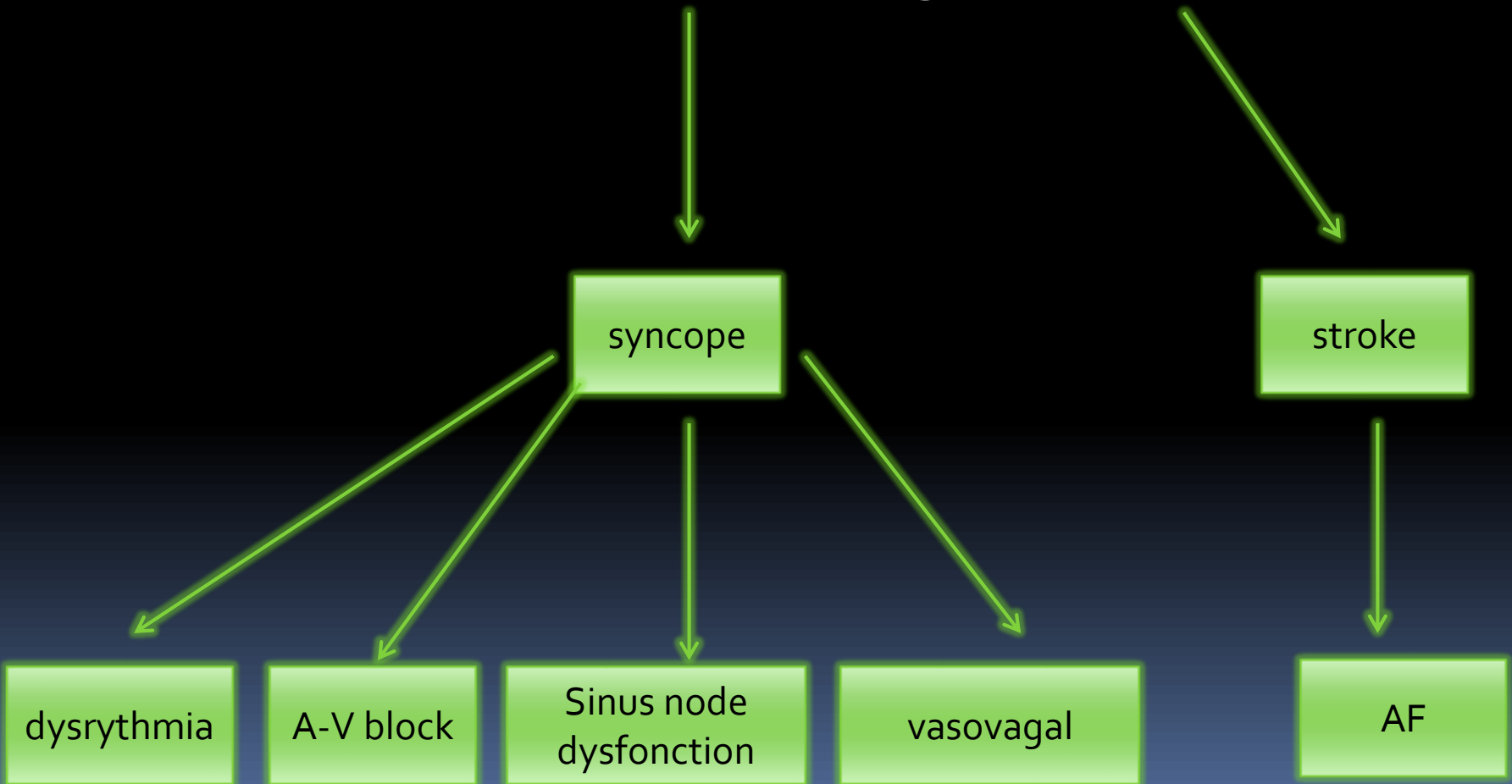




BENEFITS OF NEW DEVICES FOR HEART RHYTHM MONITORING

HPParly2
Dr C. BERTRAND

HEART Rhythm monitoring (HRM)



