

PLACE



PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

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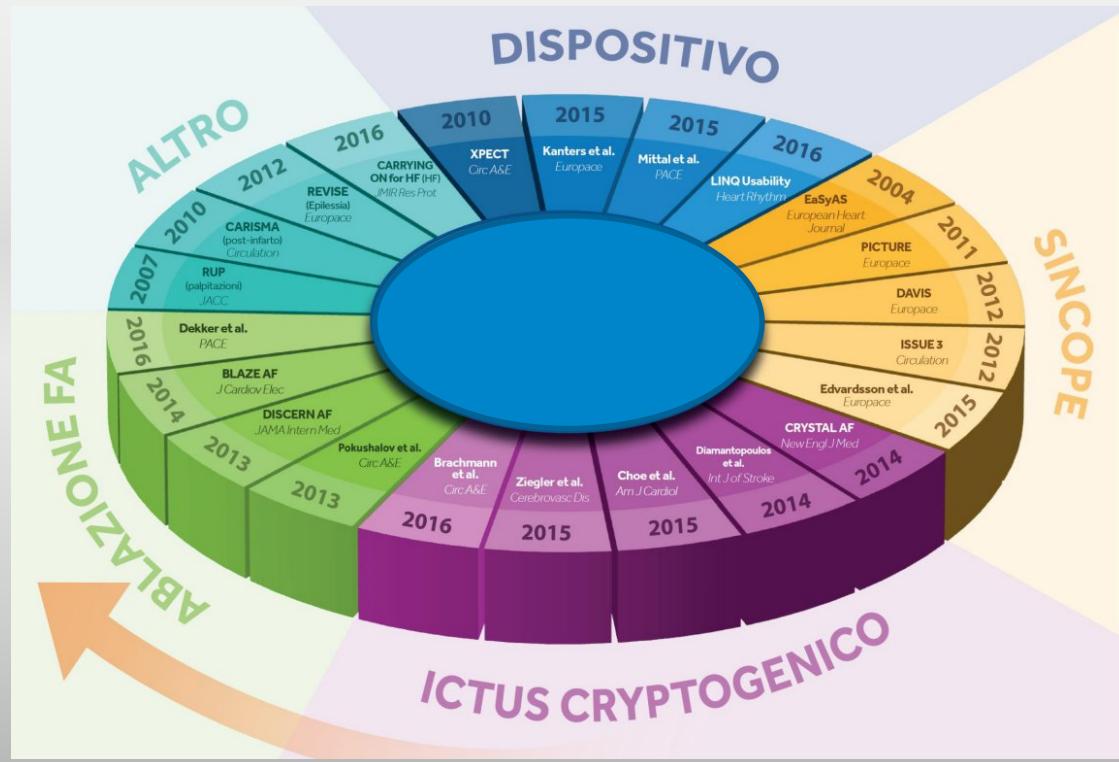
**CONSENSUS CONFERENCE IMPLANTABLE CARDIAC MONITOR:
LE NUOVE APPLICAZIONI**

**ULTIME FRONTIERE DEL MONITORAGGIO CARDIACO A LUNGO
TERMINE: QUALI I NUOVI CAMPI DI APPLICAZIONE**



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Increasing evidences and enlarging indications...



Il Loop recorder ha dato origine dal **1998** (Reveal™ anno della sua invenzione, Medtronic Inc.) a numerose evidenze scientifiche e ad un progressivo allargamento delle indicazioni diverse dalla sincope per cui era stato sviluppato.

Sincope

Fibrillazione atriale:

- Monitoraggio della FA post ablazione
- Ricerca della FA post ictus criptogenico (linea guida Esc 2016)

Post- MI, rischio SCD

Syncope

What is new in 2018 syncope guidelines ? (3)

2018 NEW RECOMMENDATIONS (only major included)

Management of syncope in ED (section 4.1.2)

- Low-risk: discharge from ED
- High-risk: early intensive evaluation in ED, SU versus admission
- Neither high or low: observation in ED or in SU instead of being hospitalized

Video recording (section 4.2.5):

- Video recordings of spontaneous events

ILR indications (section 4.2.4.7):

- In patients with suspected unproven epilepsy
- In patients with unexplained falls

ILR indications (section 5.6):

- In patients with primary cardiomyopathy or inheritable arrhythmogenic disorders who are at low risk of sudden cardiac death, as alternative to ICD

ECG monitoring: Indications (II)



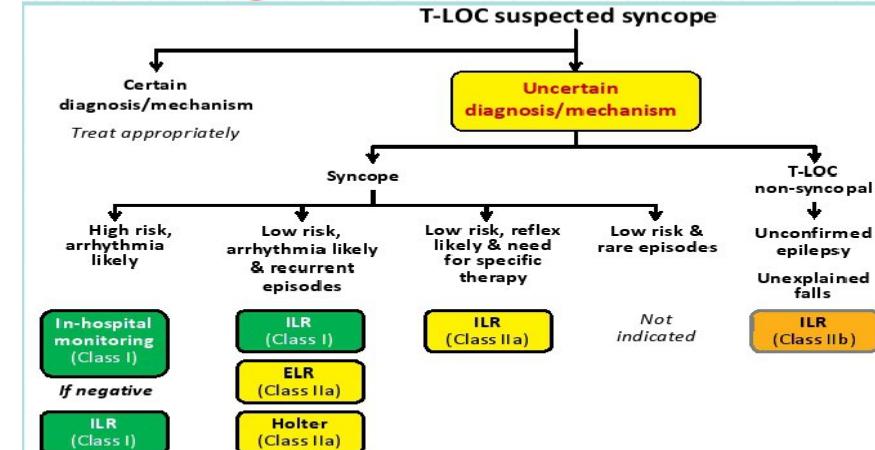
E

Uro

C

Recommendations	Class	Level
Implantable loop recorder		
4. ILR is indicated in an early phase of evaluation in patients with recurrent syncope of uncertain origin, absence of high-risk criteria (listed in <i>Table 6</i>), and a high likelihood of recurrence within the battery life of the device.	I	A
5. ILR should be considered in patients with suspected or certain reflex syncope presenting with frequent or severe syncopal episodes.	IIa	B
6. ILR may be considered in patients in whom epilepsy was suspected but the treatment has proven ineffective.	IIa	B
7. ILR may be considered in patients with unexplained falls.	IIb	B

monitoring: indications



Expert consensus on risk assessment in cardiac arrhythmias: Use the right tool for the right outcome, in the right population.

EHRA international consensus statement

European heart rhythm association published an international consensus paper on diagnostic tools for cardiac arrhythmias

Implantable loop recorder to diagnose unexplained syncope:

 An ILR is indicated in the evaluation of patients with infrequent recurrent syncope of uncertain origin especially when ambulatory monitoring is inconclusive.

 An ILR is indicated in patients with syncope and high-risk criteria in whom a comprehensive evaluation did not demonstrate a cause of syncope or lead to a specific treatment, and who do not have conventional indications for primary prevention ICD or pacemaker.

 An ILR can be considered in patients with palpitations, dizziness, presyncope, frequent premature ventricular complexes (PVCs)/non sustained VT, and in those with suspected AF, and following AF ablation.

Recommendations were provided with a 'green heart' (i.e., should do this) or yellow heart (may do this)

Source: Nielsen J, et al. *Europace*. 2020;00:1-48.



European Society (2020) **22**, 1147–1148
doi:10.1093/europace/eua065

EHRA POSITION PAPER

European Heart Rhythm Association (EHRA)/Heart Rhythm Society (HRS)/Asia Pacific Heart Rhythm Society (APHRS)/Latin American Heart Rhythm Society (LAHRS) expert consensus on risk assessment in cardiac arrhythmias: use the right tool for the right outcome, in the right population

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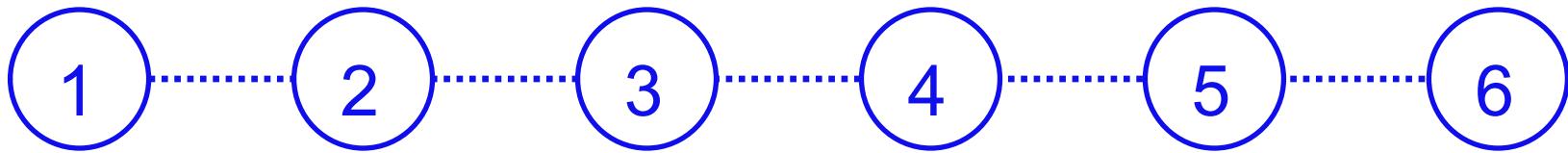
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Developed in partnership with and endorsed by the European Heart Rhythm Association (EHRA), a branch of the European Society of Cardiology (ESC), the Heart Rhythm Society (HRS), the Asia Pacific Heart Rhythm Society (APHRS), and the Latin American Heart Rhythm Society (LAHRS).

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Syncope : a long journey through evidence generation



Guidelines	Patient journey	Superior diagnostic yield	Long-term monitoring	Economic value	Pathways
<ul style="list-style-type: none">• 2017 AHA/ACC/HRS Syncope Guideline• 2018 ESC Syncope Guidelines• 2018 ESC Syncope Guidelines Meta-analysis• 2018 AHA/ACC/HRS Bradycardia Guideline• HRS/EHRA/LAHR/APHRS Consensus Statement	<ul style="list-style-type: none">• Rogers (2019)	<ul style="list-style-type: none">• Solbiati (2017)• Rogers (2020)• Frazier-Mills (2019)• Perings (2021)	<ul style="list-style-type: none">• Furukawa (2012)• Ibrahim (2017)	<ul style="list-style-type: none">• Impact to guidelines• New evidence<ul style="list-style-type: none">- Sutton 2021- Witte 2021	<ul style="list-style-type: none">• Sulke EASYAS II (2016)• Kenny (2015)• Adlan (2020)• Anderson (2018)• Baugh (2018)

AF & Stroke

Atrial Fibrillation and Stroke Indication – From Cryptogenic to Any Stroke

Research

JAMA | Original Investigation

Effect of Long-term Continuous Cardiac Monitoring vs Usual Care on Detection of Atrial Fibrillation in Patients With Stroke Attributed to Large- or Small-Vessel Disease

The STROKE-AF Randomized Clinical Trial

Richard A. Bernstein, MD; Hoaman Kamel, MD; Christopher B. Granger, MD; Jonathan P. Piccini, MD; Pramod P. Sethi, MD; Jeffrey M. Katz, MD; Carola Alfonso Vives, MS; Paul D. Ziegler, MS; Norah C. Franco, PhD; Lee H. Schwamm, MD; for the STROKE-AF Investigators

IMPORTANCE Patients with ischemic stroke attributed to large- or small-vessel disease are not considered at high risk for atrial fibrillation (AF), and the AF incidence rate in this population is unknown.

OBJECTIVES To determine whether long-term cardiac monitoring is more effective than usual care for AF detection in patients with stroke attributed to large- or small-vessel disease through 12 months of follow-up.

DESIGN, SETTING, AND PARTICIPANTS The STROKE-AF trial was a randomized (1:1) multicenter (33 sites in the US) clinical trial that enrolled 495 patients between April 2016 and July 2019, with primary end point follow-up through August 2020. Eligible patients were aged 60 years or older or aged 50 to 59 years with at least 1 additional stroke risk factor and had an index stroke attributed to large- or small-vessel disease within 10 days prior to insertable cardiac monitor (ICM) insertion.

