

How Should We Define eHealth, and Does the Definition Matter?

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Abstract. There is no useful definition for eHealth; we would like to find one. This study will provide a contribution to clarify the discussion on eHealth as a concept to enhance the understanding of the range of meanings which have been ascribed to the term ehealth.

Keywords. eHealth definition, eHealth ontology, strategy

Introduction

The topic of ehealth is widely discussed at conferences, in the literature and in the popular press. For example, searches for ‘ehealth’ conducted in December 2011 returned 659 results from PubMed, 18,600 from Google Scholar, 2,420,000 from yahoo.com, and 29,500,000 from Google.com.

There is a significant degree of attention and focus on ehealth initiatives globally; ehealth frequently forms a component of healthcare strategy and policy, and is represented in projects, financial outlays, cost benefit, outcomes, clinical process improvement, safety and quality, and addressing the challenges facing healthcare (1). Activities which are described as implementing ehealth solutions attract significant funding, and consume many resources and much time.

However, despite the frequency with which the term is used, there does not appear to be a general consensus about the meaning of ‘ehealth’. Although there is near-unanimous support for ehealth and its benefits, there is much less agreement about what ehealth actually represents. Many definitions have been proposed, but so far there has not been any universal agreement about what things might be excluded or included within the scope of the term.

There is a risk that this disjunction will give rise to dissonance in evaluating, assessing, comparing and discussing the results of various ehealth initiatives. As Brender noted: “Different interpretations of central terms continuously cause problems in discussions. Each profession has a number of concepts for which they consider the meaning to be obvious and common knowledge. Other professionals use the same terms – in other contexts and with (slightly) different interpretations.” (2), p23

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In order to provide some clarity about the meaning and implication of the term ehealth, we looked for articles and reviews, which either provided a definition, or imputed meaning and context to the term.

1. Method

We conducted a pilot review of the literature to assess whether there is a commonly agreed and workable definition of ehealth. This pilot review was by design neither comprehensive nor exhaustive, and was intended to provide a high level overview of activities intended to define ehealth.

We searched in PubMed, using the terms “ehealth” AND “definition”, and in scholar.google.com and google.com, searching for “ehealth definition”, ‘definition of ehealth’, and ‘ehealth AND definition’.

We looked at whether the sources we identified were expressed in a way that had the characteristics of a definition. Brender outlines the level of formalism, which is appropriate for presenting a definition, based on ISO 10241. A definition should include: the term name itself; a denotation of the object of the definition activity; and an example. The definition may also include a reference, and one or more notes which amplify or clarify aspects of the definition. We evaluated the formulation of the each of the descriptions and definitions listed by Oh et al, assessing them in terms of this structured concept.

We also analysed the sources to understand the particular focus of the description. Donabedian’s work on the evaluation of quality in medical care (3) introduced a useful distinction between structure, process and outcome; we applied Donabedian’s groupings to give a similar categorisation to the descriptions and definitions ehealth.

We classified as *Structure* those sources which discussed the infrastructure, tools and software components which are used to provide eHealth, while descriptions which referred to the use or application of ehealth solutions were classified as *Process*. References to improvements in the operation of the healthcare system, or to the state of

2. Results

We found that there is no clear, common understanding of the scope and boundaries of activities, which might be categorised as ehealth.

The most comprehensive discussion of the definition of ehealth, which we identified was that by Oh and colleagues in JMIR (4). These authors identified and analysed 51 candidate descriptions of ehealth, but there was little consensus between those descriptions. Our review was not able to identify other sources which provided detailed analysis of possible definitions for the term.

In order to better understand the range of meanings, which had been ascribed to the term ‘ehealth’ we looked in more detail at the 51 descriptions which Oh and his colleagues identified in their paper.

Few of the sources included by Oh as definitions approach Brender’s understanding of how a definition should be framed. A majority (30) of the statements described the object of the definition, but did not provide an example; 6 used an example as the basis of the statement about ehealth, but did not describe the object of

the definition; while 15 provided both the object of the definition, and some kind of example.

Using Donabedian's categories of structure, process, and outcome, we determined that the 51 statements presented by Oh and colleagues as definitions or descriptions of ehealth included 20, which referred to structure, 42 which focused on process, and 6 which described outcome. None of these descriptions mentioned structure alone, while 26 just described process.

This preliminary exploration left us with no clarity about whether ehealth should be described as (infra) structure which can be used to deliver healthcare, as the process of providing services through the use of digital resources, or as an outcome of having good health as a result of electronic support (or a combination of two or three of these).

3. Discussion

We found nothing in the literature that helps move informatics professionals towards a shared consensus definition of ehealth.

While Oh and colleagues identified some common themes, and other themes emerge from a re-examination of the listed descriptions, there are inconsistencies about whether ehealth includes such things as telehealth, patient and staff education, social media sites, or Internet based health marketing. We were unable to identify a single formulation which could be treated as a definition likely to receive general consensus agreement.

It may be that the absence of a consistent, definition for ehealth does not present a major barrier to continued progress. To date, the lack of a definition does not appear to have inhibited new and innovative ehealth initiatives.

However, there are a number of problems which are likely to arise from the lack of a clear shared definition of what is meant by ehealth. These include:

- Difficulties in comparing ehealth spending by different organisations and countries;
- Planning an appropriate high-level allocation for ehealth components within health budgets; and
- Comparative evaluation of large-scale ehealth interventions.

There are a number of areas of activity which might broadly be considered as ehealth, but for which disagreements might arise about their inclusion or exclusion as part of ehealth. These include:

- Web information for clinicians; and for patients;
- Telehealth;
- Systems for patient centred clinical care;
- Systems intended for autonomous use by patients and citizens; and
- Independent use of social networking for health self-help.

For these reasons, we believe it is worthwhile to pursue the issue of defining ehealth. Our approach will include a focused workshop with experts from the health informatics domain, and a remotely administered Delphi study (5). The workshop will involve a discussion of what participants understand about the term ehealth – how they think about and describe ehealth, and the uncertainties which surround their views.

The Delphi study will attempt to engage a hundred or so participants whom we assess as being likely to have an interest in the meaning of the term ehealth. We would

like to engage clinicians, administrators, technocrats, industry members and academics from a range of countries as participants in the process. The study will be allowed to run over three or four rounds in an attempt to arrive a consensus definition for the term.

The best outcome we could expect from this process would be a definition of ehealth with sufficient circumscription to reliably assess the inclusion or exclusion of particular activities, while having adequate flexibility to accommodate developments over the next few years without the need for the definition to be re-written. We may find that there is no consensus about an appropriate definition of ehealth, or maybe the views of the experts in the Delphi study will crystallize in two or three (or more) groups.

If a single consensus definition is not achievable, we should at least be able to describe the salient components of a common and agreed ehealth space, and map out the areas of disagreement which can be considered in any evaluation or comparison of ehealth initiatives.

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