Health Technology Assessment (HTA) Capability Framework for Australian government staff

Sub-themes	Foundational	Intermediate	Adept	Advanced	Highly advanced
Health policy context and government processes					
Health system and government processes (including funding)	Awareness of the overall structure of the Australian health system, and how government(s) manage the system and share responsibilities across the public and private sectors, and between the Commonwealth and States and Territories	Understanding of the different actors in the health system and the role of different funding sources (including private health insurance) and funding strategies in health	Understanding of the history and rationale for different government HTA processes Awareness of the structures and funding mechanisms within the Australian health system compared with other countries	Understanding of the complexity of how HTA processes relate to other relevant government processes Understanding of how HTA can be used to inform different funding arrangements within the Australian health system.	Able to develop and negotiate alternative funding arrangements to achieve broader policy objectives within the health system
HTA as a policy tool	Understanding of the purpose and scope of HTA	Able to assess the suitability of specific technology funding applications for different HTA processes	Able to distil key policy issues for and by HTA committees Understanding of how to use HTA in the most appropriate way to address a specific policy problem	Able to prioritise HTA of specific technologies to align with broader policy objectives	Able to write HTA-related policy. Able to develop or change government processes to enable more appropriate or efficient HTA
Australia-specific HTA	Awareness of the roles and responsibilities of the Commonwealth HTA committees (TGA, PBAC, MSAC and PLAC) and specific government processes to support these committees	Awareness of the role of the States and Territories and hospitals in HTA decision-making	Understanding of how the HTA responsibilities at all levels of Australian government intersect and interact	Understanding of how HTA processes in Australia compare to HTA processes in other countries and why they differ	Able to influence the use of HTA at a national level
HTA product types	Awareness of the different HTA product types used in Australia (e.g. full HTA vs rapid HTA, applicant-developed HTA vs Department-contracted HTA)	Understanding of the full range of HTA product types available, and the strengths and limitations of each to address different policy questions	Able to explain the risks and benefits of each HTA product type to a policy maker	Able to determine which HTA product type is suitable for which policy question, within the timeframes and resourcing available	Able to develop new HTA product types and methodologies to address specific policy requirements
Medical context and place in healthcare					
Medical context for HTA	Broad understanding of how to determine current clinical care across a range of specialties, the roles of different medical specialities, and the principles of a clinical pathway/algorithm	Able to critique a clinical pathway/algorithm developed by others	Able to develop a clinical pathway/algorithm based on available information, including consideration of alternative places/uses of technology in practice	Understanding of the broader policy implications of selecting a particular clinical algorithm for an HTA	Able to construct new evidence-based clinical pathways including the appropriate sequencing of technologies in a pathway of care (eg in the context of clinical practice guidelines)

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Clinical uses of technology	Understanding of basic medical terminology and able to use biomedical dictionaries and resources	Understanding of how medical conditions are categorised (eg, ICD categories), and the general features that are relevant to HTA (ie, natural history of condition, current diagnostic and treatment methods)	Understanding of the different purpose of technologies (eg, prevention, diagnosis, treatment, monitoring) and the implications for the conduct of an HTA	Able to communicate with national and international subject matter experts for one or more clinical areas	Able to identify cross-cutting themes or class effects of technologies across different clinical areas
Technology types	Awareness of the range of technologies that can be the subject of HTA (pharmaceuticals, vaccines, medical devices, imaging, blood products, genetic and genomic tests, public health initiatives etc)	Understanding of the mechanism of action of a range of different therapeutic interventions	Understanding of the mechanism of action of a range of investigative interventions	Understanding of how the mechanism of action of different technologies can interact (be additive or multiplicative) or be independent	Able to identify system-level issues related to the emergence of a new type of technology, especially disruptive technologies
Localising the clinical evidence	Awareness of the clinical context in which the new technology will be delivered in Australia – population characteristics, setting, health professional characteristics	Able to compare the Australian clinical context for use of the technology with the clinical context of the technology in the evidence base	Able to distinguish where differences in the clinical context of delivery of the technology are likely to be problematic in interpreting and applying the evidence to the target population and circumstances in Australia	Able to judge the applicability and generalisability of available evidence to the proposed patient population in Australia	Able to accurately predict and justify the direction and/or magnitude of the clinical effect of the technology in the target population in Australia
Appraisal of clinical evidence					
Framing questions for HTA	Understanding of how to frame broader policy questions as HTA questions, and be able to develop or confirm one or more PICO questions for a health technology with a therapeutic purpose	Able to develop or confirm one or more PICO questions for a health technology with an investigative (diagnostic, screening, staging, monitoring) purpose	Able to develop or confirm one or more PPO questions for a health technology with a prognostic or predictive purpose	Able to develop or confirm one or more HTA questions for a health technology with a combined purpose, or an innovation that does not fit within PICO or PPO framing	Able to develop HTA questions for technologies that need re-assessing eg have already been introduced into the health system (conditions of post-market reviews, or diffusion without prior HTA)
Literature searching methods	Understanding of the steps involved in conducting a simple key word literature search in one or two databases	Able to design and document a literature search to address a specific HTA question that uses Boolean operators, key words and indexing terms and is replicable	Able to design and document a search strategy that is adaptable to multiple databases and is replicable	Able to design and conduct a complex literature search to address one or more HTA questions Able to determine the completeness and appropriateness of a literature search conducted by others	Contributes to the development of new methods for searching and managing literature

