Atrial Fibrillation Occurring Transiently with Stress (AFOTS)

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AFOTS

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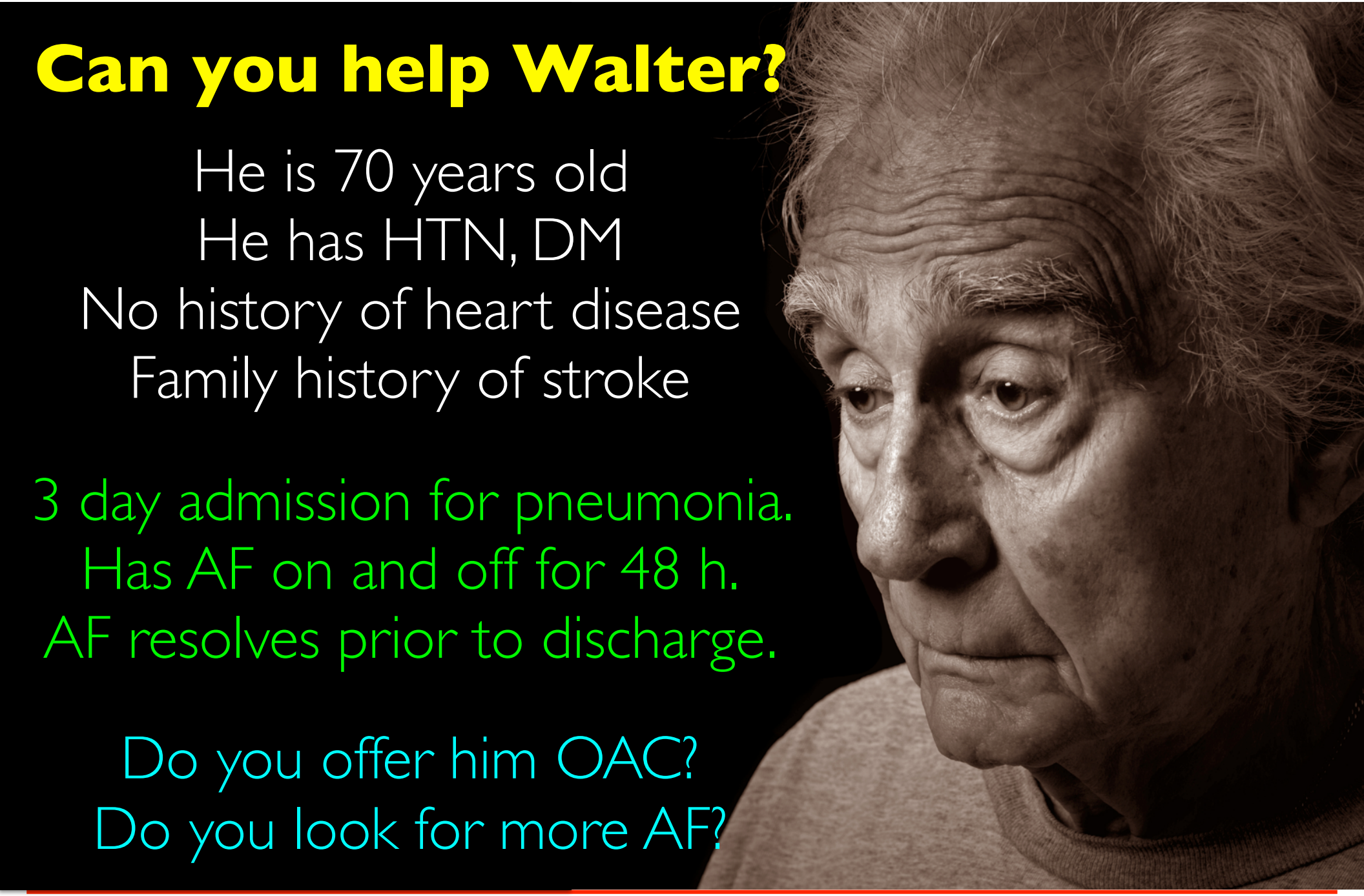
HEALTH THROUGH KNOWLEDGE

C-SPIN

Can you help Walter?



