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Development of the TWENTE MEDTECH INNOVATION INDEX

1. The challenge of assessing health technologies early in the development. Systematic literature review.

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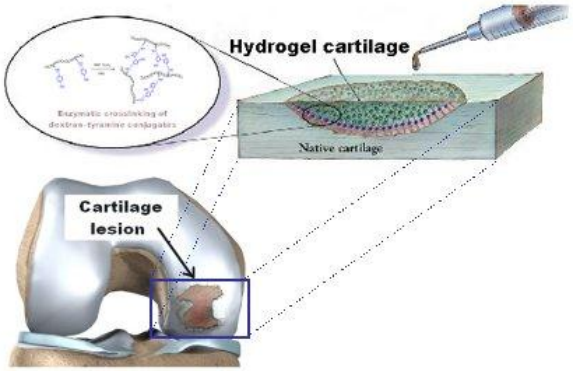
INTRODUCTION

Challenges in health care

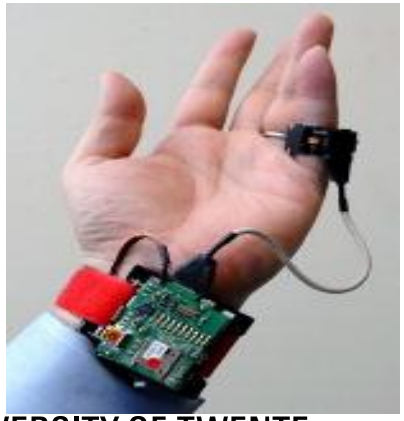
- growing and aging population,
- increase in the incidence and prevalence of chronic disease,
- decreasing work-force,
- rising costs of health care,
- increased patient awareness and growing demands,
- other factors

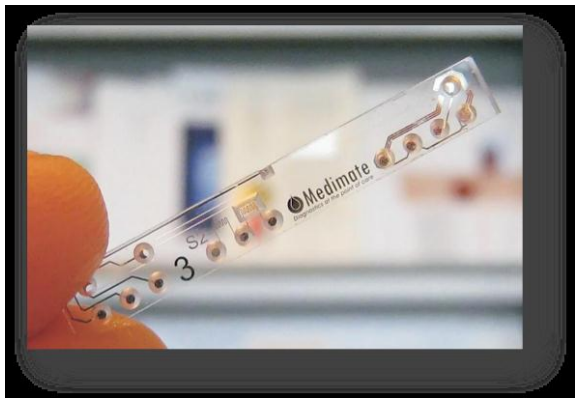
INTRODUCTION

Technology innovation is a major driver of the global economy, quality of life, and health improvement



MEDICAL DEVICES





INTRODUCTION

Problem: at the end successful design is not enough!

Many medical devices developed but only few are implemented.

- finite resources and sharp competition between different innovations,
- heavily regulated market access,
- health care systems regulations,
- different disciplines in HTA (health economics, operations research, statistics, epidemiology and management sciences).

INTRODUCTION

Solution: EARLY HTA

- to predict potential and market acceptance,
- to guide decision making,
- to gear the innovations towards their required performance,
- to maximize the benefits under constraint resources,
- to enhance the R&D efficiency,
- to decrease the failure rate at each stage of the development.

OBJECTIVES

To put into perspective current methods/frameworks that are available in the literature or used in current practice, to give an insight into the challenges of early HTA and to derive recommendations for future development of tested and validated early HTA framework

METHODOLOGY

- Systematic literature review search strategy:
- (1) computerised databases (PubMed, Science Direct, Scopus and the Cochrane Collaboration Library); (2) references in articles reviewed; and (3) references provided by colleagues,
- Articles in English, published after 1990.

METHODOLOGY

- Our inclusion criteria were:
- (1) studies from the healthcare sector;
- (2) those that had addressed HTA;
- (3) those that had looked specifically at the early HTA; and
- (4) those that met our stringent criteria for methodological quality.

"It is always too early to assess a new technology, until it becomes too late"

Buxton's "Law of Technology Evaluation"

