Cutting Through the Confusion: Selecting Comparators in Digital Health Technology Evaluation

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BACKGROUND AND OBJECTIVES

Digital health technologies (DHTs) are digital products that can be used to benefit people or health in wider society. These products may include smartphone apps, software and programmes that can be used for treatment, diagnosis, improvement of systems and analysis of data from medical devices. Some of these products may also use artificial intelligence (AI) and machine-learning algorithms to improve their performance over time [1]. Over the past decade, DHTs have become increasingly common healthcare interventions, and their prevalence is growing further.

DHTs can be used across a range of pathways, rather than for the treatment of specific health conditions. This may lead to many issues, including not having a clearly defined comparator in health economic evaluation [2]. Furthermore, pathways differ locally and regionally which makes identifying a relevant comparator especially challenging.

This research describes the approaches to this issue when evaluating the health economic impact of DHTs and recommends suggestions for future considerations.

METHODS

A pragmatic literature review was undertaken to identify research that had sought to provide clarity or had outlined a framework for the evaluation of DHTs. This was conducted using unstructured searches on PubMed and Google Scholar. Extraction focused on frameworks that identified issues and/or solutions associated with either appropriate populations or comparators for DHTs.

Following this, a series of expert panel discussions and interviews were undertaken whereby the approaches to evaluating DHTs were discussed.

This was informed by the pragmatic literature review, especially to understand where stakeholders may disagree with current published literature. The discussions and interviews captured people from a range of experience, including people with health-economic consulting, academic and public sector perspectives.

RESULTS

Table 1: Different types of interventions

Pharmaceuticals	Medical Devices	Digital Health Technologies	Implications of differences for modelling
All relevant comparators that would be used for the same indication (if for a NICE submission, based on the NICE scope). Usually replacing something in standard care with little change to the patient pathway.	All relevant comparators. May completely subvert the current care pathway, leading to the development of a new pathway.	Similar to medical devices, may lead to the development of a new pathway – usually covering an even wider population. The comparators may differ at local, regional, and national levels, particularly where DHT is replacing part or all of a face-to-face care pathway.	Implications and difficulties for selecting the correct comparator, depending on the value proposition, changes to the care pathway, regional differences in care and isolating the impact of some DHTs being adjunctive to standard care.

Regardless of the purpose of the DHT, the choice of comparator will be a function of how the intervention interacts with non-digital health care. The DHT may complement or substitute other types of health care delivery or administration systems. The relevant comparator may be easier to identify in settings where the intervention being implemented is in an area where a DHT is already used. The exception is where the new DHT has a wider aspect than the current DHT.

Discussions with the experts highlighted a key issue linking the population and comparator: whether the DHT distorts the population in the care pathway. For example, if a DHT increases access to a care pathway, then it may result in more people using the pathway, which could change the underlying population (such as by disease severity or age). In some cases, changing the population may also change what is considered 'standard care', especially if the severity of the population changes.

Figure 1: Key considerations for DHT evaluation

- Would the population be the same with the DHT? Does the DHT distort the population?
- Does the DHT have a specific comparator, or does it impact a specific care pathway?
- Does the care pathway differ across regional and local practices?
- Is the effectiveness of the DHT expected to differ significantly by subpopulation?

Table 2: Example of the comparator challenge

Hospital at Home (HaH)	Potential comparator?
▪ Allow patients to get the care they need at home safely and conveniently, rather than being in hospital. ▪ Patient facing app or website ▪ Medical devices that facilitate remote monitoring ▪ A digital interface for healthcare professionals that is interoperable with healthcare systems	▪ Step-up or Step-down care? ▪ Technology enabled or manual HaH? ▪ At home care or community care? ▪ Face-to-face or remote triage? ▪ Basic HaH or additional features (risk stratification, continuous monitoring)?

CONCLUSIONS

Identifying the relevant comparator can be difficult when evaluating DHTs. Comparators may differ at local, regional and national levels, particularly where a DHT is replacing part, or all, of a face-to-face care pathway. Decision makers should be supported to develop a framework for the evaluation of DHTs. Each DHT should have an adapted scoping approach, depending on the elements involved, to ensure a suitable approach to evaluation is used. This will help to determine the appropriate balance between granularity and pragmatism in order to inform decision makers.

FUTURE RECOMMENDATIONS

Seek out clinical advice

Clinical advice should be sought when designing any evaluation plan, to understand the possible 'spillovers' that may happen with the DHT. Care pathway analysis would be very useful for evaluation of all DHTs.

Formation of a centralised bodies

The development of a centralised body for the evaluation of DHTs. All countries should have dedicated resource and teams specialising in the complexities of evaluating DHTs.

Avoid a one-sized fits all approach for national evaluations

The implementation of DHTs is likely to differ at local and regional levels, which should be factored into any future evaluations

REFERENCES

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