



CONFERENCE

“Integrated services: organizational healthcare models in the framework of chronic diseases”.

VALIDATION ON NEW TELEMEDICINE DELIVERY MODELS

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Introduction

- Telemedicine has many potential benefits and possible uses (e.g., improving quality, promoting safety, and expanding access)
- Any intervention or innovation that delivers care in more coordinated and efficient ways could be of great benefit to organizations
- Telehealth interventions have produced positive results when used in the clinical areas of chronic conditions and for counseling and monitoring or management
- A key policy consideration is how telehealth might figure into new service delivery and payment models

Possible models

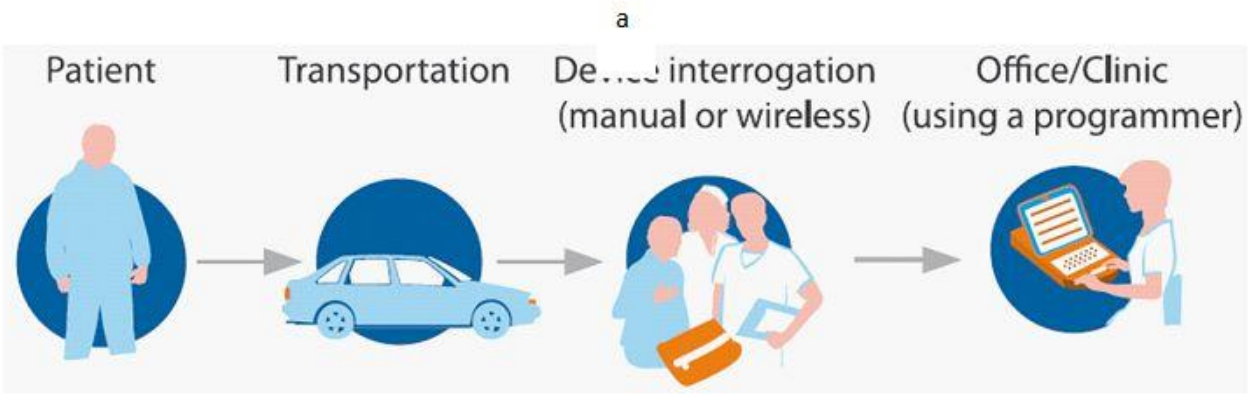


- Remote control of cardiac implantable devices (pacemakers and defibrillators)
- Monitoring of congestive heart failure