HRM Devices

LDH

PATCH
T SHIRT

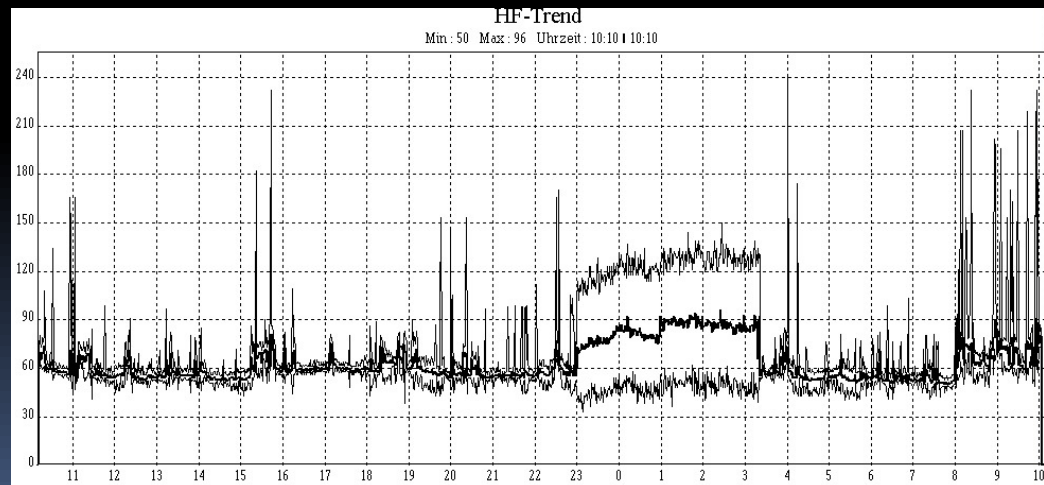
SMART
PHONE

spider flash HOLTHER: LONG DURATION HOLTHER SORIN

ANALYSIS IS BASED ON RR INTERVALS
TWO MAJOR INCONVENIENCES:
. RHYTHM EVENTS RECORDER
. POSSIBILITY TO MISS THE BEGINNING OR THE END OF RHYTHM EVENTS
→ NOT A TRUE ECG HOLTHER



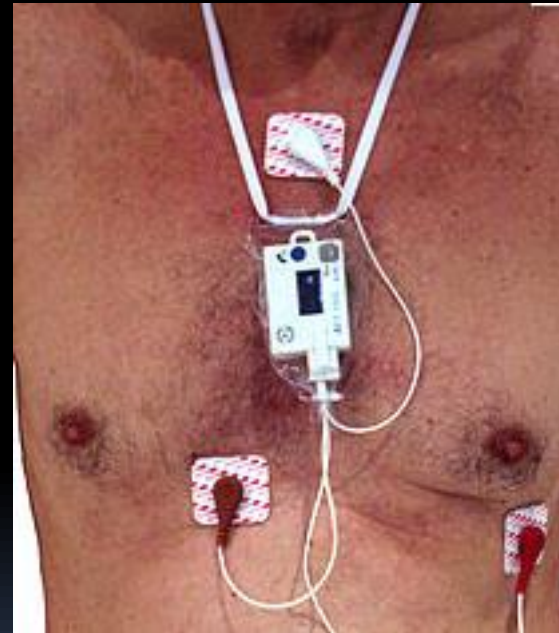
40
DAYS



AFT 1000: HOLTER SUPPLIES

25
DAYS

TRUE
HOLTER



We can analyse every moment of the holter like a 24h ECG Holter.

patch

**POWERFULLY
SIMPLE**

**SHORT-TERM
MONITORING UP TO 30 DAYS**

A white, elongated, oval-shaped medical device with a small screen and two circular electrodes. The brand name 'SEEQ' is printed at the bottom.

SEEQ



ZIO

Two circular images connected by a dotted line with a central arrow pointing right. The left image shows a doctor in a white coat looking at a tablet. The right image shows a woman in a headset working at a computer.

