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Health Technology Assessment in Hospitals: A Systematic Review on Methods and Practices

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Background

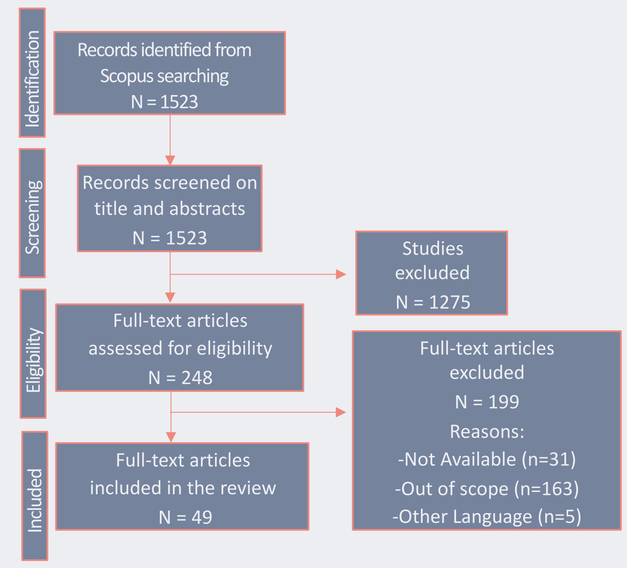
- The pace of technology innovation in healthcare is accelerating exponentially because of new patents, digital transformation, and the rise of the MedTech market.
- However, in times of limited financial availability, decision-makers at the different levels of the healthcare system need to select only "value for money" innovations. In OECD countries, investments in healthcare technologies account for about 45% of global spending[1].
- The choice among alternative competitive healthcare technologies is commonly addressed by the Health Technology Assessment (HTA) discipline. HTA can be conducted at different levels of the healthcare sector (hospital, regional, national etc.)
- Typically, as recommendations produced at the macro-level are far from hospitals' needs and their stringent requirements, Hospital-Based HTA (HBHTA) gained momentum in recent years.
- In HBHTA agreed guidelines and standardised frameworks for harmonizing its conduction are currently missing and hospital managers and professionals ask for more standardisation to allow information exchange and facilitate the assessment exercise more than ever.

Objectives

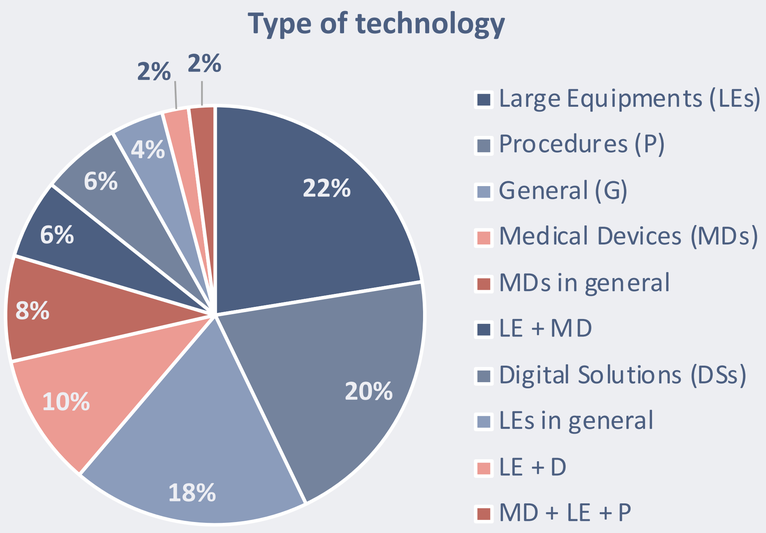
- This study aims at investigating how hospitals run HBHTA gathering evidence from what has been reported in the published literature so far about frameworks, criteria, methods, sources of evidence employed by hospitals to assess novel health technologies.
- The final purpose is developing a comprehensive and standardized synthesis of extant literature to advance both theory and practice of HBHTA.

Methods

- Systematic Literature Review on HBHTA, using the following query on Scopus: (("technology assessment" OR "HTA") AND ("hospital")).
- Articles from 2006 (Year in which Mini-HTA was developed)
- Filters: primary and secondary articles focusing on the assessment of HBHTA, excluding studies about pharma.



Results



This table provides an overview of the types of technologies analysed in the included studies. The majority of the studies evaluate LE and procedures, even if in the last years the number of medical devices and digital solutions is extremely growing.
Some studies considered digital and innovative technologies, but most of them evaluated mature technologies, even if hospitals are the places where the most innovative technologies arrive.

VALUE GENERATION		SUSTAINABILITY	
Domain	**Criteria**	**Domain**	**Criteria**
Social value creation	Effectiveness	**Clinical sustainability**	Quality of clinical evidence
	Patient or family's satisfaction		Variability of clinical evidence
	Safety	**Economic sustainability**	The degree of self funding
	Equity		The ratio of fixed costs to variable costs
	Benefit to society		Sensitivity analysis
	Environmental sustainability		Stability of the reimbursement/payment system
Economic value creation	Revenue generation		Weight of the investment on total budget/Lost "earnings" caused by a lack of technological continuity
	Cost containment	**Organisational sustainability**	Uncertainty in clinical practice
	Gains in image or in reputation		Coherence to the strategic goals
Knowledge creation	Development of new health services		Technology acceptance among health operators and patients
	Development of new healthcare technologies		Length of the transient period
	Recruitment of top physicians	**Technological sustainability**	Technology lifecycle
	Build-up of new communities of knowledge		Coherence to the current portfolio of technologies
Hospital impacts	Impact on process flow		Continuity of service
	Impact on teaching program and social services	**Resource sustainability**	Training intensity
	Ability to improve cross-institution collaborations		Coherence of human and physical resources
		Context sustainability	Coherence to the legal framework
			Coherence to the generally accepted ethics

To synthetise the domains and criteria taken into consideration by the different studies, the authors started from the framework developed by Lettieri and Masella (2009). The authors complemented what was already included in this framework with other domains and criteria resulting from the review of the literature. These are highlighted with darker shades of colours.

Conclusions

- Clear overview of the dimensions and criteria that hospitals take into account when evaluating healthcare technologies
- Academic relevance: systematic picture of the available published studies focusing on the assessment of biomedical technologies from the hospital perspective
- Practitioner relevance: The recommendations drawn from this study will provide all key stakeholders involved in HBHTA activities with complete and operative instructions and more harmonised guidelines about how to implement HBHTA in practice.

[1]OECD, Health at a Glance 2015: OECD Indicators, OECD Publishing, Paris, 2015. http://dx.doi.org/10.1787/health_glance-2015-en
Lettieri, E., Masella, C. (2009). Priority setting for technology adoption at a hospital level: Relevant issues from the literature. Health policy, 90(1), 81-88.