

Olomouc region, Czech republic: Telemonitoring of patients with AMI and in anticoagulation regime

Part 1: General Information

Publication on EIP on AHA Portal	Yes
Copyright	No
Verification of the Good Practice	Yes
Evaluation of the Good Practice	No
Type of the Good Practice	Good practice

Part 2: Description of the Good Practice

Name of the Good Practice	Telemonitoring of patients with AMI and in anticoagulation regime
Short name (Acronym)	TMCIP
URL of the Good Practice	http://ntmc.cz/?lang=en
Geographical scope	Regional level
Country	Czech republic
Region(s) involved	Olomouc region
Status of the Good Practice	On-going
Stakeholders involved	<ul style="list-style-type: none"> • Hospitals • Specialised physicians • National public authorities • Nurses • WHO
Size of population covered	1,000-9,999
Targeted audience	Irrelevant
Summary of the Good Practice	
<p>The practice, performed by University Hospital Olomouc with regional activity, is an updated and extended practice (no. 2) of the same healthcare provider that was evaluated in first half of 2013 in the context of EIPonAHA Reference Sites call in that year.</p> <p>This Good Practice was initiated by experienced cardiologists who recognised the need for improvement of care for mostly senior patients hospitalized for acute myocardial infarction (AMI) and other cardiac conditions. The purpose of the practice is support patients at home, early detect frequent co-morbidity (diabetes) and respond to unwanted development of INR of patients in anticoagulation regime. Political support is sought by management of Czech National eHealth Centre (NTMC, part of UHO) on several levels, including regional government, national healthcare management authorities and also medical societies. The</p>	

practice reflects regional conditions that are characterized by low usage of ICT in healthcare in the CR and lack of reimbursement and other pre-requisites that would otherwise allow smoother operation of such services. The practice then must have been economically optimized. Experience from participation in relevant EU projects (CIP, such as United4Health) is capitalized in the updated practice. The practice in case of diabetes detection consists of telemonitoring with clinical protocol that is in line with the protocol used in a large EU project Unite4Health that focused on assessing the impact of innovative healthcare services in real conditions in 14 regions of Europe. The practice adapted this generic protocol for the target group of patients after AMI and for the regional conditions.

Until the service was introduced, there has not been method that would enable to collect relevant information about critical parameters development co-morbidities and precisely control development of patient's INR at home.

The practice requires only minimum organisational changes in the hospital; its essential parts are under control of clinical staff (cardiologists, diabetologists and nurses) who make use of data (glucose level or INR, as appropriate) received from patients at home. The ICT (telehealth) system used for the practice has also several features that enable bidirectional communication between the medical personnel and patient; including distant ordering of medicaments, which partly fills the gap of non-existent e-prescription service in the country. The system also provides basic functions for patient empowerment as measured data are available to patients and bidirectional communication is possible.

The same system is also used for other telehealth-based practices in UHO. Its further features increase technical reliability of distant communication between patient's smartphone (gateway) and healthcare personnel with access to telehealth portal.

Central system (portal) is tailor-made for UHO and allows besides of automatic collection of measured data from devices (glucometers, prothrombin time - INR) also controlled manual entering of data by the patients and their processing and presentation to healthcare personnel as needed for amended care protocols.

There is clear relationship between initial co-morbidity detection in population - screening, followed by specific individualized therapy and management of the target group of ill in higher age and therefore the practice has positive impact to health conditions of targeted population.

It is also expected that morbidity, mortality, and quality of life of the targeted patients with observed diagnoses will be improved. Inputs in international medical (cardiology) societies will also further improve position and prestige of EU medical expertise.

As the issue of sustainability of the service is essential, the Good Practice management systematically negotiates with medical societies and national healthcare authorities to achieve reimbursement on national level and to upgrade standardized treatment protocols.

New jobs were created; work force is needed mostly for technical and management oriented tasks. The practice demonstrated increase of the quality of care and satisfaction of patients (esp. INR intervention).

Essential elements of the practice are subject of scaling up in the Region in 2016, where other healthcare providers plan making use of the telehealth system and assume the protocol design for diabetics. The practice can be transferred to other regions in the CR or abroad.

Key words: AML, diabetes, cardiac, INR, telemonitoring

Good practice being part of the larger programme

Yes.

This practice is targeted to improve care of cardiac patients in the Region. This service is one of the 2 original practices employing ICT in distant communication between medical staff and patients with chronic diseases in University hospital Olomouc. An extended set of practices is under development as part of hospital program in 2016. A common ICT system is to be used for a number practices comprising several chronic diseases (currently in mid 2016 it is planned to cover more services for than 5 departments in the hospital). The practices reflect current status of eHealth in the CR (mostly underdeveloped) and concentrate on benefits in medical domain.

