Consent-based Access to Core EHR Information: the SUMO-project

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Abstract. Lack of access to updated medication information is a challenge for healthcare providers in Norway. Drugs are prescribed from different sources as the patient’s GP, private specialists, emergency care, hospitals and doctors in the patient’s family. In order to provide healthcare providers that need access to the patient’s medication information fast, a project for consent-based access to a core-EHR has been established. All major EHR-system vendors in Norway participate in the project that is funded by national health authorities, Innovation Norway1 and the municipalities. The core-EHR provides a generic basis that can be used as a pilot for a national patient summary.

Keywords. consent, EHR, patient summary, medication

Introduction

It is estimated that medication-related errors cause 190 deaths/year in Norway (population 4.5M) and that 160,000 unintended incidents occur outside hospitals every year. It is assumed that a considerable number of these medication-related errors are due to faulty or inaccessible drug information.

When the Directorate of Health and Welfare launched their strategy, Teamwork 2007 [1] in 2003, a national municipality programme was part of the plan. A group of lighthouse projects were initiated and given limited funding from the government as part of this programme. The idea was that these projects should become examples to be followed by other projects, and that necessary national standards should be developed in relation to the projects. The projects would require extensive involvement from the municipalities in terms of both own workload, software development and infrastructure. In order to reduce the number of drug-related unintended incidents, one of the national lighthouse projects had focus on this area. The project was established by the municipality of Trondheim in 2003.

The directorate of health and welfare initiated 5 projects:
1. Consent-based access to core-EHR, drug-information (Trondheim)

1 Innovation Norway, prior the Norwegian Industrial and Regional Development Fund (SND), helps to provide or arrange financing, link customer enterprises to know-how and help them build networks for their innovation projects.
2. Shared individual plans, continuity of care (Kongsvinger/Eidskog)
3. Intermunicipal telemedicine (Nord-Gudbrandsdal)
4. Extended electronic message exchange for better cooperation between hospitals and municipalities (Stavanger)
5. A model for implementation of EHR in community care (Sandefjord)
6. Use of secure e-mail within community care, laboratory results and discharge summaries from hospitals to nursing homes (Tromsø)

The sixth project in Tromsø, was already started before the programme started.

Other related Projects

In parallel with the lighthouse-project, the ELIN-k project was established by the Norwegian Nursing Association and KS. The main goal of the ELIN-k project is to ensure that healthworkers in community care can have access to updated health information from other GPs and hospitals. Information in transferred by standardised electronic messages.

The ELIN-k project uses the same projectmodel as the ELIN-project that was initiated by the Norwegian Medical Association. The main goal for the ELIN-project was to ensure that the GPs got solutions for exchange of medical information that were integrated into their electronic health record (EHR)-systems and supported their daily work routines. A requirement for the solution was that national standards should be supported. Innovation Norway has partly funded the vendors of EHR-systems work with implementation of the needed standards. The standards have been developed by the Norwegian Centre for Health Informatics (KITH) based on the users requirements from the ELIN-project. As a result, all the vendors have implemented standards for communication of referrals, laboratory results and discharge summaries in their systems. The implementations have also been tested by the national test- and approval service operated by KITH.

1. The lighthouse-project in Trondheim

The project focuses on a group of mostly elderly people (age 80+) living at home but with an extensive need for healthcare services. In order to provide the healthcare providers form different organisations with updated information about the patient’s medication, it was decided to develop a system based on core-EHR [2].

The core EHR will be updated automatically when pharmacists, hospitals and other healthcare providers participating in the projects send information to the GP. The patient’s GP is responsible for the core EHR and will check all information received from other healthcare providers in order to detect any medication inconsistencies.

The patient and his GP jointly decide what information other healthcare providers may need in different situations based on the patients consent. The patient may at any time change or withdraw his consent, and change the distribution rules.

The patient and his GP jointly decide the distribution rules to be followed:
- Distribution rules are partly based upon ENV13606-2

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[2] The Norwegian Association og local and regional authorities (KS) is a national organisation for municipalities, counties and public enterprises under municipal or county ownership.
Who may receive healthcare information
- Explicitly named healthcare professionals
- Healthcare professionals having a specific role

Why may they receive healthcare information
- A set of standardised requests is used to specify why the requesters need healthcare information

When may they receive healthcare information
- The patient's consent is either given for a specified period of time or for a specific period of care

To comply with Norwegian legislation, the core-EHR is updated by messaging. Access to the core-EHR can also be provided by web-services.

The selected information is automatically copied from the GP’s EHR to a "core EHR" on separate server that handles the requests. A server-based solution has been chosen in order keep the core-EHR accessible outside the GP’s regular workhours. The core-EHR is run a server in the Trondheim municipalities net, and access from the Norwegian Health Net to the core-EHR will also be established.

The project uses the EHR kept by the patient’s regular GP as the main source of information. All Norwegian healthcare providers are obliged to give the patient’s regular GP relevant health information unless the patient explicitly refuses.

