AF and Heart Failure:
You should see my colleague?

Jeff Healey, MD, MSc, FRCPC, FHRS
Director, Division of Cardiology, McMaster University
Senior Scientist and Connolly Chair in Cardiology Research
Population Health Research Institute
Professor of Medicine and Yusuf chair, McMaster University
Hamilton, ON

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Management of Patients in ICD clinic

- Wound check
- Device check (thresholds, sensing)
- Device programming
- Management of:
  - Appropriate shocks (VT/VF): anti-arrhythmic drugs, ablation
  - Atrial Fibrillation: anti-arrhythmic drugs, ablation, ANTICOAGULATION
- What we do not do well:
  - HF management
  - Medication optimization

Prognostic Importance of Defibrillator Shocks in Patients with Heart Failure

Jeanne E. Poole, M.D., George W. Johnson, B.S.E.E., Anne S. Hellkamp, M.S., Jill Anderson, R.N., David J. Callans, M.D., Merritt H. Raitt, M.D., Ramakota K. Reddy, M.D., Francis E. Marchlinski, M.D., Raymond Yee, M.D., Thomas Guarnieri, M.D., Mario Talajic, M.D., David J. Wilber, M.D., Daniel P. Fishbein, M.D., Douglas L. Packer, M.D., Daniel B. Mark, M.D., M.P.H., Kerry L. Lee, Ph.D., and Gust H. Bardy, M.D.

The NEW ENGLAND JOURNAL of MEDICINE

Life and Death after ICD Implantation

Jeff Healey, M.D., and Stuart Connolly, M.D.

N ENGL J MED 359;10 www.NEJM.ORG SEPTEMBER 4, 2008

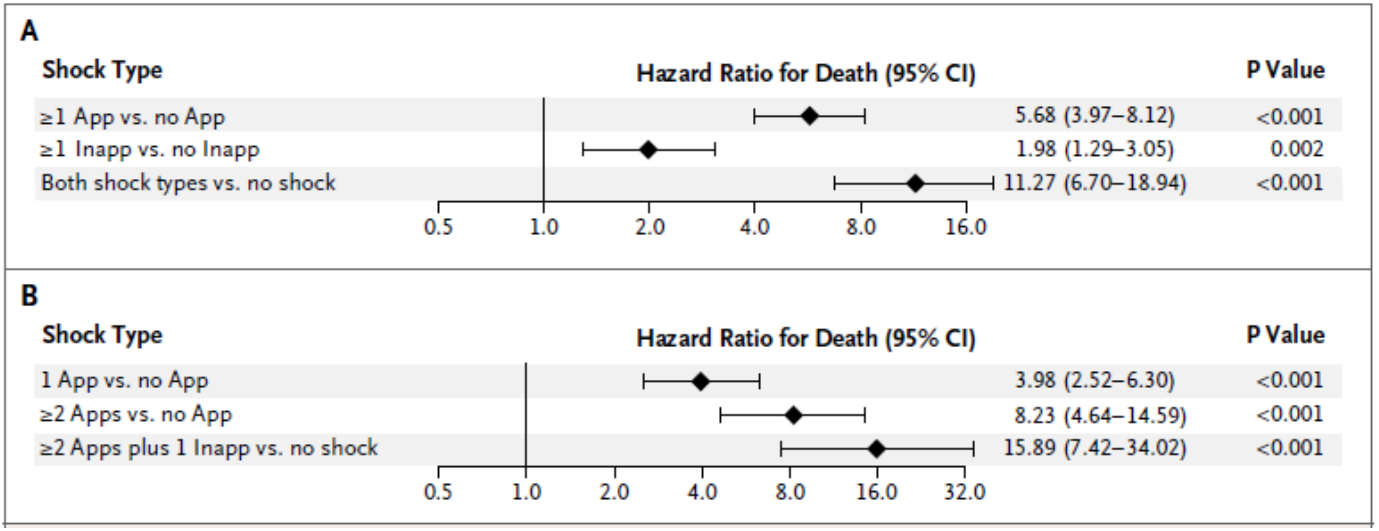


Table 2. Time from ICD Shock to Death among Patients Who Received at Least One Shock.*

