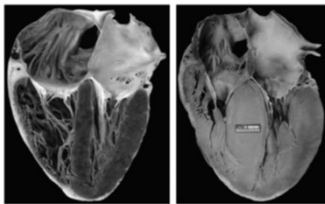
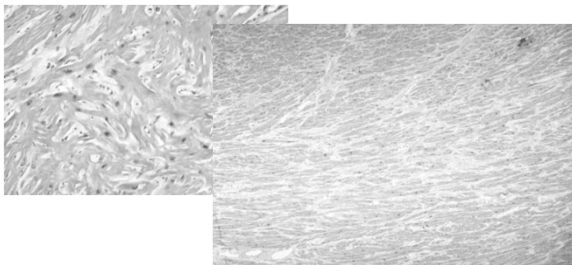




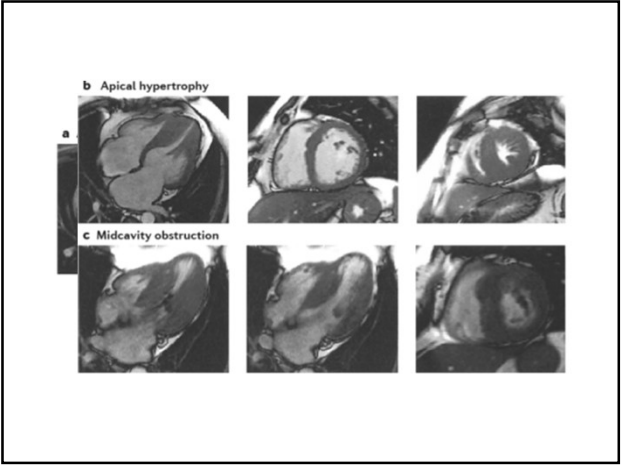
HCM: Risk Stratification by Echocardiogram, Cardiac MRI and other Modalities

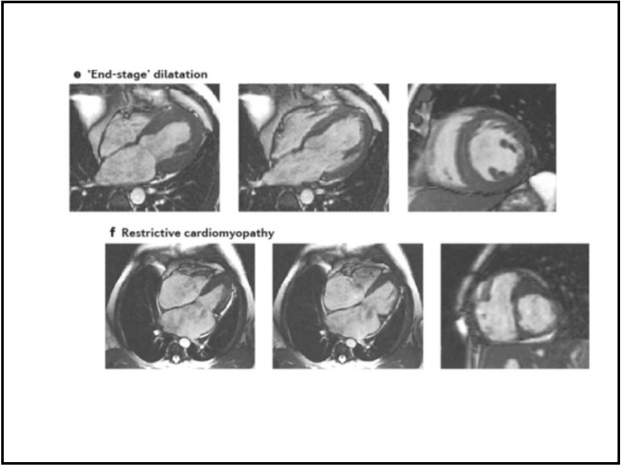
Dr Tang Hak Chiaw
Department of Cardiology
National Heart Centre Singapore

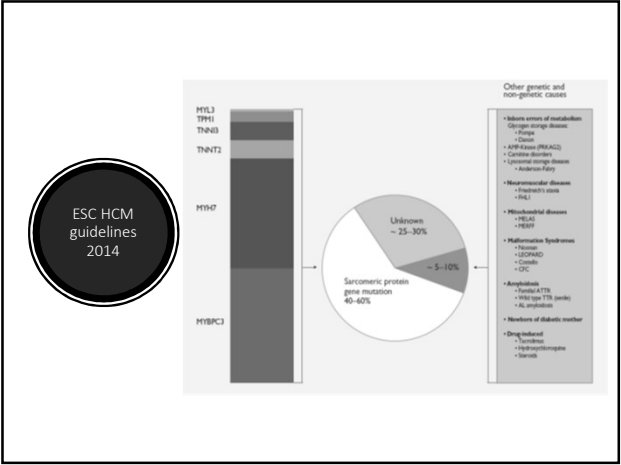




Disorganized myocardium/myofiber dysarray,
small-vessel disease, and fibrosis
(replacement/interstitial)

