Missed Signals: The Economic Implications of Current Health Technology Assessment Protocols for Diagnostics

Dr. Ricardo De La Fuente

Educational Symposia - ISPOR 2024

GE HealthCare

Introduction to the Educational Symposia

- Health technology assessment (HTA) evaluates health technologies to **maximize the health of the population** while improving the efficiency of the healthcare system
- HTA systems have well established methodologies for the assessment of **pharmaceuticals**. However, that is not the case for medical devices and other technologies, including *in vivo* imaging diagnostics.
- There is a big unmet need of developing HTA evaluation **methods tailored for the assessment of diagnostic technologies**

Panel

- **Alistair McGuire**

Professor Health Economics, Dept. Health Policy, London School of Economics

- **Alexander Natz**

Secretary General, European Confederation of Pharmaceutical Entrepreneurs (EUCOPE)

- **Montserrat Chivite**

International Market Access Lead, GE HealthCare, Pharmaceutical Diagnostics

- **Laura Sampietro-Colom**

Innovation Deputy Director, Head Evaluation of Innovation and New Technologies, Hospital Clínic Barcelona

Moderator

- **Ricardo De La Fuente**

Global Market Access Strategy Lead, GE HealthCare, Pharmaceutical Diagnostics

Research objectives

Objectives

- Analyze global HTA systems for drugs and diagnostics
- Assess current HTA methods applied to drugs and *in vitro* diagnostics vs. *in vivo* diagnostics
- Understanding how the evaluation and HTA outcomes for *in vivo* diagnostics influence pricing and reimbursement decisions

Geographic Scope (28)

France	Greece	Australia
Germany	Hungary	Brazil
Italy	Ireland	Canada
Spain	Netherlands	China
England	Norway	Japan
Austria	Poland	Mexico
Belgium	Portugal	S.Korea
Croatia	Romania	USA
Estonia	Sweden	
Finland	Switzerland	

In vivo diagnostic methods are tests that are performed inside the body typically used for imaging vs. *in vitro* tests, which are performed outside the body on samples taken from the subject

Polling Question

Are the HTA methodologies adequate to assess *in vivo* diagnostic technologies?

a) **Yes, they are adequate**

b) **They are not adequate because there is an opportunity to improve the evidence analysis?**

c) **They are not adequate because there is an opportunity to improve the framework analysis?**

d) **They are not adequate at all**

HTA methods for the evaluation of pharmaceuticals are applied to evaluate *in vivo* diagnostics with minimum or no modification

HTA METHODOLOGY					
	Drugs	***In vitro* diagnostics (Medical device)**	***In vivo* diagnostics**		
			Molecular Imaging		**Contrast Media (CM) for MRI**
			Tracers	**Modality**	**CM**
Australia	***Pharmaceutical Technology***	**Molecular Diagnostic**	**Medical Technology** (Tracer & Modality)		**Medical Technology (CM & Modality)**
Austria		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Belgium		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Brazil		**Medical Technology**	**Medical Technology** (Tracer & Modality)		**Medical Technology (CM & Modality)**
Canada		**Molecular Diagnostic**	**Medical Technology** (Tracer & Modality)		**Pharmaceutical Technology**
China		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Croatia		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
England		**Molecular Diagnostic**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Estonia		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Finland		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
France		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Germany		**Molecular Diagnostic**	**Medical Technology** (Tracer & Modality)		**Pharmaceutical Technology**
Greece		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Hungary		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Ireland		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Italy		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Japan		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Mexico		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
The Netherlands		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Norway		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Poland		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Portugal		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Romania		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
South Korea		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Spain		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Sweden		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
Switzerland		**Medical Technology**	**Pharmaceutical Technology**	**Medical Technology**	**Pharmaceutical Technology**
USA		**Molecular Diagnostic**	**Medical Technology** (Tracer & Modality)		**Medical Technology (CM & Modality)**