Type of Shock	All Patients	Patients Who Died	Time from Shock to Death			Kaplan–Meier Survival Rate 1 Year after Shock
			Median	Interquartile Range	Full Range	
			days			%
Any shock	269	77	204	1–630	0–1872	82.5±2.4
One or more inappropriate shocks only	87	10	294	28–509	0–735	94.9±2.5
One or more appropriate shocks	182	67	168	1–797	0–1872	76.9±3.2
NYHA class II	117	31	206	1–977	0–1872	84.0±3.5
NYHA class III	65	36	168	7–626	0–1343	64.2±6.1
Ischemic heart failure	93	49	96	0–443	0–1872	62.6±5.2
Nonischemic heart failure	89	18	622	204–908	1–1785	91.6±3.0
First shock for ventricular fibrillation	77	33	3	0–622	0–1872	74.6±5.0
First shock for ventricular tachycardia	105	34	258	59–797	0–1785	78.5±4.2

Cause of death is HF in 40-50%

SCAF Progression Predicts HF

JA Wong. J Am Coll Cardiol 2019

Outcome	Subclinical Atrial Tachyarrhythmia Progression				Unadjusted Risk*			Multivariable Adjusted Risk*		
	Present		Absent							
	Events/ patients	%/year	Events/ patients	%/year	HR	95%-CI	p-value	HR	95%-CI	p-value
HF hospitalization	7/60	8.9	18/355	2.5	4.10	1.65 – 10.2	0.002	4.58	1.64 – 12.8	0.004
Any stroke	0/65	0	8/350	1.1	0.00	–	–	0.00	-	-
Vascular death	4/65	4.5	17/350	2.3	1.99	0.66 – 6.02	0.23	1.71	0.53 – 5.58	0.37
MI	1/65	1.1	3/350	0.4	2.40	0.21 – 27.1	0.48	1.94	0.15 – 25.1	0.61
Stroke/MI/Vascular death	5/65	5.7	24/350	3.3	1.55	0.58 – 4.15	0.38	1.51	0.53 – 4.35	0.44

