Management of AF in patients with implantable devices

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Lineage

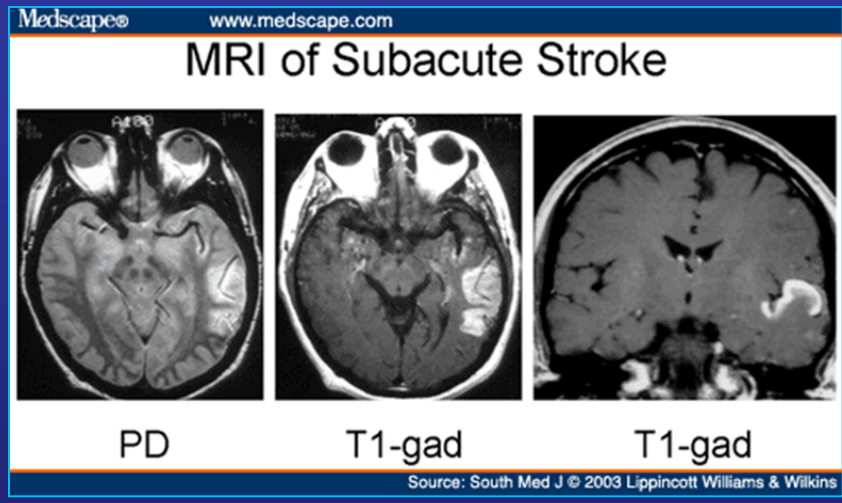
- PhD – Medical Psychology
- Medtronic
- St. Jude Medical
- Biotronik
- Medtronic