METHODOLOGY

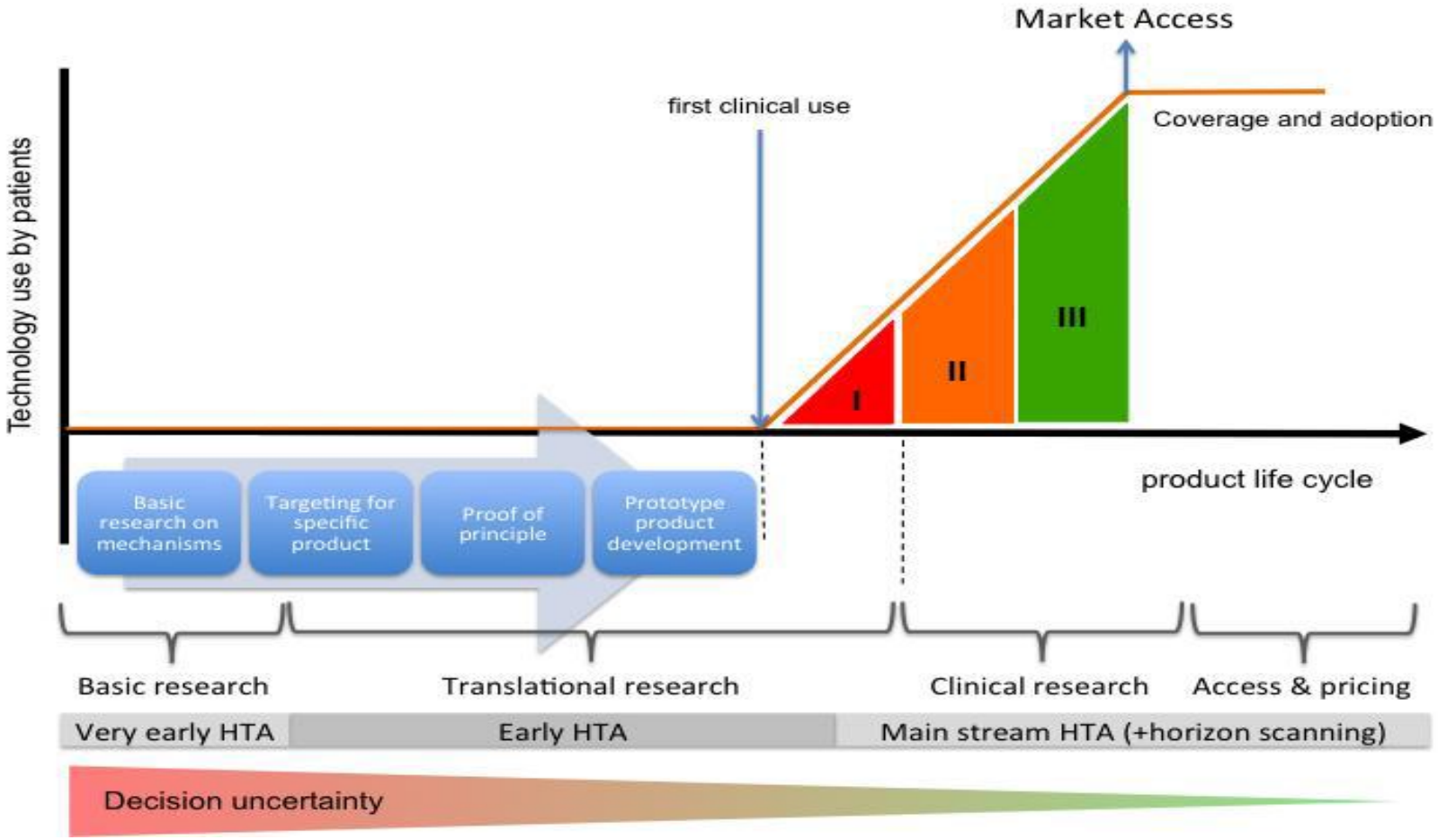


Figure 1. A simplified flow-chart of stages in medical product development

Source: Ijzerman and Steuten (2011)

RESULTS

- 1926 publications (576 duplicates removed)
- 1350 titles and/or abstracts screened (1258 excluded)
- 92 publications ordered as a full text (84 excluded)
- 8 publications included (references screening)
- 48 publications selected

RESULTS

- All the frameworks and methods were grouped:
- (1) Economic analysis,
- (2) Decision analysis,
- (3) Systems analysis,
- (4) Technological forecasting,
- (5) Information monitoring,
- (6) Technical performance assessment,
- (7) Risk assessment,
- (8) Market analysis,
- (9) Impact analysis.

CONCLUSIONS

- Most of the methods and frameworks which are currently being use in early HTA consist of assessment concepts, modelling approaches, and decision support methods.
- No single method/framework is complex enough for early assessment of each type of medical devices, because of variety of issues assigned to early assessment itself, like lack of data and its uncertainty, or ideal time of evaluation, but also because the assessed medical innovations are very diverse.

CONCLUSIONS

Recommendations for future framework:

- based on decision analytic modeling,
- include user preferences, clinical (cost-)effectiveness, disruptive or incremental innovation and reimbursement of the technology micro (SWOT) and macro (PEST) aspects,
- specifics of early evaluation should ideally be turned into an advantage,
- iterative approach - to improve the design and functionality of a device.

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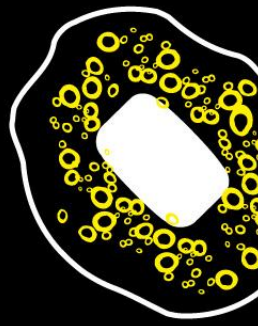
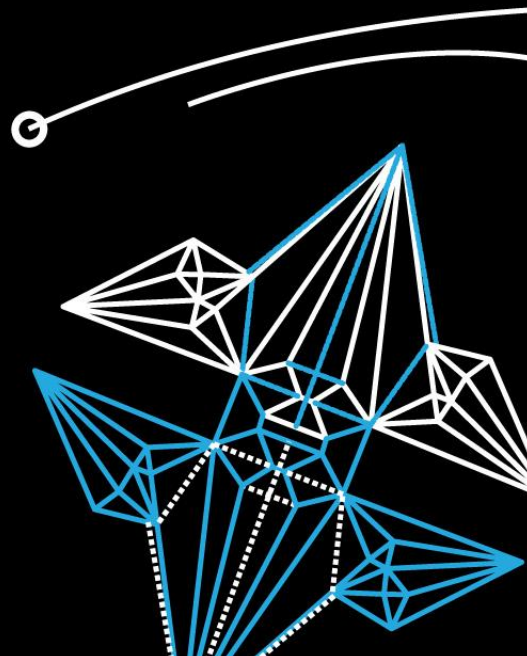


QUESTIONS?



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