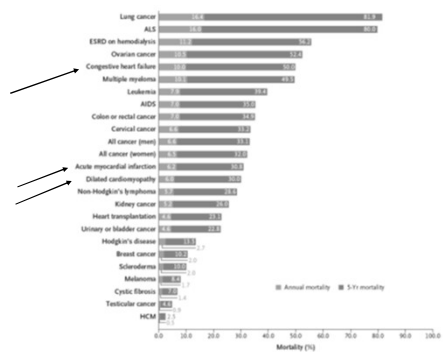


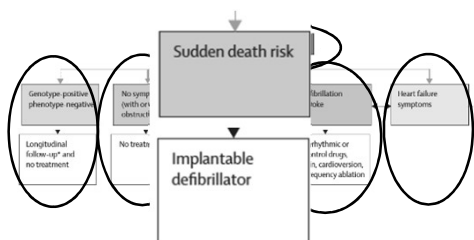




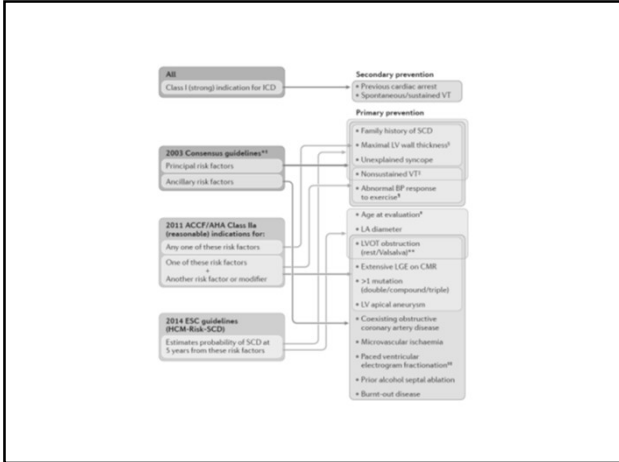


•Clinical course.....

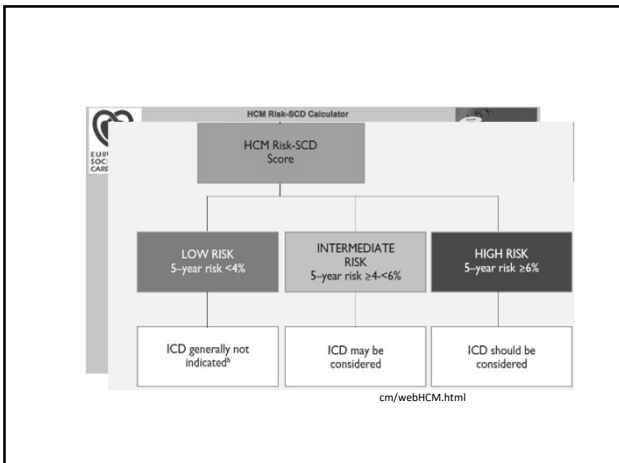




Maron et al Lancet 2013



• Other than cardiac arrest, each of the HCM risk factors has low positive predictive value (approximately 10% to 20%) and modestly high negative predictive value (85% to 95%).



• Cardiac imaging plays a crucial role in SCD risk stratifications.



Established Imaging Parameters as SCD risk Factors

- Maximal wall thickness >3 cm
 - Echocardiography, Cardiac MRI, Cardiac CT
- LVEF
 - Echocardiography, Cardiac MRI, Cardiac CT
- LVOT obstruction
 - Echocardiography, Cardiac MRI
- Apical aneurysm
 - Echocardiography, Cardiac MRI, Cardiac CT