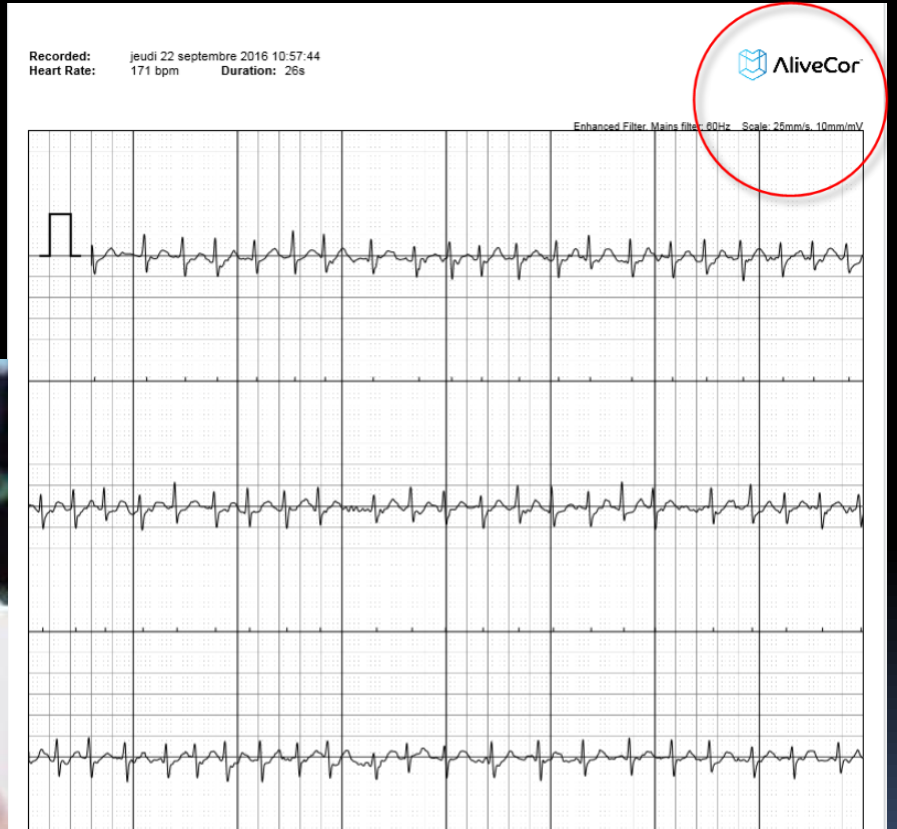
Physician Access to Clinical Reports

5.8 Days mean time to initial detection of clinically relevant arrhythmias²

Medtronic Monitoring Center
Trained cardiographic technicians review ECG data and flag notable events.

64% detection rate of clinically relevant arrhythmias.²

Smartphone



First Generation of Reveal before 2010



- Implanted loop recorder
- Non MRI compatible
- 14 month Longevity
- 1250 € (More expensive than Holter and /or patches)

Second Generation of Reveal

Reveal DX: Carelink in 2013



- Monitor Assistant delivered with the reveal
- Unique Indication: unexplained **syncope**
- 36month Longevity

New Generation : REVEAL LINQ

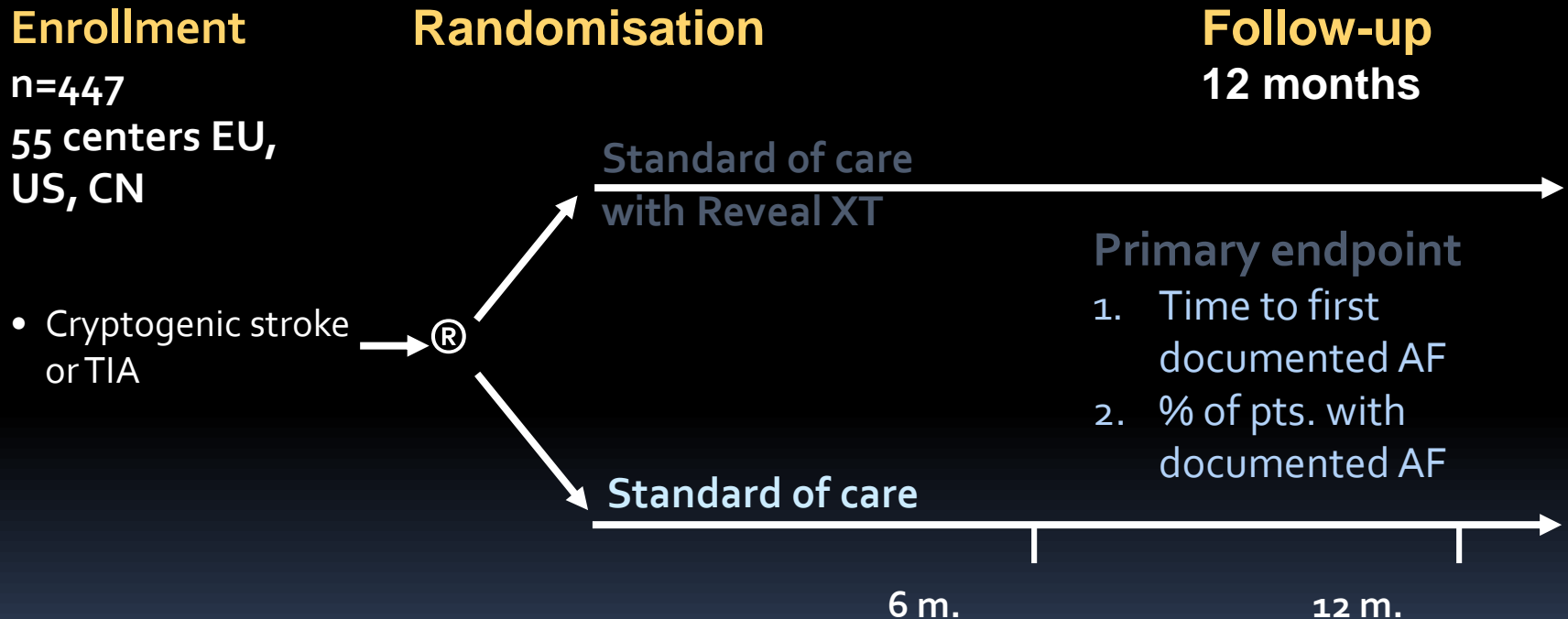
LINQ: 80 times smaller
-battery capacity: 20%
more



