Conflict of Interest

- Consultant: Medtronic; Stereotaxis; Topera-Abbott EP; CardioNet
- Board of Directors: Stereotaxis
- Stock: Stereotaxis
- Institutional Fellowship support: Boston Scientific; Medtronic; St Jude
Prime Directive in Management of Atrial Fibrillation

PRESENCE THE BRAIN
1135 patients with acute stroke given a 72-hour Holter ECG before hospital discharge

- Unknown AF detected in 49 (4.3%) of patients
- Patient age with / without AF: 76 vs. 67 (p < 0.0001)

From: Grand M Stroke 2013, DOI: 10.1161/STROKEAHA.113.001884
Use of ECG Monitoring to Detect AF in Patients after Cryptogenic Stroke (EMBRACE)

- 572 patients after cryptogenic stroke randomized to 30-day event recorder versus 24-hour Holter monitor

- Event monitor (Braemar) with autodetect AF capability (over a period of 30 beats)

- Mean age 72 years

- Randomization mean of 75 days after stroke

- 82% of monitored patients completed ≥ 3 weeks

From: Gladstone DJ NEJM 2014; 370: 2467-77
Atrial Fibrillation Detected During Prolonged Ambulatory Monitoring in Patients with Cryptogenic Stroke (EMBRACE)

From: Gladstone DJ  NEJM 2014; 370: 2467-77
Detection of AF after Cryptogenic Stroke Using 28-day MCOT Monitoring

- Retrospective cohort of 227 patients
- MCOT started median 64 days after stroke
- AF in 31 (14%) patients (3 with symptoms)
- AF Duration: ≥ 30 seconds 58%
  < 30 seconds 42%
- Age with / without AF: 69.1 vs. 61.9 yrs.  p = 0.005

From: Favilla CG Stroke 2015, DOI: 10.1161/STROKEAHA.114.007763
Use of Insertable Cardiac Monitor (ICM; REVEAL XT) to Detect AF in Patients after Cryptogenic Stroke (CRYSTAL AF)

- 441 patients randomized to ICM versus routine follow-up (control)
- Time from stroke to randomization was a mean 38 days
- AF at 6 months:
  - ICM 8.9%  p < 0.001
  - Control 1.4%

From: Sanna T NEJM 2014; 370: 2478-86
Atrial Fibrillation Detected by Implantable Cardiac Monitor in Patients With Cryptogenic Stroke (CRYSTAL AF)

C Detection of Atrial Fibrillation by 36 Months

Hazard ratio, 8.8 (95% CI, 3.5–22.2)
P<0.001 by log-rank test

No. at Risk
Control 220 194 167 114 72 36 7
ICM 221 191 173 102 57 29 8

From: Sanna NEJM 2014; 370: 2478-86
Temporal Relationship between subclinical AF (SCAF) and embolic events in **ASSERT**

- 51/2580 (2%) had stroke or systemic emboli (SE)
- Subclinical AF in 26/51 (51%)
- SCAF in 18 patients detected before stroke/SE
- 4/18 patients had SCAF w/n 30 days before event
- 14/18 patients had SCAF median 339 days pre event

From: Brambatti M Circulation 2014;129:2094-2099
Temporal Relationship of Atrial Tachyarrhythmias and Cerebrovascular Event or Systemic Emboli in TRENDS

• 40/2,486 (1.6%) patients with implantable PM/ICD had CVE/SE during follow-up

• AT/AF detected anytime prior to CVE/SE in 20 (50%) patients

• 9/20 (45%) patients had no AT/AF within 30 days prior to CVE/SE

• 6 patients had AT/AF at time of CVE/SE

• 14 patients had last episode of AT/AF 168±199 days (3-642 days) before CVE/SE

From: Daoud EG Heart Rhythm 2011; 8: 1416-23
Identification of AF BEFORE a stroke occurs
86 year old woman with syncope before, but not after, pacemaker implanted; 220 ATRs, longest 2.4 hours; No Sx
Take Your Pulse
Mass Screening for Atrial Fibrillation (STROKESTOP Study)

- Ongoing study to determine the value of AF screening in 75-year-old persons and anticoagulant therapy to reduce stroke over 5 years follow-up
- Monitoring with handheld ECG recorder (Zenicor)
- 30-second ECG rhythm strips twice daily for 2 weeks and with palpitations
- New AF detected in 218 (3%) of patients

From: Svennberg E Circulation 2015; 131: 2176-84
Prototype of Pulse Waveform Analysis Application (iPhone 4S)

From: McManus DD et al, J Cardiovasc Electrophysiol (in press)
Examples of RR Intervals and Pulse Beats

From: McManus DD et al, J Cardiovasc Electrophysioll (in press)