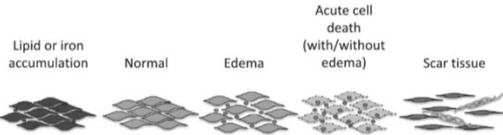
- Extent of LGE
 - Cardiac MRI

Newer Imaging parameter

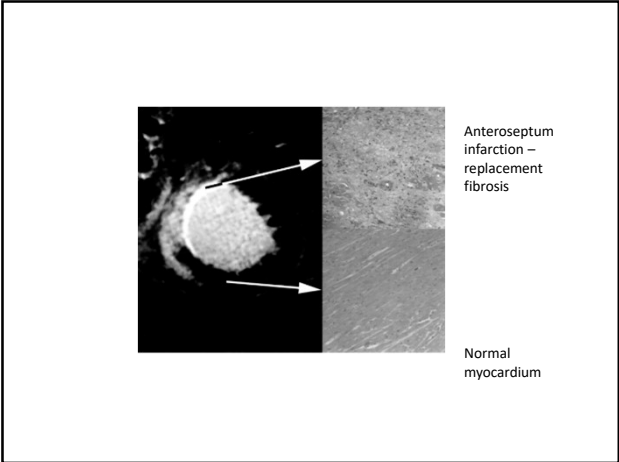
- GLPS

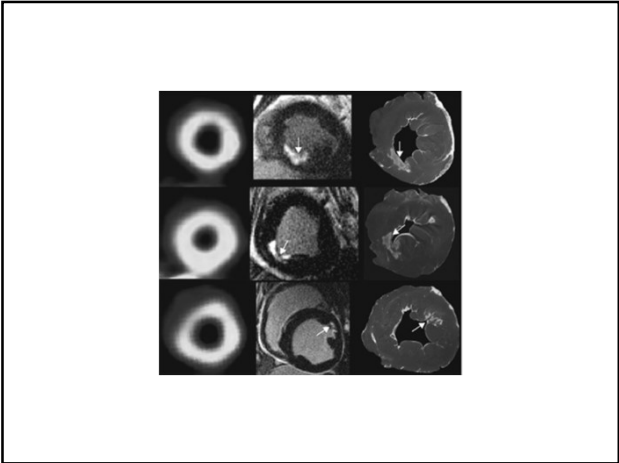
Strength of CMR

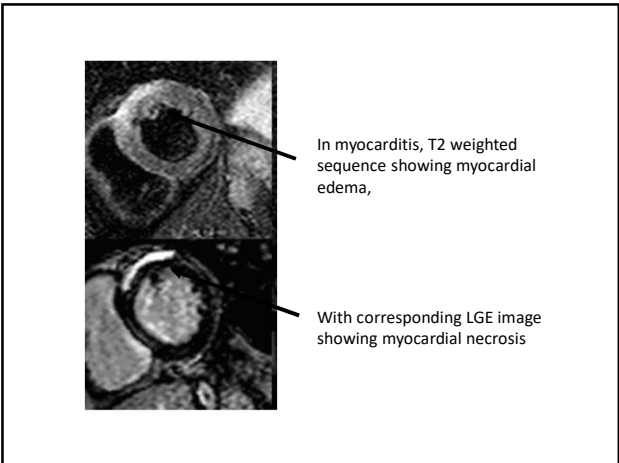
- Function
- Flow
- TISSUE CHARACTERIZATION

