OHE

Beyond Health

The BRAVER Roadmap to Broader Assessment of the Value of Health Interventions in the Asia-Pacific Region

CONTRACT RESEARCH REPORT
APRIL 2025

Claud Theakston
Matthias P. Hofer
Martina Garau
Lotte Steuten

ohe.org

APRIL 2025

Beyond Health: The BRAVER Roadmap to Broader Assessment of the Value of Health Interventions in the Asia-Pacific Region

Claud Theakston
Office of Health Economics, London

Matthias P. Hofer
Office of Health Economics, London

Martina Garau
Office of Health Economics, London

Lotte Steuten
Office of Health Economics, London

OFFICE OF HEALTH ECONOMICS
CONTRACT RESEARCH

Please cite this report as:
Theakston C., Hofer M., Garau M., Steuten L., 2025. Beyond Health: The BRAVER Roadmap to Broader Assessment of the Value of Health Interventions in the Asia-Pacific Region. OHE Contract Research Report, London: Office of Health Economics. Available at: https://www.ohe.orgpublications/the-braver-roadmap-to-broader-assessment-of-the-value-of-health-interventions-in-the-asia-pacific-region/

Corresponding Author:
Lotte Steuten
lsteuten@ohe.org

About OHE Contract Research Reports

Many of the studies OHE performs are proprietary and the results are not released publicly. Studies of interest to a wide audience, however, may be made available, in whole or in part, with the client's permission. They may be published by OHE alone, jointly with the client, or externally in scholarly publications. Publication is at the client's discretion.

Studies published by OHE as OHE Contract Research Reports are subject to internal quality assurance and undergo external review, usually by a member of OHE's Editorial Panel. Any views expressed are those of the authors and do not necessarily reflect the views of OHE as an organisation.

Funding and Acknowledgements

This consulting report was commissioned and funded by Roche, MSD, and Johnson & Johnson.

MSD's sponsorship of this report was limited to the development of a literature review to understand the current state of play with the recognition of the societal perspective in HTA across the APAC region only.

We want to thank all the members of the expert working group for their valuable input and contributions. The expert working group included:

- Lloyd Sansom (University of South Australia, Australia)
- Luying Zhang (Fudan University, China)
- Xue (Shirley) Li (University of Hong Kong, Hong Kong)
- Haarathi a/p Chandraihi (Ministry of Health, Malaysia)
- Paula Lorgelly (University of Auckland, New Zealand)
- Alec Morton (University of Strathclyde and National University of Singapore, Singapore)
- Hye-Young Kang (Yonsei University, South Korea)
- Li Ying (Grace) Huang (Center for Drug Evaluation Taiwan)
- Sitaporn Youngkong (Mahidol University, Thailand)
- Kieu Thi Tuyet Mai (Hanoi University, Vietnam)
- Bonny Parkinson (Macquarie University Centre for the Health Economy, APAC region)
- Werner Brouwer (Erasmus University Rotterdam., subject matter)
- Fiona Tolich (patient representative).

Table of Contents

List of acronyms ..... **iv**
Executive Summary ..... **v**
1. Introduction **1**
Background 1
Objective of the project 2
Methodology 2

2. State of play **6**
3. BRAVER framework and analysis **8**
3.1 Framework 8
3.2 Application in the APAC region 9
3.3 Patient perspective 11
3.4 Barriers and opportunities 12

4. Priority elements **14**
i) Equity 14
ii) Informal care health spillovers (Health-related quality of life) 16
iii) Productivity 19
iv) Wider health sector benefits 21
Case study 1: Therapy for the treatment of Alzheimer's disease 24
Case study 2: Therapies for the treatment of SMA 26

5. Conclusions & Recommendations **29**
6. References **32**
Appendix 1: BRAVER framework analysis at jurisdiction level **37**
Appendix 2: Full definitions of broader value elements/groupings **40**

List of acronyms

ACE	Agency for Care Effectiveness
AD	Alzheimer's disease
APAC	Asia-Pacific
BRAVER	Broad Assessment of Value of Health Interventions in the APAC Region
CAR-T	Chimeric antigen receptor T-cell
CDA	Canada's Drug Agency
CDE	Center For Drug Evaluation
CEA	Cost-effectiveness analysis
DCEA	Distributional cost-effectiveness analysis
HEMA	Health Economics Methods Advisory
HRQoL	Health-related quality of life
HTA	Health Technology Assessment
ICER*	Institute for Clinical and Economic Review
ICER*	Incremental cost-effectiveness ratio
iPCQ	iMTA Productivity Cost Questionnaire
MCDA	Multi-Criteria Decision Analysis
NICE	National Institute for Health and Care Excellence
QALY	Quality-adjusted life year
R&D	Research and Development
SHEER	Spillovers in Health Economic Evaluation and Research
SMA	Spinal Muscular Atrophy

*While these distinct terms share a single acronym, they are defined when first presented in full-text and can be understood within the broader context of the report text.

Executive Summary

KEY TAKEAWAYS

- ✓ Adopting a societal perspective in HTA decision-making can foster innovation and address both clinical and societal needs. This is particularly relevant to the Asia-Pacific region with its ageing population and rising chronic disease burden. Use of a societal perspective aligns HTA with broader government objectives like economic growth, improved health, and social standards, and addresses health inequities in line with regional cultural values.
- ✓ However, the implementation of a societal perspective in HTA in the APAC region is limited. Most jurisdictions only accept it in supplementary analyses or do not recognise it at all. Key barriers include a perceived lack of robust methods, capacity constraints, increased uncertainty, evidence gaps, and limited timelines of existing HTA processes.
- ✓ A key recommendation is to be "BRAVER" and integrate societal perspectives more consistently. To overcome identified barriers, we recommend creating more supportive policy environments, building capacity through training and international collaboration, and incorporating priority societal value elements in a staggered fashion by leveraging existing knowledge and methods. Additionally, involving patients and carers, promoting international research initiatives, and standardising data collection and evaluation methods are crucial steps towards the full adoption of a societal perspective in HTA in APAC countries.

Health Technology Assessment (HTA) agencies evaluate and make decisions on the use, funding, or reimbursement of health technologies based on clinical and economic evidence. Economic evaluations can adopt a healthcare system perspective, focusing on direct healthcare costs and benefits, or a societal perspective, which includes broader costs and benefits such as productivity and informal care.

Adopting a societal perspective and incorporating broader value elements in HTA decision-making can drive innovation and address both clinical and societal needs, particularly in the Asia-Pacific (APAC) region, which faces rapid population ageing and a growing burden of chronic diseases, leading to a significant reliance on informal care. This approach is consistent with welfare economic theory, in which societal welfare optimisation is the ultimate aim, and aligns HTA with broader government goals, such as economic growth and improved health and social standards, and addresses health inequities in line with regional cultural values.

Despite support for incorporating a societal perspective, its implementation in HTA in the APAC region remains limited: only China and Thailand consider the societal perspective in their base case. South Korea previously mandated it but has since changed due to its complexity. Other jurisdictions, like Australia, Vietnam, South Korea, and Malaysia, accept it in supplementary analyses, while New Zealand, Singapore, and Hong Kong do not recognise it in HTA guidelines.

This report aims to understand the current state of HTA in the APAC region regarding adopting a societal perspective and considering broader value elements and developing recommendations for their systematic inclusion. To achieve this, we involved an APAC expert advisory group through an

online survey and a virtual panel roundtable, where we explored priorities, opportunities, barriers, and recommendations for recognising broader value elements in HTA.

BRAVER FRAMEWORK AND ANALYSIS

The BRAVER framework aims to support the coherent and consistent consideration of societal perspectives and broader value elements into HTA decision-making in the APAC region. It focuses on three dimensions:

- Willingness for Recognition in HTA Guidelines: the motivation and readiness of HTA agencies to acknowledge the importance of including broader value elements in HTA.
- Ability for Measurement and Incorporation in Decision-Making: availability of appropriate, feasible methods to systematically measure and incorporate these elements, and the capacity to do so.
- Evidence for Impact in Decision-Making: availability of empirical data to demonstrate the value and impact of these elements, encouraging their inclusion.

We found that the most progressed dimension is the willingness to recognise value elements in HTA guidelines. Top-scoring elements within our suggested value framework, including equity, wider health sector benefits, informal care health spillovers, and patient productivity, were identified as priority elements for short-term progress. Other elements, including value of security, value of knowing, and economic activity are seen as long-term goals needing substantial policy and methodological changes.

BARRIERS AND OPPORTUNITIES

Experts identified several barriers to incorporating societal and broader value elements in HTA decision-making, including a lack of robust methods to measure novel value elements, added uncertainty, perceived risk of double counting, and capacity constraints. However, opportunities such as ongoing HTA reforms, pilots applying societal perspectives in specific disease areas like rare diseases, international collaborations, and consistent patient involvement can help mitigate these barriers.

PRIORITY VALUE ELEMENTS

Based on the survey results and expert advisory group input, the prioritised value elements are equity, informal carer health-related quality of life (HRQoL) spillovers, productivity, and wider health sector benefits. Two case studies in Alzheimer's disease and Spinal Muscular Atrophy show that different ways exist for these priority elements to be practically implemented into HTA decision-making in the APAC region.

Equity: Experts agreed on the importance of equity in HTA decision-making despite measurement challenges. Opportunities exist through quantitative approaches like distributional cost-effectiveness analysis (DCEA) and supplementary analyses. Experts suggest starting cautiously with case studies to build evidence and progressively integrate equity into HTA processes.

Informal carer health spillovers: Experts agreed that carer HRQoL spillovers should be recognised and incorporated taking into consideration the context and condition. There is an opportunity to accumulate practical experience and robust data, which may make formal inclusion of carer spillover more acceptable and methodologically sound over time. For example, the 2024 report by the SHEER task force recommends using adequate time horizons, prioritising primary spillover data collection, and emphasising transparency when reporting on spillover incorporation.

Productivity: Experts agreed that productivity should be recognised and incorporated taking into consideration the context and condition. Productivity impacts include absenteeism, presenteeism, reduced labour participation, and early retirement from work, as well as non-labour productivity. They are crucial from a societal perspective, though often omitted in evaluations. Regarding labour productivity losses there is an opportunity to actively advance the ongoing debate concerning the preferred methods to value these; in particular, which of the two main methods – human capital method or friction cost approach – is the most appropriate.

Wider health sector benefits: Experts believed that the three key aspects of wider health sector benefits—health system capacity, adherence, and innovation—should be treated and recognised separately. Adherence should be considered in standard economic assessments, while health system capacity and innovation should be integrated as supplemental analyses. There is an opportunity to develop better methodological approaches to build evidence and refine methods for formal inclusion over time.

CONCLUSION AND RECOMMENDATIONS

By addressing identified barriers and leveraging opportunities for collaboration and methodological development, HTA can become a more effective tool for improving health outcomes and societal welfare. To be BRAVER in recognising, incorporating, and evidencing the societal perspective we recommend:

1. **Involving patients and caregivers:** Engage patients and caregivers in identifying, measuring, and incorporating broader value elements.

2. **Creating a conducive policy environment:** Develop policies and a legislative framework that recognise societal values and provide a clear mandate to HTA agencies.

3. **Building capacity:** Allocate resources for training and developing a process for societal perspective adoption in a systemic fashion.

4. **Pursuing a stepwise approach:** Incorporate broader value elements through gradual, transparent processes such as guideline reviews and pilot projects. Prioritise adopting elements that can make tangible short-term progress such as equity, carer health spillover, productivity, or health sector capacity.

5. **Promoting international research initiatives:** Support international research to develop novel methods and validate existing ones.

6. **Engaging in early dialogue:** Pursue alignment on data collection and evaluation criteria through early dialogue between HTA agencies and innovators.

1. Introduction

Background

Health Technology Assessment (HTA) agencies make recommendations or decisions on the use, funding, or reimbursement of health technologies within their respective health systems, often based on clinical and economic evidence. Economic evaluations, which can be part of the evidence submitted and considered, can be performed by adopting a healthcare system perspective or a societal perspective, which determines the types of costs and benefits included in the analysis.

The healthcare system perspective is widely used to assess the value of medical interventions in systems claiming to maximise health from a (typically restricted) healthcare budget. However, there has been increasing recognition of the limitations of such an approach (Lakdawalla et al., 2018; Brouwer, 2019) as it overlooks the societal costs and benefits falling outside the healthcare system. Omitting elements such as productivity and informal care costs may lead to resource allocations that do not maximise the overall welfare of society (Brouwer and van Baal, 2023; Sanders et al., 2016; Meltzer, 1997). This risks reducing the efficiency of governmental budget allocations and potentially widening the gap between broader government objectives such as reducing inequalities and stimulating economic growth, and the mandate of HTA (Sharma et al., 2021).

Economic evaluation from a societal perspective incorporates economic, health-related and non-health-related effects of health interventions on society more broadly (Jönsson, 2009), including (informal) caregiver health spillovers, productivity, and distributional consequences of funding decisions (Al-Janabi, Manca and Coast, 2017; Brouwer, 2019). In this way, all relevant costs incurred, and benefits generated using new interventions can be considered in resource allocation decisions to identify those that can bring the largest returns.

The importance of considering all relevant costs and benefits is highlighted by the Second Panel on Cost-Effectiveness in Health and Medicine, which strongly recommends the evaluation of the "broader effects of interventions designed to improve health." They recommend all cost-effectiveness analyses (CEAs) should report two reference case analyses, from both the healthcare system and societal perspectives. Additionally, they suggest the inclusion and reporting of an 'impact inventory', which includes categorising impacts within and beyond the formal healthcare sector, to include informal healthcare sector effects (such as patient-time and unpaid caregiver-time costs), as well as non-healthcare sector impacts (such as environmental, educational and broader economic effects) (Sanders et al., 2016). Indeed, such a two-perspective approach was advocated in Brouwer et al. (2006) to ensure decision-makers could consider and compare the cost-effectiveness ratios from a health and a societal perspective.