Medtronic AF devices

THEN

NOW

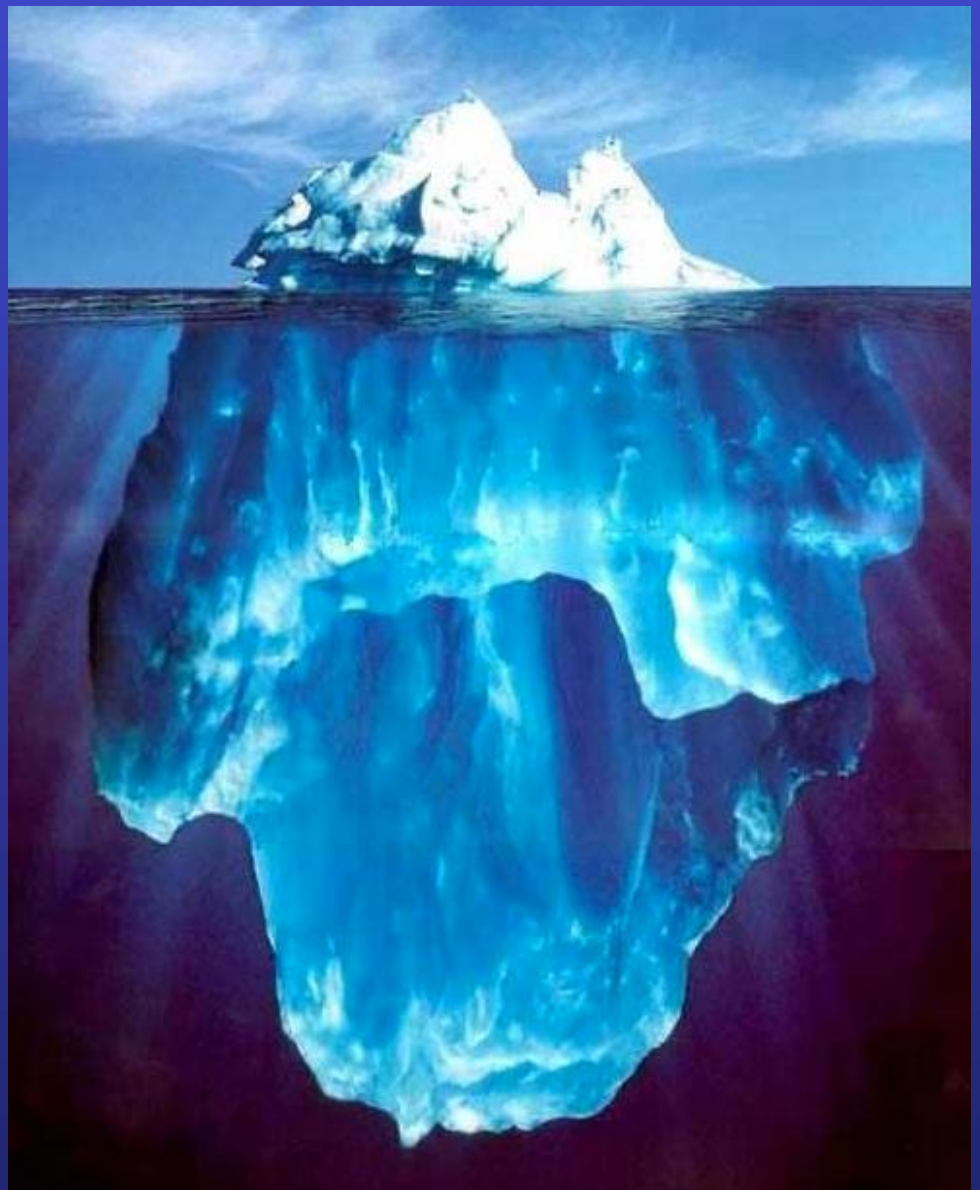
Monitor, Diagnose, Treat, Prevent



Traditional AF guidelines and medical practice are based on patient symptoms and intermittent monitoring

Symptoms or intermittent external monitoring only hint at the true amount of AF.

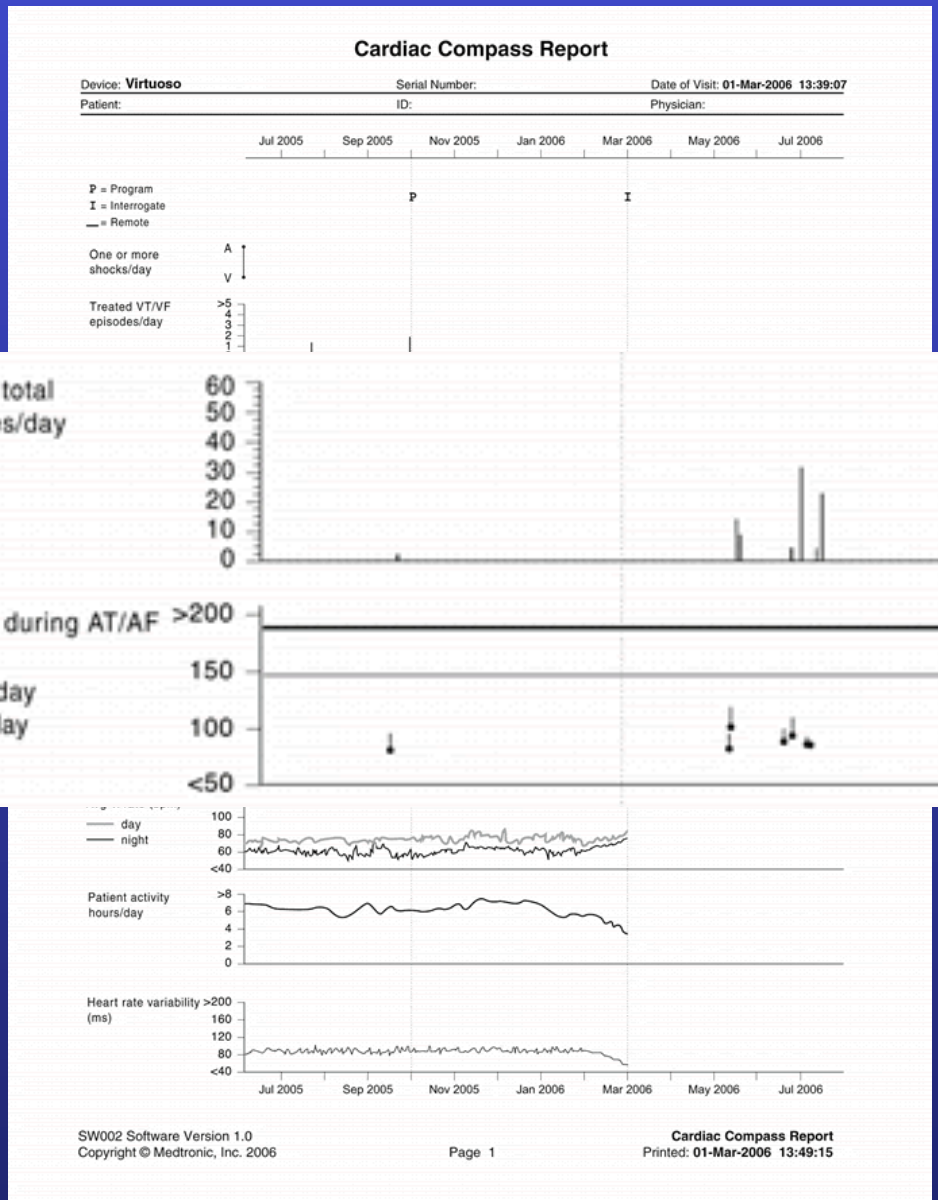
Symptoms and Intermittent Monitoring Only Reveal the Tip of the AF Iceberg