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Study design and risk of bias	Understanding of the different types of clinical study design and when they are used, and the concept of an evidence hierarchy	Awareness of the risk of bias associated with how therapeutic studies are designed and conducted, and the impact of the main types of bias on study findings Able to appraise the quality of studies addressing a therapeutic HTA question	Awareness of the risk of bias associated with how investigative studies are designed and conducted, and the impact of the main types of bias on study findings Able to appraise the quality of studies addressing an investigative HTA question	Able to synthesise standardised risk of bias appraisals and judge the quality of a body of evidence underpinning an HTA question	Able to apply an advanced understanding of HTA methods to identify and describe evidence gaps and determine the type of evidence needed to fill them
Systematic reviews of quantitative evidence	Understanding of what a systematic review is, why it is done and the benefits and limitations of systematic review methods	Able to identify, extract, organise and report relevant information from sources of clinical evidence as part of a systematic review	Able to critically appraise and synthesise a body of quantitative evidence using existing validated methods for a systematic review	Able to compare and select different methods for undertaking systematic reviews (eg, according to included study types)	Able to contribute to the empirical development of new methods for undertaking quantitative systematic reviews
Evidence generated using qualitative or mixed methods	Understanding of the nature of research questions and hypotheses and different types of knowledge	Awareness of the role of qualitative research and the range of epistemologies and theoretical approaches	Able to critically appraise qualitative research to inform HTA decision-making related to a specific technology Able to design and conduct questionnaires, surveys, semi-structured interviews, Delphi techniques, and focus groups	Able to analyse and synthesise data using different social science approaches such as thematic analysis, narrative review, or content or discourse analysis Able to combine quantitative and qualitative approaches in mixed-methods reviews or realist syntheses	Able to develop new qualitative and/or mixed-methods approaches to synthesis for the purpose of informing HTA decision-making
Statistical analysis	Understanding of hypothesis testing and basic statistical terms and descriptive statistics used in HTA, eg rates and percentages, means, medians, standard deviations and statistical significance	Understanding and calculation of epidemiological effect measures, measures of association, interpretation of confidence intervals and minimal clinically important differences. Able to undertake statistical analyses using established methods, including simple meta-analyses and adjusted indirect comparisons.	Understanding and interpretation of a wide variety of statistical methods in the literature appraised and synthesised, including multivariate analyses, statistical modelling, diagnostic and predictive statistical measures, survival analyses. Understanding and interpretation of meta-analyses and exploration of heterogeneity	Able to undertake advanced statistical synthesis methods such as network meta-analysis and individual patient data meta-analysis Able to critically appraise and interpret Bayesian and other statistical (and simulated) approaches used to analyse adaptive trial designs	Able to develop new statistical methods for the analysis or synthesis of clinical data
Health economic evaluation					
Broad economic concepts	Understanding of the concepts of scarcity, opportunity cost, efficiency, equity, discounting, and perspective	Understanding of the economic principles of supply and demand and why health is an imperfect market	Understanding of the principles of welfare economics and market approaches to health in Australia	Understanding of the macroeconomics of the health system in Australia and international comparisons	Able to influence how economics is used to inform decision-making at a whole-of-government level

