

Supporting eHealth Innovations: an Insurer's Perspective

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Abstract—Health care insurers play a vital role in the implementation of eHealth and other care innovations within the health care sector. Yet, very little is said in the literature about how innovations are being evaluated by insurers, and what criteria are being used to do so. This paper describes the results of a case study into the evaluation process and criteria of a large health care insurer in The Netherlands. The results show that experts from several departments within the insurer are involved, that these experts each bring their own set of criteria to the table, and that the decision to provide support for an innovation (e.g., by funding its wider implementation or by reimbursing its use) is based on consensus between these experts. Based on these results, an interactive website was developed to better inform entrepreneurs, project managers, researchers and other people active in the field of eHealth innovation about the insurer's role and criteria for supporting eHealth innovations.

Keywords—eHealth; innovation; health care; insurer; support; evaluation; criteria.

I. INTRODUCTION

This paper describes a follow-up study of the research project *Successful Entrepreneurship in eHealth* [1]. During this project an *eHealth innovation map* for the Dutch health care system was developed: a diagram showing entrepreneurs in eHealth (a) which health care parties to involve during the implementation process, (b) their roles and their mutual relations, (c) their interests in eHealth innovation, and (d) the kinds of evidence that can be used to convince these parties of the added value of an eHealth innovation [2]. Furthermore, a set of corresponding fact sheets and an interactive website were developed to provide eHealth entrepreneurs with concise information for choosing an appropriate *innovation route* within the health care system [3].

At the outset of the project, but also afterwards while disseminating the results to the wider audience of eHealth entrepreneurs, it was found that the role and interests of the health care insurer within the Dutch system were largely unclear to the entrepreneur. Based on this finding and facilitated by an additional research grant, the decision was made to conduct a follow-up study with the aim to shed more light on the insurer's process and criteria for evaluating eHealth innovations. Such evaluation takes place, for instance, when an entrepreneur requests the support of an insurer by funding the implementation of an eHealth innovation by health care providers, or by reimbursing its use by health care providers or patients. It was expected that the

current confusion among entrepreneurs about the insurer's role (and the resulting mismatch of expectations when requesting support from an insurer) could thus be reduced.

To the best of the authors' knowledge, this is the first study into the process and criteria used by a health care insurer to evaluate health care innovations such as eHealth. For instance, the authors have searched extensively in the MEDLINE database [4] and found no results mentioning specific processes or criteria. The study was carried out in close cooperation with two innovation experts from a large Dutch health care insurer, who in this way were hoping to make the insurer's role and interests more transparent to entrepreneurs.

The remainder of this paper is structured as follows: Section II describes the methods used for data collection and analysis, Section III reports on the main findings with respect to the insurer's evaluation process and evaluation criteria, and Section IV summarizes the conclusions and next steps.

II. METHOD

A. Data collection

During the study, data were collected in six ways:

1) Interviews with two innovation experts

A semi structured interview was held with two innovation experts from a large Dutch health insurer. The interview focused on the evaluation process and the evaluation criteria of this insurer.

2) Screening of the insurer's innovation portal

The insurer's innovation portal (a website and accompanying web form where health care innovations can be submitted by entrepreneurs and care providers to request the support from the insurer) was screened for any information pertaining to the process and criteria.

3) Documentation of submissions and assessments

The research team was provided with detailed documentation of all submitted innovations over the last quarter (17 in total), including written evaluations by all experts involved in the evaluation process.

4) Observation of one expert meeting

One researcher was present during the meeting where these submissions and their evaluations were discussed among all involved experts, and where decisions were made whether or not to provide support. Due to the confidential nature of the discussions only field notes were taken; no audio recordings were made and no pictures were taken.

5) Documentation of decisions and considerations

Two days after the meeting, the research team was provided with the written decisions and accompanying considerations that had been sent to the applicants.

6) Consultation of two other experts

Two other experts were frequently consulted during the study to check that the results were sufficiently representative of the processes and criteria of other insurers in The Netherlands: the first an innovation expert working at another insurer, and the second an eHealth program officer at a large national research funding agency.

B. Data analysis

Analysis of the collected data was performed in five stages:

1) Extracting and assigning remarks, questions etc.

All remarks, questions, suggestions etc. that were made as part of the evaluation of the 17 submitted innovations were extracted from the field notes, written assessments and decisions, and then assigned to the individual expert who made them.

2) Grouping experts into expert roles

Based on their job title and the department they worked for within the insurer, the individual experts were grouped into expert roles.

3) Identifying the criteria per expert role

All remarks and questions assigned to the experts within a single expert role were clustered (using the affinity diagramming technique [5]) to identify the criteria per role.

4) Prioritization of the criteria

The resulting criteria were then prioritized per role by all involved experts to arrive at a set of three main criteria per role.

5) Fine-tuning the roles and criteria

Throughout steps 2-4 the intermediate results were discussed with the two innovation experts that had been interviewed as part of the data collection process. Together with the research team they fine-tuned the roles and criteria based on feedback they obtained from their colleagues.