Symptoms or intermittent external monitoring only hint at the true amount of AF.

Continuous monitoring via implantable devices provides full disclosure on rhythm status.

Implantable devices monitor 24hs/day, 7/ week, 365 days/year



- 3+ years of trend information (rolling)
- Simultaneously track a variety of parameters including:
  - VT/VF
  - AT/AF
  - Heart rate during AT/AF
  - % A and % V pacing
  - Night and day heart rate
  - Patient activity
  - Heart rate variability

Effective AF Rhythm or Rate Control Leads to Improved LV Systolic Function

JACC Vol. 29, No. 4
March 15, 1997:709–15

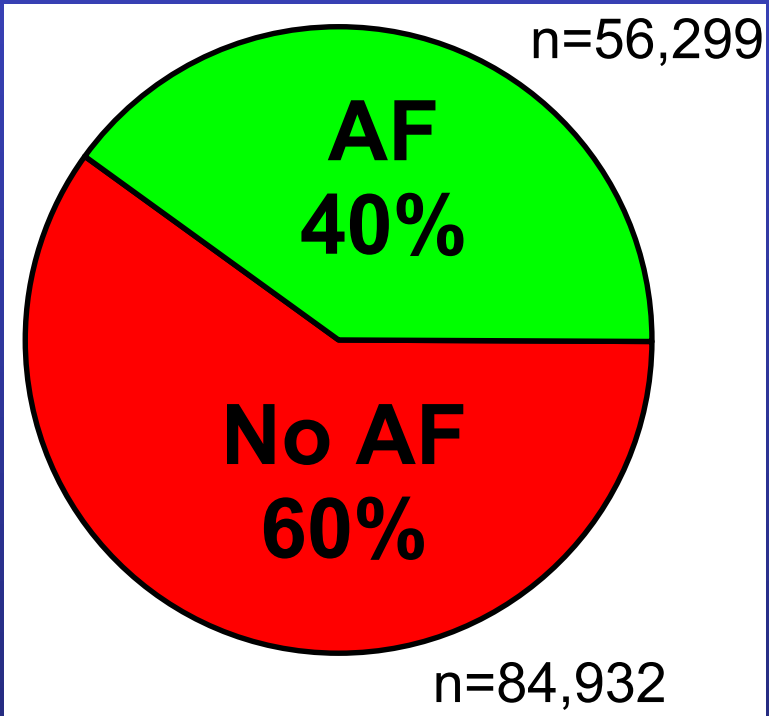
Table 1. Effect of Atrial Fibrillation Rhythm or Rate Control on Left Ventricular Systolic Function