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Specific health economic concepts	Awareness of health economics terminology and phrasing used within HTA in Australia: ICER, QALYs etc	Able to interpret the output from health economic evaluations, including uni- and multivariate sensitivity analyses	Understanding of the concept of uncertainty: sources, measurement, and interpretation	Able to define meaningful economic scenario analyses to inform relevant policy decisions	Understanding of how committees weigh different aspects of an HTA to inform policy decisions
Types of health economic evaluation	Understanding of the purpose of economic evaluation in an HTA, and the linkages between clinical and economic analyses	Understanding of the different types of health economic evaluation: CBA, CMA, CEA, CUA	Able to build a simple health economic model (in Excel and Tree-age)	Able to build complex health economic models (in Excel, Tree-age and other software applications)	Able to undertake advanced computer programming and/or simulation modelling
Cost inputs	Awareness of how health costs are expressed (units and unit costs) and the different sources of cost data used to inform health economic evaluations	Understanding of how to handle health cost data: discounting, inflation, dis/aggregation, avoidance of double-counting	Able to apply cost data from different sources within a health economic model	Able to design micro- and macro-costing studies to collect data for inclusion in a health economic analysis	Able to undertake advanced cost data handling and analysis for use in an economic analysis
Clinical data inputs	Awareness of how quantitative data from a clinical study or systematic review is applied within an economic model	Understanding of when trial-based data need to be transformed for use within an economic evaluation	Able to extrapolate and/or transform trial-based outcomes data for use within a health economic model	Able to appropriately apply a variety of clinical data sources as parameters within an economic model	Able to validate the plausibility of an economic model for clinical sense
Model structures	Awareness of the difference between trial-based and modelled economic analyses	Awareness of different types of health economic model structure and when to use them	Able to judge the appropriateness of an economic model structure for a particular clinical situation	Able to appraise all aspects of health economic models developed by others	Able to develop new methods for health economic modelling, or apply modelling methods from other disciplines
QoL and utilities	Awareness of the role of Quality of Life and Patient Reported Outcome Measures (PROMs)	Understanding of how different Quality of Life and health-related utility measures (generic and disease-specific) are generated and validated	Able to identify relevant utility measures/values reported by others and apply these appropriately in the context of a specific economic evaluation	Able to appraise studies that have used direct elicitation of preferences or validated health-related utility measures to yield utility measures/values	Able to design, conduct and analyse studies using direct elicitation of preferences or validated health-related utility measures
Financial analysis and pricing					
Macro theme	Understanding of the concept of projecting future costs by payer	Understanding of how budget estimates are derived using epidemiological and/or market share approaches	Understanding of the concept of indication leakage and awareness of the available policy and financial levers to address this risk	Understanding of how broader health policy settings may impact on estimates of utilisation	Able to develop policy to mitigate financial risk to government
Risk of leakage	Understanding of the role of budget impact analysis in HTA in Australia and linkages with clinical and economic analyses	Able to interpret the output from budget impact analyses, including uni- and multivariate sensitivity analyses	Able to analyse and interpret predicted versus actual utilisation data for MBS and PBS items	Able to analyse and interpret MBS and PBS utilisation data in the context of data from other sources (such as hospitals and private health insurers)	Able to influence the collection of utilisation data to inform future funding decisions