C. Website development

Based on the resulting expert roles and corresponding sets of main criteria, an interactive website was developed. The website had to document the insurer's role in the health care system and its interests in eHealth innovation, the insurer's evaluation process for eHealth innovations, and the criteria used within this process. As part of the development process, an evaluation of the website's content and usability was carried out with three entrepreneurs. This was done by means of a structured user interface walkthrough [5].

III. FINDINGS AND RESULTS

A. Evaluation process

The insurer participating in this research has developed an innovation portal which is part of its website and where, year round, entrepreneurs and other health care innovators are invited to submit their ideas by means of a form. Among the questions asked in this form are: *What patient needs are addressed by your idea? How does your idea improve the*

quality of care? How does your idea lower the cost of care? and What kind of support do you request from the insurer?

All ideas submitted in this way are first assessed in writing, typically by three to five experts working within the insurer. Once every three to four months, the submitted ideas and the written assessments are discussed in a meeting between all involved experts. During the meeting that was observed, 17 ideas were discussed. Once consensus about an idea has been reached between the experts, the decision whether or not to support the idea is made and the applicant is notified. Applicants whose ideas have been accepted are invited for a follow-up meeting at the insurer. It may also happen that an applicant is requested to come up with additional information.

B. Experts and expert roles

Overall, 28 experts were involved in the evaluation of the 17 submitted innovations. Among them were care and cure purchasers (8), innovation consultants (5), policy coordinators (5), pharmaceutical and medical advisors (4), commercial consultants (4), IT experts (1), and department managers (1). The experts worked for the departments purchasing (10), innovation (7), policy (4), commerce (4), and medical advice (3). Of these experts, 21 were involved in the written evaluation of the submitted innovations whereas 11 experts were present during the meeting where the submitted innovations were discussed.

Based on job title and department and on feedback provided by the experts themselves, the experts were grouped into seven expert roles: the *medical advisor*, the *innovation consultant*, the *policy coordinator*, the *proposition manager*, the *purchaser*, the *market consultant*, and the *technology consultant*. The first and second columns of Table I list the expert roles and the respective scopes when evaluating innovations. For instance, the medical advisor role focuses on the medical quality of an innovation: does it conform to the state-of-the-art in medical evidence and professional standards?

C. Evaluation criteria

Using the affinity diagramming technique [5] all questions corresponding to a single expert role were clustered to identify criteria. For instance, all questions and remarks made by the four medical and pharmaceutical experts in the written assessments and/or during the expert meeting, were all assigned to the *medical expert* role and then clustered. Affinity diagramming is particularly suited for this task since it allows topics to emerge from the data rather than from predefined categories. The topics that emerged in this way were *financing*, *target group*, *patient problem*, *uniqueness*, *added value*, and *implementation*, with each role contributing questions and remarks to one or more topics.

Next, criteria were identified per topic. This was done in several iterations and in close co-operation with the experts themselves. As a final step, the generated criteria were prioritized to arrive at a set of three main criteria per role. See the third column of Table I. For instance, the medical advisor role uses cost effectiveness, medical evidence and substitution

of existing care as the three main criteria when evaluating an innovation.

D. Interactive website

Based on the results of the study, an interactive website [6] was developed for entrepreneurs, project managers, researchers and other people active in the field of eHealth innovation. The website consists of five pages: (1) a general introduction about the aim of the website, (2) a brief description of how to submit an innovation for evaluation by the insurer, (3) the main page where entrepreneurs can read about the insurer’s criteria and complete an assessment to learn how their own innovation might score when evaluated by the insurer, (4) background information about the insurer and its role within the health care system, and (5) links to relevant websites and organizations.

The result of the assessment (see Figures 1 and 2) is explicitly not shown in terms of a ‘fail’ or ‘pass’ as this would be an unrealistic simplification. Rather, the result is indicated by seven color-coded avatars that each stand for one of the expert roles. An avatar’s color represents whether the respective expert role is likely to be convinced (green), undecided (orange) or unconvinced (red), and is determined by the answers given to three questions (either ‘yes’, ‘no’ or ‘unsure’). For instance, for a green avatar the answers should include at least 2 yes’s and 0 no’s. Overall, this reflects the actual evaluation process, where the individual experts might be convinced, undecided or unconvinced and where the final decision is made based on a discussion where consensus between the experts is reached.

IV. CONCLUDING REMARKS

Health care insurers play a crucial role in the implementation of innovations within the health care sector. Yet, very little (if anything) is said in the literature about how

innovations are being evaluated by insurers, and what criteria are being used to do so. Although the results presented here are based on the process and criteria of a single insurer, the study has delivered useful results and clearly deserves a follow-up.

Such a follow-up study should, preferably, also be done in other countries with different health care systems. The process and criteria we found, must be determined by the characteristics of the health care system and the role of insurers within the system. For instance, the Dutch system can be characterized as a universal health care system with compulsory insurance carried out by competing private insurers [7]. This may explain why some criteria address the insurer’s image or customer retention. We expect that the criteria of insurers acting within other types of systems will to some extent be different.

