Puglia, Italy: Remote monitoring in heart failure outpatient

Part 1: General Information

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

Part 2: Description of the Good Practice

Name of the Good Practice	Remote monitoring in heart failure outpatient
Short name (Acronym)	RMHF
URL of the Good Practice	Not available
Geographical scope	Regional level
Country	Italy
Region(s) involved	Apulia (Puglia)
Status of the Good Practice	On-going
Stakeholders involved	• Hospitals
Size of population covered	250-999
Targeted audience	Irrelevant

Summary of the Good Practice

Apply the Information Communication Technology (ICT) in medicine means to respond promptly to the diagnostic needs of patients regardless of where they are. Many companies are investing in and developing markets that address remote management of chronic diseases, health and wellness. Remote monitoring (RM) is a new and different way of organizing the health care. The aim of our project is evaluate the possible usefulness of the information provided by implantable cardiac defibrillator (ICD) trough RM in a population of HF outpatient at high risk of events. This System is based on primary nursing: Technician or Nurse expert checks the website and makes a first filter on the transmission of patients. Transmissions that report abnormal data, arrhythmic episodes important, critical events are brought to the attention of the physician. In case of relevant event nurse or physician call patients to modify drug therapy or to schedule another follow-up. On basis of our findings, RM by ICD seems to be useful tool for a better management of technical failures and clinical complications occurring in HF outpatient, thus strengthening the hypothesis of a routinely use of RM in this clinical setting.

Second experience: we partnered with Puglia Region, CNR and Capurso City to "ProgettoIppocrate", whose data are still in progress, which was intended to evaluate a potential correlation between climatic variations and the risk of disease cardiovascular

onset in people with high cardiovascular risk through use of a wearable "Weheart", device capable of monitoring the biometric data of patients.
Key words: remote monitoring, heart failure
Good practice being part of the larger programme Yes. According to our experience, we have participated in an international, prospective, multicentre, randomized controlled clinical trial ”MORE-CARE”, recently (September 2016) published on European Journal of Heart Failure. The aim of this study was to evaluate the clinical efficacy and safety of RM in patients with HF and biventricular defibrillator.
Challenges / problems addressed by the good practice Our challenge is to check a growing number of patients in less time maintaining consistently high standards of quality of care and reorganize in office follow-ups and in the future, extend this model to all patient with implantable devices.
Importance of the challenges / problems before starting to implement good practice In last years we show European populations aging with increasing health needs, against European healthcare systems is under financial pressure. Hospitals struggling to deliver more effective and efficient care. Increasing use of implantable devices creates a significant growth in demand for resources to manage the subsequent follow-up. These are reasons that have prompted many companies to develop telemedicine system to strengthen efficiency and improve quality of care and of life of our patient against a potential saving of time and money.
Environment before the good practice was implemented Before this practice, in our Hospital was scheduled only in office visit for patient with implantable devices.
Key innovative elements of the good practice and how the good practice improved situation compared to previous practice This practice provides us useful information for recall management, become more and more frequent in recent years. This situation has limited right functioning of our clinics by increasing the workload of health workers.

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)	Lower costs, equal outcomes

Resources required for the deployment of the good practice (personnel, equipment, facilities, ICT and other resources required) The basis of this practice in a model composed by 2 Physicians, 2 Nurses with specific competence able to manage routine, transmissions issue and triggered by alerts. Moreover 2 personal computers with laser printer and Internet connected, a telephone and fax line dedicated and a control room equipped with 1 clinical archive.	
Total budget of the Good Practice	€10.000-€99,999
Source of funding	Local funding
The main actions that have to be done to deploy the Good Practice Clinical training and continuous update of dedicated staff involved in this practice.	
Issues during the implementation of the Good Practice 1. High workload during start-up phase due to tiling this practice to in office visits. 2. Training of dedicated staff. 3. Explain to patients and families that this alternative practice is safety and ensure a better and efficacy management of issue.	
Additional resources required to scale up Good Practice Yes. Have more resources available for technical staff dedicated to work for this practice and new and comfortable location.	
Basis to support sustainability of the Good Practice Data from literature enclosed in 2008-2012-2015 HRS/ESC Expert Consensus Statement on remote interrogation and monitoring for cardiovascular implantable electronic devices.	
Evidence to observe the Good Practice Scientific partners http://spo.escardio.org/SessionDetails.aspx?eevtid=46&sessId=7804&subSessId=1022&searchQuery=&presId=54751&doc=Abstract#.V_FL_ThH7cs https://www.i-jmr.org/article/viewFile/ijmr_v2i2e27/2 http://www.sanita.puglia.it/archivio-news_det/-/journal_content/56/20182/progetto-ippocrate-internet-pathology- platform-for-characterizing-the-research-atmospheric-technology-in-health-environment	

V.E. Santobuono, S. Favale. The remote monitoring by implantable cardioverter defibrillator of chronic heart failure outpatients: single centre experience. European Heart Journal 2011, 32, Abstract Supplement,P5860;1112

Part 4: Viability assessment of the Good Practice

Time needed to deploy the Good Practice

Between one year and three years.

Investment per citizens / patient / client in terms of financial resources

Between €100 – €1.000 per targeted citizen / patient.

At the moment, for this practice it is not planned any reimbursement by the national and/or regional health system but we now propose to our regional health system a flat reimbursement of 25 € for any scheduled(every six month) remote transmission.

Evidence behind the Good Practice

Documented evidence. Evidence is based on systematic qualitative and quantitative studies.

In recent years many studies was published to support this practice. Principal paper to support our practice was published in 2015: HRS Expert Consensus Statement on remote interrogation and monitoring for cardiovascular implantable electronic devices. This document was developed from the foundations laid by the 2008 HRS Consensus statement and the 2012 expert consensus statement on remote monitoring of CIEDs by the International Society for Holter and Noninvasive Electrocardiography and the European Heart Rhythm Association. This paper focus on the organisational changes required to most effectively implement RM, from the occasional replacement of routine appointments (for patient and clinician convenience)to a system of nearly continuous monitoring, with most in person evaluations initiated in response to alert notifications communicated by RM, there by improving the quality and efficiency of patient care. http://resources.hrsonline.org/pdf/provider/2015_Remote_Interrogation_and_Monitoring_for_CEID- FINALPUBLISHED.pdf

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.

Our experience began in April 2008 with first remote monitoring system that used GSM network to send daily data stored in device. Now, In our clinic we check, daily, through all Remote Monitoring (RM) systems over 700 patients with implantable devices.

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 Better care coordination. Remote monitoring (RM) is proposed as a tool for changing the management of HF patients with an implanted device, aiming to improve patient outcome. Our challenge is improve quality of care and of life of HF outpatient with a reduction of in- office visits without compromising patient safety. Moreover RM have a favourable profile in terms of costs, from the perspective of both the healthcare system and that of the patient, as already demonstrated in "MORE-CARE" trial. This may be a valid reason for implementing this model of health care organisation.
Transferability of the Good Practice Ready for transfer, but the innovative practice has not been transferred yet. The innovative practice has been developed on local/regional/national level and transferability has been considered and structural, political and systematic recommendations have been presented. However, the innovative practice has not been transferred yet.

Part 5: Your organisation

Name of the organisation	U.O. Cardiologia Universitaria – Azienda Ospedaliero Universitaria Consorziale Policlinico Bari
Address of the organisation	Giulio Cesare Square, 11 – 70124 - Bari
Type of organisation	Hospitals
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