr Dan Exeter (University of Auckland)

Alice Hyun Min Kim (University of Canterbury) and **Dr. El-Shadan (Dan) Tautolo** (Director of Centre for Pacific Health and the Pacific Islands Families Study at AUT)

Andrew Sporle (University of Auckland)

Registration for the event is via this link: https://www.eventbrite.co.nz/e/how-can-epidemiology-help-address-inequities-in-aotearoa-the-pacific-tickets-46430837886