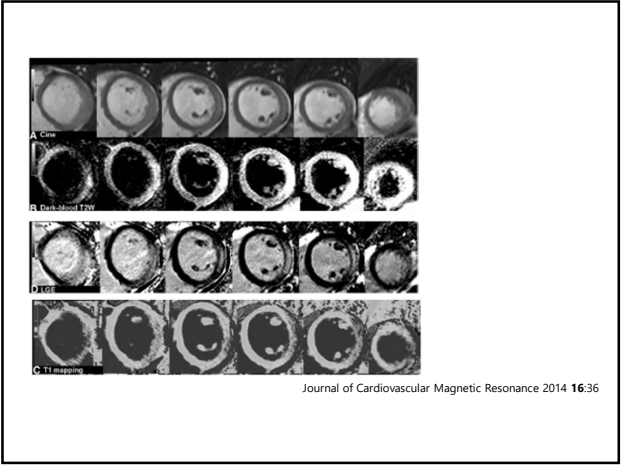


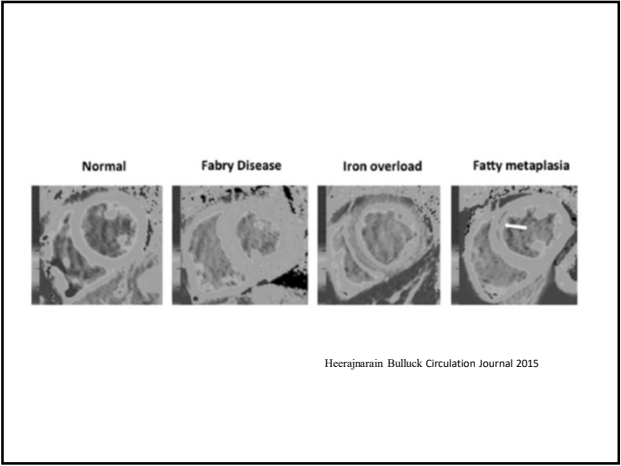
Circ Res. 2016;119:277-299











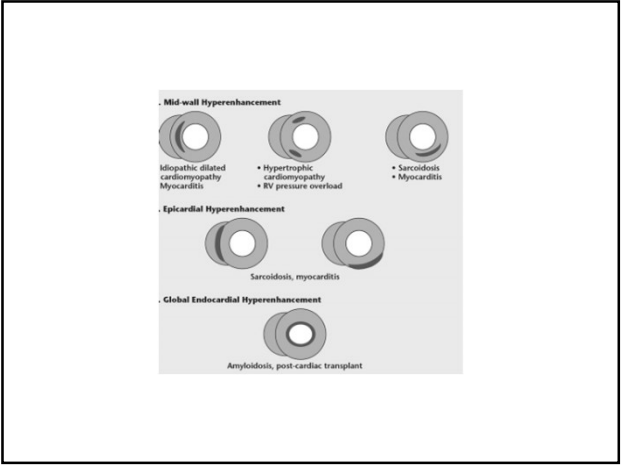
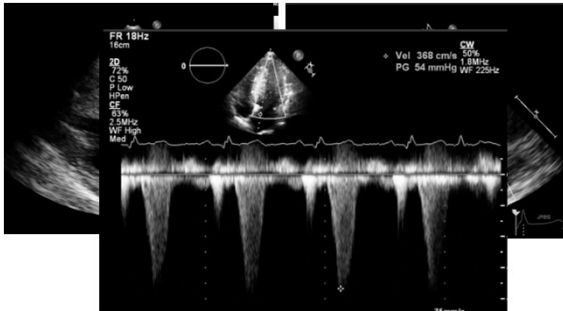
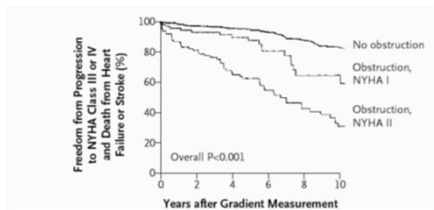


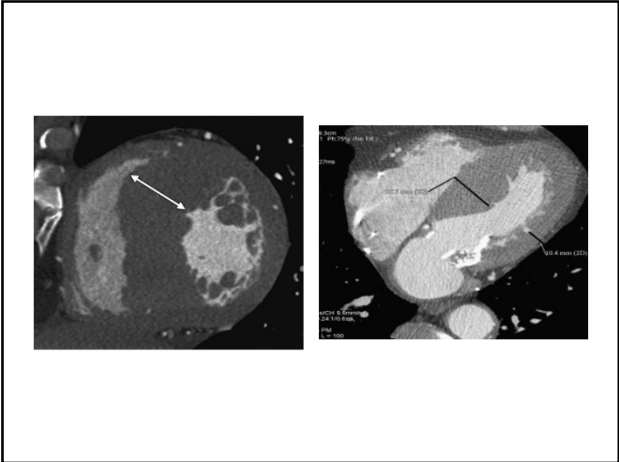
Table 3: Role of Imaging in HCM Risk Stratification

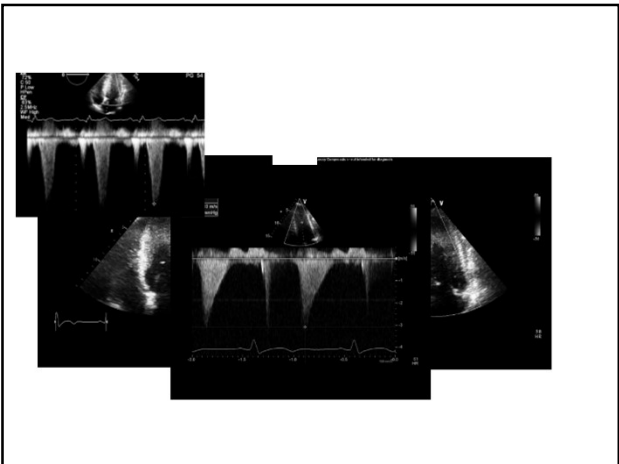
Risk Stratification Factor	Negative Prognostic Indicator
LV wall thickness	≥30 mm
Gradient across LVOT	≥30 mm Hg
Delayed enhancement	Represents fibrosis; presence and extent can be determined with MR imaging
LV ejection fraction	Decreased to <50% (burned-out phase)
Miscellaneous	LV apical aneurysms