The importance of capturing benefits beyond the direct impacts on patients and health systems led to the development of a broader value flower (Garrison, Mestre-Ferrandiz and Zamora, 2016), which later evolved into the widely known 'ISPOR Value Flower,' a broader value framework which identified a total of 12 value elements (Lakdawalla et al., 2018). In addition to recognising the two core elements of value found in traditional cost-effectiveness analyses (QALYs and net healthcare costs), eight 'novel' value elements were proposed, along with the recognition of two 'common but inconsistently used' elements: productivity and family spillovers. The inclusion of these broader elements can serve as an incentive for innovative technologies that improve societal welfare, by rewarding aspects of value not captured in traditional analyses (Ramagopalan et al., 2024). The value flower has since been updated and discussed further, with numerous novel elements of value identified and proposed.

Furthermore, the recognition and incorporation of a broader, societal spectrum of costs and benefits is necessary to assess the welfare effects of medical interventions and is consistent with the traditional welfare economic roots of economic evaluation (Meltzer, 1997). Systematic inclusion of broader societal value elements in HTA is essential to capture the full welfare impact of interventions, rather than serving as an optional add-on. Doing so methodically mitigates risks like double-counting, thereby providing a more comprehensive evaluation framework. Importantly, economic evaluation from a societal perspective will not have a unidirectional impact on HTA decision-making. The inclusion of broader value elements within a comprehensive societal perspective can improve the incremental cost-effectiveness of interventions (Ito et al., 2021), but has also been shown to decrease them, as shown by the inclusion of productivity costs in several papers by Krol et al. (2016, 2011).

Despite the policy debate and published literature in support of the incorporation of a societal perspective and broader elements of value in resource allocation decisions, implementation remains limited in many systems around the world. A review of 64 HTA guidelines revealed that only 65% explicitly considered the societal perspective, a result that was driven by well-established agencies and countries with multi-payer healthcare systems. The Asia-Pacific (APAC) region features a wide variety in terms of healthcare system and HTA maturity and there is limited published evidence on the current consideration within HTA. There is an opportunity for APAC countries and jurisdictions to become early adopters of the societal perspective, and this report aims to contribute with evidence and recommendations to the debate about future inclusion.

Objective of the project

The objective of this report is two-fold:

- to understand the current state of play in selected HTA systems in the APAC region of the recognition of societal perspective and broader value elements in HTA guidelines and decision-making.

- to develop recommendations for their robust and systematic inclusion in the near future.

Methodology

The countries and jurisdictions from the APAC region that were included in this study were: Australia, China, Hong Kong, Malaysia, New Zealand, Taiwan, South Korea, Singapore, Thailand, and Vietnam.

OHE conducted a targeted literature review to understand the current state of play on the recognition of the societal perspective in the APAC region. Subsequently, OHE convened an expert advisory group composed of HTA experts from the selection of jurisdictions within the APAC region. A total of twelve experts were included in the sample, with one expert representing each respective jurisdiction. Participants were chosen due to their expertise and experience in their respective HTA systems, with backgrounds including academic researchers, senior HTA agency professionals, or relevant government/policymakers. Additionally, the expert advisory group included one APAC regional expert and a subject matter expert on the societal perspective in HTA. We also involved a patient expert from the APAC region to understand their view on the incorporation of societal perspective and broader value elements in HTA decision-making in the APAC region.

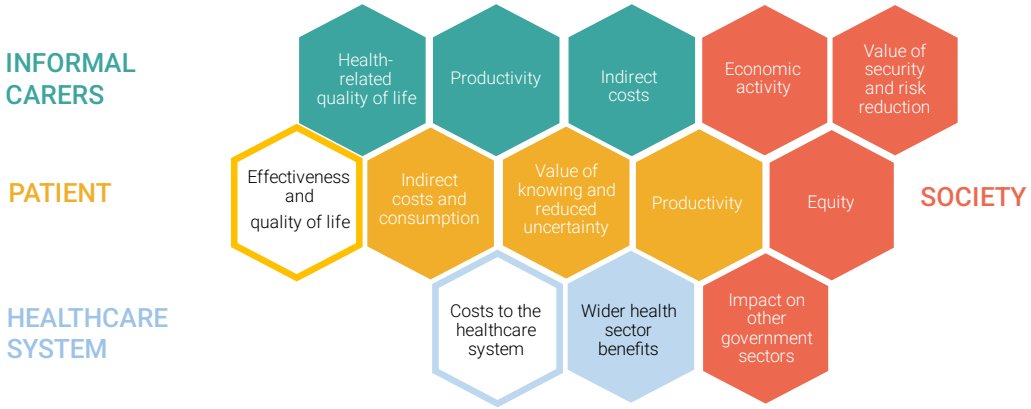
OHE designed an online survey for the expert group that was based on the initial literature review. The online survey was created to determine the status quo and explore current opportunities and

barriers for a full recognition of societal perspective and broader value elements in HTA in the selected APAC countries and jurisdictions, as well as prioritise value elements based on their importance and potential impact. Subsequently, a virtual panel roundtable was facilitated to discuss and define recommendations on broader value recognition of priority value elements in APAC, considering opportunities to utilise and hurdles to address. As a last step of interaction, experts were provided with a post-meeting survey to validate their input.

We asked experts to validate existing literature on broader value recognition and provide more information regarding the current recognition of broader societal value elements in HTA by applying the BRAVER framework to their jurisdiction. We asked them to provide qualitative information for validation of existing literature and to provide scores for each value element based on its status of recognition, incorporation, and impact using a 0-9 Likert scale (where 0 indicates no recognition/ incorporation/ impact, and 9 indicates full recognition/ incorporation/ impact). Those presented are the responses of the individual experts and reflect their understanding of current practice. There was no additional external validation of this data. In Table 1, the outcomes may highlight areas between formal recognition and consideration in practice especially when societal perspectives are not considered, and individual value elements are adopted or vice versa. In Figure 3, average scores are presented, which may not fully represent the situation in individual countries and jurisdictions. Full details can be found in the appendices. In Tables 3 to 6, the findings indicate that real-world processes related to the adoption of societal perspectives—from willingness to recognition and impact—are non-linear. Section 3.1 provides examples of how these individual results can be interpreted.

We synthesised recently published value inventories or frameworks (Sanders et al., 2016; Hofmann et al., 2023; Lakdawalla et al., 2018; Breslau et al., 2023) and created a condensed list of value elements or groups that are part of the more traditional healthcare perspective or are considered broader elements of value that form part of the societal perspective and are the focus of this study (Figure 1). The full list of broader value elements or groups is presented below and in the appendix.

FIGURE 1: INVENTORY OF ELEMENTS/GROUPS OF VALUE USED FOR THIS STUDY.



The value elements that form part of the HTA economic assessment from a more traditional healthcare/payer perspective are highlighted in white: effectiveness and quality of life, and costs to the healthcare system. All other elements can be seen as broader value elements and part of the societal perspective. These are the focus of this study. Full definitions can be found in the appendix.

Below we provide an overview of the definition of each hexagon included in Figure 1.

PATIENT-LEVEL BENEFITS:

- **Effectiveness and quality of life:** the therapeutic effects of interventions and their impact on the HRQoL of patients.
- **Productivity[1]:** the impact on a patient's formal labour market productivity due to their condition, including missed workdays, reduced productivity while at work, reduced labour participation, and early retirement.
- **Indirect costs and consumption:** additional out-of-pocket costs such as transportation, and effects on consumption unrelated to health.
- **Value of knowing and reduced uncertainty:** the benefit of a clear diagnosis and knowing the likelihood of a treatment's success or cure and reducing uncertainty for patients. It can also include the value of an intervention that extends the possibility for patients to access future treatments with uncertain benefits.

INFORMAL CARE-LEVEL BENEFITS:

- **Health-related quality of life spillovers[2]:** the impact on informal carers and family members or loved ones, primarily through emotional stress from seeing a loved one suffer and a burden of providing informal care.
- **Productivity[1]:** the impact on the work-related productivity of an informal carer from providing unpaid care.
- **Indirect costs:** primarily refer to the financial-, and opportunity costs from providing unpaid informal care.

HEALTHCARE SYSTEM-LEVEL BENEFITS:

- **Costs to the healthcare system:** the costs associated with adopting an intervention in a healthcare system.
- **Wider Health-sector benefits:** the value beyond direct cost offsets, including impacts of innovation and scientific evolution, patient's adherence to therapy (if affecting costs or effects), and healthcare system capacity during periods of high demand.

SOCIETY-LEVEL BENEFITS:

- **Economic activity[3]:** the impact on the macro-economy and economic growth.
- **Equity:** the impact on the fairness of health distribution across diverse groups, such as socioeconomic status, location, ethnicity, age, and disease characteristics. This can also include the impact on patients who are particularly disadvantaged due to a condition that is severe, rare, or has unmet needs.

[1] While this study focused on labour productivity of patients, productivity in its fullest societal sense also includes time costs of non-working populations and informal carers.
[2] This focuses on caregiver HRQoL while the patient is alive and as thus excludes the impact on their HRQoL after the person has died, such as a grieving or bereavement effect.
[3] We recognise this potentially overlaps with productivity and discuss this in more detail in the sections (4.iii) of the report.

- **Value of security and risk reduction:** the value of the enabling future protection of the population. This can also include the impacts of anti-infective therapies or vaccines on herd protection, or an alarming rate of disease spread.

- **Impact on other sectors:** the impact on other (e.g. governmental) sectors, including social services, environmental outcomes, educational outcomes, legal and criminal justice outcomes, or housing or home improvements).

2. State of play

A number of existing systematic reviews provide information on the recognition of a societal perspective and broader value elements across many countries, including in 8 of the 10 selected countries and jurisdictions of the APAC region included in this research (Australia, China, Taiwan, New Zealand, South Korea, Singapore, Thailand, and Malaysia) (Avşar, Yang and Lorgelly, 2023; Breslau et al., 2023). This literature synthesis, which mainly analysed whether the societal and broader value elements could be considered *in principle* (i.e., according to formal HTA guidelines), was used as a starting point to create an updated knowledge base. In doing so we also aimed to get a more granular, expert validated version, of the state of play regarding the recognition of societal and broader value elements *in practice*, in APAC jurisdictions of interest. Note Vietnam and Hong Kong were not included in these previous reviews and are reported here for the first time.

Experts responded to survey questions to determine if the societal perspective was covered in the base case or considered in additional scenarios or on an ad-hoc basis. Only China and Thailand consider the societal perspective in their base case. The expert from South Korea confirmed that they used to mandate the societal perspective in the base case as acknowledged by Avsar, Yang, and Lorgelly (2023), but that this has recently changed due to the complexity associated with it. Other jurisdictions accept the societal perspective in supplementary analyses, including Taiwan, Australia, Vietnam, South Korea, and Malaysia. New Zealand, Singapore, and Hong Kong do not recognise the societal perspective in HTA guidelines, however in Singapore "supplementary analyses which include non-health benefits may be appropriate in certain cases with societal implications beyond benefits for patients and healthcare system (e.g. productivity)" (Agency for Care Effectiveness, 2024).

Furthermore, experts detailed whether and to what extent specific broader elements of value were considered in their respective jurisdictions' HTA systems, either in the base case, in supplementary analyses, in qualitative deliberations, or not at all. The responses to the expert survey largely validated the previous results by Breslau et al. (2023), confirming an overall low level of recognition of broader elements of value in HTA guidelines. In rare cases, elements of value such as equity, severity, transportation, reduction in uncertainty, economic activity, housing, and consumption are recognised in the base case. However, most elements are not recognised across the APAC region, including consumption, housing, value of hope, real option value, social services, fear of contagion, environment, education, legal or criminal justice, or insurance value. While Taiwan, Thailand, Australia, and Vietnam show relatively high levels of recognition of broader elements of value, this is driven by the ability to consider them qualitatively. In contrast, and in line with the results on the recognition of the societal perspective, Hong Kong, Malaysia, New Zealand, and Singapore show low levels of recognition of broader elements of value in HTA guidelines.

TABLE 1: HEATMAP OF RECOGNITION OF SOCIETAL PERSPECTIVE AND BROADER ELEMENTS OF VALUE IN APAC JURISDICTIONS.

	TW	AU	VN	TH	KR	HK	CN	SG	MY	NZ
Societal perspective										
Base case	No	No	No	Yes	No	No	Yes	No	No	No
Considered	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No
Broader value elements										
Equity	3	3	2	2	4	4	2	3	2	2
Productivity	3	3	3	3	3	1	2	3	3	1
Severity of disease	3	3	2	4	2	1	4	2	2	2
Transportation	3	2	2	4	3	3	1	1	3	1
Reduction of uncertainty	2	3	2	4	2	4	2	1	1	1
Healthcare system capacity	2	3	3	2	2	4	2	1	2	1
Economic activity	2	3	2	3	2	1	1	3	1	1
Adherence improving factors	3	2	2	1	2	1	2	1	2	2
Family spillover	3	2	2	1	2	1	1	3	1	2
Scientific spillovers	2	3	2	1	2	2	2	1	1	1
Value of hope	3	2	2	1	2	1	2	1	1	1
Real option value	2	1	2	2	2	1	2	1	1	1
Housing	3	2	2	1	1	1	1	1	1	1
Social services	3	2	2	1	1	1	1	1	1	1
Fear of contagion	3	2	2	1	1	1	1	1	1	1
Environment	3	2	2	1	1	1	1	1	1	1
Consumption	3	1	2	1	1	1	1	1	1	1
Education	3	1	2	1	1	1	1	1	1	1
Legal or criminal justice	2	1	2	1	1	1	1	1	1	1
Insurance value	2	1	2	1	1	1	1	1	1	1

Data Source: Scoring by expert group. Potentially contradicting results between the recognition of societal perspective and the recognition of individual broader elements of value are discussed in section 1-methodology.
Country and jurisdiction acronyms: TW- Taiwan, TH- Thailand, AU- Australia, VN- Vietnam, CN- China, KR- South Korea, HK- Hong Kong, MY- Malaysia, NZ- New Zealand, SG- Singapore.