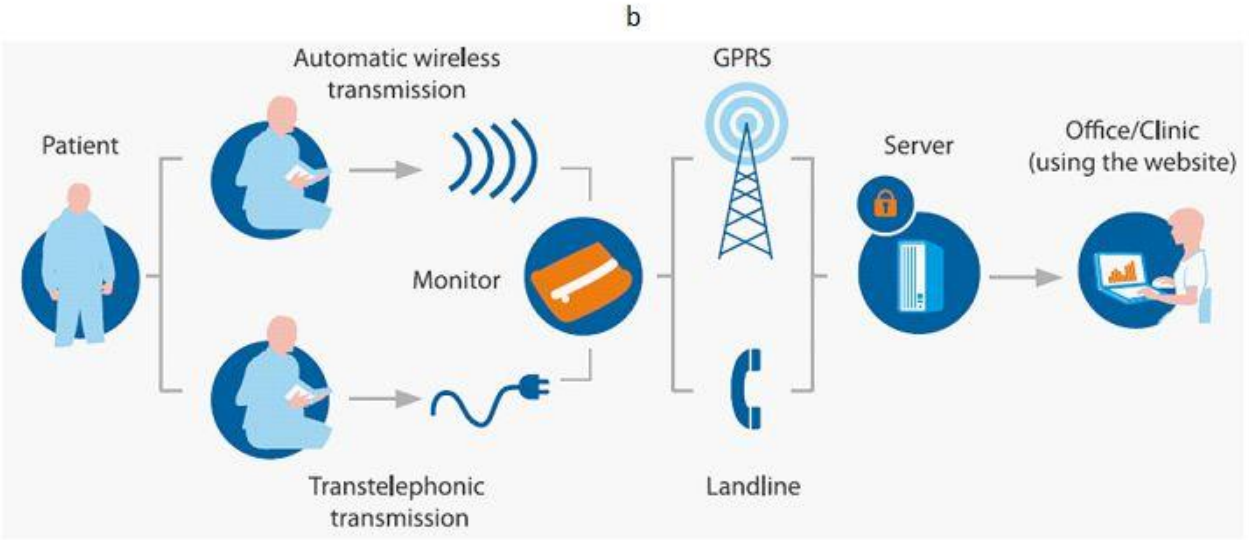


In-hospital vs remote control

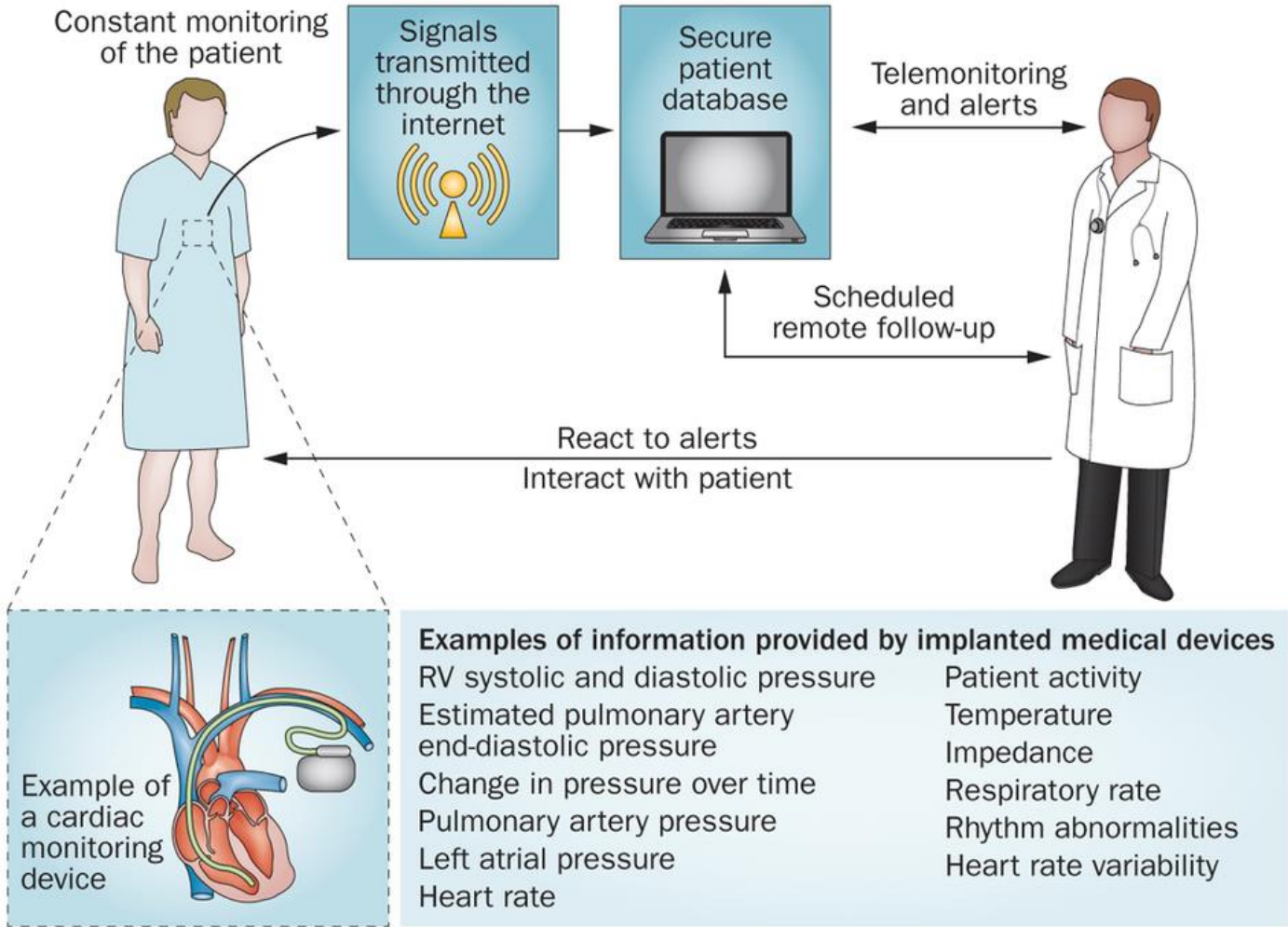
In-hospital



Remote



Remote control of PM/ICD



Goal of remote control of implantable devices

Potential advantages of remote control for patient management include:

- early detection of device technical troubles
- early reaction to changes in patient clinical status, such as atrial and ventricular arrhythmia development or heart failure progression
- reduction of unnecessary out-patient visits and optimization of health-care resource allocation

Remote control features of PM and ICD (pace makers and implantable cardioverter-defibrillators)

Ensure appropriate ICD-therapies

Prevention of inappropriate ICD therapies is of utmost importance to maintain patients' safety and quality of life. Providing comprehensive therapy monitoring capabilities, Remote Control helps to early and quickly identify potential causes of inappropriate ICD therapies, such as sensing problems or inadequate device programming. It thus enables immediate intervention even before the first inappropriate therapy has started, resulting in increased patient safety and improved quality of life.

Cardiac resynchronization therapy management

In CRT, continuous biventricular stimulation is crucial for therapy successes. For that reason, clinicians must frequently evaluate device performances and adjust programmable parameter settings to the patient's individual needs. Remote Control helps physicians to monitor the percentage of biventricular pacing so that adjustments to the programmable parameters can be made quickly, if needed.