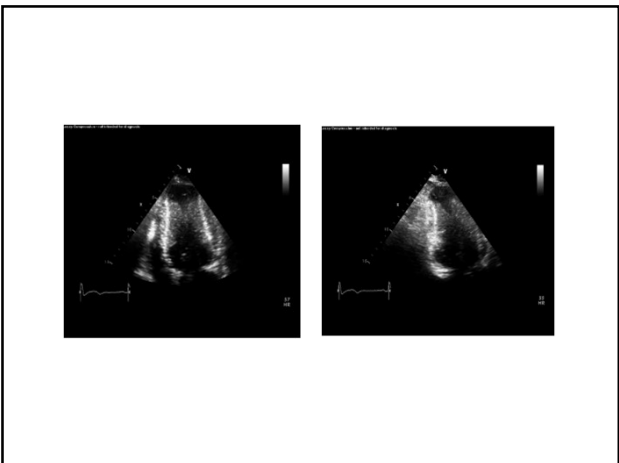


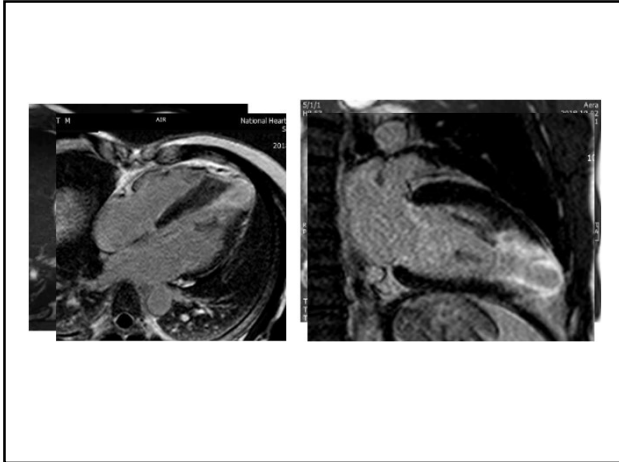


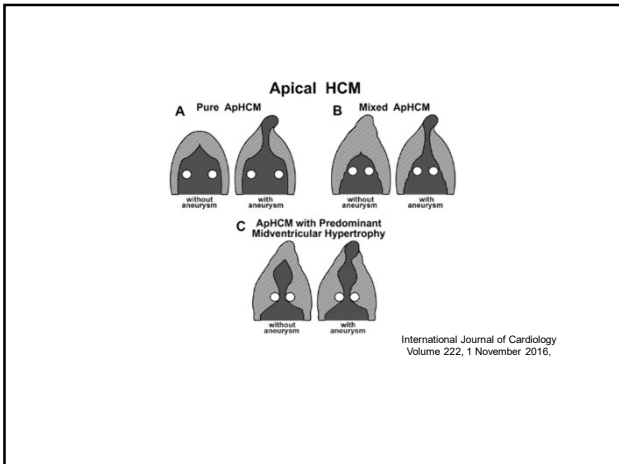
Martin B et. al. NEJM 2004

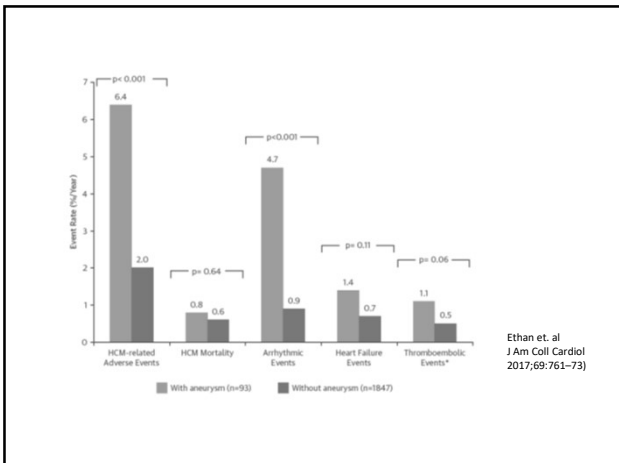


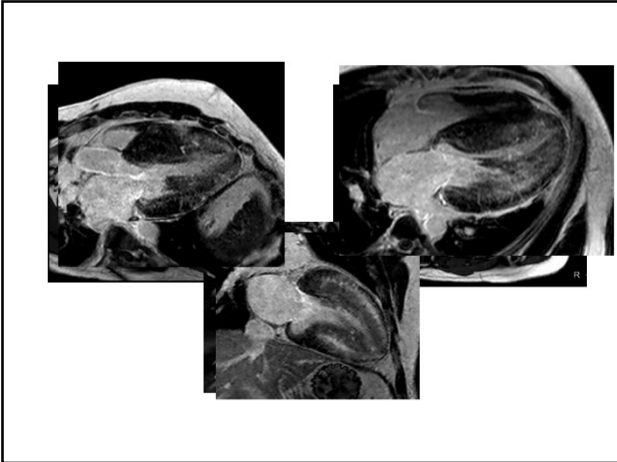












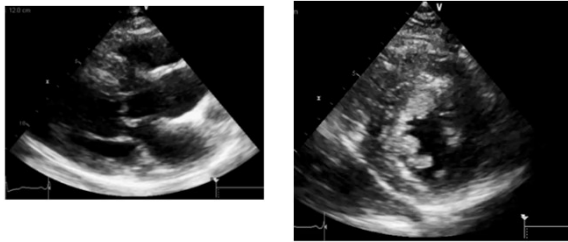
LGE, %	Pooled HR _{adjusted}	Point Estimate	95% CI
0	1.0		—
1	1.03		1.01-1.05
5	1.17		1.05-1.30
10	1.36		1.10-1.69
15	1.59		1.15-2.20
20	1.86		1.21-2.86
25	2.17		1.27-3.71
30	2.53		1.33-4.83
40	3.45		1.46-8.16

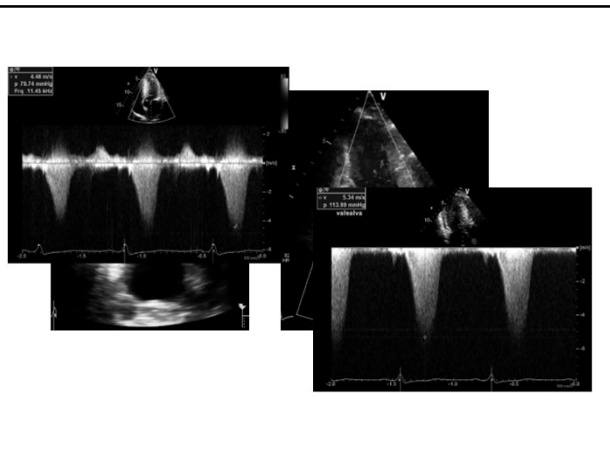
Bruder et al (2016)
 Rubinshvili et al (2019)
 Chan et al (2014)
 Hen et al (2014)