HAS 06 2 2015: LINQ not implanted now in France

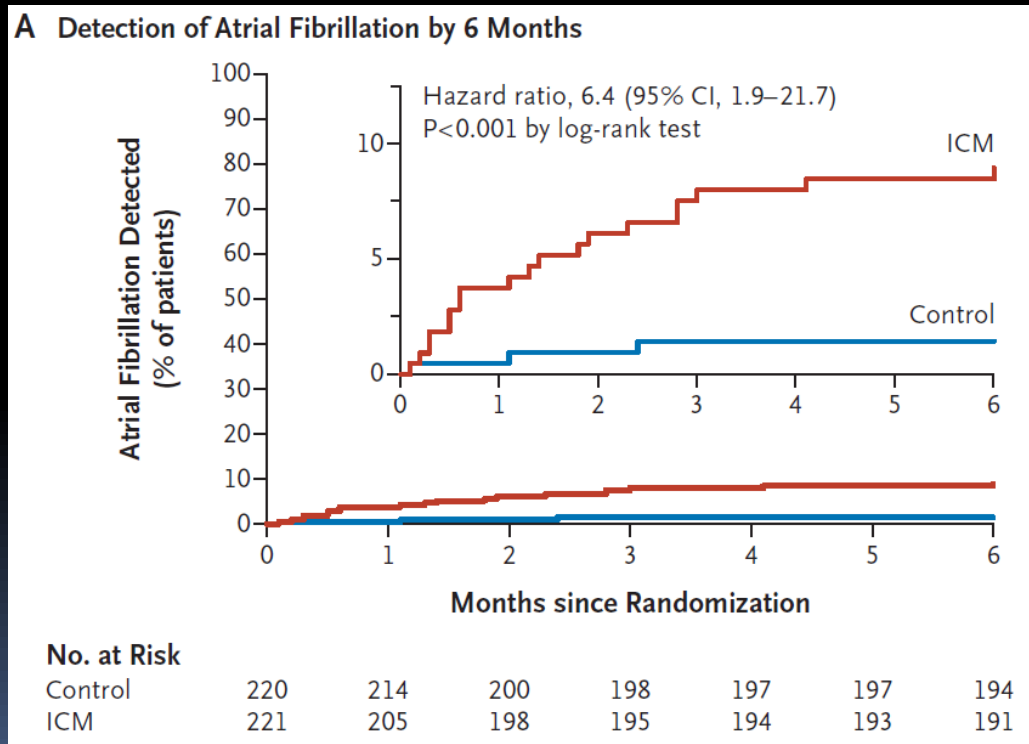
CRYSTAL AF: Goals and Design

- Comparison between AF diagnosis with Reveal XT and standard of care in cryptogenic stroke or TIA pts.