Early detection of atrial arrhythmias

Atrial fibrillation (AF) is a common rhythm disorder that occurs in many pacemaker and ICD patients. Even in its earliest stages, sustaining AF is associated with an increased risk of severe clinical events such as stroke, inappropriate ICD therapy, and rehospitalization. Early detection of even asymptomatic AF episodes and immediate notification of the physician through Remote Control reduces these associated risks and enables early intervention and (patient) individualized therapy management (e.g. adaptation of medication).

Remote control features of PM and ICD

Optimal pacemaker settings

Pacemakers with Remote Control allow the physician to actually monitor the percentage of ventricular pacing. Utilizing that information, the physician can adjust the programmable parameters to assure appropriate ventricular pacing support without excessive pacing.

Optimum patient care scheduling

Home Monitoring optimizes patient care by providing all daily updated follow-up data and making it accessible at any time. By reviewing this data, the need of in person follow-ups can be estimated in advance. In specific cases, follow-ups can also be accomplished remotely.

Device status monitoring

Remote Control indicates the Elective Replacement Indication (ERI) and all other critical device and lead related status changes. This increases patient's safety and enables the planning of unscheduled follow-ups or regular device exchange operations well in advance.

Health-care Resource Organization



A critical point in introducing device remote control in standard clinical practice is represented by the health-care resource consumption

A possible organizational model is based on a close interaction between an expert nurse continuously controlling Remote Control data flow and filtering critical events or unclear interpretations to a responsible physician

Remote Control generates a great amount of data per patient and allows a complete information on the evolution of patient clinical status and device functionality

Impact of Remote Control on Patient Care

Continuous monitoring of implanted patients through Remote Control technology may deeply impact on their clinical management

In a clinical trial during a mean follow-up of 7 months, in more than one-third of the patients data from remote control led to major changes in pharmacological treatment or in device programming

The highest percentage of the events revealed by HM are related to atrial fibrillation development, ventricular tachyarrhythmias, ICD interventions, and heart failure

Cost Saving



The number of in-hospital visits can be reduced with respect to a standard follow-up scheduling protocol, so that resource saving may be expected.

Data from published studies show that the actual number of in-hospital visits in patients with Remote Control (scheduled plus unscheduled) is lower than the number of scheduled visits in standard clinical practice for a similar patient population.

Patient satisfaction



Several studies have been conducted to evaluate patient satisfaction by remote follow-up of ICDs and PMs

Remote follow-ups are usually preferred to in-clinic visits by more than 75% of the patients. Satisfaction by the physicians was also very favorable

Congestive Heart Failure



The prevalence in Europe is estimated to range from 6.5 million to 10 million. In the United States, another 400 000–700 000 patients are thought to be diagnosed annually.

Exacerbations of HF signs and symptoms may indicate a worsening clinical status and necessitate medical attention.

Without medical care decompensation and hospitalization may result.

Decompensation and subsequent hospitalization may result from a number of factors including a lack of knowledge regarding the illness, non-adherence to medication and diet, inability to recognize changes in signs and symptoms, and inability to access health care providers

Telemonitoring in CHF



First generation of home monitoring devices for heart failure were relatively simple. They were designed to measure symptoms, weight, heart rate and rhythm, and blood pressure. From the patient's perspective, they were relatively unrewarding since the systems provide little in the way of advice or feedback.

Nonetheless, a series of randomised controlled trials have shown a reduction in mortality and in days spent in hospital, although not in the rate of hospitalisation.

Second generation equipment reflect the same measure of symptom assessment but a more interactive experience for the patient. These newer systems provide education, feedback to patients on their results, treatment and appointment reminders and a limited amount of advice on adjusting therapy. They are likely to deliver even greater health gains than first generation systems.

Telemonitoring in CHF



Further generations of telemonitoring systems are being developed, including:

- Implanted systems - ranging from a large pacemaker-like device which simply measures cardiac output and filling pressures, to standard pacemakers and defibrillators with additional telemonitoring capability, to devices that can be implanted percutaneously and don't require batteries. These may or may not be linked to external sensors for measuring weight and blood pressure.
- Ingested systems - as an integral part of the patient's daily therapy
- New sensors which can measure heart, lung and vascular function and/or fluid retention more accurately.
- New systems which empower the patient, allowing them to make their own decisions about their care, with a distant supervisory role for a nurse or doctor.

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Conclusions

Telemedicine is a new tool for the chronic disease management «ICT assisted»

A close collaboration of the multidisciplinary team is needed (hospital staff, GPs, nurses, case manager)

Barriers to telemedicine adoption still include a lack of evidence-based research, sustainability, lack of provider support, reimbursement, ethical and privacy issue, scalability and licensure

THANKS FOR YOUR ATTENTION

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