Keys:

Societal perspective	
Yes	No

Broader value elements			
4-Base case	3- Supplementary analysis	2- Qualitative discussion	1- Not recognised

3. BRAVER framework and analysis

3.1 Framework

The **Br**oad **A**ssessment of **V**alue of H**e**alth Inte**r**ventions in the APAC **R**egion (BRAVER) framework captures all dimensions that need to be achieved to drive the full adoption of societal perspective and broader value elements in HTA decision-making: recognition in HTA guidelines, incorporation into decision-making, and impact in decision-making (Figure 2).

WILLINGNESS FOR RECOGNITION IN METHOD GUIDELINES

This is the motivation to incorporate this evidence into HTA and broader decision-making processes, including making the case for broader value recognition, explaining what is currently missing, what may be the possible opportunities, and showing which medical technologies and conditions are more likely to be disadvantaged by assessments with a narrow perspective.

ABILITY FOR MEASUREMENT AND INCORPORATION IN DECISION-MAKING

This is the agreement on the most appropriate approaches to measure specific value elements and incorporate them in decision-making processes in each healthcare system. This might rely on existing methodologies and the further development of novel quantitative and qualitative approaches for their systematic consideration.

EVIDENCE FOR IMPACT IN DECISION-MAKING

This is the availability of empirical data demonstrating the value accrued for each priority value element. This requires clear signals from decision-makers for their inclusion to incentivise evidence generation.

The framework has been developed previously in the context of vaccines (Bell, Neri and Steuten, 2021), but was modified for this study to frame the discussion and introduce comprehensive changes in the methods and practices of broader value recognition in the APAC region. In an ideal scenario, this process to the full adoption of societal perspective in HTA decision-making could be linear: first, recognising societal perspectives and broader value elements in method guidelines; then developing methods to incorporate them into the decision-making process; and finally, using empirical data to impact decision-making in practice. However, these three dimensions should be considered individually, and the framework is presented in a non-linear fashion to reflect the context specificity of the three dimensions. For example, there may be little willingness to recognise broader value elements despite the ability for measurement, evidence, and incorporation into decision-making. Conversely, there may be limited ability for measurement and incorporation into decision-making, yet evidence may support more deliberative or qualitative approaches, leading to impactful decisions. In the latter scenario, there could even be low recognition of societal perspective in the HTA guideline should decision-making occur in a more deliberative fashion with certain flexibilities.

FIGURE 2: OHE BRAVER FRAMEWORK.

3.2 Application in the APAC region

We asked experts to apply the BRAVER framework to their jurisdiction and score each value element based on its status of recognition, incorporation, and impact using a 0-9 Likert scale (where 0 indicates no recognition/ incorporation/ impact, and 9 indicates full recognition/ incorporation/ impact). Figure 3 illustrates the average results for each value element across all APAC countries and jurisdictions, providing insight into how far each element is from full adoption in value assessment.

The highest scores for all BRAVER framework dimensions are around six, indicating that there is still a considerable gap to achieving full adoption (score of 9). Overall, significant effort is needed to advance all broader value elements/groups to full adoption in terms of HTA recognition, methodological incorporation, and decision-making impact. From the three BRAVER dimensions, willingness to recognise value elements and the societal perspective in HTA guidelines is the most progressed and can be considered encouraging.

The top four value elements/groups with the highest scores are equity, health sector benefits, informal care health spillovers (measured in terms of impact on carers' quality of life), and patient productivity. These represent an average score closer to five which represents a "somewhat" level of recognition, incorporation, and impact. For this reason, we identified these elements as potential "high priority" to make tangible progress towards adoption in the short term.

Several value elements show significantly higher levels of recognition and impact compared to incorporation, suggesting that while these elements are understood to be both important to include and impactful, there is a perception that the methods for measurement and incorporation (or confidence in the use of these methods) are still lacking. These include informal carer elements, the value of security and risk reduction, and the impact on other government sectors. These have the potential to create significant positive change but require substantial effort in methodological development, resources, and time.

The value elements/groups with the lowest scores are the value of knowing and reduced uncertainty, economic activity, and impact on other societal/governmental sectors. These could be seen as long-term goals that require long term commitment and significant changes in governmental policy regarding the mandate of HTA and updates to HTA methodological guidelines.

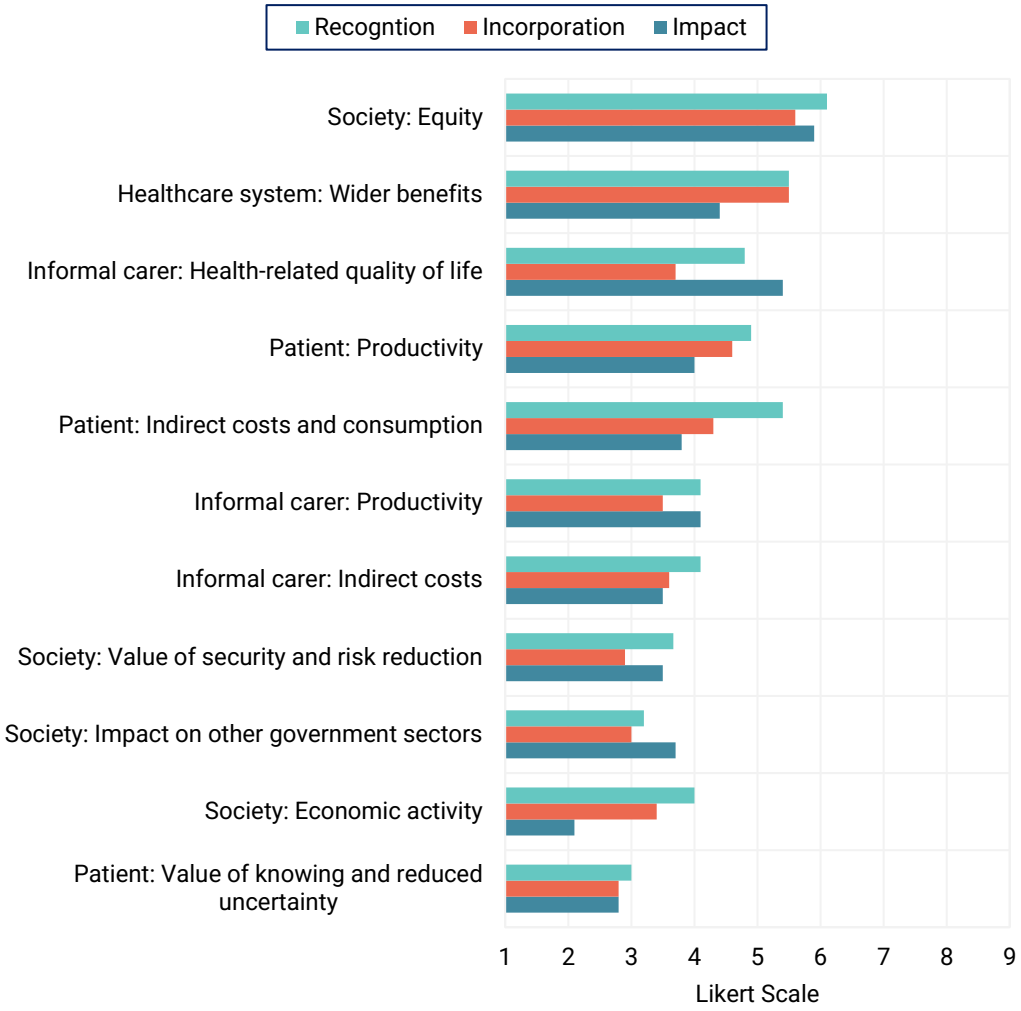


FIGURE 3: AVERAGE LEVEL OF RECOGNITION, INCORPORATION, AND IMPACT OF BROADER VALUE ELEMENTS ACROSS APAC JURISDICTIONS.

Data Source: Scoring by expert group. 9 Represents the highest level = Full adoption. The findings indicate that real-world processes related to the adoption of societal perspectives—from willingness to recognition and impact—are non-linear. Section 3.1 provides examples of how these results can be interpreted in various scenarios.

Definitions: Willingness for recognition in method guidelines is the motivation to incorporate this evidence into HTA and broader decision-making processes, including making the case for broader value recognition. Ability for measurement and incorporation in decision-making is the agreement on the most appropriate approaches to measure specific value elements and incorporate them in decision-making processes in each healthcare system. The evidence for impact in decision-making is the availability of empirical data demonstrating the value accrued for each priority value element.

3.3 Patient perspective

We also invited a patient expert to provide their reflections on the state of recognition, incorporation, and evidence of broader elements of value and how this resonates with patients. The patient expert has experienced symptoms of a chronic illness throughout their life, significantly impacting their physical abilities and daily activities. They co-founded an advocacy organisation to create a collective voice for patients and advocate for better access to treatments.

The following are key reflections and insights from the patient expert on the BRAVER dimensions:

WILLINGNESS **FOR RECOGNITION IN METHOD GUIDELINES**

Many broader value elements resonate with patients and their families, who experience the impact of chronic illness on quality of life and mental health. Key elements of value for patients, their families, and carers include equity of access to therapies, productivity and access to education, the overall financial situation of families, and the value of assurance provided by the possibility of receiving therapy—or conversely, the hopelessness when therapy is denied.

ABILITY FOR MEASUREMENT AND INCORPORATION IN DECISION-MAKING

HTA systems can lack transparency and communication with patients. The patient advocate recommended that all healthcare systems should value patient voices and involve them in decision-making processes to ensure that broader impacts of therapies are considered according to what matters to patients.

The patient expert acknowledged the challenges in measuring all impacts on patients and their families but stressed the importance of starting, even if imperfectly, with iterative improvements over time.

EVIDENCE FOR IMPACT IN DECISION-MAKING

The patient expert underscored the importance of the early involvement of patients in clinical development and evidence generation of broader values to ensure that what is measured aligns with what patients' value.

3.4 Barriers and opportunities

Based on their experience and the discussions as part of this project, experts identified several barriers across the three BRAVER dimensions preventing the full incorporation of societal and broader value elements in the HTA decision-making processes of their respective jurisdictions. They are presented in Table 2. While there is currently limited acceptance or willingness among HTA agencies to incorporate broader value elements into their decision-making processes, this was not identified as the main barrier. Most barriers are related to the ability to measure and incorporate these elements into decision-making. However, experts highlighted several opportunities across all three BRAVER dimensions that will help to mitigate the barriers and enhance the full incorporation of societal and broader value elements in the HTA decision-making processes of their respective jurisdictions (Table 2).

TABLE 2: BARRIERS AND OPPORTUNITIES FOR THE BRAVER ROADMAP

BRAVER domain	Barriers	Mitigations and opportunities
	▪ **Limited recognition:** of societal perspective in APAC countries and jurisdictions.	▪ **HTA reforms:** ongoing (or future) HTA reforms in various countries /jurisdictions confer opportunities to integrate broader societal perspectives into decision-making. Such discussions about HTA methodology and approaches in Australia, New Zealand, and Hong Kong were highlighted in the APAC.
	▪ **Lack of robust and validated methods to measure and factor in the additional value elements:** this was the most frequently cited reason by experts. This also can include the perception of a lack of robust methodology where knowledge is lacking. ▪ **Lack of consensus on appropriate methodologies:** even if methods exist. ▪ **Added uncertainty:** as more value elements are added to evaluations, often with limited evidence, decision uncertainty may increase. ▪ **Added complexity and potential for strategic selection:** decision-makers often highlight the added complexity and the possibility to select and incorporate value elements only	▪ **Research agenda:** facilitating ongoing research can enhance the knowledge and dissemination of methodology in HTA. ▪ **Focus on specific areas/case studies:** more HTA agencies are open to piloting societal perspectives in assessments. Focusing on specific disease areas like rare diseases and cancers—where unmet needs and societal impacts are significant—offers a practical starting point for establishing best practices. ▪ **Full and consistent inclusion:** where possible, all relevant costs and benefits should be included consistently and in a standardised way with transparent decision rules. Doing so can increase knowledge and confidence in methods and

BRAVER domain	Barriers	Mitigations and opportunities
	when perceived as providing a beneficial impact. ▪ **Double counting:** there can be a risk of double counting benefits or costs across value elements when incorporating multiple elements with overlapping scopes. ▪ Lack of consensus on how additional value elements can be **translated into price**	address some of the barriers such as a risk of double counting. ▪ **Multistakeholder cooperation** to decide on a research agenda and where pilot programs and inclusion of societal perspective would be most adequate and suitable. This would then enable the generation of evidence plans in consultation between HTA bodies and innovators.
	▪ **Lack of capacity:** many HTA systems in the APAC region face significant constraints in terms of finance and skills, which hinder the ability to incorporate these elements. ▪ **Current HTA timelines:** incorporation of additional value elements might not fit into current process timelines. On the other hand, extending timelines might delay access to much-needed cost-effective treatments.	▪ **Cooperation and collaboration:** collaborations, such as those facilitated by HTAsiaLink and HTAi Asia Policy Forum, can be leveraged to develop consensus on methodologies for HTA processes. The Health Economics Methods Advisory (HEMA) collaboration between ICER, CDA and NICE, which aims to assess new methods in HTA, offers a useful collaborative model and opportunities to learn from the methodological advancements of well-established agencies[4]. ▪ **Introduce Life-cycle HTA** to ensure that the first assessment is not too lengthy, and a reassessment is allowed once more evidence is available
	▪ **Limited patient input:** the absence of the patient voice in evidencing and recognising broader value elements and decision-making can lead to an underestimation of the full benefit of therapies in HTA decisions.	▪ **Consistent patient involvement:** Involve patients when it comes to data collection and economic assessment.
	▪ **Lack of or limited available evidence and data:** specifically epidemiological or real-world data are often missing to support the additional value elements.	▪ **Research agenda:** facilitating ongoing research can enhance the quality and comparability of evidence used in HTA.