INTERVENTIONS Patients randomized to the intervention group ($n = 242$) received ICM insertion within 10 days of the index stroke; patients in the control group ($n = 253$) received site-specific usual care consisting of external cardiac monitoring, such as 12-lead electrocardiograms, Holter monitoring, telemetry, or event recorders.

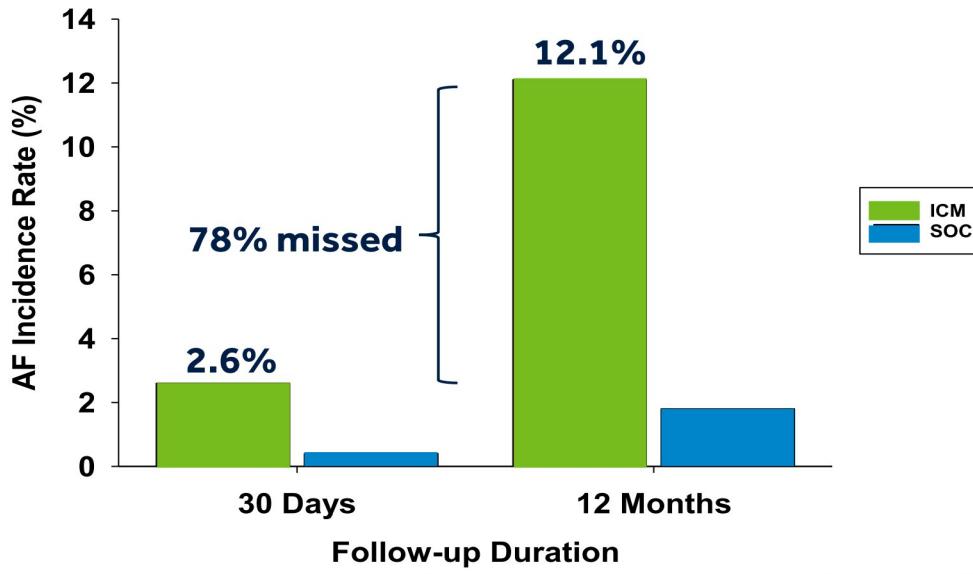
MAIN OUTCOMES AND MEASURES Incident AF lasting more than 30 seconds through 12 months.

RESULTS Among 492 patients who were randomized (mean [SD] age, 67 [9.4] years; 185 [37.6%] women; 417 [84.8%] completed 12 months of follow-up. The median (interquartile range) CHA₂D₅-VASC (congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, stroke or transient ischemic attack, vascular disease, age 65 to 74 years, sex category) score was 5 [4–6]. AF detection at 12 months was significantly higher in the ICM group vs the control group (27 patients [11.6%] vs 4 patients [1.6%], hazard ratio, 7.4 [95% CI, 2.6–21.3]; $P < .001$). Among the 27 patients in the ICM group who received an ICM, 4 (1.8%) had ICM procedure-related adverse events (1 site infection, 2 incision site hemorrhages, and 1 implant site pain).

CONCLUSIONS AND RELEVANCE Among patients with stroke attributed to large- or small-vessel disease, monitoring with an ICM compared with usual care detected significantly more AF over 12 months. However, further research is needed to understand whether identifying AF in these patients is of clinical importance.

TRIAL REGISTRATION ClinicalTrials.gov Identifier: NCT02700945

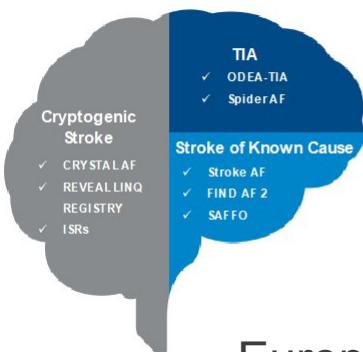
- [Editorial page 2157]
- [Related article page 2160 and JAMA Patient Page page 2218]
- [Supplemental content]



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2022 Linee Guida ESO per il monitoraggio di FA nei paziente con ictus criptogenico/TIA

Raccomandazioni per migliorare il rilevamento
di FA



European Stroke organization

Come applicare le linee guida alla pratica clinica:

L'utilizzo precoce del monitoraggio cardiaco durante il ricovero aumenta la probabilità di rilevazione della FA nei pazienti con elevato burden di FA¹

L'utilizzo degli ICM in aggiunta al monitoraggio cardiaco durante l'ospedalizzazione aumenta le probabilità di rilevazione della FA¹

La rilevazione della FA, di durata minima di 30 secondi, di solito comporta l'inizio della terapia anticoagulante in pazienti con ictus criptogenico/TIA¹

Il trattamento anticoagulante per la prevenzione dell'ictus ricorrente è indicato solo dopo la rilevazione della FA¹⁰

**Rileva la FA, Tratta la FA,
Previeni la recidiva di ictus¹¹**

Arrhythmia Management

Guidelines recommend ICMs

2018 ACC/AHA/HRS Guideline on Bradycardia and Cardiac Conduction Delay

ICMs (ILRs) upgraded

➤ After non-diagnostic echo for non-exercise-related symptoms

➤ For infrequent symptoms >30 days apart

➤ After non-diagnostic ambulatory ECG monitoring & continued concern for bradycardia

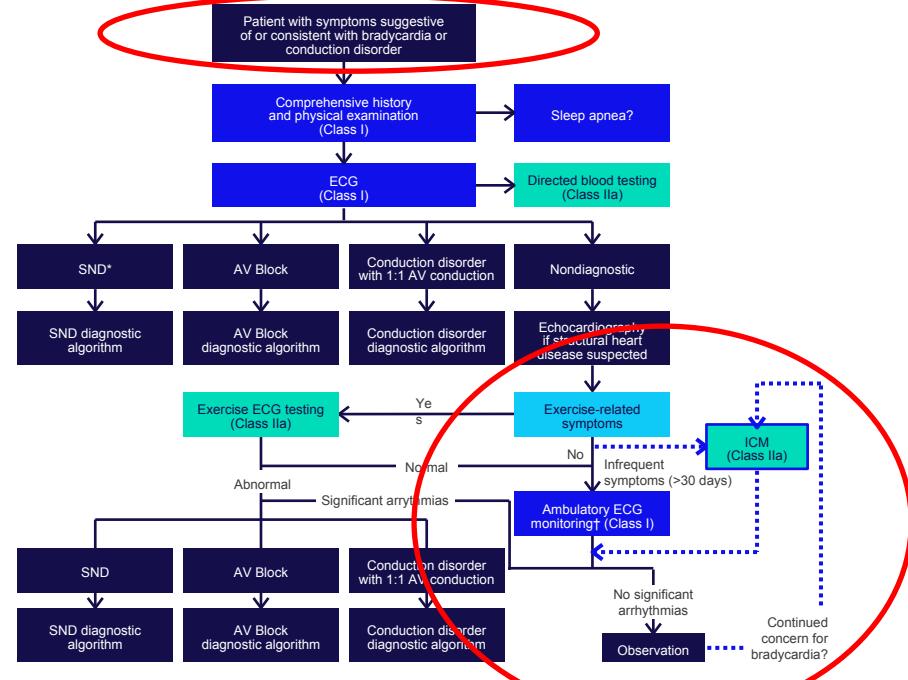
*Sinus bradycardia, ectopic atrial rhythm, junctional rhythm, sinus pause.

†Monitor choice based on the frequency of symptoms. AV indicates atrioventricular; and ECG, electrocardiogram/electrocardiographic.

Source: Kusumoto FM, et al. J Am Coll Cardiol. 2019;74:932-987.

Evaluation of bradycardia and conduction disease algorithm.

Dashed lines indicate possible optional strategies based on the specific clinical situation.



ILR NELLE LINEE GUIDA PER LA PREVENZIONE DELLA SCD

2017 AHA/ACC/HRS Guidelines

Recommendation for Implanted Cardiac Monitors

Referenced studies that support the recommendation are summarized in Online Data Supplement 5.

COR	LOE	Recommendation
IIa	B-R	1. In patients with sporadic symptoms (including syncope) suspected to be related to VA, implanted cardiac monitors can be useful (1-4).

References

- Bloch Thomsen PE, Jons C, Raatikainen MJ, et al. Long-term recording of cardiac arrhythmias with an implantable cardiac monitor in patients with reduced ejection fraction after acute myocardial infarction: the Cardiac Arrhythmias and Risk Stratification After Acute Myocardial Infarction (CARISMA) study. *Circulation*. 2010;122:1258-64.

2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

Official ESC Guidelines slide set



Recommendations

Brugada syndrome

- Genetic testing for *SCN5A* gene is recommended for probands with BrS.
BrS should be considered in patients with no other heart disease and *induced type 1 Brugada pattern* who have at least one of the following:
 1. arrhythmic syncope or nocturnal agonal respiration
 2. a family history of BrS
 3. a family history of SD (< 45 years old) with a negative autopsy and circumstance suspicious for BrS

Implantation of a loop recorder should be considered in BrS patients with an unexplained syncope.



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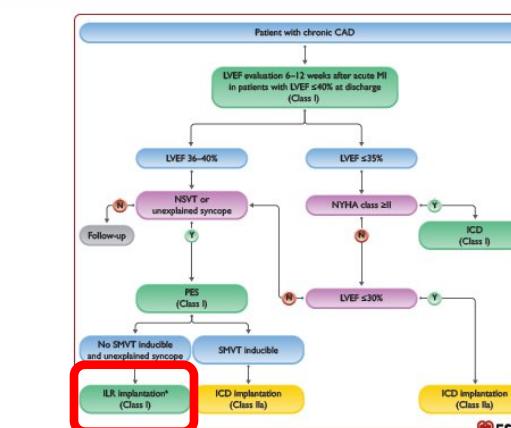
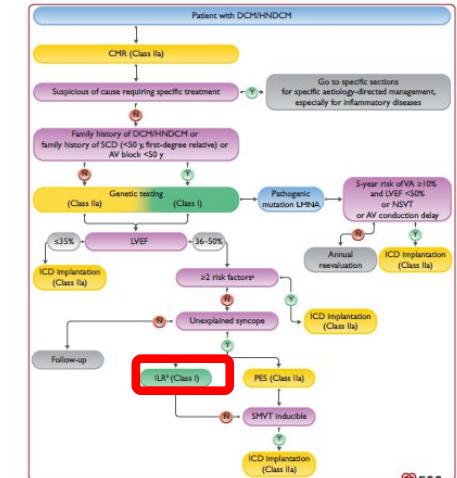


Figure 15 Algorithm for risk stratification and primary prevention of sudden cardiac death in patients with chronic coronary artery disease and reduced ejection fraction. CAD, coronary artery disease; ICD, implantable cardioverter defibrillator; ILR, implantable loop recorder; LVEF, left ventricular ejection fraction; MI, myocardial infarction; N, No; NSVT, non-sustained ventricular tachycardia; NYHA, New York Heart Association; PES, programmed electrical stimulation; SMVT, sustained monomorphic ventricular tachycardia; Y, Yes. *The 2018 ESC Guidelines for the diagnosis and management of syncope.