Study (ref no.)	No. of Pts.	Intervention Type	Method of Assessment	Pre (%)	Post (%)	p Value
Kieny et al. (74)	12	CV	EF	32 ± 5	53 ± 10	< 0.001
Van Gelder et al. (75)	8	CV	EF	36 ± 13	53 ± 8	< 0.05
Twidale et al. (76)	14	AVJ	EF	42 ± 3	47 ± 4	< 0.05
Heinz et al. (77)	10	AVJ	FS	28 ± 9	35 ± 8	< 0.01
Brignole et al. (78)	9*	AVJ	FS	23 ± 5	31 ± 9	< 0.01
	13†	AVJ	FS	40 ± 5	36 ± 6	0.05

*Patients (Pts) with depressed baseline fractional shortening (FS). †Patients with normal baseline fractional shortening. AVJ = atrioventricular junction ablation and permanent pacemaker; CV = cardioversion; EF = ejection fraction; ref = reference.

Prevalence of Atrial Tachyarrhythmias in the ICD and CRT patient population

- Device data from 77,345 ICD and 63,886 CRT-D patients recorded over 1.6±1.0 years were analyzed (**141,231 total pts)**



- 29,572 (38%) ICD and 26,737 (42%) CRT-D patients were found to have atrial tachyarrhythmia episodes (longer than 5 min/day).

HRS 2009

Patients with more than 5 min of AF on a day is highly underestimated

> 5 minutes of device-detected AT/AF?	Documented history of AF? Yes	Documented history of AF? No
Yes	372	674
No	140	1372

A documented history of AF failed to identify **64.4%** of patients having a day with at least 5 minutes of device-detected AT/AF over an average follow-up of 1.4 years.

Source: TRENDS study

Earlier studies suggest that the amount of AF may be an important risk factor for Thromboembolic events

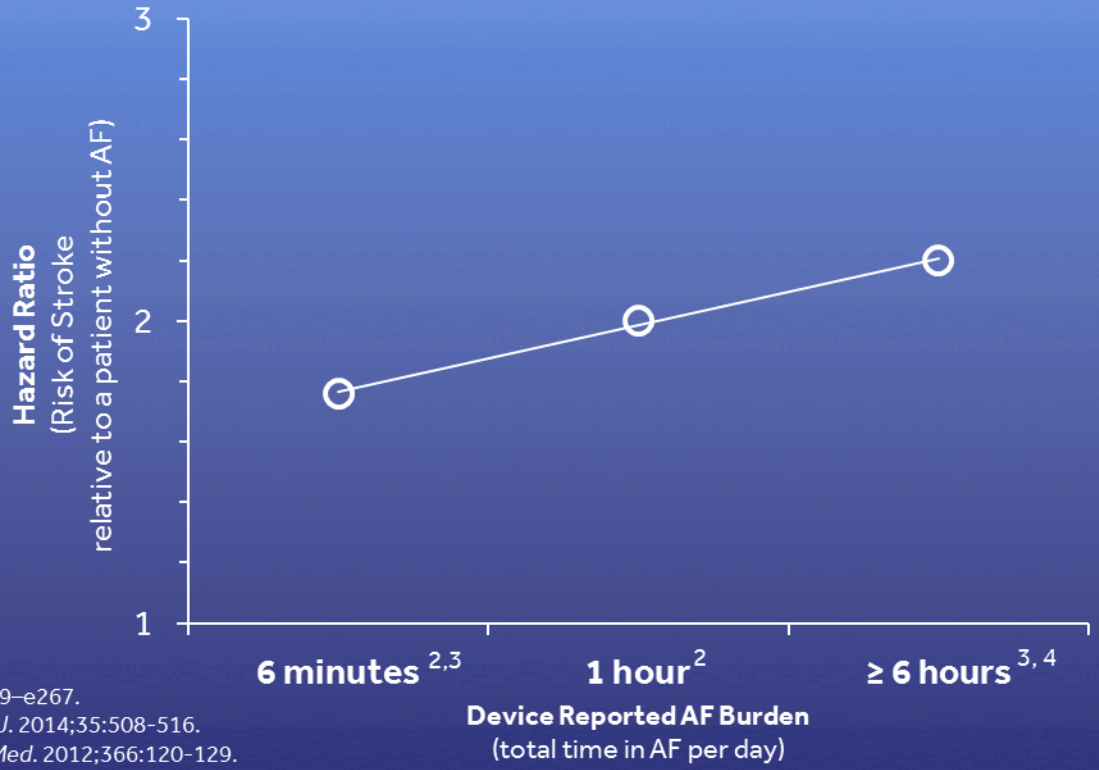
- 5 min of AF on a given day: 3 times higher risk of thromboembolism
- 24 hrs of AF: 5 times higher risk

