Investigating the Nature and Scope of Innovative Payment and Pricing Schemes for Health Technologies

HPR120

Vittoria Ardito[*,1], Ludovico Cavallaro[1], Michael Drummond[1,2], Oriana Ciani[1]

[1] Center for Research on Health and Social Care Management, SDA Bocconi School of Management
[2] Centre for Health Economics, University of York
[*]Presenting author: vittoria.ardito@sdabocconi.it

INTRODUCTION

- Innovative pricing and payment schemes have been proposed as solutions to some of the challenges raised by new technologies, such as **affordability or uncertainty about their effectiveness in the long-term**. The array of contemporary issues facing third-party payers worldwide suggests different approaches are needed to ensure financial sustainability, R&D productivity, and fast access to high-cost innovative treatments.
- The goal of this study is to **map innovative pricing and payment schemes of health technologies together with principles that may guide their successful adjustment** and flexible implementation to the context of use. The focus will be posed on pricing and payment schemes either implemented or theorized for pharmaceuticals and medical devices.
- For the purposes of this study, schemes will be considered regardless of the *ex-ante* perceived innovativeness of the scheme, the rationale being that **it is not the scheme *per se* which is innovative, but rather its application or use** in a given context.

METHODS

A scoping literature review was performed to map pricing and payment schemes, referring both to **manufacturers' approaches to pricing** and **payers' solutions to pay for innovation**, respectively.

These **schemes were then classified according to several criteria**, such as their purpose, nature, governance, product category, data collection needs, foreseen distribution of risk, and implementation challenges.

1. Exploratory mapping of pricing and payment schemes illustrated in seminal papers from top journals
2. Development of a preliminary taxonomy matrix characterizing a variety of pricing and payment schemes
3. Draft of the study protocol outlining search details and guidelines for data extraction (Prospero: CRD42023444824)
4. Comprehensive scoping review of the scientific and gray literature based on the rigorous PRISMA-ScR checklist
5. Finetuning of the dimensions of the framework and comprehensive mapping of schemes, either applied or theorized

RESULTS

Data extracted from all schemes:

- Name/denomination of the scheme
- Qualitative description of the scheme
- Main objective of the scheme
- Type of scheme (i.e., theoretical vs. applied)
- Perspective (i.e., patient-level vs. population-level)
- Distribution of risk, if any

Data extracted from implemented schemes only:

- Case of application
- Country of implementation
- Date/length/time horizon of the scheme
- Current status (i.e., closed vs. ongoing)
- Product category (i.e., drug vs. device)
- Drug type (i.e., on-patent vs. generic)
- Therapeutic area
- Type of treatment (ie, single administration, life-time)
- Setting (i.e., inpatient vs. outpatient)
- Manufacturer
- Type of healthcare system
- Needs for data collection
- Study used in the evaluation, data to be collected, and outcome measures (if outcome-based)
- Scheme consequences (e.g., removal of coverage)
- Responsibilities (e.g., governance, data collection)

Key figures

148 **Full-text papers/reports**

80 **Papers/reports selected for analysis**

(*Progress to date: 95%*)

70 **Unique pricing and payment schemes identified**

25 *Theoretical*

45 *Implemented* ▶ **56** **Cases of application**

Types of technology

Schemes can be designed to incorporate the unique features or challenges of technologies, such as generics, patented products, vaccines, or ATMPs.

Timeline of the agreement

Transactions can happen upon treatment delivery or be deferred over time, in the form of annuities or periodic installments, that could be tied to some form of performance guarantees

Pricing and payment schemes could be classified in a variety of clusters, based on the value drivers considered

Risk sharing

Schemes can foresee some form of risk sharing between stakeholders (typically manufacturers and payers), depending on the degree with which transactions are conditional on therapeutic success