POST MI

SMART-MI trial #ESCCongress

Implantable cardiac monitors in high-risk post-infarction patients with cardiac autonomic dysfunction and moderately reduced left ventricular ejection fraction - A randomised trial

Conclusion

Remote monitoring of implantable cardiac monitors (ICMs) is highly effective for early detection of serious arrhythmias in high-risk post-infarction patients with cardiac autonomic dysfunction and moderately reduced ejection fraction.



Background

Patients with severely reduced left ventricular ejection fraction (LVEF ≤ 35%) after MI are candidates for prophylactic implantation of a cardioverter defibrillator. However, the vast majority of fatal and non-fatal complications after MI occur in patients with LVEF above 35%, for whom no specific preventive measures exist.

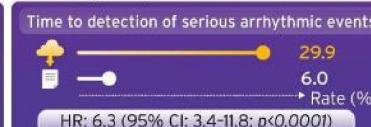
Study objectives

Previous studies in post-MI patients with reduced LVEF suggested that CV complications are preceded by arrhythmic events. However, as most of these arrhythmias are asymptomatic or subclinical, their detection escapes conventional follow-up. The SMART-MI trial examined whether ICMs could provide early detection of such arrhythmias.

Where?



Primary endpoint



Who and what?

The study enrolled post-MI patients with:

- LVEF 36-50%
- cardiac autonomic dysfunction

400 patients

randomised 1:1

ICM implantation and remote monitoring Conventional follow-up

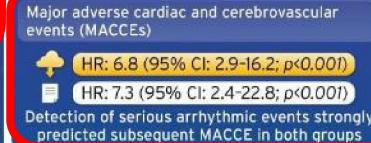


Median follow up → 21 months

Cumulative 3-year detection rate of serious arrhythmic events



Secondary endpoint



Positive predictive accuracy



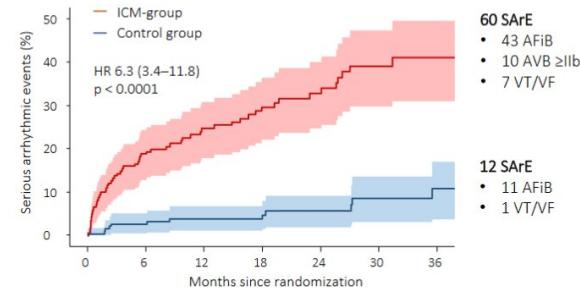
Primary composite endpoint: Serious arrhythmic events (SArE)

- Atrial fibrillation (AF) ≥6min¹
- AV block ≥IIb²
- Fast non-sustained VT (CL ≤320ms for ≥ 40 beats)³ / sustained VT/VF

Secondary endpoints (selection)

- Death
- Major adverse cardiac and cerebrovascular events (MACCE)

Primary efficacy endpoint



SArE as predictors of subsequent MACCE

ICM group (n=201) Control group (n=199)

Positive predictive accuracy

P = 0.990

Sensitivity

P = 0.007

SArE-predicted MACCE

Diagnostic and therapeutic interventions

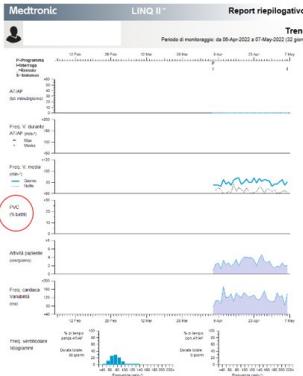
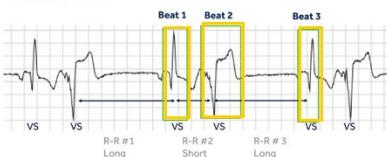
	ICM group (n=201)	Control group (n=199)	P-value
ICD-implantation	13	5	0.056
Pacemaker implantation	6	0	0.041
EP study	12	3	0.019
Catheter ablation	10	3	0.051
Revascularization	40	43	0.37
Initiation of OAK for AF	37*	11	<0.001

HF Management

INSUFFICIENZA CARDIACA: La nuova frontiera per i loop recorder ed il monitoraggio remoto



Il conteggio delle PVC viene presentato in % di battiti visibili nel Quick Look™ o Cardiac Compass™ del paziente.



Premature atrial contraction (PAC)

High frequency of PACs is associated with the development of AF, and with an increased risk of stroke and death¹⁻²



Premature ventricle contraction (PVC)

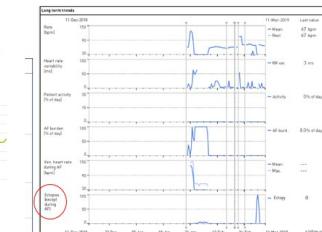
High frequency of PVCs is associated with an increased risk of heart failure and death¹⁻²



Consensus statements	Symbol	References
Asymptomatic patients with frequent PVCs (>500 per 24 h) should be referred to a specialist for further evaluation to rule out any underlying structural, ischaemic, or electrical heart disease.		
Very frequent PVCs (burden > 20%) are a marker of all-cause and cardiovascular mortality and may justify intensified follow-up.		
PVCs should be treated in patients with suspected PVC-mediated cardiomyopathy.		Expert consensus
Treatment of patients with asymptomatic PVCs should focus on the underlying heart disease in order to improve prognosis.		Expert consensus



QuickView – 11-Mar-2019		BIOTRONIK excellence for life	
To:	r	From:	
Name:		Patent ID: 95000237_80	BIOTRONIK in Düsseldorf, Germany
Phone:	-	ICM implanted 31-Jan-2019	Last Clin. Follow-up: 24-Feb-2019
Emergency status:		Emergency memory	SD memory available
Clinical status:	OK	Emergency	SD backup available
Emergency status:		Normal recording	SD memory available
Causes:	Biotronik atrial ICD	Since 24-Jan-2019 Since implantation	Followup
Atrial fibrillation (AF):	Low	1	4
High arr. Rate (HAR):	100 bpm	0	0
Bradycardia:	0 bpm	0	0
Sudden rate drop:	50%	0	0
Normal:	100	1	1
Patient trigger:	ON	0	0
There are more findings.			



HF sensor Suite

Heart Failure Sensor Suite è il pacchetto diagnostic che potrebbe essere disponibile nel futuro negli ICM Boston :
Analisi multiparametrica per la gestione del paziente



Sensori HeartLogic

	Thoracic Impedance		Sleep Incline		Heart Rate Variability (SDANN)
	Night Heart Rate		Respiratory Rate		Daily Heart Rate
	RV Rating during AT/AF		Toni cardiaci *		AT/AF Burden
	% LV Paced		Weight		Activity Level
	V-Therapy		Blood Pressure		
	APSCAN				

ALLEVIATE-HF Study Design



STRATEGIC PURPOSE: Data to support LINQ-HF Approval

STUDY DESIGN: 1:1 randomized, blinded, controlled trial with LINQ HF Investigational download arm vs control (IDE Study)

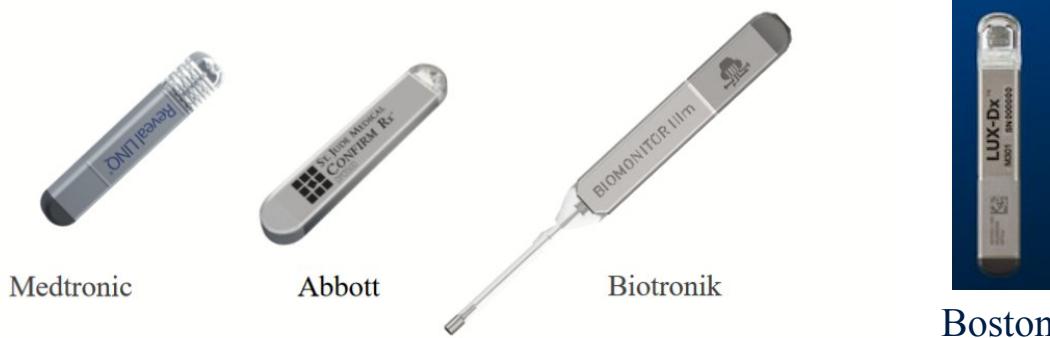
PRIMARY OBJECTIVE: (1) Improved Outcomes with hierarchical composite endpoint of CV death, HF events, KCQQ, 6MWT and (2) Safety of patient management pathway

TIMELINE: 3.5 years (estimated 36 months enrollment; 7 months minimum follow-up)

SAMPLE SIZE: 620 patients with history of HF

How Technology does respond to the clinical need?

The Device for Detecting Cardiac Arrhythmia



Insertable Cardiac Monitor : ICM

Sistemi iniettabili consentono di eseguire la procedura fuori dalla sala operatoria

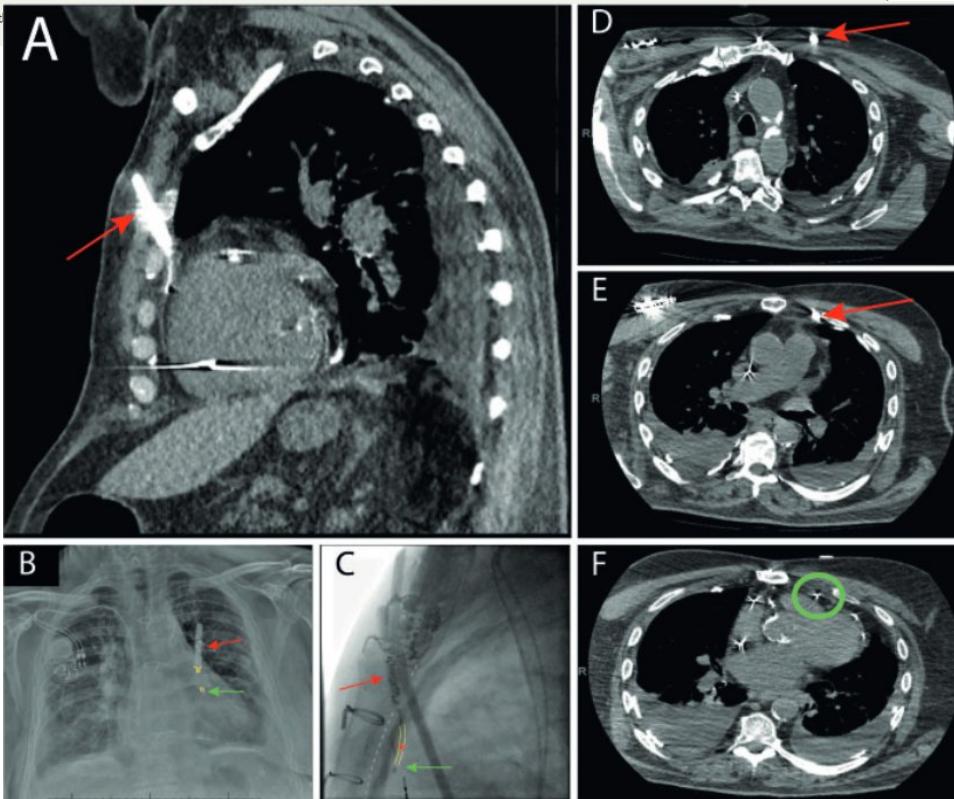
- Permette di occupare la sala operatoria per interventi più complessi^{15,17,18,19}
- Richiede personale meno specializzato¹⁵⁻¹⁹
- Snellisce i tempi di attesa e di intervento per il paziente^{18,19,20}