Markets also differ in the impact level of the HTA outcomes on P&R decisions

In vivo Diagnostics – HTA outcomes impact			
Role HTA body	**HTA recommendations & funding**	**HTA embedded into decision-making process**	**Markets**
Mandatory HTA bodies are directly accountable to the MoH and are responsible for the pricing and reimbursement of new technologies	**Binding** Purchasers/ commissioners of care are legally obliged to consider the HTA outcome when deciding on coverage	**Integrated**	Australia, Belgium, England, Estonia, Germany, Hungary, Japan, Norway, Portugal, South Korea, Spain, Sweden
	Binding	**Not integrated** Only in certain cases	China, Croatia, Finland, Italy-Veneto
	Non-binding Negative recommendation is not necessarily associated with a negative coverage decision	**Integrated**	England, Poland
Advisory Advisory HTA bodies offer coverage recommendations, but decision-makers aren't required to follow them or consider them during negotiations with manufacturers	**Non-binding**	**Integrated**	Brazil, Canada, France, Germany, Ireland, Norway, South Korea, Sweden
		Not integrated Only in certain cases	Austria, Belgium, Croatia, Estonia, Italy-Regions, Netherlands, Spain, Sweden, USA
		Not integrated Only in certain cases	Finland, Italy

Note: one country could have multiple HTA bodies with different archetypes

Non-exhaustive

Suboptimal evaluation of *in vivo* diagnostic methods has an impact on pricing, access, and reimbursement decisions

Hurdle	Learning/Limitation	Implications
HTA methods are inadequate to evaluate *in vivo* diagnostics	Assessment of *in vivo* tracers as drugs is **inadequate** because it is focused on **treatment effectiveness** to determine the degree to which improvements in therapeutic yield will result in improved patient outcomes	**Insufficient value evaluation** because assessing test effectiveness is completely different than evaluating clinical effectiveness of a drug
	HTA methods for drugs strongly recommend demonstrating effectiveness by conducting **randomized clinical trials** (RCT)	RCTs are **not the best option** for *in vivo* diagnostic technologies trials impacting value demonstration and results of the evaluation
	HTA methods for drugs **do not allow strong value demonstration** for *in vivo* diagnostic technologies	Major **difficulties to demonstrate the clinical impact** that *in vivo* diagnostics bring to patients, impacting future pricing and reimbursement decisions
Lack of standardization for HTA evaluations	HTA organizations **do not provide consistent parameters of acceptability** in terms of clinical and analytic performance, clinical utility, and economic impact	HTA is left to **subjective judgment** rather than objective assessment as to which tests meet, exceed, or fail to meet standards
	There is a **substantial variation in evidence requirements** at the time of evaluating *in vivo* diagnostics (HTA Pharma)	Risk of getting an **insufficient HTA outcome** will impact P&R decisions
	HTA for pharma technologies compares **patient outcomes** but it may not always be feasible depending on the specific interventions	**Substantial variation in evidence requirements** for HTA methodologies to evaluate pharma technologies
Disparities in impact of HTA recommendations	Almost half of markets (from this study) are issuing **non-binding recommendations**; however, the importance and the weight of these recommendations may vary across countries	**Non-binding recommendations** are not so strict in practice so they could have strong **weight on pricing & reimbursement** decisions
	Disparities regarding **impact** of HTA pharma outcomes	Different levels of influence makes it **difficult to prepare HTA submissions**

Polling Question

What is the most important limitation impacting the HTA assessments of *in vivo* diagnostic methods?

a) **HTA methods are focused on treatment effectiveness**

b) **HTA methods for drugs do not allow strong value demonstration for *in vivo* diagnostic technologies**

c) **Cost of the diagnostic applies to all patients "tested" to identify one**

d) **Disparities on the impact of HTA recommendations**

Inadequate evaluation of *in vivo* diagnostics results in unfavorable results with economic implications

