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ANALYSING THE EVIDENCE OF TELE-MONITORING OF PACEMAKERS

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BACKGROUND

The increasing number of pacemaker implants and the complexity of their monitoring has led to overloaded cardiology services. The development of remote monitoring systems are of increasing interest in the healthcare services. However it is unknown if this technology is efficiency regarding to the sustainability of National Health Service.

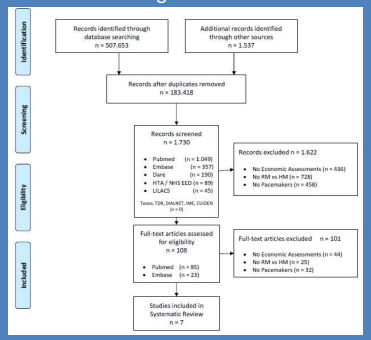
OBJECTIVES

Analyze the current scientific evidence on economic evaluations of remote-monitored pacemakers in relation to the traditional hospital monitoring system.

METHODS

A systematic review was performed in the following databases: MEDLINE, EMBASE, DARE, HTA, NHS EED, LILACS, IME, CUIDEN, TESEO, TDR and DIALNET. Studies that met the inclusion criteria were descriptively analyzed also according to the effectiveness, costs and quality of life, as well as a comparative analysis of the results.

PRISMA Flow Diagram



RESULTS

7 publications met the inclusion criteria. The mean age of the population exceeded 75 years old and the main pacemaker indication was due to atrioventricular block. The life spam of the implanted devices is in the range 6.7 to 8.3 years. The average hospitalization period was 34% shorter in the remote monitoring group. There was no significant differences in quality of life between both groups. In the remote monitoring option, cardiovascular events were earlier detected and hence the response time was improved. The total cost of remote monitoring is 20.5% lower than the traditional hospital monitoring system.

MAIN OUTCOMES IN THE STUDY

Reference, Country	Main variables	Secondary variables	Number of hospitalizations		Follow-ups patient/year		Adverse events/year		Emergency visits		Annual mortality		Cost analysis/year original currency / €		Conclusions
			HM	RM	HM	RM	HM	RM	HM	RM	HM	RM	HM	RM	
Shaw et al. 1981, UK	Transportation costs of RM	Effectivenes and healthcare costs	N/A	1	N/A	N/A	N/A	1	N/A	1	3.7% deaths between both groups		Saving/year in transport: £10,000/ €13,594.30		The success achieved, it will allow expand the service to other hospitals
Vincent et al. 1997, USA	Eficacy RM	RM direct costs	N/A	N/A	N/A	4.76	N/A	1 %	N/A	N/A	N/A	N/A	RM annual cost-savings : 19,000 € / 17,247.48 €		RM was significantly effective correlating with the PM problems
Pang et al. 2010, Canada	Eficacy and viability ot RM	Extrapolate HM costs to RM	N/A	N/A	N/A	4.7	4.1%	5.3%	N/A	N/A	12 deaths between both groups		88,230 $ 78,038.21 €	11,744 $ 10,387.4 €	RM is safe and allows the follow-up of patients with difficulties and the costs are reduced
Halimi et al. 2008 France/Belgium	Percentage of MAE	Hospitalization, costs and quality of life	4.8	3.2	7.1	5.92	19.0%	20.1%	N/A	N/A	1	0	7,414 €	7,125 €	RM is safe and allows the patients follow-up
Folino et al. 2012, Italy	Eficacy	Health and social costs	N/A	N/A	N/A	0.45	N/A	0.30	N/A	N/A	8.7% between both groups		68.43 €	56.77 €	RM is as safe and reliable as the HM. RM costs were 20.5% lower than the HM
Folino et al. 2013, Italy	Longevity, EKG and PM technical	Economic impact of RM	N/A	N/A	1.3	2.6	N/A	52%	N/A	N/A	8.3%	11.7%	73,80 €	37,26 €	RM is safe, cost-effective and detects early episodes of arrhythmias
Perl et al. 2013, Austria	Costs and number of in-hospital visits	Security of RM	15	11	0.53	0.29	No significant differences		N/A	N/A	N/A	N/A	RM costs are 58.7% lower than HM		RM is safe, detects events and reduce the number of in-hospital visits

HRQoL: health-related quality of life; AE: adverse events; MAE: major adverse events: EKG: Electrocardiogram; HM: hospital monitoring; PM: pacemakers; N/A: not available; RM: remote monitoring.

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CONCLUSIONS

Selected studies show that the remote monitoring of pacemaker shows a better cost-effectiveness ratio than the hospital follow-up mode.

RECOMMENDATIONS

This is the first systematic review of economic evaluations in which health outcomes are analyzed and resource consumption associated with remote monitoring in patients with pacemakers. The study offers tools for future decision-making and new health policies.

This study can be used both by the healthcare managers as by the professionals for cardiology services to promote the sustainability of the current healthcare systems.

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