'Close' cardiac monitoring: life-threatening complication of a loop recorder implant

Zaki Akhtar  ^{1,2*}, Lisa W.M. Leung², Zhong Chen¹, Ian Beeton¹, and Mark M. Gallagher^{1,2}

¹Cardiology department, Ashford and St Peter's Hospital NHS trust, Surrey, KT16 0PZ, UK; and ²Cardiology department, St George's University Hospital, Blackshaw Road, London, SW17 0RE, UK

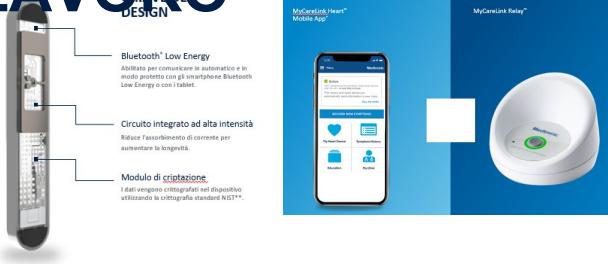
*Corresponding author



*"Loop recorder implantation
should be safe,
but no invasive procedure is
completely innocuous"*

CONNELLITIVITA' e SEMPLIFICAZIONE DEI FLUSSI DI LAVORO

CONNETTIVITÀ
ON-DEVICE
DESIGN

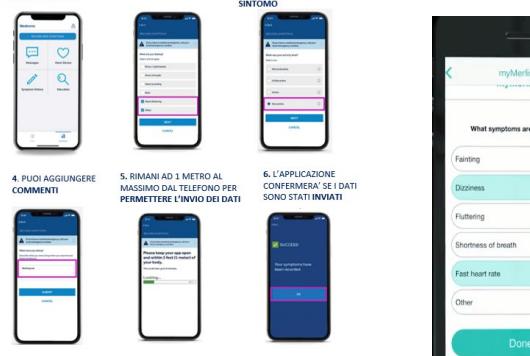


- La tecnologia **BlueSync™** consente una comunicazione wireless protetta, per un'esperienza di monitoraggio da remoto migliorata
- Due opzioni di monitoraggio per adattarsi allo stile di vita dei pazienti: Applicazione **MyCareLink Heart™** e Comunicatore paziente **MyCareLink Relay**

REGISTRAZIONE DEL SINTOMO CON MOBILE app

- SELEZIONA REGISTRA NUOVO SINTOMO
- REGISTRA LA SENSAZIONE
- REGISTRA IL LIVELLO DI ATTIVITÀ AL MOMENTO DEL SINTOMO

4. PUOI AGGIUNGERE COMMENTI
5. RIMANI AD 1 METRO AL MASSIMO DALL'TELEFONO PER PERMETTERE L'INVIO DEI DATI
6. L'APPICAZIONE CONFIRMERÀ SE I DATI SONO STATI INVIAVI



Programmazione remota

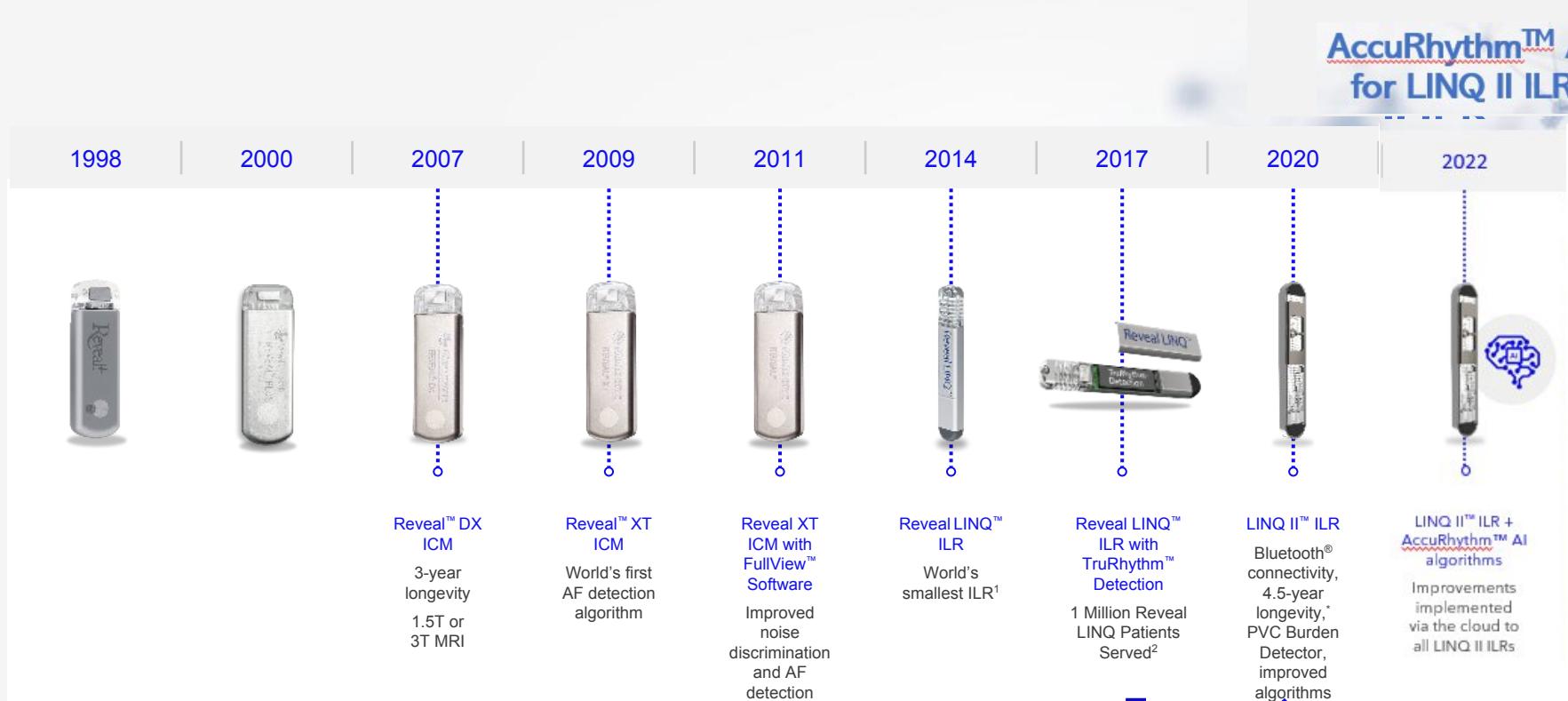
LINQ II™ ICM consente di programmare da remoto i parametri del dispositivo tramite una comunicazione sicura dal sito CareLink™ al monitor/app del paziente al dispositivo.*⁹



LINQ II™ è il primo ICM con capacità di programmazione da remoto⁹:

- Consente di eseguire la programmazione di tutti i parametri del dispositivo direttamente dalla struttura sanitaria dopo l'impianto
- Consente l'ottimizzazione continua della programmazione, riducendo le trasmissioni non significative
- Può ridurre il numero di visite ambulatoriali dei pazienti e le relative difficoltà di pianificazione

How Technology does respond to the clinical need?

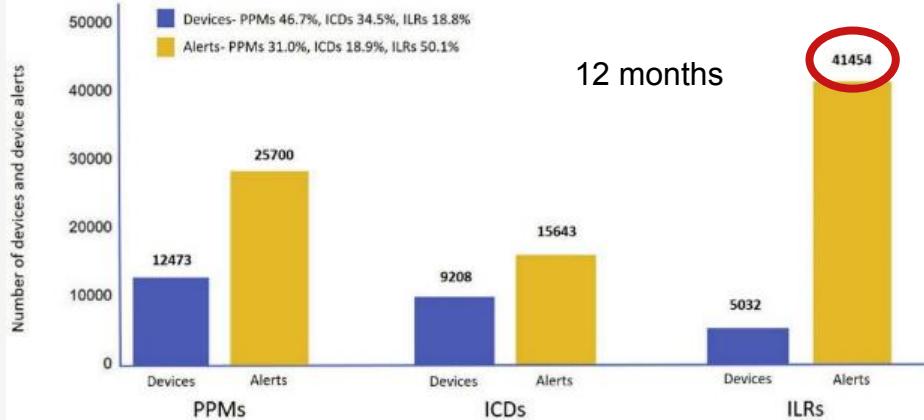


*Nominal settings.

¹ ICM Size Comparison Guide, 2021.

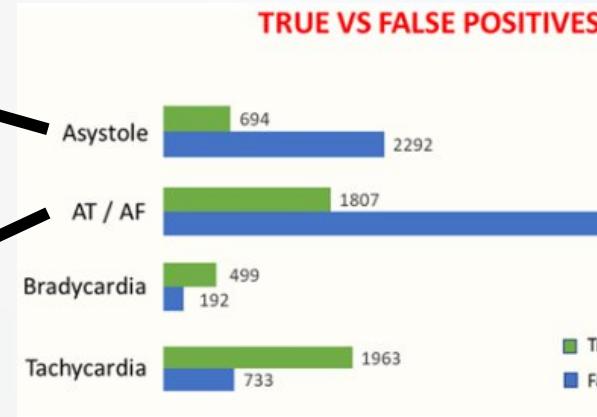
² Medtronic Reveal™ ICM family data. Data on file. 2021.