Learning/Limitation	Economic Implications
Costs associated with *in vivo* diagnostic methods could be **dominant vs. the short-term economic savings** when they are analyzed by conventional HTA methods	**Limited efficient use of resources** (e.g., avoiding unnecessary imaging and reducing the use of inappropriate therapies) due to restricted access to *in vivo* diagnostic methods
HTA analysis does not always properly evaluate the **additional economic value** associated with the use of *in vivo* diagnostic methods on the **long-term**	**Lack/limited reimbursement and coverage** as the HTA evaluation of does not reflect the additional economic benefits of using *in vivo* diagnostic methods. The cost associated with them could potentially impact treatment cost-effectiveness when diagnostic testing is identified to be a driver in the health economic model
In the evaluations for *in vivo* diagnostics using HTA for drugs, the cost of the therapy only applies to the patients treated, while the **cost of the diagnostic applies to all patients "tested"**	**Restricted coverage** because the economic benefits of *in vivo* diagnostic technologies are diluted as the HTA evaluation aggregates the cost to diagnose one patient
When diagnostic testing is the SoC to profile **all patients**, it becomes **unclear when and how to incorporate these costs**	**Diagnostic costs** are directly related to the disease and the evaluated technology, meaning that these costs are **recognized as direct costs** in a health economic model
Different HTA results were observed from the evaluation of the same *in vivo* diagnostic technology, even when similar **evaluation criteria** was applied– e.g., FDG PET/CT evaluation in colorectal cancer in DE (not reimbursed) vs. IT regional (reimbursed)	Potential **different reimbursement** depending on evaluation (method and criteria) applied, resulting in access disparity to *in vivo* diagnostics **across markets**

Polling Question

What is the most important economic implication as result of inadequate assessment of HTA *in vivo* methods?

a) ***In vivo*** **diagnostic methods could be dominant vs. short-term economic savings**

b) HTA analysis does not always properly evaluate the additional economic value associated with the use of *in vivo* diagnostic methods

c) When the test is applied to all patients, it becomes unclear when and how to incorporate these costs

d) Different HTA results from the evaluation of the same *in vivo* diagnostic technology, even when similar evaluation criteria was applied

HTA methods have well established processes to assess drugs but not to assess *in vivo* diagnostic technologies

Diagnostics impact outcomes indirectly

- Patient outcomes depend on the intervention with the diagnostic and subsequent treatments.
- Diagnostic technologies improve health outcomes indirectly by **guiding treatment decisions**
- Diagnostic's value is based on **changes in patient management and their outcomes**, requiring evaluations of the effect of improved accuracy on decision making

HTA methodology differ across markets

- Although many HTA agencies use **largely overlapping assessment criteria** with clinical benefit being the main component, they **differ** in many aspects including the evidence quality, equity, and defining specific cost–effectiveness thresholds
- **Heterogeneity across HTA systems** makes it difficult to demonstrate value and anticipate assessment outcomes, impacting reimbursement decisions

Lack of specific HTA methods for diagnostics

- HTA assessments for health technologies & medical devices are **not well established**
- HTA bodies tend to **apply general HTA approaches**, designed to assess pharmaceuticals, and apply these to diagnostic technologies with little or no modification

Unclear methodology on HTA of diagnostics

- HTA organizations that specifically apply evaluation methods for diagnostics, focus on the evaluation of test accuracy, **leaving other test-value benefits outside the assessment**
- **Lack of consensus** on the HTA for medical devices with regard to dimensions, process, criteria, and methods
- There is a **significant uncertainty** about the **minimum evidence** needed to support an HTA submission and/or to get an evaluation result reflective of the test value

Pannel Discussion

- *HTA & Evidence Generation:*
  - ✓ **Disparities** on HTA *in vivo* imaging diagnostics across different evaluation stakeholders
  - ✓ **Evidence generation hurdles** for a new *in vivo* imaging diagnostic method
  - ✓ **Evidence planning** and value demonstration to get an optimal HTA outcome for *in vivo* diagnostic technologies
- *Real World Setting:*
  - ✓ **Challenges in HTA evaluations** for *in vivo* diagnostics
  - ✓ **Linkage** between HTA **recommendations** and procurement **decisions**
  - ✓ **Insufficient coverage** grouping
- *Implications:*
  - ✓ **Lack of value recognition** and rewards for new precision imaging diagnostics unlike new precision medicines
  - ✓ **Implications** of evaluation disparity and ambiguous methodology for *in vivo* imaging diagnostics


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