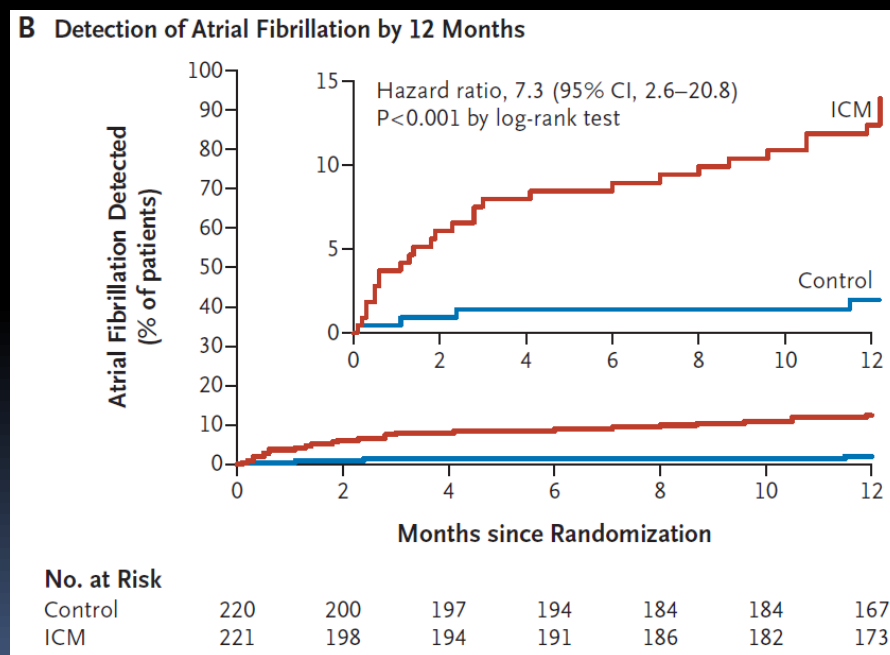
Primary Endpoint: AF at 6 Months

- At 6 months AF was detected in 8.9% in the ICM group compared with 1.4% in controls (19 vs 3 pts.)
- Median time to AF detection: 41 d, 74% asymptomatic



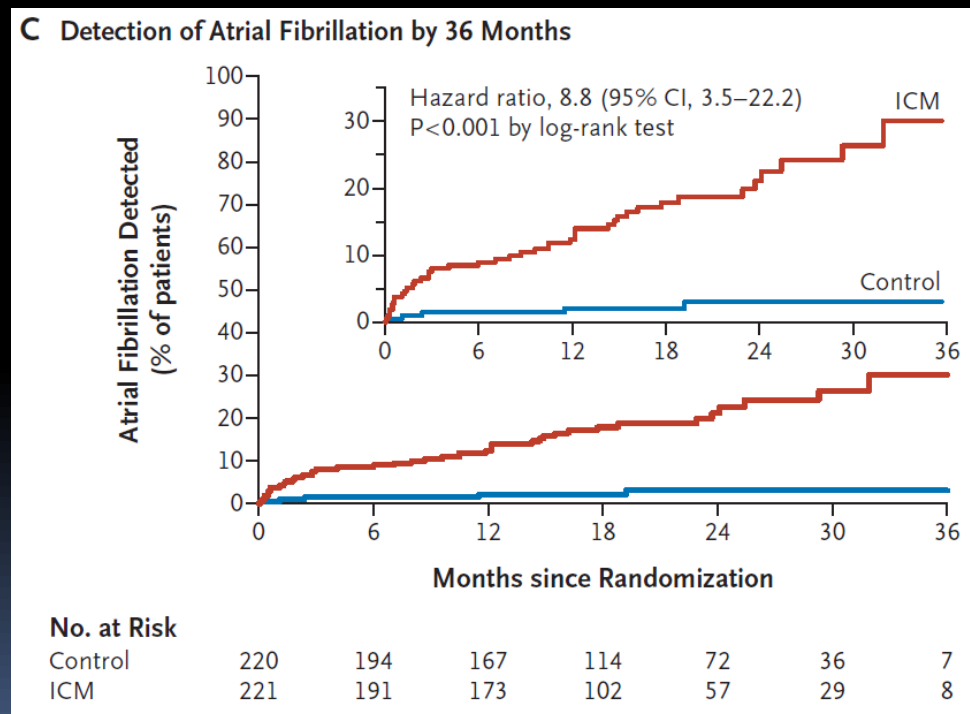
Secondary Endpoint: AF at 12 Months

- At 12 months AF was detected in 12.4% in the ICM group compared with 2.0% in controls (29 vs 4 pts.)
- Median time to AF detection: 84 d, 79% asymptomatic



CRYSTAL AF: AF at 3 Years

- At 3 years AF was detected in 30.0% in the ICM group compared with 3.0% in controls (42 vs 5 pts.)