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Data inputs for Budget Impact Analyses	Understanding of the concepts of incidence and prevalence, and how they are used to estimate populations for acute and chronic health conditions	Able to critically appraise different sources of epidemiological and observational evidence	Able to select the most appropriate data inputs for a specific budget impact analysis	Understanding of how access and implementation issues may impact on uptake of a new technology or service and/or substitution of a comparator	Able to define meaningful budget impact scenario analyses to inform relevant policy decisions (including alternative place of technology in practice)
Mechanics of building Budget Impact Analyses	Able to describe the approach to a budget impact model prepared by others	Able to check the accuracy of budget impact models developed by others (in Excel)	Able to build a simple budget impact model (in Excel)	Able to build complex budget impact models (in Excel)	Able to undertake advanced simulation modelling of budget impact
Pricing policy	Understanding of Medicare-related concepts such as co-payments, bulk billing, rebate rates, out-of-pocket costs, co-claiming and the Medicare safety net	Understanding of concepts such as financial caps, discounts, and list/schedule prices vs effective/shadow prices.	Understanding of government pricing strategies other than cost-effectiveness evaluation: internal/external reference pricing, cost plus pricing, special pricing arrangements, and tendering.	Understanding of public hospital and private health sector pricing strategies and how these interact with Commonwealth pricing policies	Able to develop health technology pricing policy for government
Legal and legislative aspects	Understanding of confidentiality and intellectual property provisions related to HTA	Understanding of rules and regulations relevant to a technology, its proposed circumstances of use, and it's likely funding mechanism	Able to apply relevant rules and regulations to consideration of a specific technology.	Able to contribute to the development of materials to support a Risk Share Arrangement or health technology tendering process	Able to manage the development of a Risk Share Arrangement or a health technology tendering process
Implementation and Post-market review					
Macro theme	Awareness of the concepts of efficacy vs effectiveness, and the applicability and generalisability of clinical evidence due to inter/national differences in clinical context	Able to critique the assessments of applicability and generalisability undertaken by others within a local HTA	Able to undertake an assessment of the applicability and generalisability of a particular evidence base for local HTA (research translation)	Understands the implications for decision-making when an evidence base is not fully applicable or generalisable to a local HTA	Understands the principles of implementation science and the factors that might enable or inhibit the impact of an HTA-informed decision.
Consumer engagement	Awareness of how the consumer perspective may be different to the perspectives of health professionals or government	Able to identify aspects relevant to consumers (patients, carers, community) for an HTA of a specific technology	Able to communicate with consumers, including writing HTA summaries for a lay audience	Able to apply methods for collecting and interpreting consumer input for HTA	Able to develop government policy related to consumer engagement in HTA
Stakeholder engagement	Awareness of the different stakeholders involved in HTA processes and activities, and understanding of the different perspectives and factors that motivate these stakeholders	Able to liaise effectively with a range of government stakeholders (regulators, other committees etc) regarding HTA matters	Able to liaise effectively with a range of non-government stakeholders (industry, academia, clinical groups) regarding HTA matters	Able to engage effectively in conversations and negotiations with stakeholders where HTA decisions are contested or where HTA processes may need to be varied	Able to communicate HTA-related matters effectively with senior policy makers and the media

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Legal aspects	Awareness that HTA encompasses social, legal and ethical aspects as well as clinical, economic and financial aspects	Able to identify relevant ethical or legal aspects for a specific HTA (eg, biosamples, genetic testing, health data privacy, data storage)	Aware of ethical and legal consequences of increased use of a specific technology (especially personalised care) from multiple perspectives	Understanding of relevant legislation and legal ramifications of decisions regarding specific health technologies	Able to contribute to the drafting of relevant regulations or legislation
Ethical aspects	Understanding of the principles in the NHMRC Statement of ethical conduct in research	Awareness of the types of bioethical problems that might arise for specific technologies and/or conditions when undertaking an HTA	Understanding of the four principles of bioethics: autonomy, non-maleficence, beneficence, and justice	Able to apply the bioethics principles to each technology reviewed and (where relevant) conduct a full ethical analysis	Able to appraise and critique the ethical argument in other HTAs, and/or develop new understandings of ethical issues associated with the introduction, reimbursement or disinvestment of specific health technologies
Social aspects	Understanding of the concept of equity and is aware of the links between equity, benefit and public financing	Able to identify attributes of a health technology that might enhance or limit the acceptability of a health technology to patients, carers or healthcare providers	Understanding of how community norms may influence patient preferences for/utilisation of a specific technology	Understanding of how behavioural economics might influence health professional preferences for a specific technology	Able to apply methods for augmenting cost-effectiveness analyses to address equity
Health system aspects	Awareness of factors that influence geographic or demographic variation in the use of a specific health technology: rurality, socioeconomic status, jurisdictional differences	Able to identify attributes of a health technology that might enhance or limit the feasibility of introducing the technology to the Australian health system	Aware of the relevant training and credentialling required to introduce a specific health technology or service	Able to develop policy regarding workforce and/or organisational requirements for a service, technology or class of technologies	Able to model the implementation of a technology taking a whole-of-health system perspective
Re-assessment and post-market review	Awareness of the concept of re-assessment and the ways in which HTA-based decisions can be reviewed over time as new information becomes available	Understanding of current Australian government processes for post-market review of medicines and post-listing review of medical services and prostheses	Able to identify and incorporate relevant emergent data or evidence into a pre-existing HTA for one or more technologies	Able to define and manage the re-assessment of one or more technologies	Able to develop policy and/or processes to align re-assessment activities with government priorities

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