Challenges / problems addressed by the good practice

Training of medical personnel, preparation of the infrastructure, such as the ICT system and its features reflecting needs, pathways for patients including education, methodology for stratification of patients (selection for the service), financing - investment and operation, strategy for negotiation of sustainability (ongoing with stakeholders in the CR in 2016). There is technologic challenge in case of INR intervention as there is lack of Bluetooth enabled devices on the market, which does not allow eliminating fully human entering the measured data. Acceptance of the INR intervention by both the medical personnel and patients is generally very positive, while in case of diabetes intervention it is more complex task and its success is also influenced by relatively high level of care of diabetics by specialists in the CR.

Importance of the challenges / problems before starting to implement good practice

In case of diabetes detection, the challenges resulting from scope of work of relevant personnel, as well as technology (glucometers) issues were quite important and have lead to modifications of the practice. In case of INR, the prevailing issue is cost of strips for blood drops that should be resolved (normally, strips are not reimbursed to the patients in the CR).

Providing support by medical personnel in INR intervention increases their work load (even during off-work time periods).

Environment before the good practice was implemented

Classical clinical care, not always systematically focusing on early diabetes detection and development after AMI. Uncontrolled INR values in period between hospital visits were source of various health status issues.

Key innovative elements of the good practice and how the good practice improved situation compared to previous practice

Early detection of diabetes; precise control of INR in cardiac patients results in reduction of occurrence severe stages of co- morbidities and enable to stabilise patients status. Improved care, less visit to hospital. The interventions have elements and therefore medical protocols are not compromised. Patients stay in the services for period of time as necessary (depends on the intervention and conditions) and then the equipment can be transferred to another patient.

Part 3: Transferability of the Good Practice

Cost-effectiveness of the good practice (including all kind of costs and outcomes such as better health, quality of life or other resources)	Higher costs, improved outcomes
Resources required for the deployment of the good practice (personnel, equipment, facilities, ICT and other resources required).	
Personnel: nurses + cardiologists (training), 1 telehealth engineer, office room for dedicated ICT system and education of patients, HW and application SW (small server - in cloud), Bluetooth enabled smartphones with SW, devices (glucometer, INR meter) and consumables, telecommunications (2G, 3G mobile). Negotiations of the practice with the aim to achieve the service sustainability take long time and require adequate skill.	
Total budget of the Good Practice	€10.000 -€ 99,999
Source of funding	Other (European & national funding)
The main actions that have to be done to deploy the Good Practice	
Initial training of medical staff, defining professional roles in the practice in the hospital, modification of clinical protocols and workflow, putting the ICT system in operation.	
Issues during the implementation of the Good Practice	
Ensuring financial resources for the service after project resources were exhausted. Some patients need more intensive education. The technical feature of the telehealth system enabling distant configuration of patient smartphones saves significant effort, resources and time to the support. Not all patients can enrol, mostly due to their cognitive impairments.	
Additional resources required to scale up Good Practice	

No.
Basis to support sustainability of the Good Practice
Financial resources and functional HW, SW.
Evidence to observe the Good Practice
A visit to an implementation site.

Part 4: Viability assessment of the Good Practice

Time needed to deploy the Good Practice
Less than a year.
Investment per citizens / patient / client in terms of financial resources
Between €1.000 - €5.000 EUR per targeted citizen / patient.
Cost of equipment of the patient, share on the cost of the system and its operation, telecommunications.
Evidence behind the Good Practice
No knowledge about evidence. No evaluation or documentation of effect has been carried out.
Evidence behind the practice was part of results of our deployment site in Unite4Health project. Clinical evidence is based on analysis of evidence provided by based medicine resources (were also bases of Unite4Health project). Evaluation of the practice was completed by methodology MAST - Model for Assessment of Telemedicine.
Maturity of the Good Practice
There is evidence that the practice is economically viable and brings benefits to the target group. Further research and development is needed in order to achieve market impact and for the practice to become routine use.
The practice is beneficial to patients, the hospital and even the healthcare system. However, its economic viability is still subject of negotiation (status August 2016) with appropriate authorities. The negotiations are on-going on several levels including Ministry of Health of the CR.
Estimated time of impact of the Good Practice
Long term and sustainable impact - e.g. a long time after the pilot project ended and routine day-to-day operation began.
Impact observed

No knowledge about evidence. No evaluation or documentation of effect has been carried out.

Implementation of telemedicine in care of chronically ill patients has impact in better compliance of patients, lower cost of treatment of patients due to early detection of adverse development of the disease or co morbidity that typically prevent transition of the patient's condition to worsen. We observed also better quality of life and economic aspect - fewer hospital readmissions.

Transferability of the Good Practice

The innovative practice has been transferred within the same region.

The diabetes practice has been transferred to other healthcare provider in the Region. Scaling up to other hospitals can follow, however the team in NTMC concentrates on organisational aspects of such telehealth service, especially economic conditions to ensure sustainability.

Part 5: Your organisation

Name of the organisation	University Hospital Olomouc
Address of the organisation	I.P.Pavlova 185/6, 779 00 Olomouc, Czech Republic
Type of organisation	Hospitals
Name of the contact person	Zdenek Gütter, PhD ; Milos Taborsky, M.D., Ph.D, FESC, MBA (head of I. Internal clinic)
Email address of the contact person	Gutter@ntmc.cz