CRYSTAL AF: Conclusion

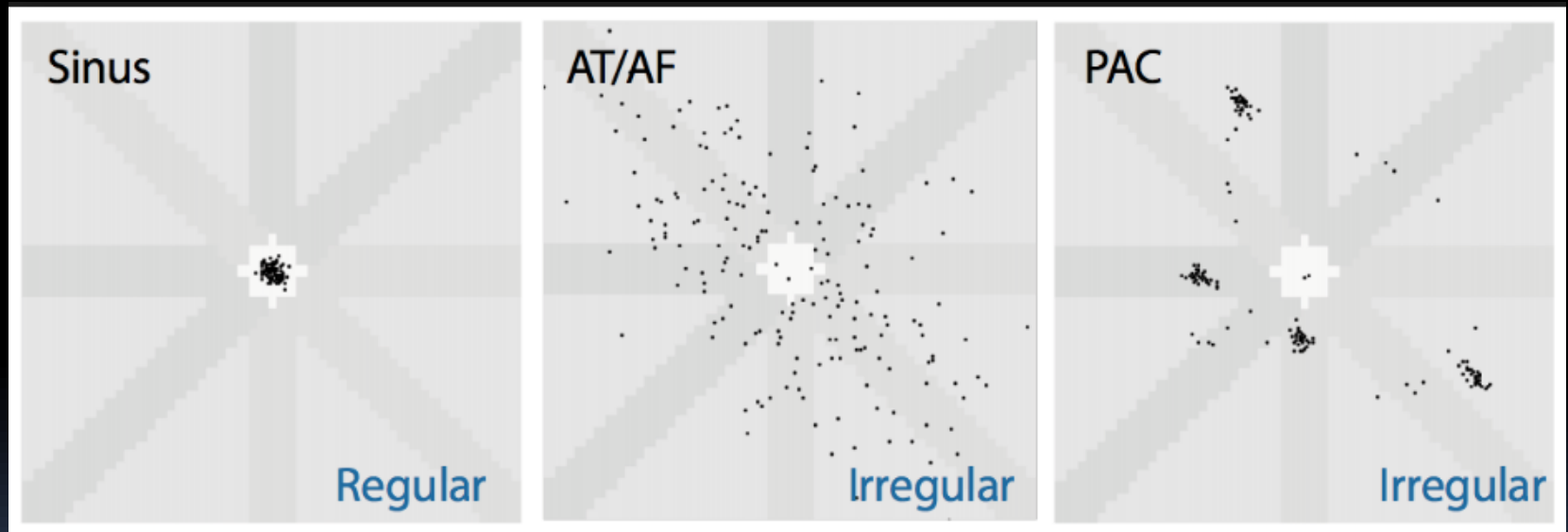
- AF monitoring with an ICM is superior to conventional follow-up in cryptogenic stroke pts.

Time	ICM (%)	Control (%)	Hazard Ratio	P
6 months	8.9	1.4	6.4	0.0006
12 months	12.4	2.0	7.3	0.0001
3 years	30.0	3.0	8.8	0.0001

- AF was mostly asymptomatic and paroxysmal so unlikely to be detected by non continuous monitoring


Reveal: limits of AF detection

- False positive
 - Atrial bigeminy: regularity in the irregularity



Log RR analysis

- False negative: 3-4% !!!