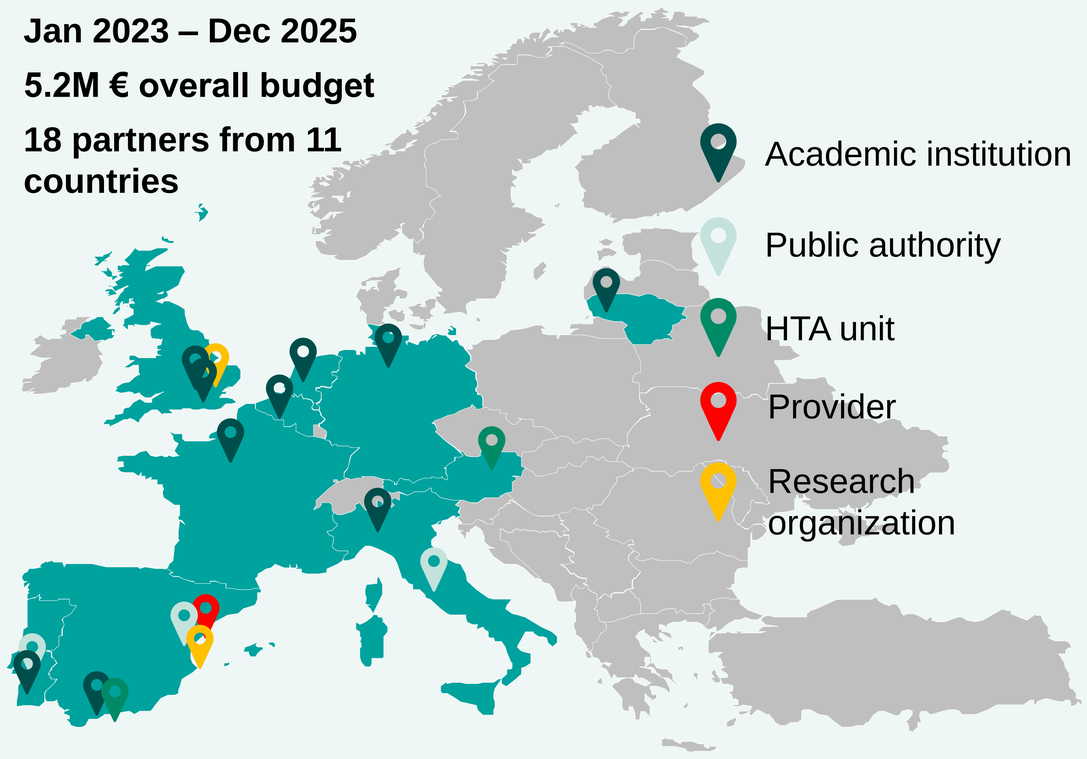
Disease areas

Schemes can be tailored to account for the specificities of certain therapeutic courses, as it was observed for oncology drugs, Alzheimers disease, gene therapies, or chronic diseases

HEALTH INNOVATION NEXT GENERATION PAYMENT & PRICING MODELS **(HI-PRIX):**

Balancing Sustainability of Innovation with Sustainability of Health Care

- **Jan 2023 – Dec 2025**
- **5.2M € overall budget**
- **18 partners from 11 countries**



WP1 Mapping of payment and pricing schemes for health innovation in the EU: implementation, barriers and enablers

WP2 Role of Public Contributions to the Development of Health Innovations and its Integration in Value Assessment and Pricing / Reimbursement Decisions

WP3 Widening the scope of economic evaluations for pricing and reimbursement decisions: the role of indirect medical and environmental costs

WP4 Pricing dynamics throughout the lifecycle of pharmaceutical products

WP5 Novel payment schemes and methods and planning for purchasing and delivering services that incorporate novel technologies or products

WP6 Impact of innovative payment schemes on long-term competition in health technology markets, in particular the pharmaceutical market

WP7 Incentives for pharmaceutical innovation and equitable access to innovation

WP8 Equity-issues mitigation strategies in innovation pricing and payment models

This project has received funding from the European Union's Horizon Europe research and innovation programme under **Grant Agreement number 101095593**

Methods to Measure the Environmental Impacts of Health Technologies and to Include Them in Economic Evaluations: A Scoping Literature Review

EE451

Vittoria Ardito[*,1], Helen Banks[1], Niccolò Cusumano[1], Rosanna Tarricone[1,2]