Remote Monitoring Alert Burden



Asystole alerts	
76.8% false-positive	
▪ 100% undersensing	

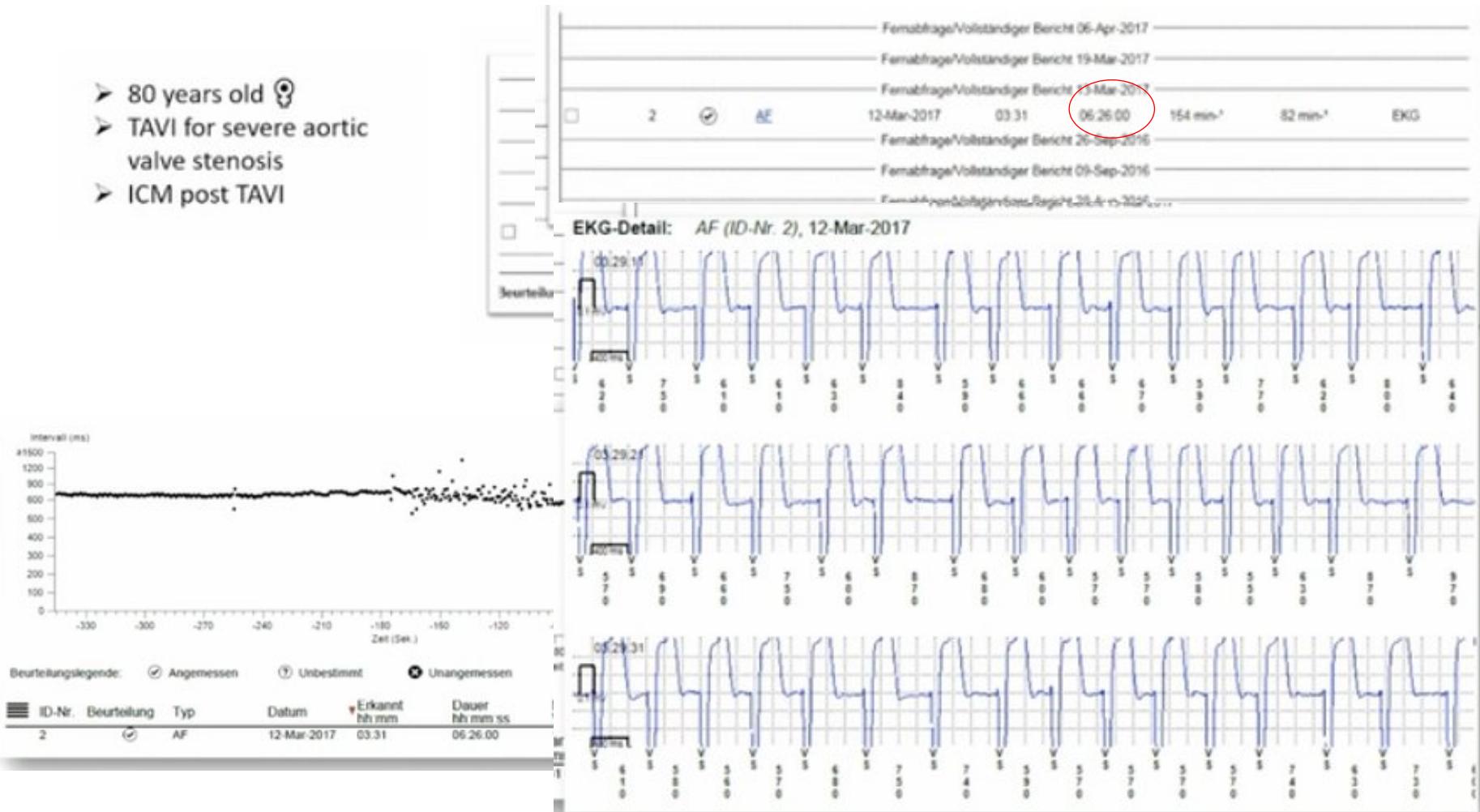
AT/AF alerts	
74.2% false-positive	
▪ 90.2% frequent ectopy	
▪ 9.4% noise/artifact	
▪ 0.2% oversensing	
▪ 0.2% undetermined	



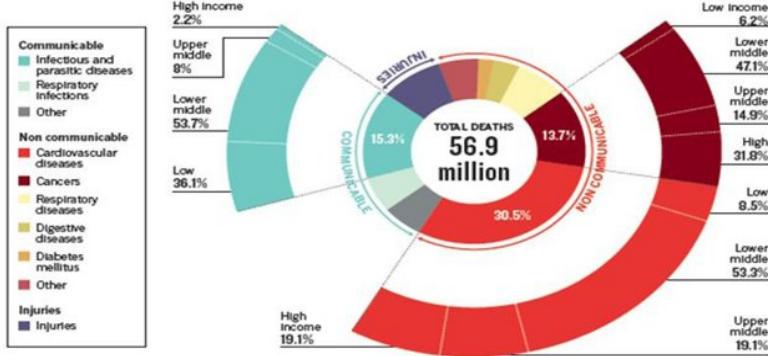
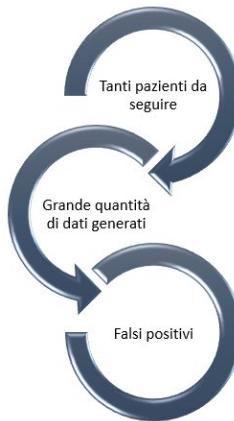
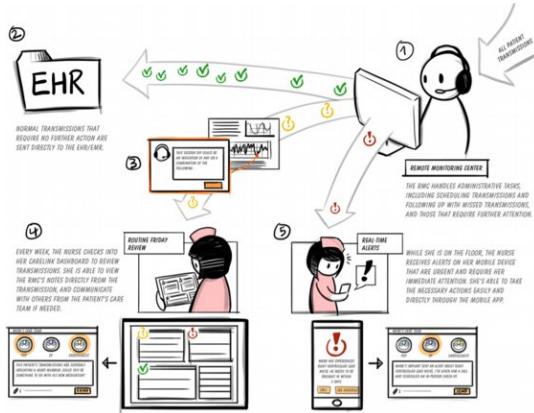
PPV	95% Confidence Interval
0.232	(0.217-0.248)
0.258	(0.247-0.268)
0.728	(0.711-0.745)
0.722	(0.689-0.756)

- Catherine J. O'Shea. Circulation: Arrhythmia and Electrophysiology. Remote Monitoring of Implantable Loop Recorders: False-Positive Alert Episode Burden, Volume: 14, Issue: 11, DOI: (10.1161/CIRCEP.121.009635)
- O'Shea C, Middeldorp M, Hendriks J, et al. Remote Monitoring Alert Burden. J Am Coll Cardiol EP. 2021 Feb, 7 (2) 226-234. <https://doi.org/10.1016/j.jacep.2020.08.029>

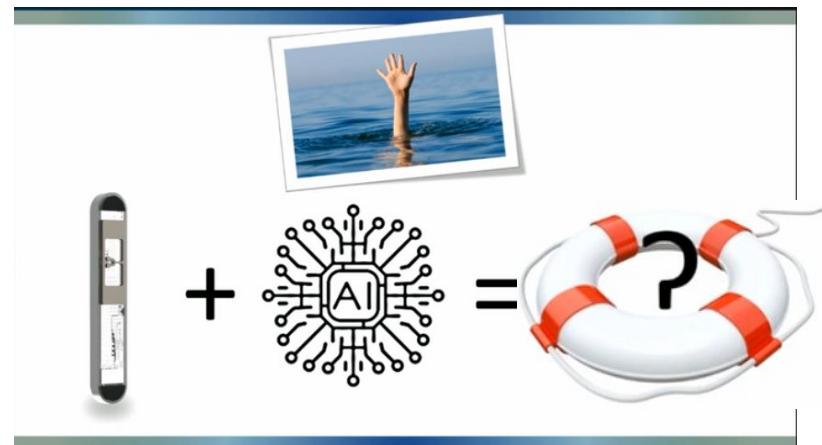
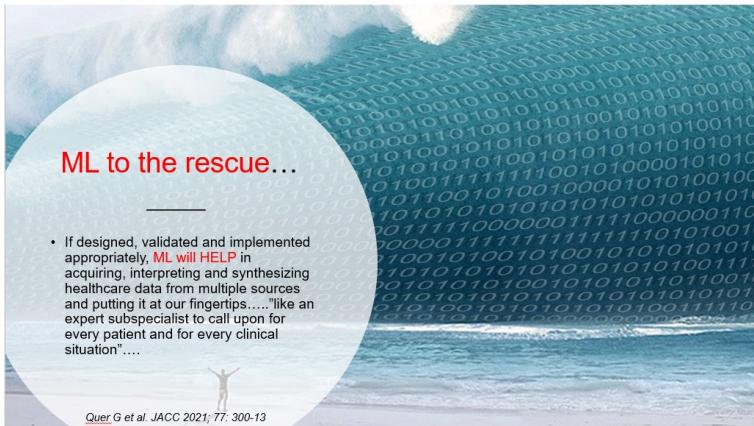
- 80 years old ♂
- TAVI for severe aortic valve stenosis
- ICM post TAVI



ILR & DATI

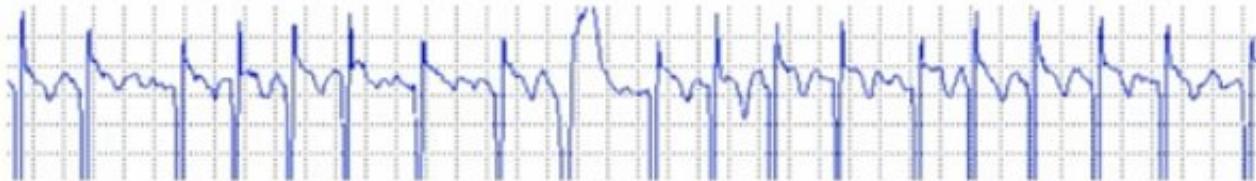


- 57 paesi al di sotto della soglia di copertura sanitaria critica dell'OMS
- 4.3 M in tutto il mondo di mancanza di operatori sanitari inclusi medici, infermieri e tecnici.

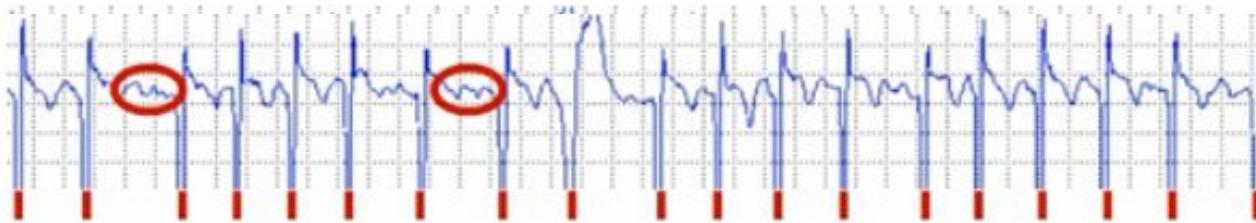


AI Algorithms to Address False Alerts

Physician



Conventional
Algorithms



Artificial
Intelligence



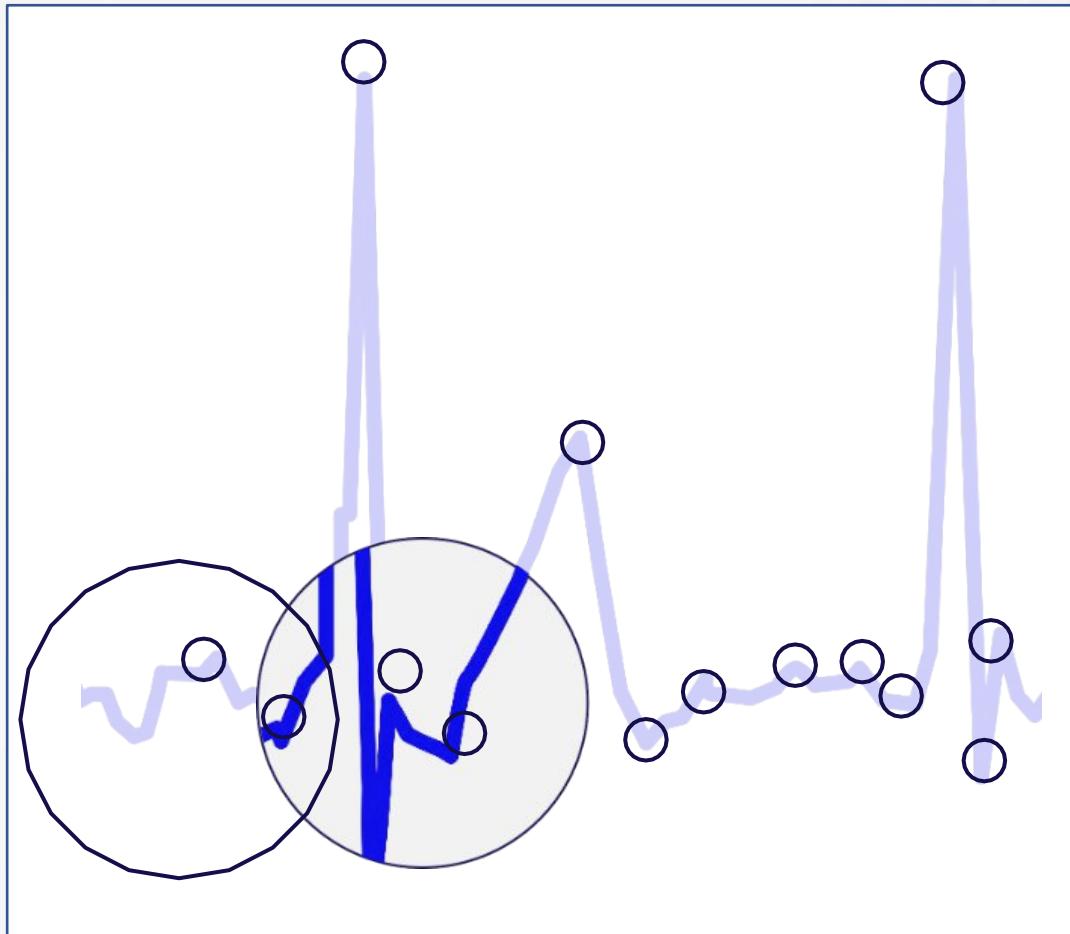
How AccuRhythm AI can help with Alert Burden?