Wong JA, et al. JACC 2018

Medical Therapy at time of ICD Implant

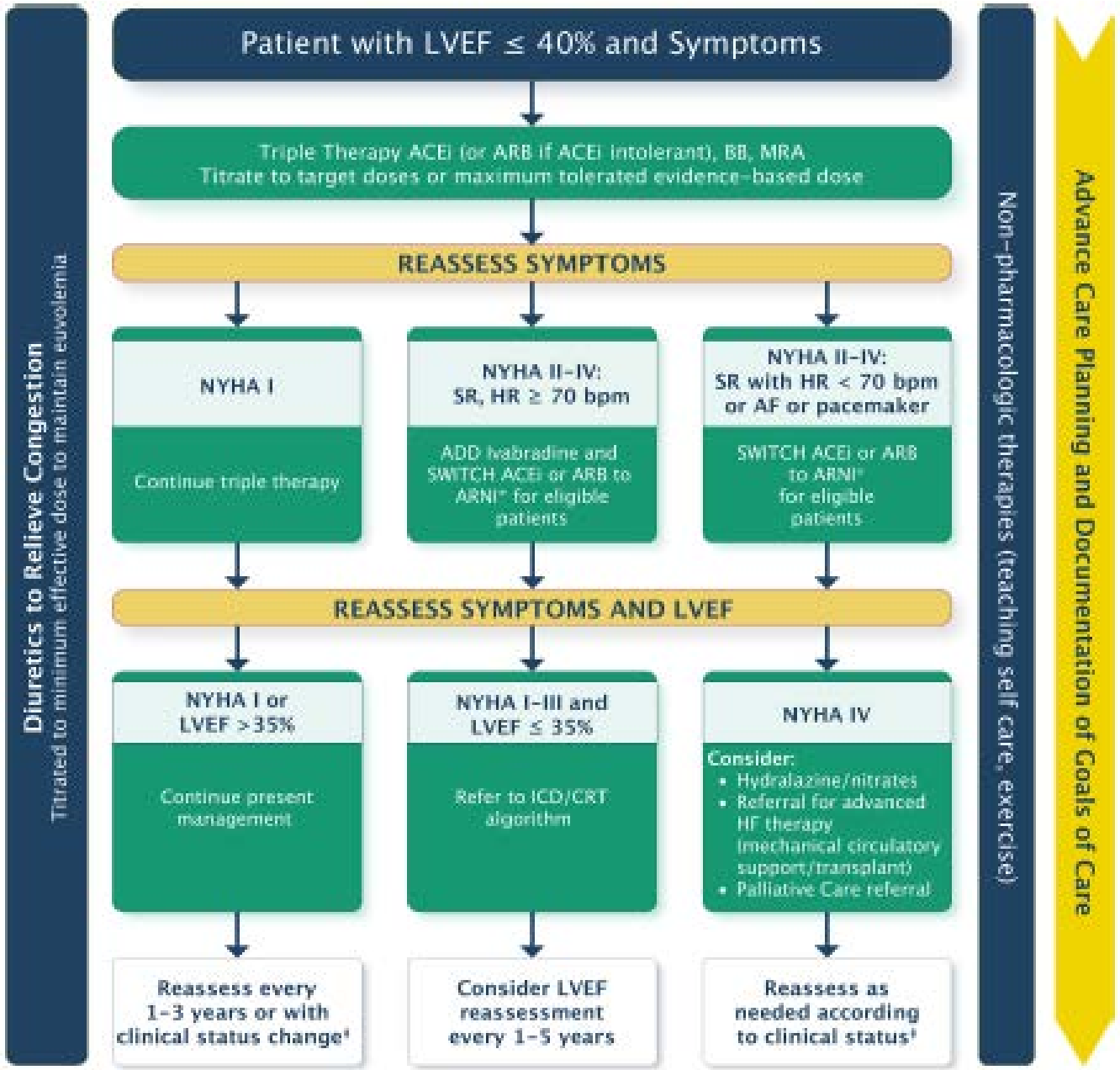
SIMPLE Trial Lancet 2015

	No defibrillation testing (n=1247)	Defibrillation testing (n=1253)
Age (years)	62·6 (11·5)	63·0 (11·7)
Male	1015 (81·4%)	1009 (80·5%)
ICD implanted for primary prevention	889 (71·3%)	924 (73·7%)
Coronary artery disease	821 (65·8%)	799 (63·8%)
Non-ischaemic dilated cardiomyopathy	392 (31·4%)	414 (33·0%)
Hypertrophic cardiomyopathy	42 (3·4%)	53 (4·2%)
Long QT, Brugada syndrome, or CPVT	24 (1·9%)	29 (2·3%)
Previous PCI or CABG	651 (52·2%)	622 (49·6%)
Heart failure class NYHA II	404 (32·4%)	410 (32·7%)
Heart failure class NYHA III	365 (29·3%)	387 (30·9%)
Left ventricular ejection fraction, %	31·6% (12·4)	32·0% (12·8)
History of atrial fibrillation	285 (22·9%)	299 (23·9%)
Persistent or permanent atrial fibrillation	141 (11·3%)	139 (11·1%)
Previous stroke or transient ischaemic attack	133 (10·7%)	127 (10·1%)
Amiodarone use	182 (14·6%)	190 (15·2%)
ACE inhibitor use	891 (71·5%)	888 (70·9%)
Angiotensin receptor blocker use	213 (17·1%)	205 (16·4%)
β-blocker use	1100 (88·0%)	1088 (86·8%)
Aldosterone antagonist use	479 (38·4%)	445 (35·5%)
No device implanted	11 (0·9%)	11 (0·9%)
Single chamber ICD implanted	569 (45·6%)	552 (44·1%)
Dual chamber ICD implanted	319 (25·6%)	324 (25·9%)
Resynchronisation ICD implanted	348 (27·9%)	366 (29·2%)
Right-sided device implant	15 (1·2%)	13 (1·0%)
Dual coil ICD lead	733 (58·8%)	717 (57·2%)
Implant R wave voltage mV	15·1 (6·3)	14·9 (6·2)

Real World: Hamilton 2017

- 371 consecutive CRT-D/P patients
- 37% had active HF symptoms
- Despite OMT at time of implant:
- Only 27% on optimal ACE/ARB/ARNI dose
- 25% on optimal beta-blocker dose
- 0% on optimal MRA dose
- Many had not seen a cardiologist or NP in past 6 months

