Developing a System-Centric Framework for Health Technology Value Creation

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INTRODUCTION

Health technologies hold the potential to deliver significant value to health systems. To harness this value, it is essential to identify and define the broad system factors that drive value creation, enabling more informed resource allocation decisions.

Defining the scope of these factors across various decision-making contexts helps clarify value creation. Identifying key structures and stakeholders within the system is crucial to accelerating reimbursement decisions, thereby supporting innovative products and practices that enhance long-term population health.

OBJECTIVE

This project aims to develop a consensus-driven framework that:
- Identifies key factors influencing the value creation potential of health technologies.
- Highlights system-level barriers that may limit the added value these technologies can provide.

By adopting a comprehensive, system-focused approach by design, this framework offers an expansive perspective on value assessment that is fit for the complex decision-making environment.

METHODS

Mixed Methods: Combined targeted literature review and Delphi method.
Targeted Review:
- Focused on value assessment frameworks and health system analysis.
- Yielded 1,859 articles; 21 frameworks extracted.
- Informed initial "skeleton framework" with domains and sub-domains.

3 round Web-based Delphi Process:
- Key experts were invited from a range of stakeholder groups, including academics, industry, patient reps, policymakers, regulators

Qualitative feedback
Participants comment on the LSE proposed framework and propose their own value statements

R1

R2
Quantitative feedback
Participants rate each value statement on a 5-point "agreement" likert scale

Quantitative feedback & consensus formation
Participants are shown overall group responses from R2 and rerate the value statements

R3

Statistical analysis
Value indicator consensus measured by:
1) ≤10% change between R2 & R3,
2) IQR ≤1
3) overall agreement (agree + strongly agree) ≥70%

Thematic analysis of responses & incorporation of value statements and additional themes into framework

RESULTS

Literature Review
- Developed a skeleton framework with 44 sub-domains across 8 value domains (e.g., Politics, Health System Governance, Healthcare Financing, Technology Features).

Delphi Process
- Round 1: Participants proposed 198 value indicators. Thematic analysis consolidated proposed indicators into 61 final indicators
- Rounds 2 & 3: Achieved consensus on 17 stable indicators (see Table 2).

Table 1. *Delphi stakeholder group participation*

Stakeholder group	Participants	
	Round one	Round three
Academia (total)	13	11
Health policy and health systems research	7	5
Health economics	4	4
HTA	1	1
Implementation science	1	1
Industry	5	4
Patient representative	1	1
Policy maker	2	2
Physician	1	0
Marketing authorisation (including regulation and HTA)	1	1
Payer / decision-maker	1	0
Other (including thinktanks, NGOs and patient safety roles)	3	3
Total	**27**	**22**

Table 2. *Participant generated stable (≤10% change between rounds two and three) value statements with consensus (IQR≤1) and overall agreement (≥70%) in Delphi Round Three*

Domain	Sub-domain	Value statements	Agree +Strongly Agree participant ratings
Politics	Politics and political power	Political interests and priorities can influence the value of a technology. Technologies aligned with political interests may add value on this basis, leading to differential pricing and access.	81%
	Politics and political power	The political spectrum of a country may impact the level of solidarity among citizens, affecting their willingness to pay for new innovations they may not personally use.	86%
	Electoral cycles	Electoral cycles promote a short-term mindset within healthcare, leading to prioritisation of policies, interventions, and products with quickly visible benefits.	90%
	Media and reporting	Media and reporting can shape the priorities and perceptions of policy-makers, regulators, and technology assessors, influencing reimbursement and access.	86%
Health system organisational features	History of institutions	The traditional organisation of care, such as siloed, reactive care, may hinder the true realisation of value from certain technologies.	95%
Health system governance	Regulatory bodies	Robust regulatory assessment processes can positively impact value recognition by increasing confidence in technologies and demand within the market.	87%
	Professional bodies	Professional bodies significantly impact the adoption and implementation of new technologies through shaping the knowledge and attitudes of their members by disseminating information regarding 'best practise' guidelines and new clinical pathways.	91%
Technology features	Core features	The extent to which a health technology has been developed together with end-users and thereby responds to actual needs and is compatible with existing systems and practices, is likely to influence its adoption and implementation, affecting its value to the system.	86%
	Knowledge required to use the technology	The extent to which knowledge is required to use a technology determines the likelihood that it will be optimally used, thereby affecting the added value the technology can provide.	100%
	Knowledge required to use the technology	Technologies requiring significant changes to the care model may have a slower uptake curve, impacting their value and utilisation.	100%
Health care financing	Out of pocket spending	Significant out-of-pocket spending, especially when representing a substantial proportion of the patient's income, can lead to limited access and treatment discontinuation for financial reasons, diminishing the overall value realisation of the product.	95%
Resource generation	Physical capital	The state of development of physical capital influences the (potential) added value of health technologies by shaping capacity to treat patients, which affects demand for services, thereby shaping willingness to pay from public sources.	87%
	Human capital	The knowledge of the workforce i.e., professional training and experience, to innovate influences the value and adoption of health technologies.	100%
	Human capital	The capacity of the workforce i.e., time available to undertake necessary work, to innovate influences the value and adoption of health technologies.	100%
Providers	Primary care	Technologies which can be delivered in primary care settings and/or those involved in prevention can reduce demand for secondary care services.	78%
	Urgent care	Health technologies used in urgent care may have increased perceived value as they play a critical role in reducing mortality.	77%
Private industry	Pharmaceutical manufacturers	Pharmaceutical companies' focus on maximising revenues may affect reimbursement terms, limiting broad access to health technologies.	77%

CONCLUSIONS

This study is the first to systematically identify health system components that impact value creation, producing a generalisable framework. The framework formalises the "decision context" in Health Technology Assessment (HTA), incorporating factors like infrastructure, regulatory, and political barriers.

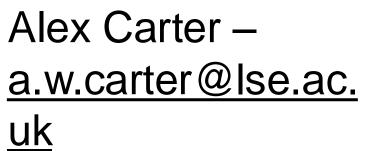Policymakers and other stakeholders can use this framework to:
- Assess the potential for value creation from a health technology based on the value domains we formalised.
- Identify specific barriers to value creation that are outside the typical field of view and adjust funding decisions accordingly.
- Align data standards across disciplines, enabling holistic evaluation.

Future research should test and validate the framework in diverse health systems to examine potential use in different contexts.

CONTACT INFORMATION

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Scan here for further information on the project and outputs