

The Cardio R® – a New Digital Loop Recorder for Improved Diagnosis of Patients with Suspected Symptomatic Arrhythmia. The 'SHL'-Telemedicine Experience

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Background: Loop recorders are often used to detect electrophysiological signals which may explain various symptomatic events that could potentially result in clinical and/or hemodynamic consequences. An inherent disadvantage is the waste of time from recording of an electrocardiogram (ECG) through establishing diagnosis to taking appropriate measures. The Cardio R® is a loop recorder which uses digital technology to transmit cardiac recordings via cellular communication whenever the user presses a designated button. Users can also choose from a list of complaints to describe symptoms.

Objective: To assess the utility of the Cardio R® device for early detection of electrical events which may account for symptoms.

Methods: Every recording arrives to 'SHL'-Telemedicine's call center where it is instantly displayed on a screen for immediate diagnosis by the on-duty medical team. According to the rhythm displayed in relation to the described symptoms, the protocol is to instruct the subscriber and/or notify his/her physician, or dispatch a mobile intensive care unit (MICU) to the scene.

Results: Between January-October, 2009, 7,170 ECG transmissions were received from 258 patients (age range 9-94 years).

Selected epidemiological and outcome data:

Parameter/reason for referral	Palpitations n=149 Calls=4471	Pre-syncope n=58 Calls=1561	Chest pain n=11 Calls=202	Unspecified n=40 Calls=936	Total n=258 Calls=7170
Age (mean ± 1 SD), y	57 ± 18	56 ± 22	56 ± 24	57 ± 20	57 ± 19
Male, %	40	48	55	54	45
Transmissions/patient	29 ± 41	27 ± 46	19 ± 16	24 ± 13	28 ± 43
Notifications to physicians (%)	23 (0.51)	30 (1.92)	1 (0.50)	13 (1.39)	66 (0.92)
MICU dispatches	5 (0.12)	0	0	1 (0.10)	6 (0.08)
Instructions to callers, n (%)	43 (0.96)	27 (1.73)	0	16 (1.71)	90 (1.26)
Relevant events (%) n	3018/4471 (68) 127	227/1561 (14) 23	84/202 (42) 6	103/936 (11) 18	3432/7170 (48) 174
Diagnostic real-time ECG findings (%)	2217/3018 (73)	203/227 (89)	57/84 (68)	73/103 (71)	2550/3432 (74)
Delay (days) until transmission of 1st symptomatic episode	3 ± 9	4 ± 7	1 ± 3	2 ± 3	2 ± 7

n = number of callers

Conclusions: The Cardio R® device enabled prompt ECG interpretations and interventions for cardiac-relevant complaints.