He is 70 years old
He has HTN, DM
No history of heart disease
Family history of stroke

3 day admission for pneumonia.
Has AF on and off for 48 h.
AF resolves prior to discharge.

Do you offer him OAC?
Do you look for more AF?

AFOTS

Atrial Fibrillation Occurring Transiently With Stress

AF Facts

Most Common Arrhythmia

Lifetime risk: 1 in 4

Major Cause of Death and Disability

15% of all strokes, 30% in patients over 80

Risk Modifiable with OAC

66%↓ stroke, 24%↓ death

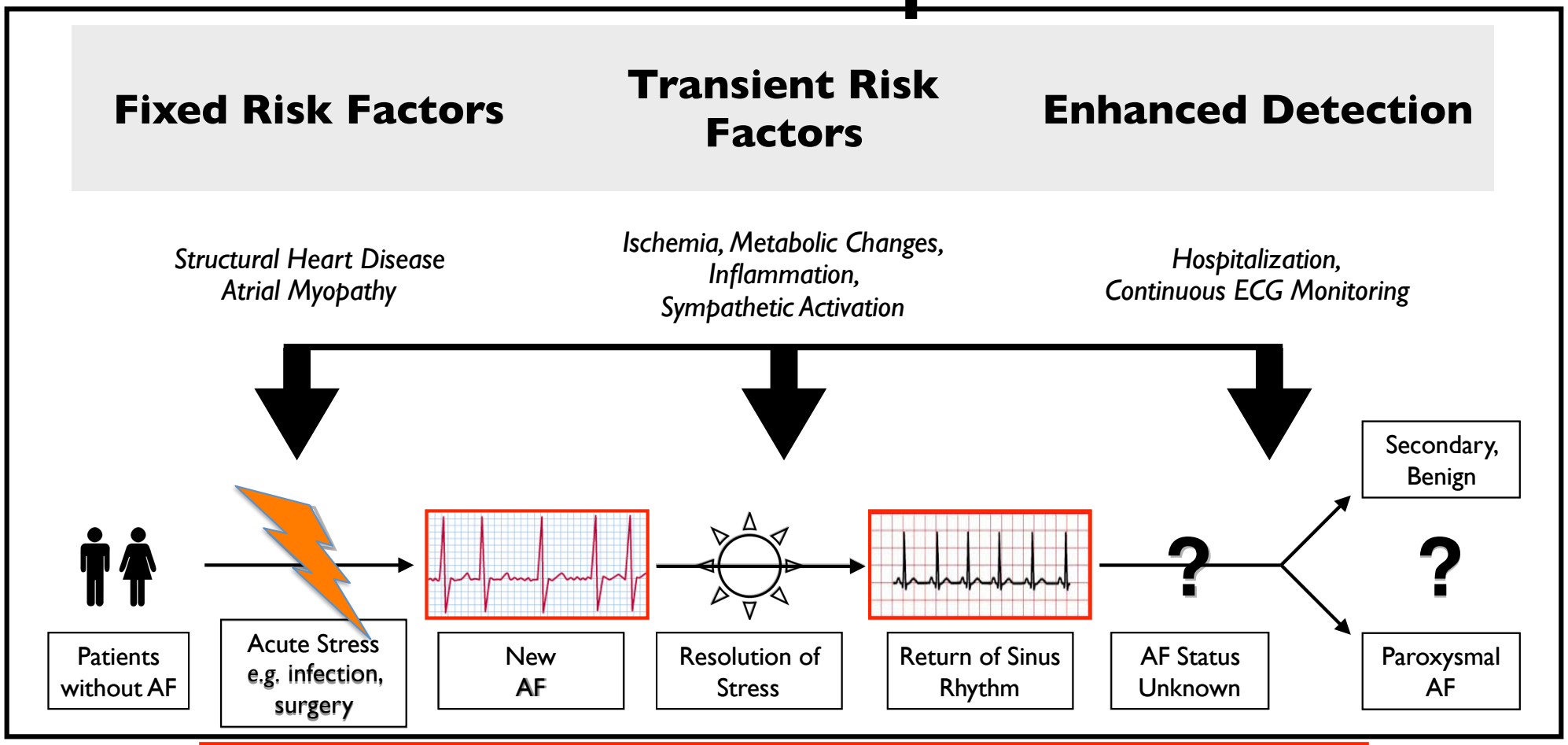
Frequently occurs in the setting of an acute stressor