Other actors who need and are will receive updated drug-information based on requests sent to the GP’s EHR-system. Each request is automatically checked against a set of distribution rules and if the request is covered by one of these rules, a message containing the requested information is automatically returned.
1.1. The EHR-systems that need to communicate with the core-EHR in the Trondheim region

The hospitals in Norway are organised within 5 regional health authorities, owned by the government, and Trondheim municipality mainly communicated with hospitals that are located within the Regional Health Authority (RHA) of Mid-Norway. All the hospitals in RHA Mid-Norway are using the same EHR-system from Siemens. The EHR-systems for the hospitals are all operated at the same location, but the hospitals databases are separate due to Norwegian legislation, so although it would technically be possible to share EHR-information between the hospitals, this is not possible without patient consent.

The municipality in Trondheim has installed an EHR-system in community care from the vendor Tieto Enator. This system is in use at nursing homes and for homecare. The system is used by both for administrative workers and healthcare providers.

The GPs in Trondheim have been using EHR-systems for more than a decade. They do not keep paper records any more, and rely solemnly on the electronic record. The GPs use the EHR-system actively while the patient is in the office, and they are very concerned by the fact that the EHR-system must be easy in use, and that new functionality must be added in a way that does not force them change work routines to something that is less efficient than today. There are currently EHR-systems from two vendors, Profdoc and Hove in use within the municipality.

1.2. Communication between the EHR-systems before the core-HER was established in Trondheim

By the time the projects started, there were limited possibilities for communication between the EHR-systems. The GPs received laboratory results and discharge summaries and had electronic communication with NAV, the Norwegian Labour and Welfare Organisation. A pilot for sending electronic referrals from GPs to hospitals and specialists was also established.

1.3. Infrastructure for the core-EHR

The hospitals, GPs and the caretakers in the municipality of Trondheim all have access to the Norwegian Health Net. The Norwegian Health net is owned by the RHAs, and has so far mainly been used by the hospitals, but the number of GPs connected to the net is rising. In November 2007, 15% of the Norwegian municipalities are connected to the Norwegian Health net.

2. From lighthouse project in Trondheim to SUMO

Other municipalities in Norway soon also showed interest for the core-EHR, but they had started out at a slightly different angle than the project in Trondheim. Stavanger municipality wanted to use regular messaging between the actors to keep the drug information updated, and the Norwegian Centre for Telemedicine in Tromsø had also initiated a medical card project together with Tromsø municipality based on use of web-services.
It was soon evident that the three projects would benefit from cooperation. Development of common standards and implementation of the same standards for all EHR-vendors would be highly advisable. The project in Trondheim municipality did only count for 1/3 of the EHR-vendors in Norway, but all major vendors would be covered in a joint project with Stavanger, Tromsø and Trondheim. The three projects thus decided on cooperation, and the projects in Trondheim and Tromsø are now using the same core-EHR system, and all three projects use the same set of standards. To comply with Norwegian legislation, the core-EHR is updated by messaging. Access to the core-EHR can also be provided by web-services.

An application for funding of the EHR-system vendors development of client-modules in their EHR-systems was sent to Innovation Norway, and was approved late 2006. The same project model as for the ELIN-project was again used. A project to coordinate the vendors work, called SUMO, was established in early 2007.

The SUMO-project has been running a number of Workshops with vendors and users throughout 2007. Messaging standards for administration of the core-HER, and exchange of EHR-information, have been developed by KITH based on requirements from users and vendors in the SUMO-project. The new messaging standard for EHR is based on reusable components [3], and will probably prove to be a useful basis for development of future communication standards. Requirement specifications for the client-modules in the vendors EHR-systems have also been developed. The vendors are now at a stage where they implement the standards and the client-modules in the EHR-systems. The project is due to finish in June 2009, and the first pilots will be up and running in spring 2008. The core-EHR is already developed, and is being tested by Trondheim and Tromsø municipality.

The project works closely together with the ELIN-k project, the national ePrescription project run by the Directorate of Health and Welfare and the Norwegian pharmacies organisation. It is crucial for the vendors that larger national projects are coordinated and that the same set of standards can be shared and reused across projects.
As an example will the structure of the medication in the SUMO-project be the same as defined in the ePrescription project.

3. From SUMO to national core-EHR and patient summary

It is a need for a core-EHR solutions that can be used for more purposes than drug information. Examples are: Shared individual plans to support continuity of care, summary of the patient’s contacts with health providers in different organisations, and core-EHR information as important diagnoses, allergies and contact information. The core-EHR and the model from the SUMO-project can provide a good basis for a more general Norwegian core-EHR. The RHA’s ICT-organisation, NIKT, has now initiated a national project to evaluate how a core-EHR can be realised in the coming years, and the suggested solution for SUMO is likely to become a model for future work in this field in Norway.

References

[2] Løsningskisse fyrtrår Trondheim: Legemiddelopplysninger i Samtykkebasert kjernejournal, Centre for Health Informatics, KITH-rapport 29/05.