 Ismail et al (2014)

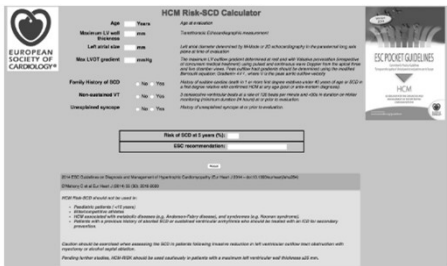
Zhen et. al J Am Coll Cardiol Img 2016;9:1392-402

Risk Stratification Factor	Negative Prognostic Indicator
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LV ejection fraction	Decreased to <50% (burned-out phase)
Miscellaneous	LV apical aneurysms

- 35 yr old c/o reduced effort tolerance for months.
- Diagnosed HCM at home country





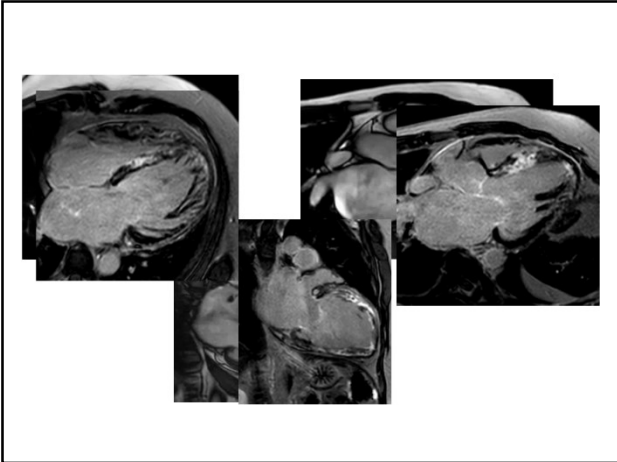


<http://www.doc2do.com/hcm/webHCM.html>

- 4.9 % SCD risk in 5 years (moderate risk; ESC 2014)
- No traditional risk factors for SCD (no f/h of SCD, no syncope, MWT below 3)