[4] The first topic to be addressed by HEMA will be the consideration of "potential additional benefits to incorporate into HTA analyses".

4. Priority elements

Based on the results of the survey and input from the expert advisory group, examining the current perspectives, barriers, and opportunities for each BRAVER dimension, we prioritised the following value elements/groups for further research: **equity, informal care spillovers (HRQoL), productivity and wider health sector benefits**.

Additionally, two case studies describe how the societal perspective can practically be integrated into HTA decision-making regarding therapeutic interventions in Alzheimer's disease (AD) and Spinal Muscular Atrophy (SMA).

i) Equity

DEFINITION:

We defined this value element as the impact on the fairness of health distribution across diverse groups, such as socioeconomic status, location, ethnicity, age, and disease characteristics. Within HTA and health economics, health equity is generally defined as the absence of unfair and avoidable differences in health outcomes among population groups (Panteli, Kreis and Busse, 2015).Therefore, it encompasses concepts, often used in HTA contexts, related to i) severity; ii) unmet need, and iii) rarity.

Beyond this definition, equity is understood as an ethical imperative rooted in social justice. It requires that all individuals have a fair and just opportunity to achieve their optimal health regardless of their background or circumstances. This perspective not only addresses the distribution of health outcomes (distributional equity) but also the fairness of the decision-making processes used to allocate healthcare resources (procedural equity) (Culyer and Bombard, 2012).

EXPERT PERSPECTIVE FOR APAC REGION:

The results highlight a wide variety of ways equity is recognised and incorporated across APAC jurisdictions (Table 3). Experts agreed that equity should be considered in HTA decision-making but also acknowledged challenges in its measurement and incorporation.

TABLE 3: RECOGNTION, INCORPORATION, AND IMPACT OF "EQUITY" IN APAC JURISDICTIONS.

Score	N/A	1	2	3	4	5	6	7	8	9
Recognition				MY	NZ	VN	CN AU SG	HK	TH TW KR	
Incorporation					HK CN SG	VN AU	TW NZ	MY TH	KR	
Impact				HK	AU	TW VN SG		CN MY NZ	TH KR	

Data Source: Scoring by expert group; 9 Represents the highest level = Full adoption; The findings indicate that real-world processes related to the adoption of societal perspectives—from willingness to recognition and impact—are non-linear. Section 3.1 provides examples of how these results can be interpreted in various scenarios.
Country and jurisdiction acronyms: TW- Taiwan, TH- Thailand, AU- Australia, VN- Vietnam, CN- China, KR- South Korea, HK- Hong Kong, MY- Malaysia, NZ- New Zealand, SG- Singapore.

Key reflections and insights from the experts on stakeholders' willingness, ability, and evidence for considering equity include:

WILLINGNESS **FOR RECOGNITION IN METHOD GUIDELINES**

Equity was understood to be central to the purpose of HTA, and there was broad consensus that it must be recognised and included in assessments. Despite challenges inherent to the numerous dimensions included within equity, there is an opportunity for greater recognition of many of these dimensions like severity or rarity of the condition, or patient characteristics in HTA to ensure fair and just outcomes.

Equity concerns are culturally sensitive e.g. in multi-ethnic societies like in Singapore, or regarding New Zealand's Indigenous population. How governments understand and perceive equity may not align with HTA systems definitions, leading to potential conflicts between HTA decision-making and government priorities.

ABILITY FOR MEASUREMENT AND INCORPORATION IN DECISION-MAKING

There are barriers to measuring and quantifying equity due to its multifaceted nature. Experts highlighted the potential for quantitative approaches such as distributional cost-effectiveness analysis (DCEA) to include socioeconomic status and consider equity explicitly in economic evaluations.

EVIDENCE FOR IMPACT IN DECISION-MAKING

There is an opportunity to accumulating practical experience and robust data, which may make formal inclusion of equity more acceptable and methodologically sound over time.

DISCUSSION:

Traditionally, HTA has prioritised maximising overall population health through cost-effectiveness. However, recent advances in HTA methodology increasingly emphasise that equity should be considered explicitly alongside efficiency to ensure equitable resource allocations align with societal values. Several approaches have been developed to incorporate equity considerations into HTA, including Multi-Criteria Decision Analysis (MCDA), the application of proportional shortfall (Reckers-Droog, van Exel and Brouwer, 2018), severity modifiers (Charlton, 2023), and equity checklists which allow evaluators to formally define, measure, and weight equity-related criteria such as disease severity, unmet need, and rarity (Benkhalti et al., 2021).

Methods such as distributional cost-effectiveness analysis (DCEA) offer the potential for explicit incorporation of socioeconomic factors (Asaria, Griffin and Cookson, 2016). Where aspects of equity remain difficult to capture quantitatively, deliberative, and transparent appraisal processes should be in place. Supplementary analyses and case studies are recommended to progressively build robust evidence for formally integrating equity into HTA decision-making.

Without a universally accepted definition, HTA agencies and government bodies may apply different interpretations of equity in their decision-making processes. Contextual legal and institutional factors can lead to varied understandings of equity principles. Employing a combination of methodological and procedural practices, alongside broader dissemination of existing methodological resources, could enhance equity-focused evaluations. Collaborative networking initiatives among existing platforms could support these efforts.

ii) Informal care health spillovers (Health-related quality of life)

DEFINITION:

Informal care health spillovers are defined as the impact of a patient's health state on their informal carers and family members' health-related quality of life (HRQoL), e.g., through emotional stress from seeing a loved one suffer and the potential burden of providing informal care. Excluding these (potentially large) spillover effects could lead to an underestimation or misinterpretation of an intervention's value, negatively impacting efficient and equitable resource allocation (Brouwer, 2019).

HRQoL spillovers can arise from both the emotional impact of caring about an ill family member ("family effect") and the burden of providing informal, unpaid care ("caregiver effect") (Bobinac et al., 2011; Engel, Bryan and Whitehurst, 2021; Wittenberg, James and Prosser, 2019). While economic evaluations often emphasise the caregiver effect, excluding family effects risks omitting significant real-world impacts (Al-Janabi et al., 2016). Moreover, disentangling the emotional burden from caregiving responsibilities is inherently challenging, particularly for chronic or severe conditions that demand extensive informal care (Bobinac et al., 2011; Hoefman, van Exel and Brouwer, 2013).

EXPERT PERSPECTIVE FOR APAC REGION:

Responses from the expert advisory group highlight a wide variety of how these HRQoL spillovers on informal carers are recognised and incorporated in APAC jurisdictions (Table 4). There was strong agreement among the expert working group that carer health spillovers should be recognised and incorporated. However, they pointed out that their impact will necessarily be context and condition-specific; not all conditions place significant informal care burdens. Also, it was suggested that further developments on the methodological side are needed before it can be considered as part of the base case. Hence, they believed that it should be integrated as a supplemental analysis rather than the reference case.

TABLE 4: RECOGNITION, INCORPORATION, AND IMPACT OF "INFORMAL CARE HEALTH SPILLOVERS" IN APAC JURISDICTIONS.

Score	N/A	1	2	3	4	5	6	7	8	9
Recognition		MY		SG KR CN	NZ		VN AU	TH HK	TW	
Incorporation		MY	AU CN	NZ SG KR		TH VN	HK	TW		
Impact	MY SG	CN		NZ	AU	TW KR		HK TH	VN	

Data Source: Scoring by expert group; 9 Represents the highest level = Full adoption; The findings indicate that real-world processes related to the adoption of societal perspectives—from willingness to recognition and impact—are non-linear. Section 3.1 provides examples of how these results can be interpreted in various scenarios.
Country and jurisdiction acronyms: TW- Taiwan, TH- Thailand, AU- Australia, VN- Vietnam, CN- China, KR- South Korea, HK- Hong Kong, MY- Malaysia, NZ- New Zealand, SG- Singapore.

Key reflections and insights from the experts on stakeholders' willingness, ability and evidence considering informal care health spillovers include:

WILLINGNESS FOR RECOGNITION IN METHOD GUIDELINES

There is a need to implement carer health spillovers more consistently, especially with the increasing prevalence of dementia and home care. However, experts highlight the difficulty in consistently applying carer health spillover considerations across different diseases and contexts.

Cultural perceptions can also play a factor. For example, Thailand was highlighted as a system where there is a cultural importance of informal care, and the use of qualitative evidence does support their HTA. Additionally, there can be cultural variation and societal preferences for considering this as 'burden' vs 'privilege' of caregiving.

ABILITY FOR MEASUREMENT AND INCORPORATION IN DECISION-MAKING

Some experts highlighted perceived barriers with regard to the validity of existing methods. However, it was also noted that existing validated utility measures such as the EQ-5D have been shown to be appropriate and sensitive for measuring and incorporating carer HRQoL but have some limitations.

When it comes to incorporation into decision-making, there is a need to consider a variety of aspects:

- Which and how many carers should be included in an evaluation? It would be worth considering or limiting a 'maximum' number of carers that could be considered for both practical and ethical reasons.
- Should both the caregiving effect (burden of providing care) and the caring about effect (emotional impact of a loved one being ill) be considered?

- How to weight carer HRQoL relative to patient health gains? For example, there may be ethical concerns with valuing the benefits to carers to the detriment of the patients (Al-Janabi et al., 2022).
- How long should carer HRQoL be considered?

EVIDENCE FOR IMPACT IN DECISION-MAKING

There is a chance to gain more practical experience with robust data to advance the formal inclusion of carer HRQoL spillovers.

DISCUSSION:

Barriers to the inclusion of carer HRQoL spillovers are often not methodological or the result of data availability, but rather awareness of existing methodology as well as wider policy and practical considerations of whether or not to include. These decisions are often implicit but should be made explicit and based on the best available evidence. While there may be some cultural variation in the applicability to different HTA jurisdictions, there is a practical need for limiting the maximum number of carers which can be considered within an evaluation, particularly if HTA systems across the APAC region include this element in a standardised and comparable way.

A 2024 report by the SHEER task force provided 11 consensus-based best practice recommendations for incorporating family and caregiver health spillovers into economic evaluations (Henry et al., 2024). Key recommendations include analysing spillovers from healthcare and societal perspectives, using adequate time horizons, prioritising primary spillover data collection, and emphasising transparency when reporting on spillover incorporation. This shows that methods and best-practice guidelines are available.

While there may be challenges in some jurisdictions with collecting and implementing such data in evaluations, HTA agencies should require the collection of primary evidence using validated measures, even if not for the base case analysis. This will develop the evidence base over time, enabling greater inclusion in future analyses. Collaborative and pilot approaches, such as those used by the UK's National Institute for Health and Care Excellence (NICE) and Taiwan's Center For Drug Evaluation (CDE), can also help HTA systems build technical capability among personnel (NICE, 2024).

It is also worth noting that our definition of carer HRQoL spillovers and the discussion with the expert working group did not consider the effects of grief. Nonetheless, we acknowledge that grief, which may in some cases evolve into prolonged or complex forms associated with prolonged grief syndrome (a classified disease), represents a significant post-bereavement burden. The inclusion of such considerations may also mitigate a limitation in health economic evaluations, known as the "Carer QALY trap" where interventions that improve patient QALYs may increase carer burden, reducing overall societal well-being (Mott et al., 2023).

iii) Productivity

DEFINITION:

Productivity is defined as the impact on a patient's and carer's productivity due to their condition, including missed workdays (absenteeism), reduced productivity while at work (presenteeism), and early retirement.

From a welfare-maximising perspective, it is important to consider productivity costs. The changes in productivity that patients experience due to their health conditions and the treatments they receive are a significant part of the total costs and economic impact of healthcare services. (Krol et al., 2016). As a result, the decision of whether to include productivity costs in economic evaluations of healthcare can have substantial implications for the final outcomes and conclusions of those assessments.

EXPERT PERSPECTIVE FOR APAC REGION:

Responses from regional experts highlight a wide variation in how productivity is recognised and incorporated across the APAC region (Table 5), reflecting differences in the extent to which productivity is considered part of the societal perspective. The majority of the expert advisory group agreed that productivity should be recognised and incorporated. However, it was also discussed as highly context-specific and concerns about double counting were raised, as explained below. Hence, experts recommended starting cautiously, using supplementary analyses and case studies to build evidence and test methods. Over time, accumulating practical experience and robust data may make formal inclusion of productivity impacts more acceptable and methodologically sound.

TABLE 5: RECOGNITION, INCORPORATION, AND IMPACT OF "PRODUCTIVITY" IN APAC JURISDICTIONS.

Score	N/A	1	2	3	4	5	6	7	8	9
Recognition			HK MY NZ			SG VN	KR AU	CN TH TW		
Incorporation		HK	NZ	MY		VN SG AU	TW KR CN	TH		
Impact			NZ HK SG	MY	AU CN	KR VN	TH	TW		

Data Source: Scoring by expert group; 9 Represents the highest level = Full adoption; The findings indicate that real-world processes related to the adoption of societal perspectives—from willingness to recognition and impact—are non-linear. Section 3.1 provides examples of how these results can be interpreted in various scenarios.
Country and jurisdiction acronyms: TW- Taiwan, TH- Thailand, AU- Australia, VN- Vietnam, CN- China, KR- South Korea, HK- Hong Kong, MY- Malaysia, NZ- New Zealand, SG- Singapore.