  Botto et. al. *J Cardiovasc Electrophysiol, 2008*
- 5 min of AF on a given day: 2.8 times higher risk of death or non-fatal stroke
  - Glotzer et. al. Circulation 2003

AF BURDEN VS. STROKE RISK

HOW DOES DEVICE DETECTED AF RELATE TO STROKE RISK?

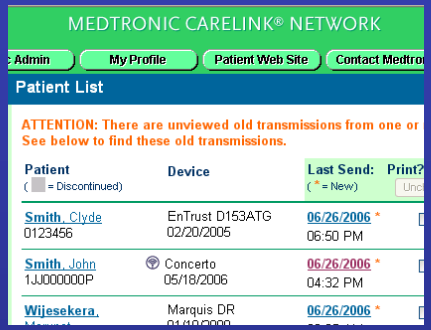
2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation: "In patients with AF, antithrombotic therapy should be individualized based on shared decision making after discussion of the absolute and **relative risks of stroke** and bleeding and the patient's values and preferences."[1]



[1] *Circulation*. 2014;130:e199–e267.
[2] Boriani G, et al. *Eur Heart J*. 2014;35:508-516.
[3] Healey JS, et al. *N Engl J Med*. 2012;366:120-129.
[4] Glotzer TV, et al. *Circ Arrhythm Electrophysiol*. 2009;2:474-480.

Notification Methods

CareLink Website



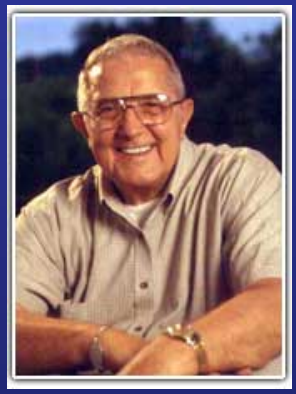
Page

Phonecall

Audible Alert

Clinicians

Patient



Why monitor AT/AF?

- Rhythm control
  - ✓Initiate anticoagulation (diagnose AF)
  - ✓Discontinue anticoagulation (post ablation)

Why monitor AT/AF?

- Rate control
  - ✓Prevent Heart failure exacerbation
    - ➢Ablate & Pace? RV? BIV?
  - ✓Ensure maximum CRT therapy
  - ✓Prevent unnecessary cardioversion shocks