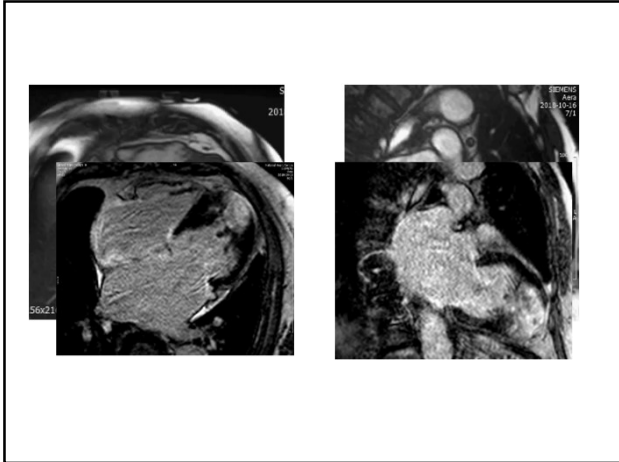
- No action
- ICD?
- Further imaging?

- 60 year old man presented with CCF
- Coros normal
- Referred as non-ischemic CMP.



- CCF treatment
- ICD

- 56 year old known apical HCM
- Presented with AF and heart failure

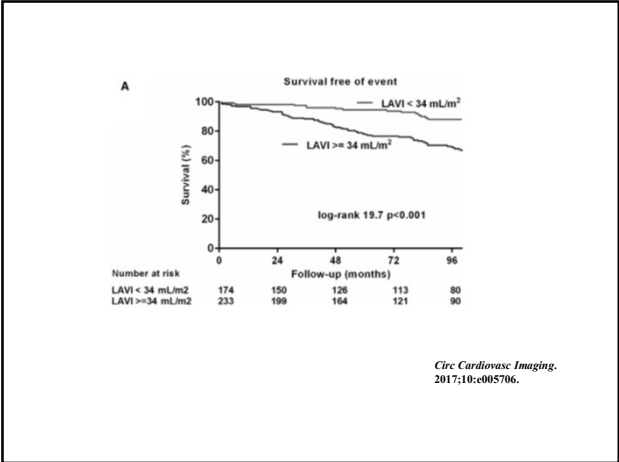


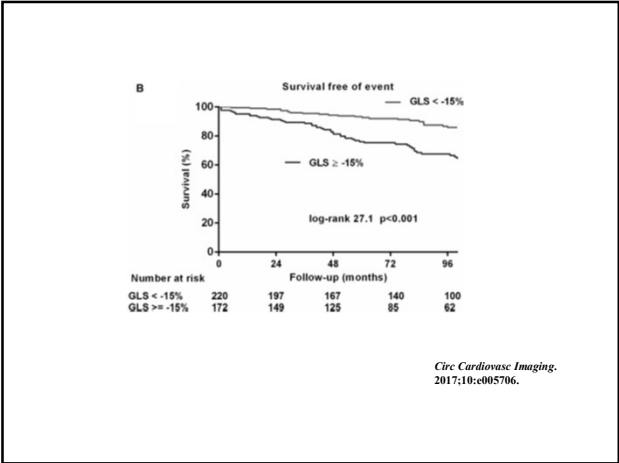
- 5 yr SCD risk 4.6 %
- No traditional risk factor for SCD (family history, syncope, MWT > 3 cm, NSVT)
- ?ICD

Enlarged Left Atrial Volume in Hypertrophic
Cardiomyopathy: A Marker for Disease
Severity

Hua Yang, MD, Anna Wos, MD, FACC, Daniel Monakier, MD, Michal Jamorski, RDCS,
Katie Febwick, BSc, E. Douglas Wigle, MD, FACC, and Harry Rakowski, MD, FACC
Toronto, Ontario, Canada

J Am Soc Echocardiogr 2005;18:
1074-1082.)





• Thank you
