The importance of clear communication

Implementation of innovation projects in healthcare: the expected and the unexpected

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Summary

Introduction: Healthcare institutions welcome innovation projects aiming to improve processes by fulfilling previously identified needs. Despite the adoption of a specific methodology and the identification of potential risk, conducting an innovation project in healthcare often has unexpected consequences. We present and contrast the expected and unexpected difficulties encountered during the design and implementation of an innovative app to facilitate nursing workflow at a patient’s bedside.

Methods: Expected risks were collected during feasibility assessment and risk identification analysis, and compared with those obtained during the debriefing before the pilot evaluation of the project. The findings were compared using a thematic analysis.

Results: Although many problems were forecast, unexpected problems were encountered due to change of leadership, difficulty in implementing functionality for heterogeneous practice, security issues due to the introduction of new devices, or insufficiently controlled communication.

Discussion: Based on our experience, we recommend defining a very clear communication strategy as a preventive measure for unexpected events that can be encountered during the development of innovative solutions.

Key words: innovation; mobile health; Hospital Information Systems

Introduction

Healthcare is a complex and fast-moving environment that is particularly suitable for innovation [1]. Since the introduction of the first computer in hospitals, care processes have continuously been influenced and sometimes disrupted by the changes made possible by computerization [2]. Perhaps the most striking example is the introduction of electronic health records (EHRs). EHRs have impacted not only on the quality of the available data but also the workflow process and healthcare billing [3–5]. Although the advantages of EHRs are now universally recognized (despite some associated drawbacks), it was difficult to convince institutions to invest in such technology when the first EHRs appeared. The same story can be repeated with many other innovations in healthcare and other fields. This tendency is well reflected by the innovation adoption curve that shows that early adopters are rare and that the majority of consumers wait before adopting innovation. This demonstrates that innovation is not simple in healthcare [6]. Indeed, although large amounts of money are invested worldwide to foster innovation, only a small fraction of these innovations are ever implemented in practice. Many determinants have been identified in the literature to explain predictors of success or failure in an innovative project. Regina E. Herzlinger identified six factors that promote or hinder innovation in healthcare: players, funding, policy, technology, customers and accountability [7]. These six factors can either foster or curb the innovation depending how well these factors are managed during innovation projects. Another study from Fleuren et al. identified 50 determinants that can influence the success of innovation in healthcare [8]. These determinants are classified in five categories: socio-political context, organizations, users, innovations, and facilities to implement the innovations. Finally, Chaudoir et al. captured the multi-level factors thought to affect the successful implementation of evidence-based health innovations and organized them into structural, organizational, provider, innovation and patient-level factors [6].

In this article, we report our experience regarding the development of a new mobile application for nurses that allows them to manage their daily interventions. We describe the difficulties that we expected to encounter in the innovation process and the unexpected events that complicated the project.

Methods

The increasing capabilities of mobile devices and their penetration in every aspect of people’s lives makes mobile applications increasingly attractive for use in a healthcare environment [9]. Based on the impulse of an IT leader at our university hospital, an inter-professional team from our teaching hospital including computer scientists, nurses, and physicians began to work on an innovation project aiming to support nurses in their daily work at the patient’s bed-
side. Once the scope and overall vision of the project were defined, a coordination team was given the responsibility of leading the project to its goal. In order to conduct the project, the coordinators developed a specific methodology [10]. They also performed a feasibility assessment and risk-identification analysis. Before the pilot evaluation of the project, we conducted a debriefing to gather together unexpected difficulties encountered during the project. Finally, a thematic analysis was performed to compare the risks identified before the start of the project, and those encountered during the project.

**Results**

We chose to present the identified and encountered risks that we considered specific to this project, leaving aside the general risks that can potentially exist in all projects.

**Players: expectation**

When you start a project based on innovation, you have to ensure that a shared vision of the project is created in the minds of the participants who take account of different stakeholder priorities. Good communication is important, and we have been careful to clarify the vision and aims of the project. Unfortunately, it is well known that there can be great differences between the message given and the one received. As a consequence, different stakeholders communicated visions that diverge from what was originally intended. The misunderstandings caused had negative consequences for the project since they led to unrealistic expectations.