Atrial Fibrillation Occurring Transiently With Stress

AFOTS

Andrade J, *et al. Circ Res* 2014;114:1453-68.
Wolf PA, et al. *Arch Int Med*, 1987. 147:1561-4.
Ruff CT, et al. *Lancet* 2014. 383:955-62.
Hart RG, et al. *Ann Int Med* 2007. 146:857-67.

AFOTS: Conceptual Model



Secondary to a reversible cause and therefore benign?

A first presentation of paroxysmal AF
and therefore associated with a risk of stroke?

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AFOTS: What we know

Stressor	Incidence	Recurrence	Long-Term Stroke Risk
Non-cardiac Surgery	0.004% to 50.3% Median 11.0% (IQR 4.0-17.2%)	0-34%	HR 2.0 (1.7-2.3) *Gialdini et al, JAMA 2014* *Admin Data*
Medical Illness	1-44%	17-44%	HR 1.2 (1.1-1.4) *Walkey et al, Chest 2014* *Admin Data*

Limitations of existing evidence:

Retrospective, not systematic, less sensitive

Likely underestimate true prevalence

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AFOTS: Important Questions

- What is the incidence and what factors affect it?
- What is the long-term rate of AF recurrence?
- How should we manage these patients?

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WILEY CLINICAL CARDIOLOGY

TRIAL DESIGNS

Design and rationale of the atrial fibrillation occurring transiently with stress (AFOTS) follow-up cohort study

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Hypotheses

1) Patients with AFOTS will have a higher future incidence of AF as compared to controls
2) The risk of AF after AFOTS will be sufficiently high (> 80%) to warrant routine assessment for OAC

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Study Population

Inclusion Criteria: AFOTS Cases

New AF w/ Illness

- Non-cardiac surgery
- Medical illness: infection, PE, thyrotoxicosis

Candidates for OAC

Inclusion Criteria: Controls

No AFOTS

Matched for Sex, Age, Unit where AF Detected (Proxy to Stressor)

Candidates for OAC

Key Exclusion Criteria

Prior History of AF

Acute MI/Acute CHF

Stage V CKD

In AF at Discharge

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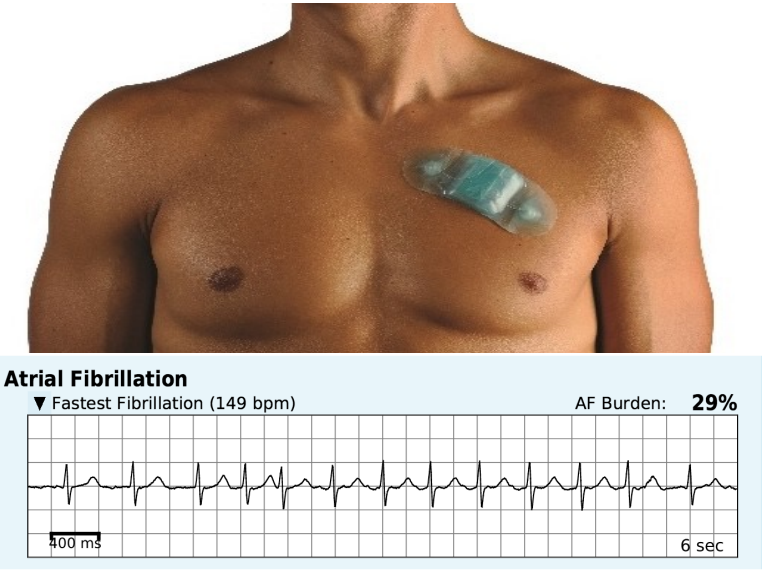
Patch ECG Monitoring



