



# LAA appendage occluders; a case for low income countries

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## A Fib in SSA

- AF is the most common sustained cardiac arrhythmia in the developed world, and its prevalence in Africa is expected to grow as risk factors for AF, including an aging population, increase in this region.

The epidemiology of cardiovascular diseases in sub-Saharan Africa: the Global Burden of Diseases, Injuries and Risk Factors 2010 Study. Moran A, Forouzanfar M, Sampson U, Chugh S, Feigin V, Mensah G. Prog Cardiovasc Dis. 2013 Nov-Dec; 56(3):234-9.



## AF in SSA



- The largest relative increase in cardiovascular disease burden between 1990 and 2010 in Sub-Saharan Africa was in AF

Moran A, Forouzanfar M, Sampson U, Chugh S, Feigin V, Mensah G. The epidemiology of cardiovascular diseases in sub-Saharan Africa: the global burden of diseases, injuries and risk factors 2010 study. *Prog Cardiovasc Dis.* 2013;56(3):234–239.



- It is estimated that by 2050, the prevalence of AF in Africa will be greater than in any other region of the world.

Rahman F, Kwan GF, Benjamin EJ. Global epidemiology of atrial fibrillation. *Nat Rev Cardiol.* 2014;11(11):639–654.

## AF is younger in Africa



- As a consequence of the higher prevalence of rheumatic heart disease, AF may affect people in Africa at a younger age than in the US or Europe.
- In RE-LY AF, Africa had the youngest median age of patients with AF (57.2 years, standard deviation [SD]: 18.8 for African patients vs 70.1 years, SD: 13.4 for North American patients).

Oldgren J, Healey JS, Ezekowitz M, et al. RE-LY Atrial Fibrillation Registry Investigators Variations in cause and management of atrial fibrillation in a prospective registry of 15 400 emergency department patients in 46 countries: the RE-LY Atrial Fibrillation Registry. *Circulation*. 2014;129(15):1568–1576.

### Selected risk factors for AF in African patients compared with the global population enrolled in a prospective registry of emergency department patients presenting with AF



Atrial fibrillation in Sub-Saharan Africa: epidemiology, unmet needs, and treatment options. *Int J Gen Med*. 2015; 8: 231–242

Bruce Sheldon Stambler and Leonard M Ngunga

	Africa	Overall
Number of patients with AF	1,137	15,400
Age, years, mean (SD)	57* (19)	66 (15)
Hypertension, %	54*	62
Previous stroke or TIA, %	14	14
Heart failure, %	64*	35
Diabetes mellitus, %	14*	22
Rheumatic heart disease, %	22*	2
CHADS <sub>2</sub> score, mean	1.8	1.8



- Permanent AF is the most prevalent type of AF among African individuals

Atrial fibrillation in Sub-Saharan Africa: epidemiology, unmet needs, and treatment options. [Int J Gen Med.](#) 2015; 8: 231–242

## LAA occluder therapy is good for Africa



- What happened to warfarin
- What happened to NOACs

## Warfarin



- Warfarin is effective at reducing stroke risk in patients with AF, provided that good anticoagulation control is achieved by maintaining the international normalized ratio (INR) in the therapeutic range for at least 60%–70% of the time
- Benefit of oral anticoagulant over antiplatelet therapy in atrial fibrillation depends on the quality of international normalized ratio control achieved by centers and countries as measured by time in therapeutic range. Connolly SJ, Pogue J, Eikelboom J, Flaker G, Commerford P, Franzosi MG, Healey JS, Yusuf S, ACTIVE W Investigators. *Circulation*. 2008 Nov 11; 118(20):2029-37.

## How is warfarin faring in Africa?



- Among the regions enrolled in the RE-LY AF registry, TTR was lower in Africa than in Europe or North America.
- Oldgren J, Healey JS, Ezekowitz M, et al. RE-LY Atrial Fibrillation Registry Investigators Variations in cause and management of atrial fibrillation in a prospective registry of 15 400 emergency department patients in 46 countries: the RE-LY Atrial Fibrillation Registry. *Circulation*. 2014;129(15):1568–1576



## What about Noacs?

### Reducing the Bleeding Risk

#### Intracranial Haemorrhage

Dabigatran 110 mg BID

Dabigatran 150 mg BID

Rivaroxaban 20 mg QD

Apixaban 5 mg BID

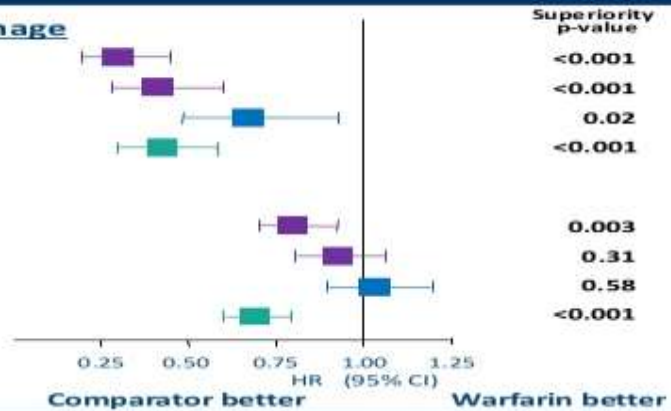
#### ISTH Major Bleeding

Dabigatran 110 mg BID

Dabigatran 150 mg BID

Rivaroxaban 20 mg QD

Apixaban 5 mg BID



Connolly *N Engl J Med* 2010; 363: 1876; Patel *N Engl J Med* 2011; 365: 883; Granger *N Engl J Med* 2011; 365: 981

## Major bleeding in Africa?

- Does it have the same outcomes as developed countries????