Rate-based analysis

Relies heavily on R-R wave timing

Rhythm-based analysis

Reviews the whole strip and relationships between segments and waveform features in adjudication



AccuRhythm AI Algorithm Development

>1,000,000 ECGs

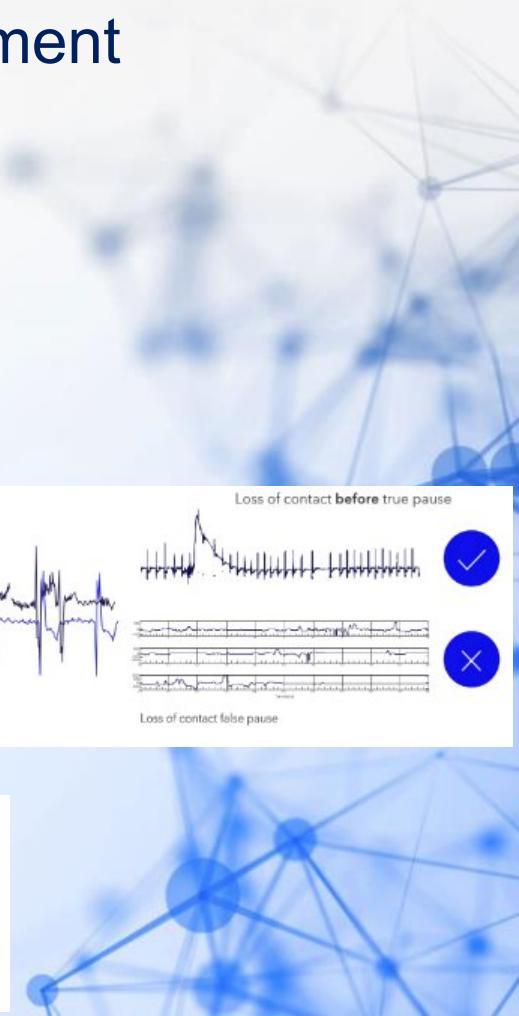
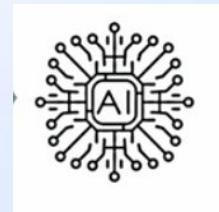
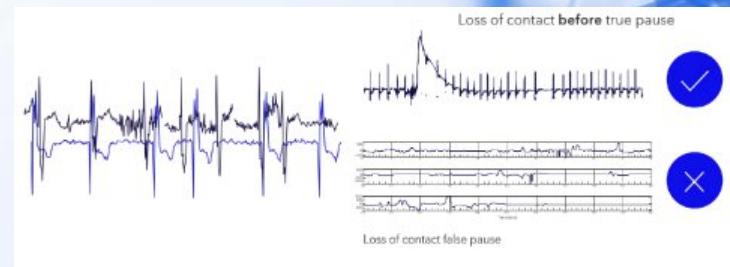
- High volume of accurate subcutaneous data from ILRs
- Wide variety of data adding substantial volumes of rare and difficult to adjudicate events to training data events
- Each episode artificially modified to create a variety of realistic waveform modifications

Professionally adjudicated

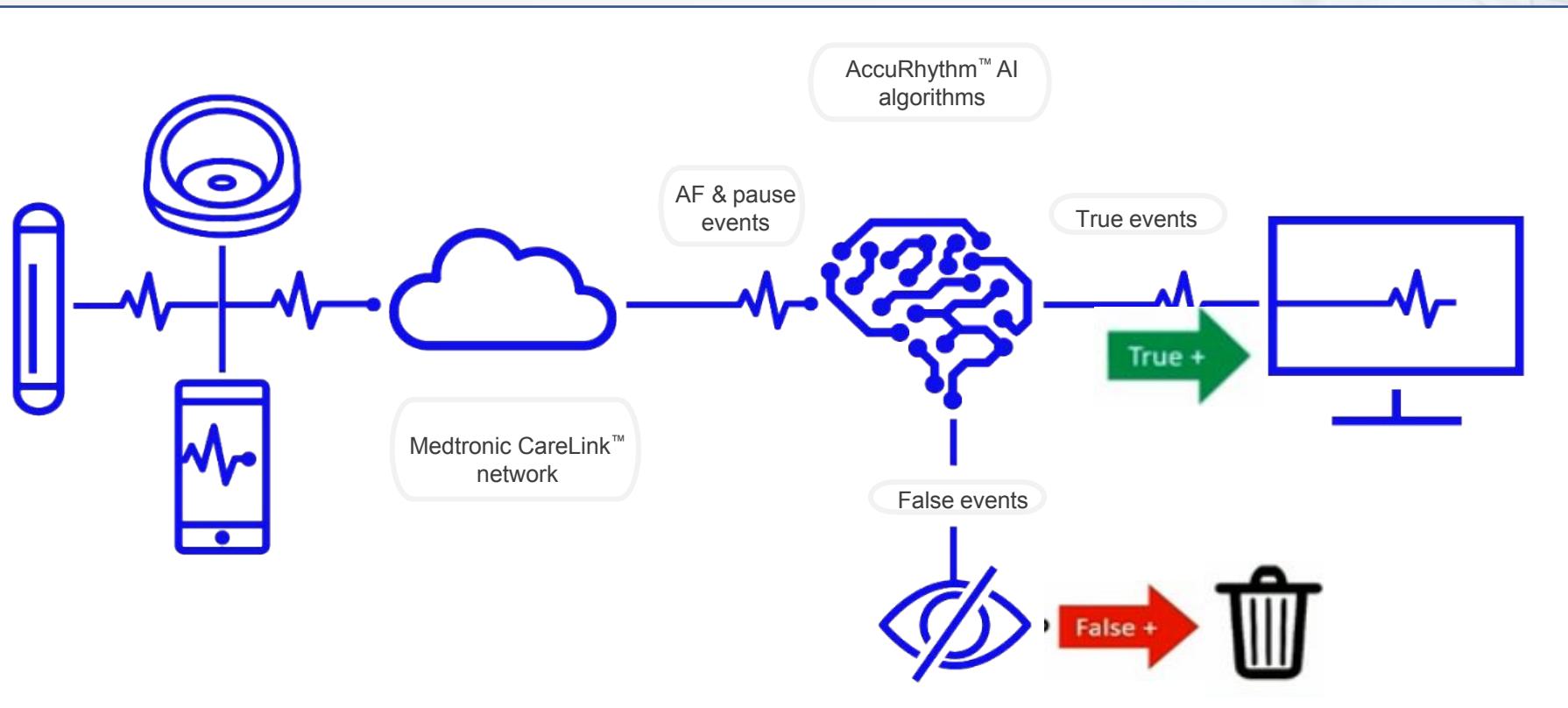


AI Training for Pause and AF algorithms

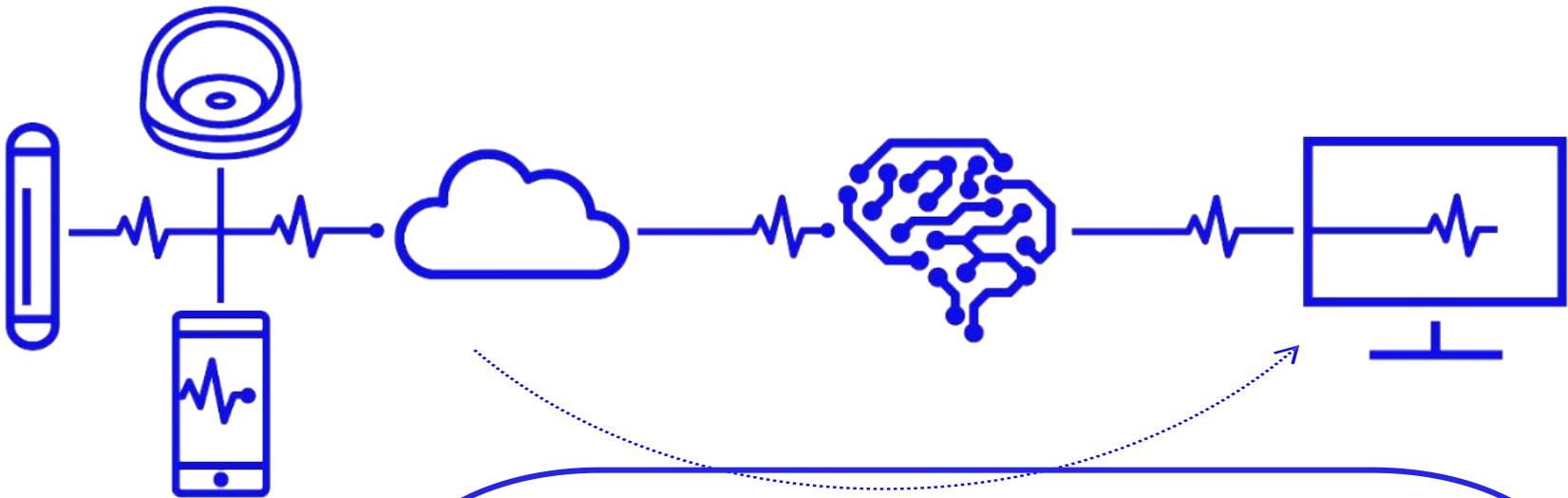
locked to retain unbiased behavior and preserve sensitivity



LINQ II™ data flow with AccuRhythm™ AI



LINQ II™ ICM data flow with AccuRhythm™ AI algorithms

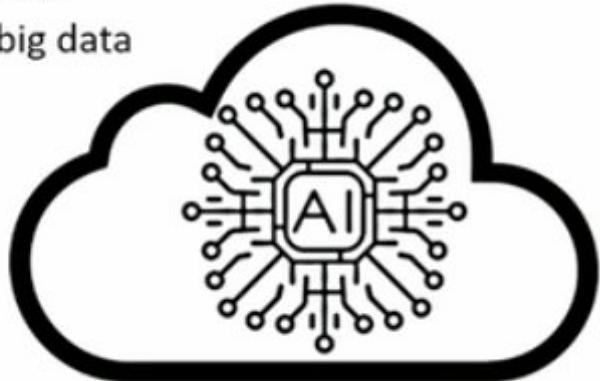


Event bypasses AI review if:

- Correlated to patient-marked symptoms
- AF event \geq one hour
- Infrequent pause event (\leq one episode per month)
- Pause events when the pause duration was programmed very short (1.5 seconds)

Advantages of AI Platform in the Cloud

- Power of the cloud
 - Large volume of computing power
- No new hardware required
 - Cloud based algorithms are also applicable to existing hardware
- Platform for future innovations at software level
 - Options for new product innovations and use of big data



AccuRhythm AI Performance

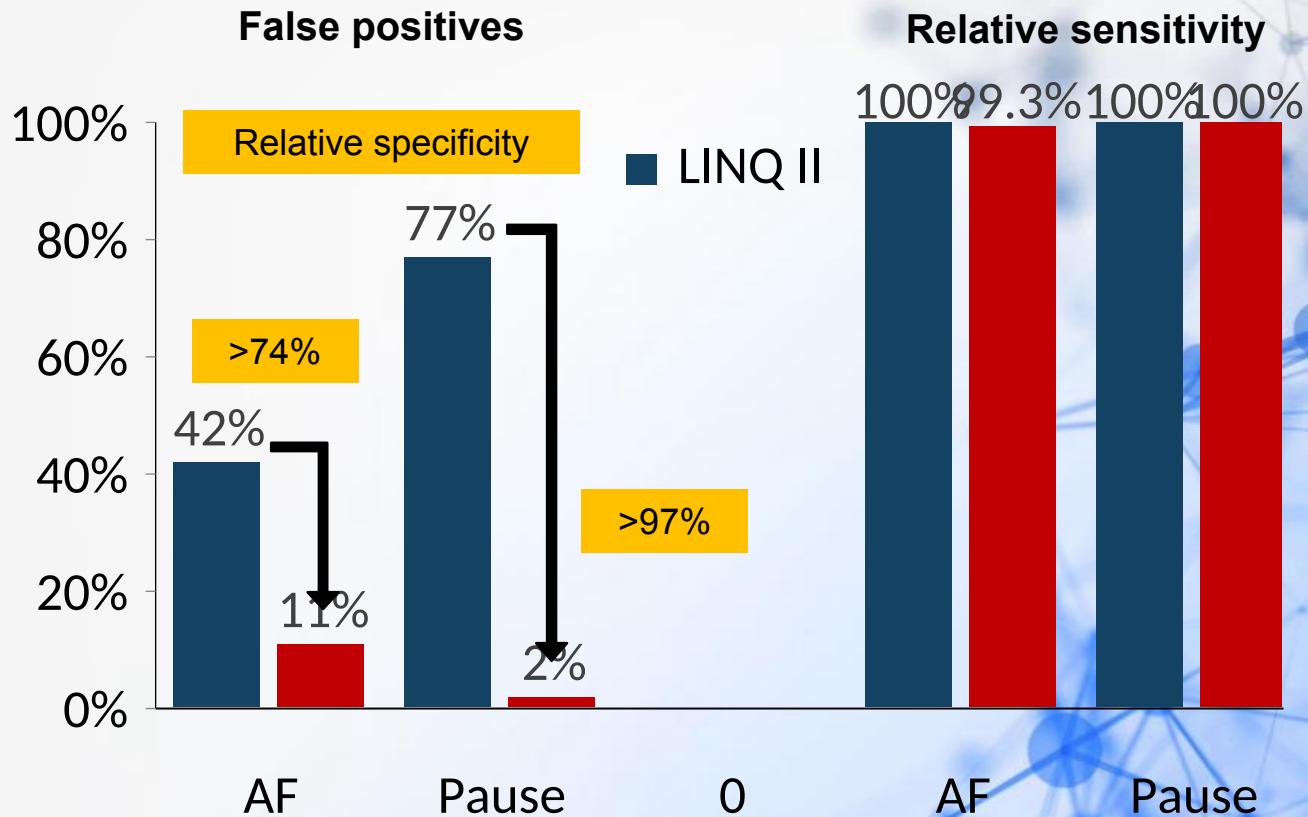
Datasets

Atrial fibrillation

- 147 patients
- 2'186 AF alerts
- 1'275 true positives in 89 patients

Pause

- 382 patients
- 1'713 pause alerts
- 674 true positives in 122 patients



Caso Clinico

EPISODI DI FA CORRETTAMENTE FILTRATI DA AI

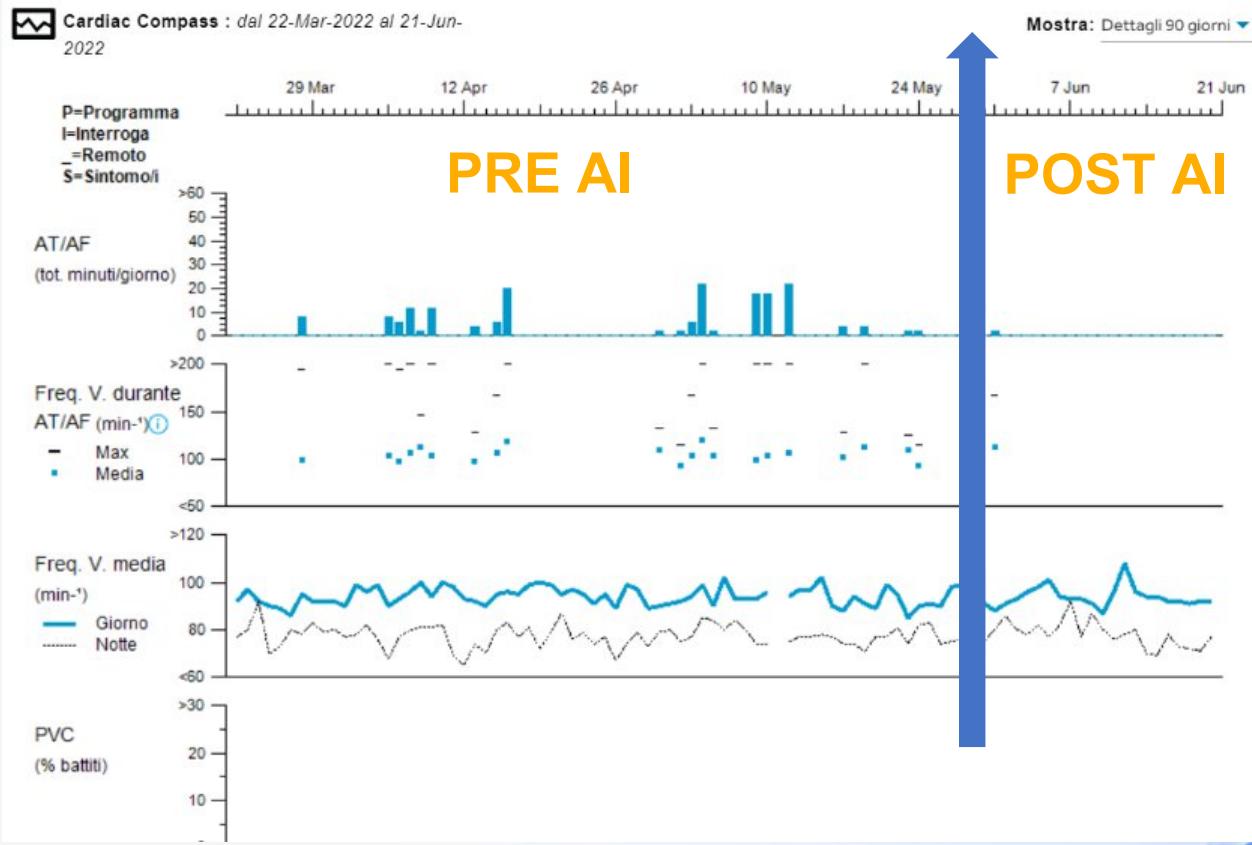
Quick Look	Episodi	Trends	Commenti e note	Cronologia azioni
Telefono: 000	Data di nascita: 14-Aug-1965	Medico di follow-up:	Commenti sul paziente: 03/05/21 Pause: verosimile undersensing; FA: sottoposta a valutazione. (DS) 15/07/21 Verosimile FA su tracciato di scadente qualità, in NAO...	Modifica
LINQ II™ LNQ22	Data di impianto:	Motivo del monitoraggio:		
Numero di serie del dispositivo: 		Gest. AF	[Continua nella scheda Commenti e note]	
Dati Quick Look				
	Corrente	Durata	Parametri	
Sintomo	0	0	3 episodi da 10 min	
Tachicardia	0	0	>154 min ⁻¹ ,>=16 battiti	
Pausa	0	0	>5 secondi	
Bradicardia	0	0	<30 min ⁻¹ ,>=12 battiti	
AT	0	0	Off	
AF	0	49	Tutti gli episodi	
Tempo in AT/AF	0.0%	---		
PVC (% battiti)	0.0%	---	Off	

Dal 25 Aprile al 28 Luglio

- 217 episodi di AF
- 49 episodi di FA non filtrati da AI (veri)
- 171 episodi di FA giudicati falsi da AI (circa il 78%)

Considerando un tempo di revisione degli episodi di circa 3 minuti, sono stati risparmiati 513 minuti (circa 8,55 ore)

Real-life Clinical Case on AF*



Caso Clinico

Episodi di pausa correttamente filtrati da AI

Quick Look
Episodi
Trends
Commenti e note
Cronologia azioni

SINTOMO
 Bradicardia
 Tachicardia
 Pausa
 AT
 AF

Ordina per: Data/ora ▾

Visualizza gli episodi con valutazione:

Tutti gli episodi ▾

Stampa	ID n.	Valutazione	Type	Data		Rilevato	Durata	Freq. V. max	Freq. V. mediana	Dettagli
				Rilevato	Durata	hh:mm	hh:mm:ss			episodio
<input type="checkbox"/>	160	●	Pausa	26-Jul-2022	18:42	00:00:06		00:00:06	56 min ⁻¹	ECG
<input type="checkbox"/>	158	●	Pausa	22-Jul-2022	20:27	00:00:06		68 min ⁻¹	ECG	
<input type="checkbox"/>	157	●	Pausa	22-Jul-2022	12:21	00:00:06		65 min ⁻¹	ECG	
<input type="checkbox"/>	150	●	Pausa	23-Jun-2022	18:48	00:00:08		70 min ⁻¹	ECG	
<input type="checkbox"/>	149	●	Pausa	15-Jun-2022	19:55	00:00:07		63 min ⁻¹	ECG	
<input type="checkbox"/>	148	●	Pausa	15-Jun-2022	17:47	00:00:07		70 min ⁻¹	ECG	
<input type="checkbox"/>	147	●	Pausa	11-Jun-2022	17:05	00:00:08		53 min ⁻¹	ECG	
<input type="checkbox"/>	146	●	Pausa	05-Jun-2022	12:24	00:00:13		68 min ⁻¹	ECG	
<input type="checkbox"/>	145	●	Pausa	02-Jun-2022	20:49	00:00:10		75 min ⁻¹	ECG	
<input type="checkbox"/>	144	●	Pausa	01-Jun-2022	12:02	00:00:09		67 min ⁻¹	ECG	