Key reflections and insights from the experts on stakeholders' willingness, ability and evidence considering productivity include:

WILLINGNESS **FOR RECOGNITION IN METHOD GUIDELINES**

The high level of context-specificity can be a barrier to stakeholders' willingness to consider productivity as part of HTA. It is specific to a country's economic situation and government/HTA policy context, i.e. if it aims to protect the working-age population or move people off governmental benefits. In addition, legal changes may be needed to incorporate productivity or societal benefits. For example, in New Zealand, the historical statutory objective of HTA has been to deliver health gains and not societal benefits, with potential reform now possible as a result of new directives from the Associate Minster for Health (Seymour, 2024)

ABILITY FOR MEASUREMENT AND INCORPORATION IN DECISION-MAKING

Experts highlighted the need to develop, refine and decide on locally appropriate methodological approaches to measure and value productivity losses. When it comes to incorporation into decision-making, there is a need to consider a variety of aspects:

- While there have been concerns about potential double counting due to productivity being reflected in quality-of-life measures, empirical research has demonstrated the contrary. The expert advisory group generally acknowledged the strong evidence base showing that utility measures like the EQ-5D do not meaningfully capture productivity (Tilling et al., 2010, 2012).
- Adding productivity as a cost category raises equity concerns because of the exclusion of non-working population groups like children and the elderly. Explicit and difficult trade-offs need to be made, together with the consideration of additional methods to account for the economic impact of populations outside the formal labour force.

EVIDENCE FOR IMPACT IN DECISION-MAKING

Experts agreed that the priority is to consider the existing methodological solutions and collect robust data to advance the formal inclusion of productivity in HTA decision-making.

DISCUSSION:

There remains an ongoing debate concerning the preferred methods to measure productivity losses, in particular, which of the two main methods – human capital method or friction cost approach – is the most appropriate.

The human capital method calculates productivity loss based on the total days of work lost multiplied by daily earnings. For example, the iMTA Productivity Cost Questionnaire (iPCQ) is a concise, generic instrument developed to quantify productivity losses for both paid and unpaid work, enabling its use in economic evaluations of healthcare (Bouwmans et al., 2015). It can be used to assess productivity costs within the human capital method or friction cost approach. The iPCQ launched in English in 2015, (soon translated into German, French and Spanish) and is currently available in at least 18 languages, including Korean. It is not available in the languages of many included Asian countries (though translations are likely in the short-medium term). It can currently be used in English-speaking countries such as Australia and New Zealand, as well as South Korea.

Recognising that sick workers can be covered or replaced, the friction cost method considers the time it takes for the system to adjust and replace the lost productivity, leading to lower estimates for long-term absences.

The choice of valuation method can significantly alter the impact and needs to be jurisdiction-specific. High unemployment can make it easier to replace lost productivity, while low unemployment can extend transition periods. Due to the ease of data collection, some HTA systems may prefer to use the human capital approach. Whatever approach is chosen, it is important that method guidelines are explicit and consistently applied.

It is also worth noting that our definition of productivity and the discussion with the expert working group specifically focused on formal labour market productivity as a key element to be prioritised for inclusion. From a truly broad societal perspective, and as recommended by the Second Panel on Cost-Effectiveness in Health and Medicine (Sanders et al., 2016), household production and informal labour market production should also be considered, as failure to do so can lead to inequities.

iv) Wider health sector benefits

DEFINITION:

Wider health sector benefits are defined as the value beyond direct cost offsets which is accrued within the healthcare sector. This includes: i) innovation and scientific spillovers, ii) adherence improving factors; iii) healthcare system capacity. These benefits include non-marginal impacts on the healthcare system that are not typically captured in standard economic evaluations.

EXPERT PERSPECTIVE FOR APAC REGION:

The results highlight a wide variety in how these benefits are recognised and incorporated in APAC jurisdiction, indicating varying interpretations and applications. Experts agreed that these three key aspects of wider health sector benefits should be explored separately. For example, adherence should inherently be considered in standard economic assessment of clinical efficiency. The other two elements should be integrated as supplemental analysis and not in the reference case. They considered the recognition of the value elements in Table 6.

TABLE 6: RECOGNITION, INCORPORATION, AND IMPACT OF "WIDER HEALTH SECTOR BENEFITS" IN APAC JURISDICTIONS.

Score	N/A	1	2	3	4	5	6	7	8	9
Recognition		SG MY			AU		CN VN KR	HK	TW NZ TH	
Incorporation		SG			AU MY	HK VN KR		CN	NZ TW TH	
Impact	TH SG		NZ	AU	MY	VN	HK	KR	CN	TW

Data Source: Scoring by expert group; 9 Represents the highest level = Full adoption; The findings indicate that real-world processes related to the adoption of societal perspectives—from willingness to recognition and impact—are non-linear. Section 3.1 provides examples of how these results can be interpreted in various scenarios.
Country and jurisdiction acronyms: TW- Taiwan, TH- Thailand, AU- Australia, VN- Vietnam, CN- China, KR- South Korea, HK- Hong Kong, MY- Malaysia, NZ- New Zealand, SG- Singapore.

Key reflections and insights from the experts on stakeholders' willingness, ability and evidence considering wider health sector benefits include:

WILLINGNESS **FOR RECOGNITION IN METHOD GUIDELINES**

The three distinct elements need to be treated differently:

- Health System Capacity: HTA decision-makers must evaluate whether the healthcare system can practically implement a new intervention, considering the type of technology and potential capacity constraints, as seen during the COVID-19 pandemic. The relevance of this value element varies across jurisdictions, depending on the healthcare system and its capacity. For instance, many countries face shortages of healthcare workers, making innovations in this area particularly valuable (van Baal, Morton and Severens, 2018). Additionally, interventions that enhance healthcare worker productivity could be prioritised, which provides a link to the value of productivity discussed above. Health system capacity issues should also be considered for technologies that are challenging to adopt due to logistical and resource constraints, such as genetic counselling or CAR-T therapies, as discussed in Australia.
- Adherence: Economic models typically consider adherence within their calculations.
- Innovation and scientific spillovers: These are rarely considered by HTA decision-makers.

ABILITY FOR MEASUREMENT AND INCORPORATION IN DECISION-MAKING

Experts highlighted the need to develop methodological approaches to measure some of the elements related to innovation and capacity. Evaluating constrained human resource capacity should consider the opportunity cost of these resources. In terms of innovation, the spillover effects of the healthcare sector on the environment are becoming increasingly important.

When it comes to incorporation, experts highlighted multiple ways:

- In Australia, adherence-improving factors are only relevant if they lead to improved clinical outcomes. Innovation is seen as a societal benefit, but subsequent drugs in the same class are often evaluated through cost minimisation, potentially diminishing the perceived value of innovation.
- In New Zealand, factors like adherence and capacity are considered in qualitative deliberations rather than in cost-effectiveness analyses. The prioritisation system affects how these elements are ranked.
- In China, the government encourages innovation in the health sector. Local innovations or first-to-market drugs in China are given higher thresholds and potentially higher prices during price negotiations.
- In Vietnam, there is a priority for health sector benefits, especially for conditions like end-stage renal disease. However, Vietnam faces challenges due to limited resources, data, and studies on these benefits.

EVIDENCE FOR IMPACT IN DECISION-MAKING

There is an opportunity to think about data sources and types of evidence for each element before submitting them in case studies to HTA bodies. Adherence is already regularly captured in clinical trials and often considered in HTA decision-making.

DISCUSSION:

Adherence-improving factors is mainly seen and considered as a patient-level outcome; whereby improved adherence has an intermediate effect on patients. However, it can also be considered as a societal value, where improved adherence improves the efficiency of a health system through reduced costs and enhancing intervention effectiveness. It is commonly reported as being integrated into HTA decision-making through effectiveness measures or more qualitative deliberations (Breslau et al., 2023; Hofmann et al., 2023). For example in Belgium and Canada, applicability and user-friendliness are part of therapeutic value to be discussed (Hofmann et al., 2021). In Sweden, the societal perspective can include cost off-sets due to easier drug administration (Hofmann et al., 2021).

Health system capacity is increasingly a factor of consideration since the experience with the COVID-19 pandemic or other country-specific circumstances (Brassel et al., 2022; Asukai et al., 2021; Breslau et al., 2023). For example, an opportunity cost approach has been used to evidence the value of vaccines in preventing hospitalisation to support regular healthcare services and clearing the increased demand from the pandemic (Brassel et al., 2022).

Scientific progress and knowledge spillover enable pharmaceutical innovation and the development of novel therapies, which is a highly risky process. It remains unclear if the current reward system for pharmaceutical R&D leads to optimal levels of scientific knowledge generation and sharing. A recent publication for example focussed on the value of future R&D efforts and the entire innovation community (Xie, Towse and Garrison, 2022). In China, the value of innovation can be considered in HTA decision-making and pricing (Zhang et al., 2023).

Case study 1: Therapy for the treatment of Alzheimer's disease

Alzheimer's disease (AD) is a progressive neurodegenerative disorder that primarily affects older adults, leading to gradual cognitive decline, memory loss, and impaired functional capacity (Alzheimer's Association, 2024). As the most common cause of dementia, AD accounts for an estimated 60–80% of dementia cases worldwide, with prevalence projected to rise substantially in tandem with an ageing global population, and has been recognised by the World Health Organization as a global public health priority (WHO, 2023). In 2018, Alzheimer's Disease International estimated a global prevalence of around 50 million people living with dementia, a figure projected to triple by 2050, with two-thirds of those individuals residing in low-income and middle-income countries (Alzheimer's Disease International, 2018). The disease imposes a significant economic burden on healthcare systems and society. Clinically, AD manifests through a continuum that begins with mild cognitive impairment and advances to severe dementia, necessitating progressively increasing levels of care and support.

WHY BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVE NEED TO BE CONSIDERED

Impact on caregiver HRQoL

The impact of AD extends beyond direct patient outcomes to include significant caregiver burdens. Caregivers frequently provide significant assistance to patients with many aspects of their daily lives. Caregiving for AD patients is somewhat distinct from caregiving in other conditions due to the disease's prolonged course and the progressive decline in both cognitive and physical functions (Alzheimer's Association, 2020).

Productivity and equity

These burdens can also impact caregiver productivity, straining individual carers and society, while also worsening inequalities. Indeed, a recent OHE report highlighted that 41% of informal carers face financial hardship and 21% leave work due to caregiving. Women often endure the most unpaid care. Additionally, diagnosis gaps in rural areas and among ethnic minority carers can reduce timely access to appropriate support (Hodgson et al., 2024).

HOW BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVE HAVE BEEN CONSIDERED

Ito et al. (2021) used the Alzheimer's Disease Archimedes Condition Event Simulator to evaluate the cost-effectiveness of a hypothetical disease-modifying treatment for AD by simulating various scenarios. Scenarios included a traditional health system perspective, as well as the inclusion of caregiver utilities and patient/caregiver healthcare costs within a broader societal perspective.

Societal perspective scenarios included non-healthcare costs and productivity costs for patients. The broadest societal perspective also accounted for caregiver costs. The study incorporated caregiver health-related quality of life (HRQoL) using EQ-5D utility values obtained from informal caregivers of patients with AD/dementia. The researchers investigated the impact of including caregiver utility by adding it directly to the total patient QALYs gained in the model. Caregiver productivity costs were the higher value between the time spent by caregivers providing care and the income lost due to leaving or reducing employment to care for the patient, calculated using the human capital approach. Specifically, an opportunity cost approach was used to value caregiver time. Lost productive hours were summed and multiplied by the national average annual gross hourly wage for workers. For non-workers, the same was done for lost leisure time (valued at 35% of the hourly wage for workers).

The results are displayed in Table 7 and Figure 4. A health system perspective (Scenario A) which includes only patient utilities and health care costs resulted in an incremental cost-effectiveness ratio (ICER) of $183,000 per QALY. When taking a full, broad societal perspective (Scenario F) - including patient non-healthcare costs, as well as caregiver utilities, healthcare, and productivity costs - the

resultant ICER was $74,000 per QALY (Ito et al., 2021). The inclusion of estimates of the treatment's impact on caregivers' quality of life (scenarios C and F) and productivity (scenarios E and F) were particularly impactful, in reducing the ICER. Given the US QALY valuation range of $100,000-$150,000, including these elements could change conceptions about whether such therapy reflects reasonable value for money.

TABLE 7: INCLUSION OF FACTORS BY SCENARIO, ADAPTED FROM ITO ET AL. (2021)

	Included factors by scenario (A-F)					
	Health system perspective			Societal perspective		
Cost/utility	A	B	C	D	E	F
Health state utilities						
Patient	✓	✓	✓	✓	✓	✓
Caregiver	X	X	✓	X	X	✓
Healthcare costs						
Patient	✓	✓	✓	✓	✓	✓
Caregiver	X	✓	✓	X	✓	✓
Non–healthcare costs						
Patient	X	X	X	✓	✓	✓
Productivity costs						
Caregiver	X	X	X	X	✓	✓

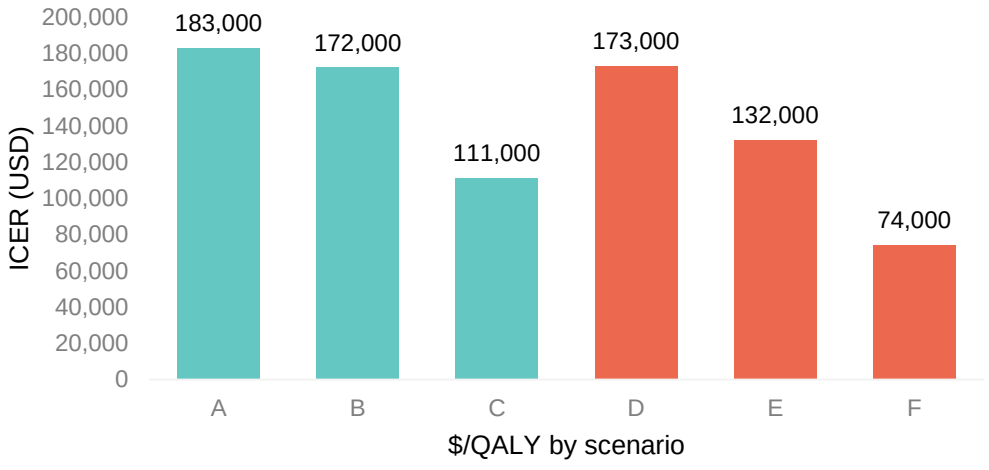


FIGURE 4: $/QALY BY SCENARIO, ADAPTED FROM ITO ET AL. (2021)

Case study 2: Therapies for the treatment of SMA

Spinal muscular atrophy (SMA) is a rare, debilitating genetic disorder that impairs motor neuron function, leading to progressive muscle weakness and wasting (Spinal Muscular Atrophy | National Institute of Neurological Disorders and Stroke, 2024). The condition presents in four types, with the most severe, Type I, typically manifesting before 6 months of age and having a life expectancy of less than 2 years (NHS, 2017). Symptoms include muscle weakness, respiratory distress, and difficulties with feeding and swallowing. SMA has an exceptionally poor prognosis. Half of paediatric patients with the most severe type die before their first birthday. Three recent treatments have been approved for SMA including a gene therapy, an antisense oligonucleotide therapy, a pre-mRNA splicing modifier.