Study with a neurological
and rythmologia patnership
LDH 21D on cryptogenic
stroke population

(Parly 2 Rythmologia Team
and Neurological Team
Versailles Hospital)

Journal of Stroke and Cerebrovascular Diseases



Objectives



- Evaluate the detection rate of paroxysmal atrial fibrillation (PAF) in patients with cryptogenic brain infarct or TIA using 21 days long duration ECG holter
- Determine risk factors of PAF detection



Patients and Methods



Patients were included from march 2009 to january 2013

- ✓ in Versailles Stroke Center
- ✓ with cryptogenic brain infarct or TIA
- ✓ Complete work up : Clinical, ECG, TTE and TEE, Brain imaging
- ✓ After discharge : 21 days AFT 1000 HLD ECG in Parly II Clinic Cardiology
Department
- ✓ Predictors of AF detection by HLD were determined
by univariate and multivariate analysis (Biostatiticians. CT, ZM)



Results



171 patients: 144 Brain infarct (84%); 27 TIA (16%)

- Mean age 63,2 years ; 63 % Men; 40 % of HTN ; 10 % of Diabetes
- NIHSS arrival (BI)= $2,2 \pm 3,6$ (Almost minor stroke)
- Brain imaging : all had CT or Brain MRI.
- 144 patients (84%) with exploitable Brain MRI data
- Cardiovascular Work up :
 - ✓ 100% ECG
 - ✓ 72% 48h telemetry
 - ✓ TTE 100%; TEE: 88%



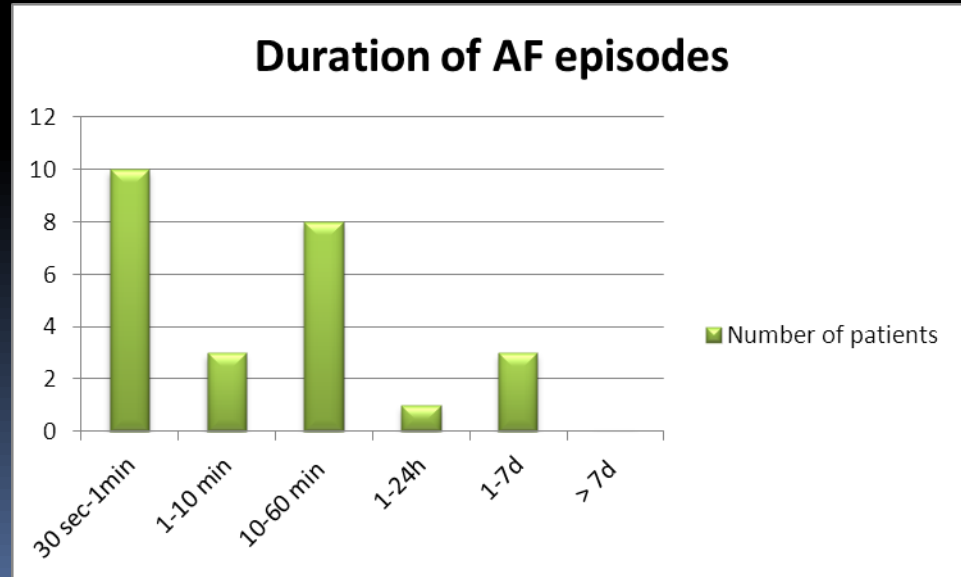
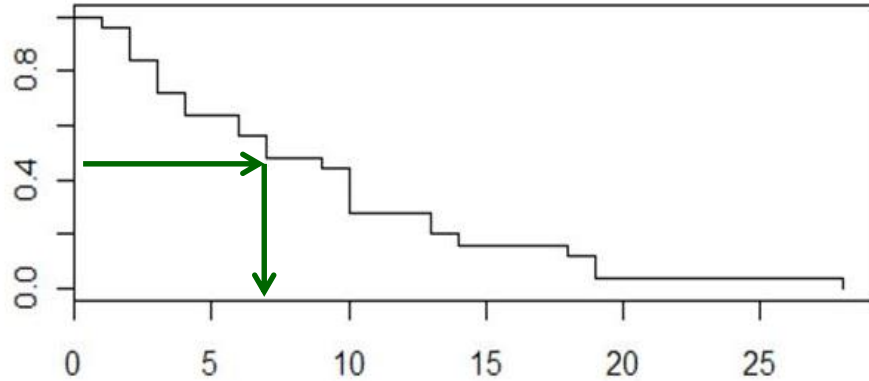
Results



Detection rate of AF lasting > 30 sec (*Guidelines AHA 2006*)
= 26 patients (15,2 %)

Median delay between HLD initiation
and first PAF episode detected = 7 days

Mean number of PAF episodes/patient = 1.2 ± 1.1



conclusion

- Future is in detection with non or mini invasive approach
- Detection of Arrhythmia, conduction disturbance can change the treatment (pace maker implantation, anticoagulant treatment...)
- We can't stop the progress