Ezekowitz et al.
2017 CCS HF Guidelines Update



Prognosis Improving Therapy

ACE/ARB/ARNI
Beta-blocker
MRA
SGLT-2
Ivabradine
?Coronary revascularization
? IV iron
? HF clinic management
? Cardio-Mems, Heart Logic
? Non-invasive monitors

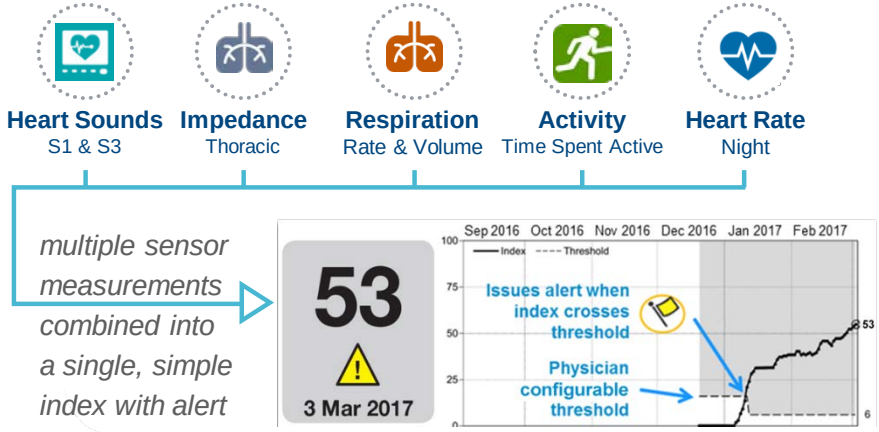
ICD-Base Physiologic Sensors: Heart Logic

HeartLogic™ shifts heart failure patient management from reactive treatment to **proactive care,** and was validated in the MultiSENSE Study to have:

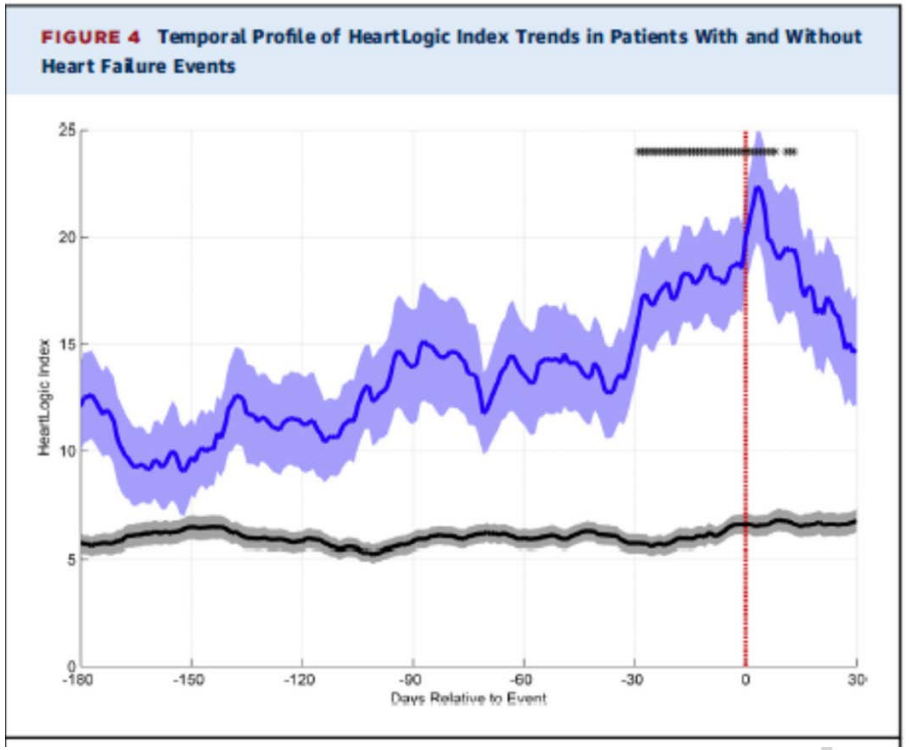
- **High sensitivity** of 70% for detecting heart failure events
- **Weeks of advance notice** of a potential heart failure event
- **Low burden** of less than 2 alerts per patient per year