WHY BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVE NEED TO BE CONSIDERED

Impact on caregiver HRQoL

SMA profoundly impacts the lives of patients and their families, placing a substantial burden of care with corresponding impacts on the HRQoL of caregivers. The complex, multidisciplinary care required can be overwhelming for parents/caregivers. Patients, especially those with type 1 SMA, demand constant, hands-on care, including frequent repositioning, temperature monitoring, specialised feeding, and management of invasive treatments and medical equipment at home.

Productivity

SMA also imposes substantial financial and societal productivity burdens, as one parent typically reduces or forgoes employment to provide full-time care. This caregiving role is physically and emotionally demanding, leading to high levels of anxiety.

Equity, innovation, and scientific spillovers

As a rare and severe disease with an incidence of less than 0.4 per 10,000, lacking approved and appropriate treatments, there was considerable unmet need for novel and effective treatments (EMA, 2015).

HOW BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVE HAVE BEEN CONSIDERED IN THE USA

The Institute for Clinical and Economic Review (ICER), the HTA body in the US, has so far evaluated two of these novel treatments from both payer and societal perspectives (ICER, 2019). They noted that payers might apply higher thresholds and consider broader impacts (such as innovation and unmet need) when assessing treatments for ultra-rare diseases and conducted analyses using willingness-to-pay thresholds incorporating family impacts and other factors not captured in standard cost-utility analyses. The ICER assessment also included a scenario analysis using the modified societal perspective, the model included estimates of patient productivity gains. For patients achieving the greatest health gains – defined as reaching the important health state milestones of “sitting” or “walking” – the existing model assumed some could participate in the workforce later in life. To estimate these productivity gains, the analysis combined data on the educational attainment of SMA patients with US income data by education level. This allowed the estimation of a potential monthly income of $4,450 for SMA patients, applied from ages 25 to 67. However, no productivity changes were assumed for those in the most severe health states.

Dean et al., (2021) updated the ICER model, comparing a number of modelling approaches and scenarios, along with updates to include long-term follow-up data. One scenario included a broader modified societal perspective which included the impact on caregiver HRQoL (as disutilities) and lost household income in addition to patient productivity gains. For ultra-rare diseases, broader societal considerations concerning equity may support a higher willingness-to-pay (Bobinac et al., 2012).

The third and most recent treatment will be evaluated in an upcoming assessment, set to include and compare all three treatments (ICER, 2025). The upcoming ICER evaluation of all available treatments will also be analysed from a healthcare system perspective and modified societal perspective (considered the co-base case). The draft scoping document highlights the importance of considering benefits beyond health and special ethical priorities. In particular, these include equity concerns such as substantial unmet need and relevance for people of racial/ethnic groups "that have not been equitably served by the healthcare system", the substantial impact on caregiver HRQoL and productivity, as well as recognising the opportunity of the treatment to improve access to effective treatment by means of its mechanism of action or method of delivery. This may indicate capturing of further aspects of a societal perspective.

HOW BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVE HAVE BEEN CONSIDERED IN SWEDEN

Similar analyses have been conducted by researchers in Sweden (Zuluaga-Sanchez et al., 2019), considering both a societal and healthcare/payer perspective. The societal perspective accounted for costs beyond direct medical expenses, including caregiver quality of life, lost productivity, and informal care costs.

To capture the impact on caregiver HRQoL, the study utilised data from literature reviews which assessed health-related quality of life in caregivers of SMA patients. Caregiver disutility values were derived and reflected the negative impact on caregivers' HRQoL due to the patient's health state. These disutilities were applied to caregivers based on the patient's motor function status. The model adjusted caregivers' HRQoL based on the patient's health state over time. The model also included indirect costs due to lost productivity for caregivers, using the human capital approach. The assumption was that caregivers of infantile-onset SMA patients would completely leave work, while caregivers of later-onset SMA patients would reduce working time for some years.

The analysis utilised data from the Swedish National Mediation Office. For infantile-onset SMA, the full annual salary of 500,000 SEK was considered as the productivity loss for a caregiver leaving the workforce entirely, while for later-onset SMA a 50% reduction in working hours equated to a productivity loss of 250,000 SEK per year per caregiver. These annual productivity losses were applied over the duration of the patient's dependence on the caregiver. For example, if a patient with infantile-onset SMA required full-time care for 10 years, the total productivity loss would be 5,000,000 SEK (500,000 SEK/year × 10 years).

The authors noted the importance of including caregiver HRQoL and lost productivity, particularly in later-onset SMA, where caregiver burden is more prolonged. While these examples show how elements such as caregiver HRQoL and productivity can be quantified for inclusion within HTA, often important broader elements of value, such as innovation, need to be considered through a transparent qualitative deliberation.

HOW BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVE HAVE BEEN CONSIDERED IN THE UK

In the UK, all three treatments have been assessed and approved by NICE. As potential life-extending breakthrough treatments in an area of high unmet need, and in the absence of any approved disease-modifying therapies, these therapies were considered to be "highly innovative technologies", representing a "step change in managing SMA" (NICE, 2019, 2021a). While NICE conducts CEA from a healthcare system perspective, societal and broader value elements were explicitly recognised as particularly important and impactful and were considered through cost-effectiveness threshold modifiers as well as qualitative deliberation. NICE considered the impact on carer HRQoL, as well as innovation, unmet need and disease severity being instrumental in determining cost-effectiveness/reimbursement decisions (NICE, 2019, 2021a; b).

Two of the therapies qualified for cost-effectiveness threshold modifiers for end-of-life and severe diseases, respectively. In addition to these quantifiable equity concerns, the innovative nature of the technologies, and their impact on carer HRQoL in these cases could only be addressed and incorporated explicitly through qualitative deliberative processes.

HOW BROADER VALUE ELEMENTS/SOCIETAL PERSPECTIVES HAVE BEEN CONSIDERED IN THE APAC REGION

Treatments for SMA have also been approved for reimbursement in some jurisdictions within the APAC region, despite challenges from both regulatory and HTA perspectives.

Regional experts from Taiwan and China included in our expert working group both noted that SMA drugs reached successful reimbursement decisions in part by reference to the consideration of the discussed value elements, in particular, their innovative nature was included through deliberative processes, similarly to the UK.

5. Conclusions & Recommendations

Adopting a societal perspective and incorporating broader value elements in decision-making ensures decision-makers are better informed about the societal welfare effects of their choices, enabling them to make welfare-maximising decisions which can incentivise innovation and encourage the development of treatments that address both clinical and societal needs. This approach is particularly relevant for the Asia-Pacific region, which is experiencing rapid population ageing and an increasing burden of chronic diseases, both leading to a significant reliance on informal care. Additionally, this strategy has the potential to better align HTA with broader government goals in Asia-Pacific jurisdictions, including economic growth and the improvement of health and social standards for society as a whole. Additionally, a more holistic measurement of the full value of health technologies also ensures adequate planning and continued investments in healthcare relative to other governmental expenditures. Finally, addressing health inequities aligns with cultural and societal values in the region.

Without a clear strategy for the full adoption of a societal perspective and recognition of broader elements of value, there will be a growing tension between HTA decision-making and government goals for society and the economy. This report aimed to characterise the current state of play in the APAC region and provide a roadmap for full adoption. Results from the expert consultation indicate a low level of recognition and incorporation of societal perspectives in the APAC region. Barriers identified were largely related to the ability to measure and incorporate broader elements of value. The primary challenges include a perceived lack of robust and validated methods, limited consensus on methodologies, significant capacity constraints, tight assessment timelines, and the potential risk of double counting benefits or costs. However, experts highlighted several opportunities to overcome these barriers, including increasing awareness of existing methodological research, the openness of HTA systems to bring changes and reforms, and ongoing pilots and initiatives aimed at advancing methods and aligning on the most appropriate approaches, standardising data collection methods, and collaborations to enhance evidence quality and comparability.

The adoption of societal perspective and broader value elements could be enhanced by research on priority areas, including but not limited to:

- Estimating productivity gains of non-working populations: while this report has not explored this in detail – as we focused on formal labour market productivity as an initial element to be prioritised – the recognition of unpaid labour should also be considered to improve equitable outcomes, and is of particular relevance in the APAC region where there is an increasingly ageing population, outside the formal labour force but positively contributing to society. In order to develop and refine appropriate methods to quantify the time costs and opportunity costs of unpaid labour, potential research avenues include pilot studies employing time-use surveys and real-world data to estimate productivity gains in non-working populations that could integrate into economic evaluations.

- Investigating the impact of including carer HRQoL in economic evaluations: it will be important to ensure that carer HRQoL is captured using appropriate existing or novel methods and assessing the robustness of these, as well as exploring whether the inclusion of carer HRQoL utility values result in what NICE have called the “perverse” effects of potentially prioritising the perceived cost-effectiveness of interventions that reduce caregiving burden over those that improve patient outcomes (NICE, 2019). This phenomenon, referred to as the "carer QALY trap", occurs when a life-extending treatment appears less cost-effective due to the reduced carer QALY gains that would otherwise result from the patient's death (Mott et al., 2023). Additional research exploring and measuring

bereavement effects – which recognise the temporary or sustained decline in the carer's HRQoL due to grief and emotional distress – may also be useful to mitigate any examples of this limitation in economic modelling.

- Further research is required to improve the ability to define and measure equity and explore its relative importance in decision-making. This involves creating methods and frameworks for evaluators to measure and weight equity-related criteria, such as disease severity, unmet need, and rarity. Similarly, additional research is needed to elicit societal preferences on these criteria and ensure they are accounted for appropriately in decision-making rules (Hayes et al., 2024). Additionally, implementing and refining quantitative methods, such as DCEA, can help to consider socioeconomic factors explicitly. Finally, establishing structured deliberative processes to address qualitative aspects and gather practical experience and evidence can lead to a more consistent inclusion of equity in decision-making.

- Bridging guidance to practice: This report has shown that there is often a perceived difference between what happens in practice in decision-making compared to what is described in guidance documents. Furthermore, even when a robust methodology for quantification of impact exists, it may be challenging to integrate it into HTA practice. One useful avenue of research could focus on methods for the adoption and integration of societal perspectives and broader elements of value, with the potential for cross-jurisdictional comparative studies across the APAC and other regions, to identify best practices and contextual factors that facilitate or hinder the inclusion of societal perspectives. Subsequent research could evaluate the extent to which the principles set out in recommendations and guidelines are being followed in practice, e.g. by using "country scorecards" (Besley et al., 2022, 2023).

We recommended being BRAVER when recognising and incorporating, the societal perspective so that HTA can become a more effective tool for improving health outcomes and societal well-being. This involves:

1. INVOLVING PATIENTS AND CAREGIVERS:

All stakeholders, particularly HTA agencies and innovators, should involve patients and/or caregivers in measuring and incorporating broader elements of value and the societal perspective.

2. CREATING A CONDUCIVE POLICY ENVIRONMENT:

Policymakers should create a policy and legislative framework that recognises societal values and promotes equity considerations, providing a clear mandate to HTA agencies.

3. BUILDING CAPACITY:

Policymakers and HTA agencies should allocate resources for capacity-building and ensure personnel are trained in (novel) methods to conduct HTA evaluations with a broader perspective and implement processes for consistent decision-making. They should also be enabled to be active in international collaborative initiatives.

4. PURSUING A STEPWISE APPROACH:

HTA agencies should work towards recognising and incorporating societal value elements in HTA for their country by:

- Reviewing current guidelines to identify gaps and prioritise value elements to include systematically.

- Convening and resourcing an academic group to independently review and improve, when needed, existing guidelines and create systems for ongoing updates.

- Collaborating with the HTA research community to identify the most appropriate methods for implementing broader value elements in decision-making. In this context, both quantitative and qualitative approaches should be considered to ensure that a wide range of societal value elements can be implemented in a pragmatic but consistent manner.

- Prioritising the adoption of elements such as equity, carer health spillover, productivity, or wider health sector benefits in terms of capacity to make tangible progress in the short term.

- Gradually introducing elements through pilot projects, allowing for iterative learning and refinement.

- Aim to consistently implement a societal perspective on all technologies as part of the reference case in the long term. Ideally APAC jurisdictions would agree on the inclusion of priority elements in a standardised and consistent way to increase the comparability between countries but also the learning effects, both in terms of methods as well as in terms of impact.

- Creating transparent processes and decision-making to facilitate dialogue on methodology and iterative learning.