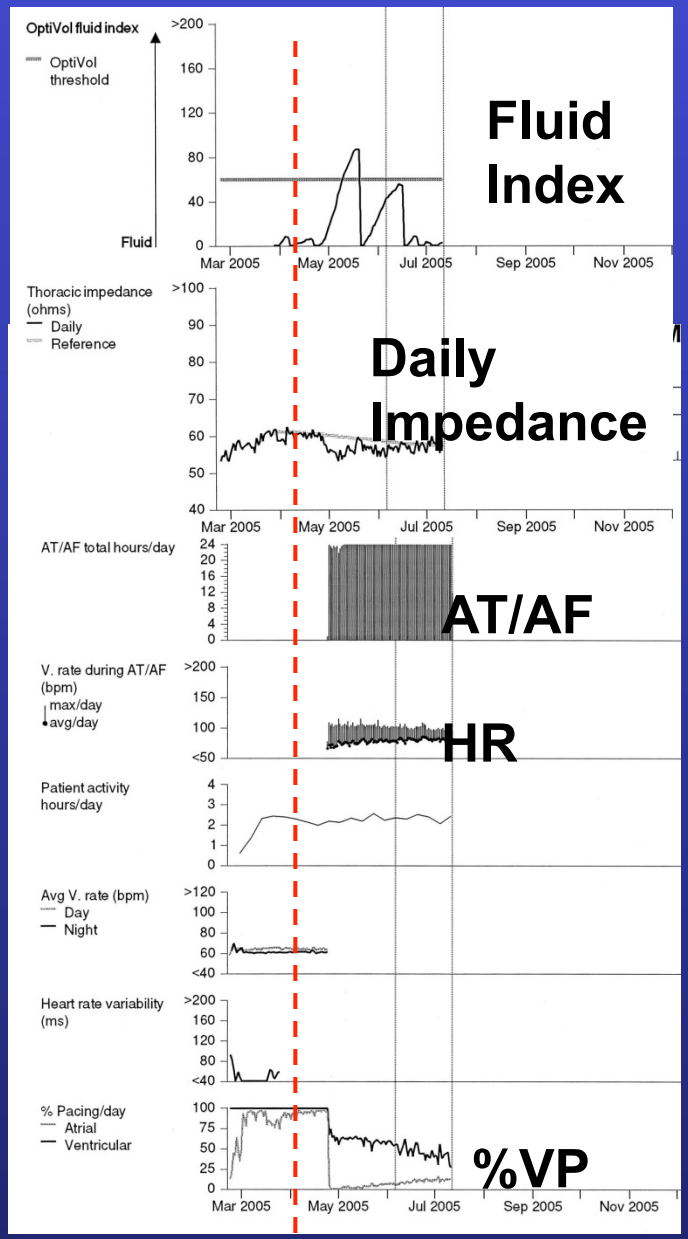
Why Be Alerted to AT/AF Burden?

- Anticoagulation
- Prevent exacerbation of CHF
- Reduce symptoms
- Reduce hospitalizations
- Reduce Costs

Why Be Alerted to High Rate during AT/AF?

- Prevent exacerbation of CHF
- Ensure maximum CRT therapy
- Reduce symptoms
- Prevent unnecessary shocks

Why Be Alerted to High Rate during AT/AF?



Physiologic "Dominoes"

- Atrial Tachyarrhythmia⇒
- High Heart Rate⇒
- Loss of CRT⇒
- Decompensation ⇒
- ↓Impedance ⇒
- ↑Fluid Index

AT/AF Alerts in Medtronic Devices

AT/AF Settings - Monitor

AT/AF Alerts	Enable	Burden	V. Rate
AT/AF Daily Burden	Off	6 hr	
Avg. V. Rate During AT/AF	Off	6 hr	100 bpm

Undo Pending OK

Daily Burden for Avg. V. Rate (hr/24hr)

0.5	2	12
1	6 P	24

Undo Pending Close

Avg. V. Rate during AT/AF (bpm)

90	110	130	150
100 P	120	140	

Undo Pending Close

Summary

- More monitoring information is now available to better assess AF patient status
- Clinical decisions can be made based on complete information from the implanted device
- Current device AT/AF alerts can help in the management of both patients with and without AT/AF history.
- On-going and future research may provide new treatment guidelines based on implantable device AT/AF monitoring.