Stampa	ID n.	Valutazione	Type	Data		Rilevato	Durata	Freq. V. max	Freq. V. mediana	Dettagli
				Rilevato	Durata	hh:mm	hh:mm:ss			episodio
<input type="checkbox"/>	143	●	Pausa	14-May-2022	12:49	00:00:05		78 min ⁻¹	ECG	
<input type="checkbox"/>	142	●	Pausa	13-May-2022	12:10	00:00:08		61 min ⁻¹	ECG	
<input type="checkbox"/>	141	●	Pausa	13-May-2022	10:56	00:00:05		71 min ⁻¹	ECG	
<input type="checkbox"/>	140	●	Pausa	08-May-2022	06:36	00:00:06		70 min ⁻¹	ECG	

Stampa	ID n.	Valutazione	Type	Data		Rilevato	Durata	Freq. V. max	Freq. V. mediana	Dettagli
				Rilevato	Durata	hh:mm	hh:mm:ss			episodio
- Report riepilogativo 27-May-2022 -										
<input type="checkbox"/>	139	●	Pausa	24-Apr-2022	06:29	00:00:07		68 min ⁻¹	ECG	
<input type="checkbox"/>	138	●	Pausa	23-Apr-2022	23:16	00:00:05		61 min ⁻¹	ECG	
<input type="checkbox"/>	137	●	Pausa	12-Apr-2022	15:23	00:00:09		74 min ⁻¹	ECG	

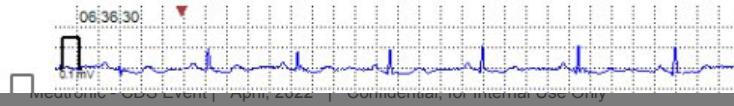
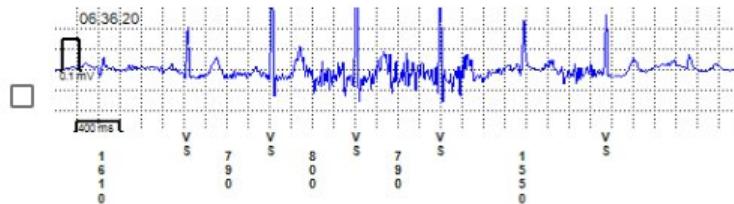
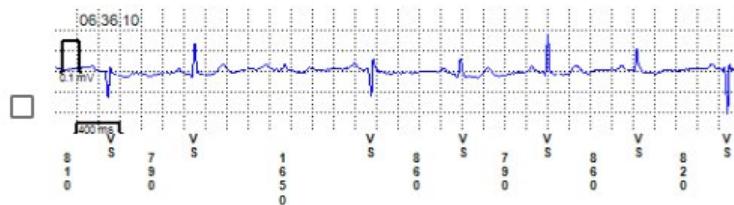
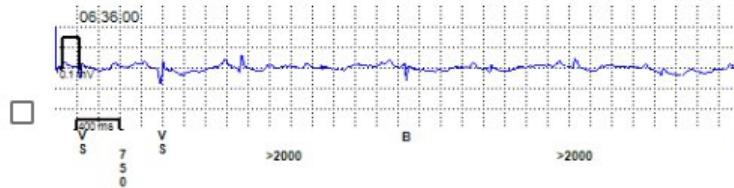
Legenda valutazioni: (✓) Appropriato (?) Indefinito (✗) Non appropriato (●) @li: AI False

Medtronic

8 maggio

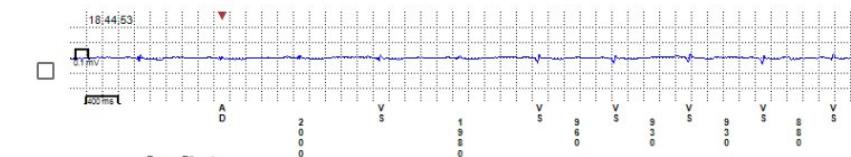
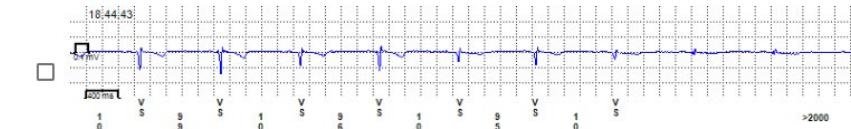
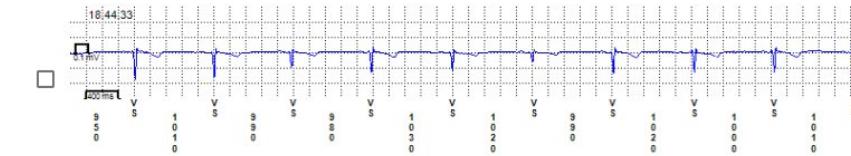
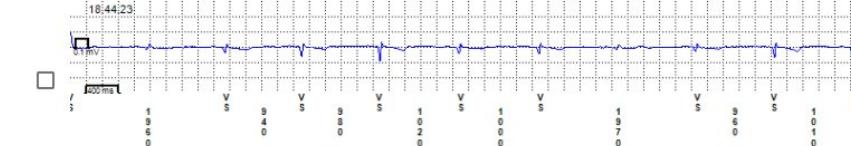
Visualizza/Stampa
 (tutti)

Regola ampiezza



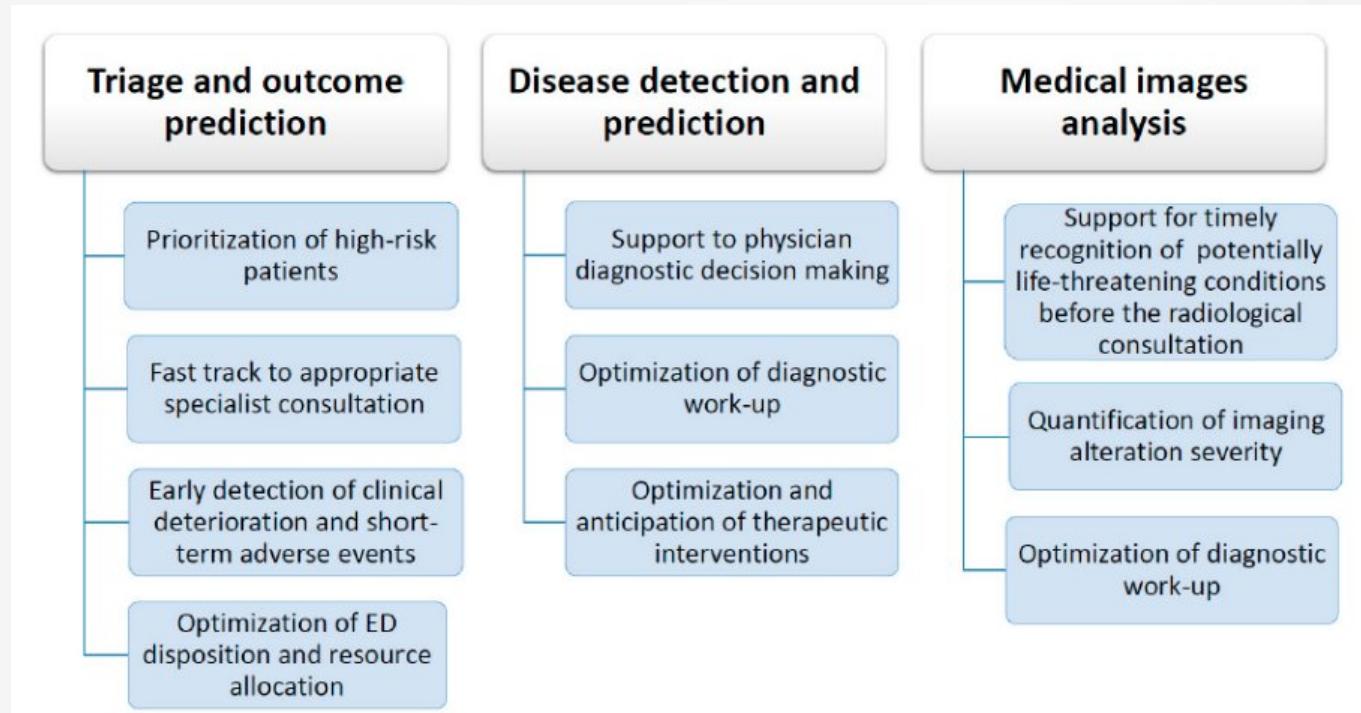
Visualizza/Stampa
 (tutti)

Regola ampiezza



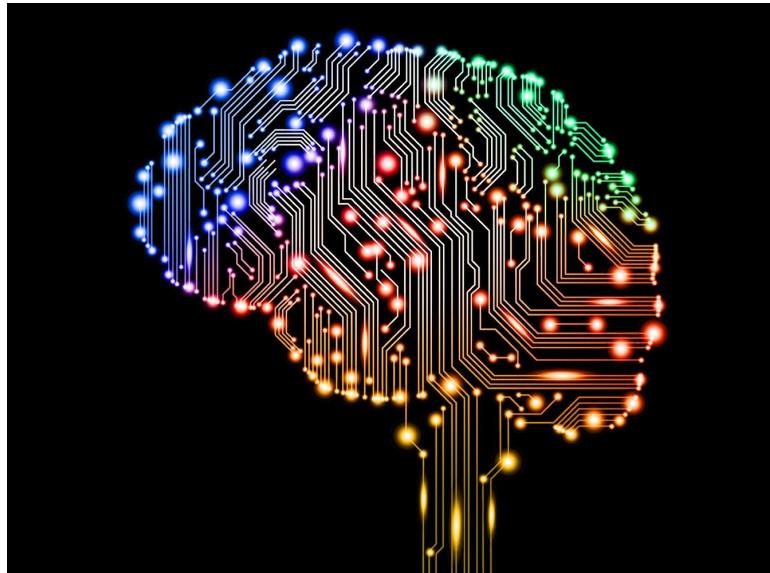
25 luglio

Future applications of AI



AI & MEDICINE

- “...automation won't replace physicians, but those using automation will replace those that don't.”



Bertalan Mesko, Medical Futurist Institute, 13 April 2021

https://www.linkedin.com/pulse/doctors-reject-support-from-ai-heres-why-bertalan-mesko-md-phd/?trk=eml-email_series_follow_newsletter_01-hero-1-title_link&midToken=AQFi90tixbv4eg&fromEmail=fromEmail&ut=0Rf

VISION WHAT ABOUT THE FUTURE?

Drive a new era of personalized medicine by empowering care providers and patients with actionable insights to conquer chronic disease.

DIAGNOSIS

MONITORING

DISEASE
MANAGEMENT

CONCLUSIONI

- Le indicazioni all'impianto di loop recorder sono in costante allargamento, dalla sincope, all'ictus criptogenetico, alla FA, fino alle nuove frontiere della stratificazione del rischio aritmico nel post MI e di morte improvvisa, alla valutazione multiparametrica dello scompenso cardiaco
- Le nuove generazioni di ICM sono dotate di algoritmi automatici che migliorano l'accuratezza diagnostica riducendo i falsi positivi e di conseguenza riducendo il carico di lavoro dei centri controllo
- Le nuove funzionalità automatiche di inizializzazione e programmazione in remoto e le nuove modalita' di connettivita' mediante sistemi Bluetooth e APP migliorano la compliance dei pazienti e la qualita' delle trasmissioni
- L'implementazione delle AI sul cloud per l'analisi degli allarmi consentira' una significativa riduzione dei falso positivi e conseguentemente del carico di lavoro per i centri