**Players: support from the hierarchy**

In large healthcare institutions, you need the support from the top management to bring your project to completion. Indeed, it is uncommon for you to be able to complete a project without interacting with the different services that are also taking part. These collaborations work if the respective formal authorizations provide the necessary resources. Moreover, it is also important to have a clear vision of the on-going strategy of the institution, so that you can determine a viable direction that will be supported in the long term. Finally, hierarchical support can also promote your project in the institution, particularly since the strategic vision can evolve over time.

**Funding**

Healthcare institutions have strong operational constraints regarding their information systems. IT leadership is usually under strong pressure from end-users asking for improvements to the existing IT system. In this context, IT leadership tends to favour sustaining innovations over disruptive ones. Disruptive innovations have impacts that are difficult to forecast and do not always receive the attention they deserve. Moreover, the financial benefits resulting from the introduction of disruptive interventions are often difficult to demonstrate or emerge over time. For instance, the return on investment of computerized physician order entry was not easy to estimate. Key stakeholders had to be sufficiently convinced to invest. Medico-economic analyses based on the expected outcome of the intervention can help tip the balance in this respect.

**Policy: security**

Information security is a central concern in healthcare. Storing health information in electronic form raises concerns about patient health, privacy, and safety. An in-depth study shows that healthcare information systems (HIS) are threatened by both accidental events and deliberate action threats, which can severely damage health information systems’ reliability and consequently discourage professionals from future use [11]. Innovation projects and the changes they induce inevitably create new breaches. In our case, the introduction of a new device generated a need to adapt the whole pipeline of authorization and security. Unfortunately, the existing regulation on security was defined for the existing IT system and usage. Innovation disrupts existing processes, and these are often unable to cope with new usage parameters without adaptation.

**End-user: requested functionality**

In innovation projects, it is critical to adopt user-centred methodology to be certain of designing a product and associated processes that are properly tailored to the target audience. The research on user experience recommends performing a strong end-user requirement analysis to understand needs and to implement functionality accordingly. In healthcare environments, this is particularly challenging due to the extreme diversity of practice. Although nursing care uses guidelines to standardize many care processes, there is still great variety in the organization of the daily workflow. This may depend on the physical organization

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**Table 1: Summary of expected and unexpected risks in the project.**

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that depends on the specificity of the patients’ conditions in the ward and the specific organization of the ward.

**Technology: technical architecture**

While implementing an IT system, it is recommended that an existing system be connected through the dedicated API. In innovation projects, the new system may link with services that are not exposed by the API. Moreover, if the business logic supported by the existing system is not the same as the one chosen for implementation, there is no clear way of achieving integration. As a consequence, you either have to hijack the existing system or request integration of the new logic and API by the IT department. Hijacking the system is particularly risky since it can jeopardize the integrity of information. The complexity of the care process then requires the performance of exhaustive testing that is time- and resource-rich. On the other hand, relying on an IT department can produce very long delays if the new system is not listed as a priority task.

**Discussion**

Innovation projects conducted in healthcare are really challenging. Feasibility assessments and risk identification help to prepare for many situations, but the complexity of the healthcare institution, the strong human factor component and the technological constraints associated with this environment induce a lot of unexpected challenges throughout the project realization. Based on our experience with the development of an innovative mobile application to support nurses in their daily work at the patient’s bedside, we encountered many unexpected problems, and reported them in this paper. It is interesting to note that many of these unexpected events are due to human factors. In order to avoid these problems in future development, we want to emphasize the importance of clear communication about innovation projects. This communication should be conducted not only through informal discussions, but also rely on more structured communication support that helps to avoid ambiguity about the intended results. This communication material can then be used to convince multiple stakeholders about the importance of your project. Gathering strong support from top management is very important. All the more so because only being supported by a single promoter jeopardizes project sustainability in the case of a change in leadership. Moreover, having the support of a large base in the hierarchy to help obtain a clear strategic vision and to provide results that will be supported at an institutional level. Finally, this communication about the project will help to strengthen collaboration during the project’s implementation and integrate the project into the existing workflow and infrastructure.

**Disclosure statement**

No potential conflict of interest relevant to this article was reported.

**References**


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