MULTISENSE Trial: JP Boehmer JACC-HF 2018

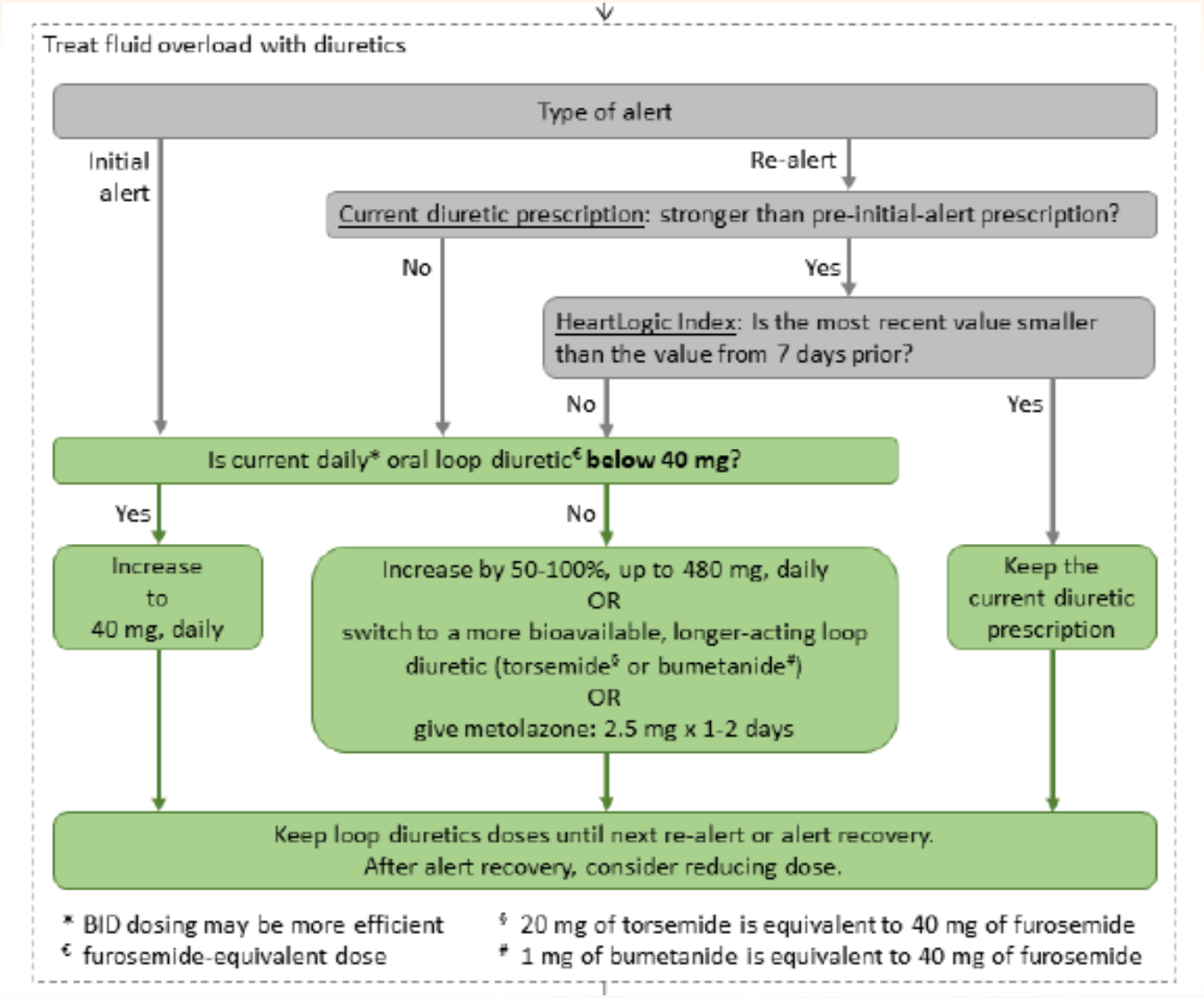
HeartLogic™ incorporates multiple sensors with a single composite alert



Boehmer, J et al., JACC-HF, 2017;5(3),2 1 6 – 2 5



Heart-Logic: MANAGE-HF Trial



Conclusions

- Heart failure is the main cause of death in ICD patients and is a major cause of hospitalization

- Maximizing guideline-indicated HF therapy in ICD patients can improve survival

- Most ICD clinics not configured to optimize HF therapy. HF clinic referrals and collaborative models are needed