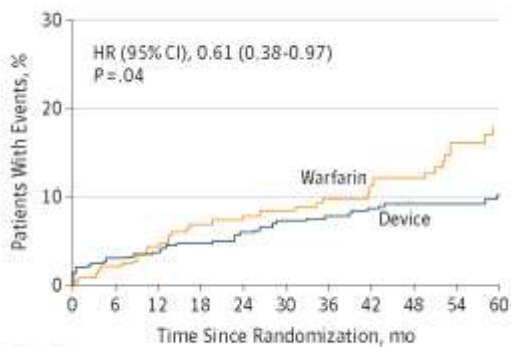
## Why LAA occluder then?



## Protect AF Watchman vs Warfarin

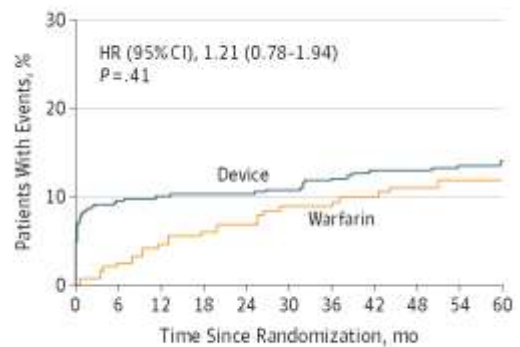


**A** Primary efficacy end point



No. of patients	
Device	463 398 382 370 360 345 337 327 317 285 196
Warfarin	244 230 218 210 200 188 173 159 147 121 87

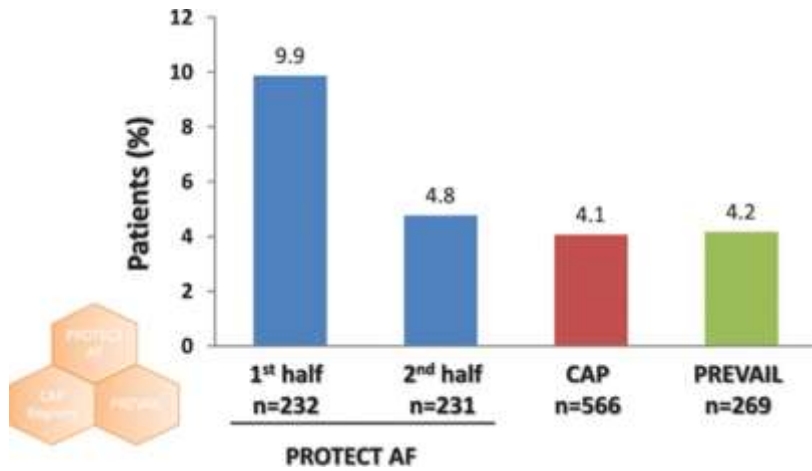
**B** Primary safety end point



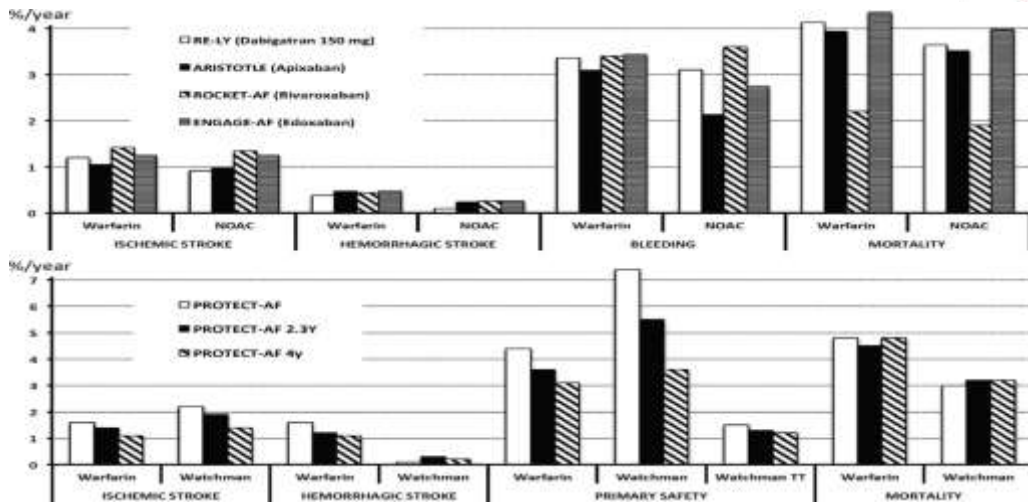
Device	463 376 364 357 353 341 332 320 310 277 190
Warfarin	244 228 214 207 195 183 169 153 139 117 86



# Safety events ( at 7 days) with Watchman



# LAO vs warfarin vs NOACs





## More devices in the market



Limbre™ LAA Closure System

## Why LAAO in Sub-Saharan Africa?

- AF is there and growing
- Difficulties with warfarin and INR f/u
- NOAC are still expensive and patients still bleed
- Complications drop with experience
- Prices will drop with more devices