5. PROMOTING INTERNATIONAL RESEARCH INITIATIVES:

The HTA community should promote and contribute to international research initiatives to develop and validate new methods, especially for less developed and tangible value elements.

- Utilising existing channels such as HTAsiaLink events and the HTAi Asia Policy Forum for collaboration and development of best practices.

- Engaging in existing multi-country research studies and initiatives to address specific issues and barriers related to incorporating broader value elements; or creating a new dedicated one for the APAC region, similar to the HEMA collaboration (IICER, 2025).

- Fostering a research agenda on measuring and implementing the societal perspective consistently across all technologies and therapeutic areas.

5. ENGAGING IN EARLY DIALOGUE:

HTA agencies in APAC countries should collaboratively work on adopting a two-perspective approach (healthcare and societal approaches) and standardise the same categories and methods for broader societal impacts. Furthermore, HTA agencies and innovators should engage in early dialogue to align data collection methods and evaluation criteria, establishing clear rules for evidence generation and assessment of broader value elements.

6. References

Agency for Care Effectiveness, 2024. *Procedures and guidelines for company submissions to the Agency for Care Effectiveness for funding consideration*. Available at: https://www.ace-hta.gov.sg/docs/default-source/company-led-submission/procedures-and-guidelines-for-company-submissions_v1-6_oct2024.pdf?sfvrsn=fcb64bd8_5 [Accessed 29 Jan. 2025].

Al-Janabi, H., Manca, A. and Coast, J., 2017. Predicting carer health effects for use in economic evaluation. *PloS One*, 12(9), p.e0184886. 10.1371/journal.pone.0184886.

Al-Janabi, H., Van Exel, J., Brouwer, W., Trotter, C., Glennie, L., Hannigan, L. and Coast, J., 2016. Measuring Health Spillovers for Economic Evaluation: A Case Study in Meningitis. *Health Economics*, 25(12), pp.1529–1544. 10.1002/hec.3259.

Al-Janabi, H., Wittenberg, E., Donaldson, C. and Brouwer, W., 2022. The relative value of carer and patient quality of life: A person trade-off (PTO) study. *Social Science & Medicine (1982)*, 292, p.114556. 10.1016/j.socscimed.2021.114556.

Alzheimer's Association, 2020. 2020 Alzheimer's Disease Facts and Figures. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*. 10.1002/alz.12068.

Alzheimer's Association, 2024. 2024 Alzheimer's Disease Facts and Figures. [online] Available at: https://www.alz.org/alzheimers-dementia/facts-figures .

Alzheimer's Disease International, 2018. World Alzheimer Report 2018. *NEW FRONTIERS*. [online] Available at: https://www.alzint.org/u/WorldAlzheimerReport2018.pdf .

Asaria, M., Griffin, S. and Cookson, R., 2016. Distributional Cost-Effectiveness Analysis: A Tutorial. *Medical Decision Making: An International Journal of the Society for Medical Decision Making*, 36(1), pp.8–19. 10.1177/0272989X15583266.

Asukai, Y., Briggs, A., Garrison, L.P., Geisler, B.P., Neumann, P.J. and Ollendorf, D.A., 2021. Principles of Economic Evaluation in a Pandemic Setting: An Expert Panel Discussion on Value Assessment During the Coronavirus Disease 2019 Pandemic. *Pharmacoeconomics*, 39(11), pp.1201–1208. 10.1007/s40273-021-01088-5.

Avşar, T.S., Yang, X. and Lorgelly, P., 2023. How is the Societal Perspective Defined in Health Technology Assessment? Guidelines from Around the Globe. *PharmacoEconomics*, 41(2), pp.123–138. 10.1007/s40273-022-01221-y.

van Baal, P., Morton, A. and Severens, J.L., 2018. Health care input constraints and cost effectiveness analysis decision rules. *Social Science & Medicine (1982)*, 200, pp.59–64. 10.1016/j.socscimed.2018.01.026.

Bell, E., Neri, M. and Steuten, L., 2021. *THE BRAVE INITIATIVE. The BRAVE Narrative for Broad Assessment of Value in Vaccines Engagement*. Office of Health Economics.

Benkhalti, M., Espinoza, M., Cookson, R., Welch, V., Tugwell, P. and Dagenais, P., 2021. Development of a checklist to guide equity considerations in health technology assessment. *International Journal of Technology Assessment in Health Care*, 37, p.e17. 10.1017/S0266462320002275.

Besley, S., Henderson, N., Napier, M., Cole, A. and Hampson, G., 2023. *Are Recommendations for HTA of Gene Therapies Being Achieved?* [online] Available at: https://www.ohe.org/publications/recommendations-for-hta-of-gene-therapies-being-achieved/ .

Besley, S., Henderson, N., Towse, A. and Cole, A., 2022. *Health Technology Assessment of Gene Therapies: Are Our Methods Fit for Purpose?* [online] London: Office of Health Economics. Available at: https://www.ohe.org/publications/health-technology-assessment-gene-therapies-are-our-methods-fit-purpose [Accessed 2 Sep. 2022].

Bobinac, A., van Exel, N.J.A., Rutten, F.F.H. and Brouwer, W.B.F., 2011. Health effects in significant others: separating family and care-giving effects. *Medical Decision Making: An International Journal of the Society for Medical Decision Making*, 31(2), pp.292–298. 10.1177/0272989X10374212.

Bobinac, A., van Exel, N.J.A., Rutten, F.F.H. and Brouwer, W.B.F., 2012. Inquiry into the Relationship between Equity Weights and the Value of the QALY. *Value in Health*, 15(8), pp.1119–1126. 10.1016/j.jval.2012.07.002.

Bouwmans, C., Krol, M., Severens, H., Koopmanschap, M., Brouwer, W. and Roijen, L.H., 2015. The iMTA Productivity Cost Questionnaire: A Standardized Instrument for Measuring and Valuing Health-Related Productivity Losses. *Value in Health*, 18(6), pp.753–758. 10.1016/j.jval.2015.05.009.

Brassel, S., Neri, M., Schirrmacher, H. and Steuten, L., 2022. The Value of Vaccines in Maintaining Health System Capacity in England. *Value in Health*, p.S1098301522020964. 10.1016/j.jval.2022.06.018.

Breslau, R.M., Cohen, J.T., Diaz, J., Malcolm, B. and Neumann, P.J., 2023. A review of HTA guidelines on societal and novel value elements. *International Journal of Technology Assessment in Health Care*, 39(1), p.e31. 10.1017/S026646232300017X.

Brouwer, W. and van Baal, P., 2023. Moving Forward with Taking a Societal Perspective: A Themed Issue on Productivity Costs, Consumption Costs and Informal Care Costs. *PharmacoEconomics*, 41(9), pp.1027–1030. 10.1007/s40273-023-01307-1.

Brouwer, W.B.F., 2019. The Inclusion of Spillover Effects in Economic Evaluations: Not an Optional Extra. *PharmacoEconomics*, 37(4), pp.451–456. 10.1007/s40273-018-0730-6.

Brouwer, W.B.F., van Exel, N.J.A., Baltussen, R.M.P.M. and Rutten, F.F.H., 2006. A dollar is a dollar is a dollar--or is it? *Value in Health: The Journal of the International Society for Pharmacoeconomics and Outcomes Research*, 9(5), pp.341–347. 10.1111/j.1524-4733.2006.00123.x.

Charlton, V., 2023. All health is not equal: the use of modifiers in NICE technology appraisal. *BMJ Evidence-Based Medicine*, 28(4), pp.247–250. 10.1136/bmjebm-2022-112159.

Culyer, A.J. and Bombard, Y., 2012. An Equity Framework for Health Technology Assessments. *Medical Decision Making*, 32(3), pp.428–441. 10.1177/0272989X11426484.

Dean, R., Jensen, I., Cyr, P., Miller, B., Maru, B., Sproule, D.M., Feltner, D.E., Wiesner, T., Malone, D.C., Bischof, M., Toro, W. and Dabbous, O., 2021. An updated cost-utility model for onasemnogene abeparvovec (Zolgensma®) in spinal muscular atrophy type 1 patients and comparison with evaluation by the Institute for Clinical and Effectiveness Review (ICER). *Journal of Market Access & Health Policy*, 9(1), p.1889841. 10.1080/20016689.2021.1889841.

EMA, 2015. *EU/3/15/1509 - orphan designation for treatment of spinal muscular atrophy | European Medicines Agency*. [online] Available at: https://www.ema.europa.eu/en/medicines/human/orphan-designations/eu-3-15-1509 [Accessed 16 Jan. 2024].

Engel, L., Bryan, S. and Whitehurst, D.G.T., 2021. Conceptualising 'Benefits Beyond Health' in the Context of the Quality-Adjusted Life-Year: A Critical Interpretive Synthesis. *PharmacoEconomics*, 39(12), pp.1383–1395. 10.1007/s40273-021-01074-x.

Garrison, L., Mestre-Ferrandiz, J. and Zamora, B., 2016. *The Value of Knowing and Knowing the Value: Improving the Health Technology Assessment of Complementary Diagnostics*. [online] OHE - Leading intellectual authority on global health economics. Available at: https://www.ohe.org/publications/value-knowing-and-knowing-value-improving-health-technology-assessment-complementary/ [Accessed 19 Dec. 2024].

Hayes, H., Radu, P., Mott, D. and Skedgel, C., 2024. Understanding societal preferences for priority by disease severity in England & Wales|. [online] Available at: https://www.ohe.org/publications/understanding-societal-preferences-for-priority-by-disease-severity-in-england-wales/ .

Henry, E., Al-Janabi, H., Brouwer, W., Cullinan, J., Engel, L., Griffin, S., Hulme, C., Kingkaew, P., Lloyd, A., Payakachat, N., Pennington, B., Peña-Longobardo, L.M., Prosser, L.A., Shah, K., Ungar, W.J., Wilkinson, T. and Wittenberg, E., 2024. Recommendations for Emerging Good Practice and Future Research in Relation to Family and Caregiver Health Spillovers in Health Economic Evaluations: A Report of the SHEER Task Force. *PharmacoEconomics*, 42(3), pp.343–362. 10.1007/s40273-023-01321-3.

Hodgson, S., Hayes, H., Cubi-Molla, P. and Garau, M., 2024. *Inequalities in Dementia: Unveiling the Evidence and Forging a Path Towards Greater Understanding - OHE*. [online] OHE Contract Research. Available at: https://www.ohe.org/publications/inequalities-in-dementia [Accessed 30 Aug. 2024].

Hoefman, R.J., van Exel, J. and Brouwer, W., 2013. How to include informal care in economic evaluations. *PharmacoEconomics*, 31(12), pp.1105–1119. 10.1007/s40273-013-0104-z.

Hofmann, S., Branner, J., Misra, A. and Lintener, H., 2021. A Review of Current Approaches to Defining and Valuing Innovation in Health Technology Assessment. *Value in Health*, 24(12), pp.1773–1783. 10.1016/j.jval.2021.06.006.

Hofmann, S., Branner, J., Müller, M. and Brown, L., 2023. Assessing the Value of Medicines Beyond Patients' Health Benefit.

ICER, 2019. *Spinraza and Zolgensma for Spinal Muscular Atrophy: Effectiveness and Value. Final Evidence Report*. Available at: https://icer.org/wp-content/uploads/2020/10/ICER_SMA_Final_Evidence_Report_110220.pdf .

Institute for Clinical and Economic Review, 2025. *Health Economics Methods Advisory (HEMA)*. [online] ICER. Available at: https://icer.org/health-economics-methods-advisory-hema/ [Accessed 5 Feb. 2025].

Institute for Clinical and Economic Review, 2025. *Therapies for the Treatment of Spinal Muscular Atrophy*. [online] Available at: https://icer.org/wp-content/uploads/2025/01/ICER_SMA_Draft-Scope_For-Publication_010625.pdf [Accessed 10 Mar. 2025].

Ito, K., Chapman, R., Pearson, S.D., Tafazzoli, A., Yaffe, K. and Gurwitz, J.H., 2021. Evaluation of the Cost-effectiveness of Drug Treatment for Alzheimer Disease in a Simulation Model That Includes Caregiver and Societal Factors. *JAMA Network Open*, 4(10), p.e2129392. 10.1001/jamanetworkopen.2021.29392.

Krol, M., Papenburg, J., Koopmanschap, M. and Brouwer, W., 2011. Do productivity costs matter?: the impact of including productivity costs on the incremental costs of interventions targeted at

depressive disorders. *PharmacoEconomics*, 29(7), pp.601–619. 10.2165/11539970-000000000-00000.

Krol, M., Papenburg, J., Tan, S.S., Brouwer, W. and Hakkaart, L., 2016. A noticeable difference? Productivity costs related to paid and unpaid work in economic evaluations on expensive drugs. *The European Journal of Health Economics*, 17(4), pp.391–402. 10.1007/s10198-015-0685-x.

Lakdawalla, D.N., Doshi, J.A., Garrison, L.P., Phelps, C.E., Basu, A. and Danzon, P.M., 2018. Defining Elements of Value in Health Care—A Health Economics Approach: An ISPOR Special Task Force Report [3]. *Value in Health*, 21(2), pp.131–139. 10.1016/j.jval.2017.12.007.

Meltzer, D., 1997. Accounting for future costs in medical cost-effectiveness analysis. *Journal of Health Economics*, 16(1), pp.33–64. 10.1016/S0167-6296(96)00507-3.

Mott, D.J., Schirrmacher, H., Al-Janabi, H., Guest, S., Pennington, B., Scheuer, N., Shah, K.K. and Skedgel, C., 2023. Modelling Spillover Effects on Informal Carers: The Carer QALY Trap. *Pharmacoeconomics*, 41(12), pp.1557–1561. 10.1007/s40273-023-01316-0.

NICE, 2019. *Nusinersen for treating spinal muscular atrophy | Guidance | NICE*. [online] Available at: https://www.nice.org.uk/guidance/ta588/ [Accessed 5 Feb. 2025].

