Interview summary

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mHealth Practice: **United4Health, Southern Norway**

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Topics

United4Health, Southern Norway has a successful approach to the following topics:
- Planning
    - **User centered design considerations**
- Execution
    - **Solutions testing and validation**

It also promoted learnings about **regional collaboration across organisational boundaries.**

Summary

- EU FP7 Project (2013-2016) CIP-ICT PSP-2012-3, 20 countries, 20 000 patients.
- Kristiansand municipality and University of Agder design, development and deployment of telemonitoring program for COPD patients.
- Aim: to reduce hospital re-admissions from COPD exacerbations over the following year and pathway is more cost-effective compared to usual care.
- User-centred design: all stakeholders at all times.
- COPD patients and health professionals designing and evaluating together.
- Service deployed into the Norwegian Health Network.
- Triage based on clinical evidence (no standard available at the time).
- International partners with different expertise but tackling the same type of problem.
- Learning objectives: legal, technical and economic issues.
- Benefit realisation takes time: short- versus long-term approach.
- Triage is now part of an algorithm in use at same municipality.
- The Agder region is a Norwegian and European Reference Site (3 star in EU EIP-AHA).

Scope of mHealth Practice

The United4Health was an EU FP7 project (2013-2016) with stakeholders collaborating across organisational and administrative levels (municipal and hospital sectors) in the Region of Southern Norway. A technology solution allowed to telemonitor Chronic Obstructive Pulmonary Disease (COPD) patients at home. The system was deployed into the Norwegian Health Network. A field trial included around 100 patients during the duration of the project.

United4Health had a strong focus on user-centred design during the entire development and deployment processes.

Topic: User-centred design with multiple stakeholders

Scope and timeline of the mHealth good practice implementation

How long did it take for the mHealth practice to be implemented?

The technology development process took approximately 6 months. The implementation and integration into the National Health Network took another 6 months and created a delay that affected the planned schedule for the project.

What are the key steps that were undertaken?

A project board was established and a project management in charge of the medical and technology aspects, legal contracts between the stakeholders, and a patient organisation was involved. Workshops with key stakeholders allowed for end-user representativeness throughout all the stages of the project. These included user tests and validation test over a test network. A field study was carried out with patients and health professionals in a pre-implementation phase to preliminary analyse the usability of technology in real settings.

What are the strengths and weaknesses of the implementation process?

Strengths:
1) user-involvement in all the stages of the project,
2) implementation in the National Health Network,
3) a detailed protocol for the implementation of the service for patient follow-up.

Weaknesses:
1) lack of integration with the electronic health record due to process time length, which made it became a standalone system,
2) the municipalities were not included as full project partners, although they contributed to the project outcomes,
3) the detailed protocol for the patient follow-up service was a limitation for the municipality who had need for individualising the patient follow-up.

Is there a workplan that can be included as a reference? Is there further documentation about the approach?

There are scientific peer-reviewed publications connected to the project (around 10).

What are the strengths and weaknesses of the solution?

Today, the solution would not have been approved as Medical Device (due to the European General Data Protection Regulation, Quality Assurance ISO 13485 and Medical Device Regulation (EU 2017/746). Standards and quality assurance would have taken a more relevant role in the development of the solution.

Stakeholder involvement

What stakeholders needed to be involved for the good practice to work?

All directly and indirectly involved in the design, development, deployment and evaluation of the solution. This includes hospital, municipalities, research institution, IT provider of hospital and

municipal organisations, The Norwegian Data Protection Authority, IT company, patient organisation.

What are the stakeholders' roles and activities/effort?

Municipality: to run the IT-system, HR resources, location/real estate. Hospital: owned the technical equipment/tablets, configuration of technology, teaching of nurses that included patients at hospital before being discharged, user training of patients and advisory function. Research institution: responsible for the user-centred design overall approach; development the tablet application to be used by patients. Research and dissemination at regional, national and international level. IT company: development of the backend information system. Patient organisation: to support the recruitment of end-users. The Norwegian Data Protection Authority: advisory role. All stakeholders: providing resources to join user-centred development process workshop/tests.

How was involvement and buy-in of the stakeholders secured?

By legal contracts connected to the project agreement and own contribution from the organisations.

Barriers

The stakeholders were from different organisations and had multiple levels of administration (as a barrier for financial support to project activities and regarding laws, the data storage and data access had to be taken care of). The municipality and hospital had different economy and service models. The technology was not fully integrated with other systems in use, such as electronic health records (hospital and municipality). It was challenging to involve the General Practitioners in the project and operation of the service.

Were there any obstacles you experienced? How were they overcome?

Realisation of benefits: the one who provided new services did not immediately see the benefits. In this case, the municipality had to establish a new service with employees and corresponding costs. The overall benefit was to release patients from hospital knowing they would be followed up and monitored at home.

Success factors

1) Involvement of all stakeholders at all times for the design, development, deployment and evaluation of the technology solution.

2) Technical solution implemented in National Health Network.

3) International and national clinical guidelines for COPD were carefully taken care of and the algorithms that were developed are still in use in other regional projects.

Lessons learnt

Involve organisations as equal partners. Legal and economic issues may arise, and they need to be taken into account when designing the project. Realisation of benefits may take longer time than expected, so it is essential to structure them with short-, middle- and long- term perspectives. Policy/political: long-term view regarding investments, operation and permanent implementations is needed. The focus has to be on the benefits of the patients and not mainly the organisations. It is relevant for the development of the Project to take into account organisational

policy and involve politicians, making them aware of the benefits for the region/city/organisations/citizens. Legal resources must be available to assist in new implementation and risk management is relevant to predict any unforeseen circumstances. It was difficult to engage and enrol physicians to the project, and it was experienced that this engagement is important and has to be a priority from top management.

Outcomes

What were the main outcomes of implementing the mHealth solution?

Establishment of new services connecting stakeholders and organisations. New ways of carrying out services supported by technology. Providing means to improve quality of life, save time and resources. Patient empowerment was a central part of the project where patients learned how to manage their own disease. After the end of the United4Health project, the stakeholders involved are still collaborating closely regarding digital health and remote monitoring in the Agder region.

What is the status?

The project/system was fully operational until 2016, but was discontinued after the end of the project. Due to the Norwegian rules for procurements, another system was later bought for a similar service in the region.

Continuous learning and outlook

What would you have done differently? What can still be improved?

Involve all partners equally. Permanent implementation. Include data protection standards and quality assurance in a systematic way through the project. More available technical support/user support for all user groups (patients and health professionals).

What are the future plans for exploiting the mHealth solution?

The same organisations are still collaborating in other similar mHealth projects, although they are using an off-the-shelf solution for the technology. The Southern Norway Region is a national pilot for testing and running new mHealth services in Norway. In addition, the Agder Region is a reference site for mHealth in EU (Reference site 3-star of the European Innovation Partnership on Active and Healthy Ageing, EU EIP-AHA).

Other elements to be highlighted

1) Strong focus on collaborative work across organisations.

2) A specific application/server solution was developed for this mHealth implementation for patient-generated data.

3) The importance of testing out new technical solutions in a secure network (professional test facilities and National Health Network) and also to make clinical test and evaluation.