- 14 day
- non-invasive
- single-lead
- AF algorithms

Higher Yield vs Holter

AFOTS Study Protocol:
- prospective
- systematic
- prolonged (14 days)
- sensitive

Prior Studies:
- retrospective
- opportunistic
- 48 h Holter
- less sensitive

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Non-cardiac Surgery Cohort n=138
Medical Illness Cohort n = 138

Cases	Controls
AF With Stress n=69	Stress Without AF n=69

New AF: ≥30 s of telemetry or one 12-Lead ECG
Key Exclusion: Any documented history of AF prior to index hospitalization
Hospitalized for non-cardiac surgery:
(*i*.e. thoracic, abdominal, vascular, gastrointestinal, central nervous system, other)

↓

Enrolment	Demographics , Risk factors for Stroke and AF
1 & 6 month AF Detection	14-day Patch ECG Monitor
12 month Clinical Follow-up	Medical History Re-collected

↓

Primary Endpoint

Identification of recurrent AF by ambulatory monitor

- *irregular rhythm without visible p-waves ≥ 30 seconds*

OR Identification of AF by 12-Lead ECG outside of study protocol

Implications

Typical Tertiary Hospital				
Patients/Yr	**Incidence**	**AFOTS Cases**	**AF Recurrence**	**Expected Recurrence**
12000 Admissions 40% Medical/ICU	8.5%	408	45-80%	185-325

New Dx AF;
OAC Candidates

Potential Impact

Change practice in the management of AFOTS:

- If incidence of AF is ≥80% → OAC
- Guide post-discharge surveillance for AF
- Guide an RCT of OAC after AFOTS

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Baseline Demographics: Participants Enrolled to Date

TABLE 3 Baseline characteristics of AFOTS cases enrolled in the AFOTS follow-up cohort to date

	N = 90
Age in years (median [IQR])	76.50 (66.0-83.5)
Female sex (*n* [%])	47 (53.4)
CHA2DS2-VASC score (median [IQR])	3.00 (2.0-4.0)
Duration of AF in hours (median [IQR])	15.00 (3.0-51.0)
Method of cardioversion	
Spontaneous (*n* [%])	39 (50.6)
Electrical (*n* [%])	3 (3.9)
Pharmacological (*n* [%])	35 (45.5)
Discharged on OAC (*n* [%])	36 (40.9)
Primary diagnosis	
Non-cardiac surgery (*n* [%])	46 (51.1)
Neurosurgery (*n* [%])	3 (6.5)
Thoracic surgery (*n* [%])	6 (13.0)
Vascular surgery (*n* [%])	8 (17.4)
Urological surgery (*n* [%])	1 (2.2)
Digestive surgery (*n* [%])	8 (17.4)
Female reproductive surgery (*n* [%])	4 (8.7)
Orthopedic surgery/trauma (*n* [%])	11 (23.9)
Other surgeries (*n* [%])	3 (6.5)
Medical illness (*n* [%])	44 (48.9)
COPD exacerbation (*n* [%])	2 (4.5)
Pulmonary embolism (*n* [%])	2 (4.5)
Infection (*n* [%])	23 (52.3)
Bleed (*n* [%])	4 (9.1)
Acute kidney injury/rhabdomyolysis (*n* [%])	3 (6.8)
Hypertensive emergency (*n* [%])	2 (4.5)
Other[a] (*n* [%])	9 (20.5)

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Conclusions

- There is uncertainty about how to treat patients with atrial fibrillation that occurs transiently with stress (AFOTS) in the setting of acute non-cardiac illness

- Estimates of the incidence and recurrence rates of AFOTS vary widely - this is likely due to varying populations and methodology of ascertainment

- The AFOTS Research Program aims to generate sensitive estimates of the incidence and recurrence of AFOTS

AFOTS

Peer Reviewed Funding

Hamilton Health Sciences

Canadian Cardiovascular Society – Bayer Resident Vascular Award

CCS AF RESEARCH AWARD

C-SPIN

CIHR IRSC

Canadian Institutes of Health Research | Instituts de recherche en santé du Canada

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Questions?

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