NICE, 2021a. *Onasemnogene abeparvovec for treating spinal muscular atrophy | Guidance | NICE*. [online] Available at: https://www.nice.org.uk/guidance/hst15/ [Accessed 5 Feb. 2025].

NICE, 2021b. *Overview | Risdiplam for treating spinal muscular atrophy | Guidance | NICE*. [online] Available at: https://www.nice.org.uk/guidance/TA755 [Accessed 21 Mar. 2025].

NICE, 2024. *Advancing health technology assessment in Taiwan*. [online] Available at: https://case-studies.nice.org.uk/Taiwan/index.html [Accessed 6 Feb. 2025].

Panteli, D., Kreis, J. and Busse, R., 2015. CONSIDERING EQUITY IN HEALTH TECHNOLOGY ASSESSMENT: AN EXPLORATORY ANALYSIS OF AGENCY PRACTICES. *International Journal of Technology Assessment in Health Care*, 31(5), pp.314–323. 10.1017/S0266462315000549.

Ramagopalan, S.V., Gomes, M., Durand-Zaleski, I., Malcolm, B., Diaz, J., Mitchell, G., Pearson-Stuttard, J. and Garrison, L.P., 2024. Val (EU) xit: do we need an international ISPOR value flower? *Journal of Comparative Effectiveness Research*, 0(0), p.e240083. 10.57264/cer-2024-0083.

Reckers-Droog, V.T., van Exel, N.J.A. and Brouwer, W.B.F., 2018. Looking back and moving forward: On the application of proportional shortfall in healthcare priority setting in the Netherlands. *Health Policy (Amsterdam, Netherlands)*, 122(6), pp.621–629. 10.1016/j.healthpol.2018.04.001.

Sanders, G.D., Neumann, P.J., Basu, A., Brock, D.W., Feeny, D., Krahn, M., Kuntz, K.M., Meltzer, D.O., Owens, D.K., Prosser, L.A., Salomon, J.A., Sculpher, M.J., Trikalinos, T.A., Russell, L.B., Siegel, J.E. and Ganiats, T.G., 2016. Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses: Second Panel on Cost-Effectiveness in Health and Medicine. *JAMA*, 316(10), pp.1093–1103. 10.1001/jama.2016.12195.

Seymour, D., 2024. *Letter of Expectations 2024-25.* Available at: https://pharmac.govt.nz/assets/Uploads/Letter-of-Expectations-2024-25.pdf [Accessed 20 Aug. 2024].

Sharma, M., Teerawattananon, Y., Dabak, S.V., Isaranuwatchai, W., Pearce, F., Pilasant, S., Sabirin, J., Mayxay, M., Guerrero, M., Phuong, N.K., Sastroasmoro, S. and Htoo, T.S., 2021. A landscape analysis

of health technology assessment capacity in the Association of South-East Asian Nations region. *Health Research Policy and Systems*, [online] 19. 10.1186/s12961-020-00647-0.

Tilling, C., Krol, M., Tsuchiya, A., Brazier, J. and Brouwer, W., 2010. In or out? Income losses in health state valuations: a review. *Value in Health: The Journal of the International Society for Pharmacoeconomics and Outcomes Research*, 13(2), pp.298–305. 10.1111/j.1524-4733.2009.00614.x.

Tilling, C., Krol, M., Tsuchiya, A., Brazier, J., Exel, J. van and Brouwer, W., 2012. Does the EQ-5D reflect lost earnings? *PharmacoEconomics*, 30(1), pp.47–61. 10.2165/11539910-000000000-00000.

WHO, 2023. *Dementia*. [online] Available at: https://www.who.int/news-room/fact-sheets/detail/dementia [Accessed 5 Feb. 2025].

Wittenberg, E., James, L.P. and Prosser, L.A., 2019. Spillover Effects on Caregivers' and Family Members' Utility: A Systematic Review of the Literature. *PharmacoEconomics*, 37(4), pp.475–499. 10.1007/s40273-019-00768-7.

Xie, R.Z., Towse, A. and Garrison, L.P., 2022. Should We Pay for Scientific Knowledge Spillovers? The Underappreciated Value of "Failed" R&D Efforts. *International Journal of Technology Assessment in Health Care*, 38(1), p.e31. 10.1017/S0266462322000150.

Zhang, M., Bao, Y., Yang, Y., Kimber, M., Levine, M. and Xie, F., 2023. Identifying Attributes for a Value Assessment Framework in China: A Qualitative Study. *PharmacoEconomics*, 41(4), pp.439–455. 10.1007/s40273-022-01235-6.

Zuluaga-Sanchez, S., Teynor, M., Knight, C., Thompson, R., Lundqvist, T., Ekelund, M., Forsmark, A., Vickers, A.D. and Lloyd, A., 2019. Cost Effectiveness of Nusinersen in the Treatment of Patients with Infantile-Onset and Later-Onset Spinal Muscular Atrophy in Sweden. *PharmacoEconomics*, 37(6), pp.845–865. 10.1007/s40273-019-00769-6.

Appendix 1: BRAVER framework analysis at jurisdiction level

TABLE 8: LEVEL OF RECOGNITION OF BOADER ELEMENTS OF VALUE (1- NOT AT ALL RECOGNISED, 5- SOMEWHAT RECOGNISED, 9- HIGHLY RECOGNISED)

Recognition	1	2	3	4	5	6	7	8	9
Patient: Productivity		HK MY NZ			SG VN	KR AU	CN TH TW		
Patient: Indirect costs and consumption		HK NZ	SG		CN	VN KR	AU TH	TW MY	
Patient: Value of knowledge and reduced uncertainty	MY SG NZ	HK	AU CN	TH VN KR			TW		
Informal care spillovers: Health-related quality of life	MY		SG KR CN	NZ		VN AU	TH HK	TW	
Informal care spillovers: Productivity	MY	HK NZ	AU KR		VN SG CN		TW	TH	
Informal care spillovers: Indirect costs	SG MY	HK NZ	AU		VN CN	KR		TW TH	
Society: Economic activity	MY NZ	HK CN	AU KR		SG		VN	TW TH	
Society: Equity			MY	NZ	VN	CN AU SG	HK	TH TW KR	
Society: Value of security and risk reduction	SG MY NZ		HK	CN AU	KR VN		TH TW		
Society: Health-sector benefits	SG MY			AU		CN VN KR	HK	TW NZ TH	
Society: Non-health sector benefits	CN SG MY	NZ	AU	VN HK TH KR				TW	

TABLE 9: LEVEL OF INCORPORATION OF BOADER ELEMENTS OF VALUE (1- NOT AT ALL INCORPORATED, 5- SOMEWHAT INCORPORATED, 9- HIGHLY INCORPORATED)

Incorporation	1	2	3	4	5	6	7	8	9
Patient: Productivity	HK	NZ	MY		VN SG AU	TW KR Cn	TH		
Patient: Indirect costs and consumption	HK	NZ	SG	TH CN	MY VN	TW KR	AU		
Patient: Value of knowledge and reduced uncertainty	SG HK MY NZ	AU KR		TH CN	VN		TW		
Informal care spillovers: Health-related quality of life	MY	AU CN	NZ SG KR		TH VN	HK	TW		
Informal care spillovers: Productivity	HK MY	CN NZ	KR AU		SG VN	TW	TH		
Informal care spillovers: Indirect costs	HK MY	CN	NZ KR AU		SG VN	TW	TH		
Society: Economic activity	MY CN	AU NZ HK	KR		SG VN	TW	TH		
Society: Equity				HK CN SG	VN AU	TW NZ	MY TH	KR	
Society: Value of security and risk reduction	SG HK MY	AU NZ KR CN			VN	TW	TH		
Society: Health-sector benefits	SG			AU MY	HK VN KR		CN	NZ TW TH	
Society: Non-health sector benefits	MY SG	AU CN NZ	HK	TH KR	VN	TW			

TABLE 10: LEVEL OF IMPACT OF BOADER ELEMENTS OF VALUE (N/A- NOT RECOGNISED NOR INCORPORATED; 1- NO IMPACT, 5- SOME IMPACT, 9- HIGH IMPACT)

Impact	N/A	1	2	3	4	5	6	7	8	9
Patient: Productivity			NZ HK SG	MY	AU CN	KR VN	TH	TW		
Patient: Indirect costs and consumption			NZ HKCN SG		MY AU	TW KR	TH		VN	
Patient: Value of knowing and reduced uncertainty	NZ		KR AU GG	HK CN		VN TW	TH			
Informal care spillovers: Health-related quality of life	MY SG	CN		NZ	AU	TW KR		HK TH	VN	
Informal care spillovers: Productivity	MY SG		AU CN	HK NZ		KR TW	VN	TH		
Informal care spillovers: Indirect costs	MY SG		AU CN	HK NZ		KR	VN TW		TH	
Society: Economic activity	TH MY SG NZ			HK CN	AU	KR	TW		VN	
Society: Equity				HK	AU	TW VN SG		CN MY NZ	TH KR	
Society: Value of security and risk reduction	MY TH SG	NZ	AU			VN KR	TW	HK CN		
Healthcare system: Wider Health benefits	TH SG		NZ	AU	MY	VN	HK	KR	CN	TW
Society: Impact on other government sectors	MY SG		AU CN			KR VN NZ TH	HK	TW		

Appendix 2: Full definitions of broader value elements/groupings

Perspective	Value Element/Group	Definition
Patient	Productivity	The impact on a patient's productivity due to their condition, including missed workdays (absenteeism), reduced productivity while at work (presenteeism), and early retirement.
Patient	Indirect costs and consumption	Additional out-of-pocket costs such as transportation, and effects on consumption unrelated to health.
Patient	Value of knowing and reduced uncertainty	The benefit of a clear diagnosis and knowing the likelihood of a treatment's success, reducing uncertainty for patients. Includes: i) value of hope and cure (the value of the possibility of a cure and patient preferences for treatments that offer a chance at the best outcomes), and; real option value (the value of an intervention that extends the possibility for patients to access future treatments with uncertain benefits, either by prolonging survival, increasing eligibility, or enhancing future treatment effectiveness).
Informal care spillovers	Health-related quality of life	The impact on informal carers and family members, primarily through reduced emotional stress from seeing a loved one suffer and a lower burden of providing informal care.
Informal care spillovers	Productivity	Impact on productivity from providing unpaid informal care.
Informal care spillovers	Indirect costs	Time, financial and opportunity costs from the burden of providing unpaid informal care.
Healthcare system	Wider health-sector benefits	The value beyond direct cost offsets, including: i) innovation and scientific spillovers (the broader innovation benefits that arise from implementing new treatments, which can drive further research and advancements in medicine); ii) adherence improving factors, and; iii) healthcare system capacity (value of maintaining health system resources to manage patient care during periods of high demand, preventing scenarios where patients go untreated due to lack of capacity).

Perspective	Value Element/Group	Definition
Society	Economic activity	The impact on supply and demand in the broader economy and economic growth.
Society	Equity	The impact on the fairness of health distribution across diverse groups, such as socioeconomic status, location, ethnicity, age, and disease characteristics. It could include also: i) severity (the degree of health loss caused by a condition); ii) unmet need (the difference between the healthcare a person receives and what is considered necessary based on medical advice or personal preferences), and; Refers iii) rarity (diseases affecting a small number of people compared to the general population).
Society	Value of security and risk reduction	The value of the enabling future protection of the population. Includes: i) herd protection (indirect protection for non-immune individuals when most of the population is immune to an infectious disease); ii) the value of no fear of contagion (the value of reducing disease spread to ease public anxiety about infection risks and potential quarantines, specific to anti-infective treatments), and; iii) insurance value (the value the broader population places on the availability of therapies for future use, offering protection against potential health and financial risks).
Society	Impact on other government sectors	The impact on other governmental sectors. Includes: i) the environmental footprint of each health technology; ii) educational outcomes; iii) legal and criminal justice outcomes, e.g. crime rates; iv) effect on social services, and v) housing or home improvements

About us
With over 60 years of expertise, the Office of Health Economics (OHE) is the world's oldest independent health economics research organisation. Every day we work to improve health care through pioneering and innovative research, analysis, and education.

As a global thought leader and publisher in the economics of health, health care, and life sciences, we partner with Universities, Government, health systems and the pharmaceutical industry to research and respond to global health challenges.

As a government-recognised Independent Research Organisation and not-for-profit, our international reputation for the quality and independence of our research is at the forefront of all we do. OHE provides independent and pioneering resources, research and analyses in health economics, health policy and health statistics. Our work informs decision-making about health care and pharmaceutical issues at a global level.

All of our work is available for free online at www.ohe.org.

Areas of expertise

- Evaluation of health policy
- The economics of health care systems
- Health technology assessment (HTA) methodology and approaches
- HTA's impact on decision making, health care spending and the delivery of care
- Pricing and reimbursement for biologics and pharmaceuticals, including value-based pricing, risk sharing and biosimilars market competition
- The costs of treating, or failing to treat, specific diseases and conditions
- Drivers of, and incentives for, the uptake of pharmaceuticals and prescription medicines
- Competition and incentives for improving the quality and efficiency of health care
- Incentives, disincentives, regulation, and the costs of R&D for pharmaceuticals and innovation in medicine
- Capturing preferences using patient-reported outcomes measures (PROMs) and time trade-off (TTO) methodology
- Roles of the private and charity sectors in health care and research
- Health and health care statistics

CONTRACT RESEARCH REPORT
APRIL 2025

ohe.org

The Office of Health Economics A Company Limited by Guarantee of Registered No.09848965
OHE Consulting Ltd Registered Company No.09853113
OHE is a Charity Registration No.1170829
Registered Office 2nd Floor Goldings House, Hay's Galleria, 2 Hay's Lane, London, SE1 2HB