[1] Center for Research on Health and Social Care Management, SDA Bocconi School of Management
[2] Department of Social and Political Sciences, Bocconi University
[*]Presenting author: vittoria.ardito@sdabocconi.it

BACKGROUND & OBJECTIVES

- The health care sector is an important contributor to global emissions of CO2 (estimated to be about 4.4%), and in most countries it is the largest service sector in terms of carbon footprint, suggesting the **impact of health care on the environment needs addressing**.
- Health and environmental economists have started to make methodological assumptions on **how to best incorporate the environmental impact of health technologies in economic evaluations**, leveraging established methods and models conventionally used in health economics. However, clear guidance on the best rationales and approaches to integrate the environmental consequences of health technologies from a system-wide perspective is still lacking.
- This work aimed at performing a **comprehensive analysis of the state of the art on the incorporation of environmental considerations when assessing the value of health technologies**.

METHOD

We conducted a scoping review of the scientific and grey literature according to the PRISMA-ScR guidelines.

The search was conducted in PubMed, Web of Science and Scopus. Furthermore, the International HTA Database and HTA agencies websites were searched to identify ongoing or published HTA dossiers.

Being a relatively recent field of research, the search was restricted between 2013 and March 2023.

The search strategy was developed around two core concepts: environment and health technology assessment. Several keywords were used to make the search as comprehensive as possible.

No exclusions were made based on the type of study design, the rationale being including any relevant in-scope contribution.

RESULTS

Key numbers

Scientific articles

12,336 retrived & screened

16 incuded for analysis

HTA dossiers

90 retrived & screened

6 incuded for analysis

~ 64% of the sources were published in the UK, or Canada

~ 68% of the sources were published recently, from 2020 (included)

50% of scientific articles are opinions, commentaries, personal views

What are the environmental impacts of health technologies?

Carbon dioxide (CO2) is the environmental dimension most commonly considered, and there is agreement over the metrics to use for its measurement (CO2 kilos or tons).

Conversely, **other environmental spillovers**, such as impact on water, waste, or biodiversity loss, are often neglected due to lack of data.

The most established methodology is the **life cycle analysis (LCA)**, which calls for the consideration of the environmental impact from cradle to grave. Different approaches can be used with varying levels of data and/or simplifications needed, such as the **environmentally extended input output analysis** or the **process-based LCA**.

How to incorporate them in an health technology assessment?

Established methodologies **could in principle be used** to integrate the environmental impact, with varying levels of integration within traditional clinical and cost-effectiveness evaluations.

Attempts have been made to include environmental impact either **among costs**, or by **converting it into health outcomes**. About half of the papers analyzed cost-utility analysis (incl. enriched CUA), multi-criteria decision analysis and cost-benefit analysis as potential methodological approaches. Fewer (31%) papers addressed budget impact analysis, cost-effectiveness analysis (19%), or other approaches.

HTA agencies are starting to incorporate environmental considerations in their dossiers, **by means of conducting reviews of the literature** on the object of assessment, in a process of developing their own framework.

DISCUSSIONS & CONCLUSIONS

- This work contributed to **update available evidence** on how to incorporate the evnvironmental impact of health technologies in an HTA, by **synthetizing proposed methodologies while shedding light on possible challenges**.
- In the near future, **short term trade-offs might be necessary** such as performing partial life cycle analyses conditional on data availability, or assessing the environmental impact only for technologies with huge consequences for the enviornment.
- Incorporating the environmental impact of health technologies in economic evaluations is **under development, but consensus is still lacking** on appropriate, feasible methodologies for its uptake.
- **Before considering incorporating the environmental impact in pricing or reimbursement-related decisions**, the preferred method to maximize utility levels of different stakeholders (e.g., HTA agencies, industry) needs clarification.

ACKNOWLEDGEMENTS

I-PRIX

HEALTH INNOVATION NEXT GENERATION PAYMENT & PRICING MODELS:
Balancing Sustainability of Innovation with Sustainability of Health Care

- **Jan 2023 – Dec 2025**
- **5.2M € overall budget**
- **18 partners from 11 countries**

This project has received funding from the European Union's Horizon Europe research and innovation programme under **Grant Agreement number 101095593**