Besides contributing to the transparency about the insurer’s evaluation process and criteria, the study has also proven beneficial for the insurer itself. The co-operating experts were surprised to learn, after the first stages of the analysis, how much overlap existed between the remarks made and questions asked by every one of them. The ensuing iterations to fine-tune the expert roles and evaluation criteria has led to a greater awareness and a more streamlined evaluation process within the insurer. It also led to a strong involvement among the experts, who clearly saw the benefits of a greater transparency about the insurer’s evaluation process, such as fewer misunderstandings among entrepreneurs and a higher quality of future submissions.

During the last stages of the study, three representatives of the target group (all eHealth entrepreneurs) were invited to evaluate the website by means of a structured user interface walkthrough [5]. This has led to several improvements of the website. More importantly, it showed that the information presented on the website and the assessment are indeed useful.



Figure 1. Part of the main page of the developed website. The avatars of four out of seven expert roles are visible.

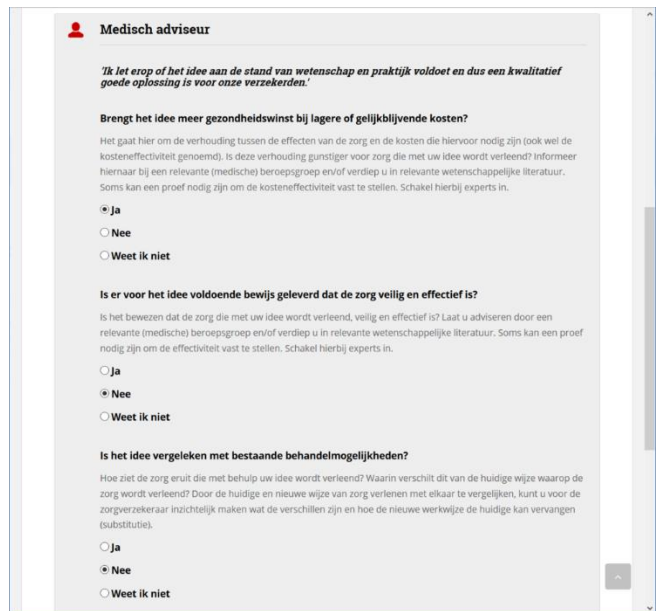


Figure 2. Part of the assessment. The three questions for the expert role medical advisor are visible.

The participating entrepreneurs stressed the value of adding descriptions to the website of successful cases where insurer and entrepreneur have indeed co-operated in the wider implementation of an innovation.

Overall, the study and website have received a warm welcome among entrepreneurs, insurers and government officials. Removing obstacles for health innovation is an important issue on the agenda of the Ministry of Public Health. Nevertheless, the actual added value of the website remains to be seen (for instance by studying the question: is there any difference in success rates among entrepreneurs who did and who didn't consult the website before submitting their ideas to the insurer?). The Ministry of Public Health has, in the meantime, provided an additional grant to extend the study to more insurers, and to incorporate the description of several successful cases as requested by the entrepreneurs. The results will be reported at this conference in due time.

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TABLE I. EXPERT ROLES, EVALUATION SCOPES AND MAIN EVALUATION CRITERIA

Expert role	Evaluates whether the innovation...	Main evaluation criteria
Medical advisor	satisfies the state-of-the art in medical evidence and professional standards	1. cost effectiveness (does it contribute to better health at equal or lower cost) 2. medical evidence (is there any proof that it is safe and effective) 3. substitution (can it replace a current treatment)
Innovation consultant	contributes to cost reduction while maintaining or improving quality of care	1. business case (are costs balanced by benefits) 2. stakeholder support (has it been developed in co-creation with stakeholders) 3. pilot readiness (is it ready for a trial to evaluate its added value)
Policy coordinator	fits the insurer's responsibilities and strategy	1. patient problem (does it address an existing patient problem) 2. insurer role (does it fit with the insurer's role within the health care system) 3. insurer strategy (does it fit with the insurer's policy and strategy)
Proposition manager	has added value for the insurer and its subscribers	1. insurer image (will it aid the insurer to distinguish itself from its competitors) 2. customer retention (will it help to retain or attract customers) 3. customer value (will it improve the insurer's customer offerings)
Purchaser	can be reimbursed within the public health insurance regulations	1. substitution (will it replace, not supplement, existing care) 2. care regulations (can it be made to fit within current regulations) 3. reimbursement regulations (is it reimbursable under current regulations)
Market consultant	addresses an existing patient need	1. patient problem (does it address an existing patient problem) 2. patient involvement (have patients been involved during its development) 3. patient need (does it fit with patient needs and desires)
Technology consultant	is truly new	1. scalability (can it be scaled to more care providers) 2. uniqueness (is it unique compared to its alternatives) 3. privacy & compliancy (is information handled according to relevant standards)