



**Watchman Asia Pacific Study(WASP):**  
**A Prospective 7 Country Multicentre Cohort Study,**  
**1 Year Results**  
**(with comparative data from Asian Studies)**

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# Potential Conflicts Of Interest

Speaker's name : **Teguh, Santoso, Jakarta**

I do not have any potential conflict of interest

# Facts About Atrial Fibrillation

People with atrial fibrillation (AF) have **5 times the risk of stroke** compared to people without AF<sup>1</sup>

AF-associated ischemic strokes generally occlude **large intracranial arteries** depriving a **more extensive region** of the brain of blood flow<sup>2</sup>

Stroke is **more severe** for patients with AF, as they have a **70% chance of death or permanent disability**<sup>1</sup>

Compared with non-AF patients, AF patients have **poorer survival & more recurrences** of stroke during the **1<sup>st</sup> year** of follow-up<sup>3</sup>

<sup>1</sup>Holmes DR. Seminars in Neurology. 2010;30:528–536

<sup>2</sup>Tu HT et al, Cerebrovascular Disease. 2010;30(4):389-95

<sup>3</sup>Patel et al, Cardiol Res Pract. 2012; 2012: 610-27

# AF Poses A Considerable Threat To Public Health *In Asia*

## AF in China

In community-based studies, the overall AF prevalence varied from 0.8% to 3.7%<sup>1,2</sup>

In hospital-based studies, the AF prevalence rate might be as high as 7%<sup>1</sup>

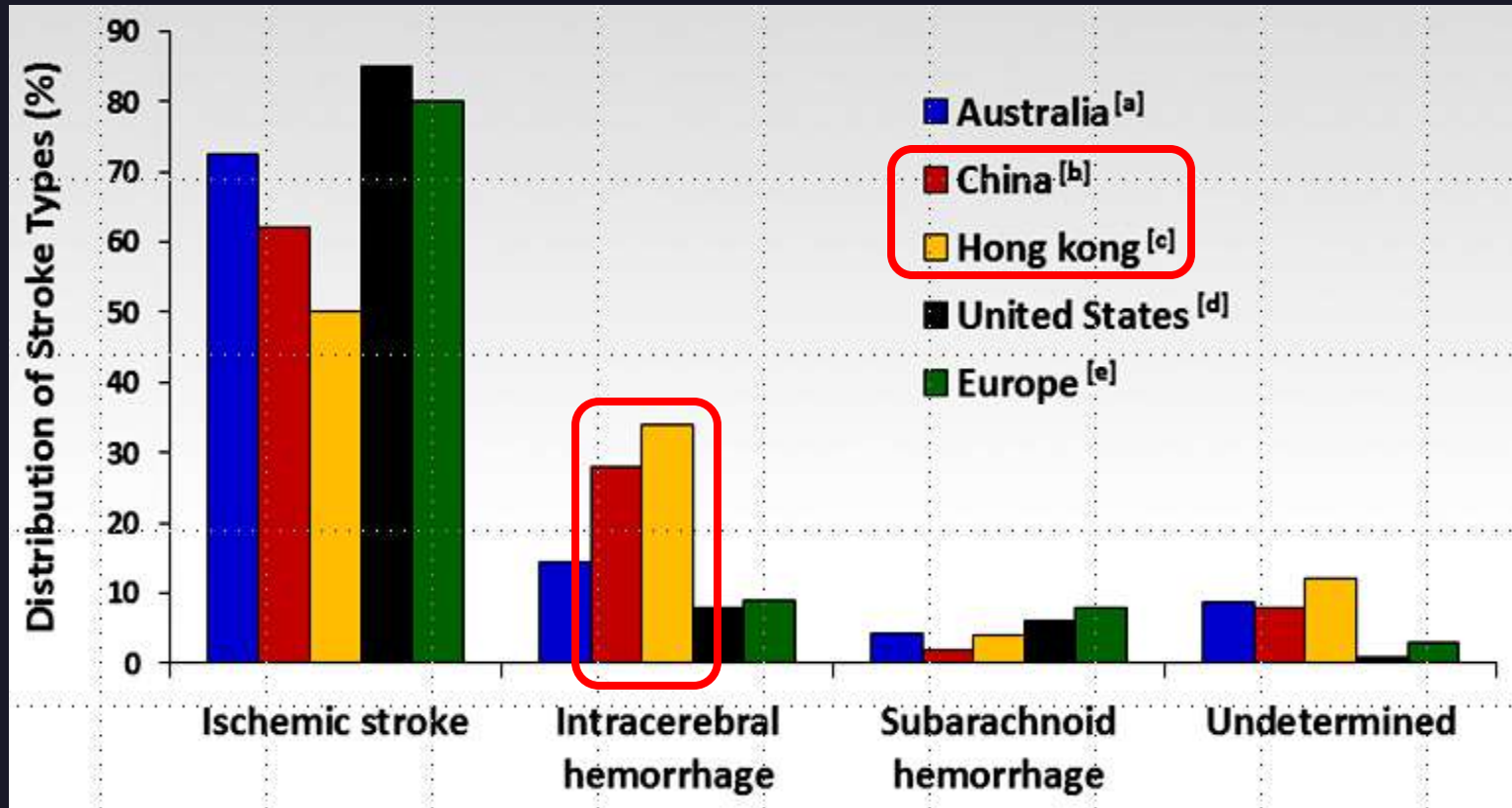
The **stroke rate** in Chinese **AF patients ranged from 6% to 13%**<sup>3,4</sup>

Large-cohort study also reported a **increasing trend in the incidence of AF and AF-related stroke** over the past decade<sup>3</sup>

Despite the high stroke incidence, **only 4.1% of Chinese pts with AF are currently under warfarin** therapy<sup>1-3</sup>

**AF patients taking warfarin did not have lower stroke rate** compared to patients taking Aspirin, probably due to a poor INR control<sup>5</sup>

# Stroke Subtypes By Different Geographic Regions



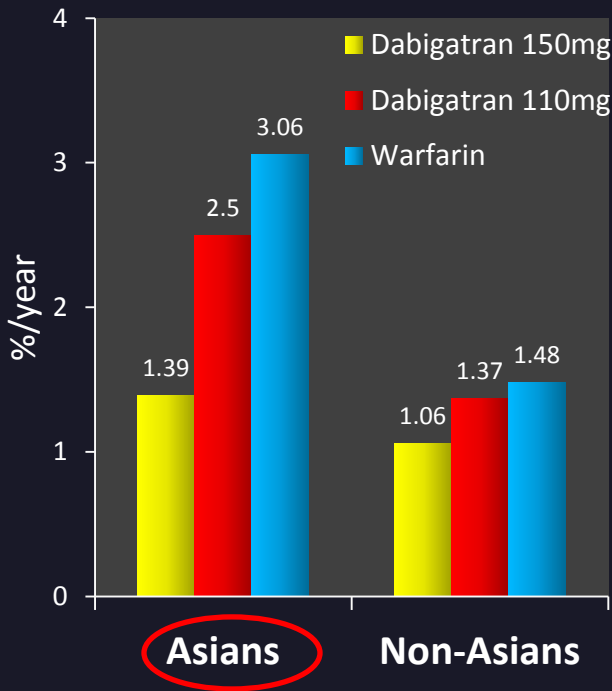
***Intracerebral hemorrhage***, relative to other stroke subtypes, is much greater in Asian-Pacific countries vs. Western regions (i.e.: USA & Europe)

a. Thrift AG, et al. Neuroepidemiology. 2009;32:11-8; b. Zhang LF, et al. Stroke 2003;34:2091-6;

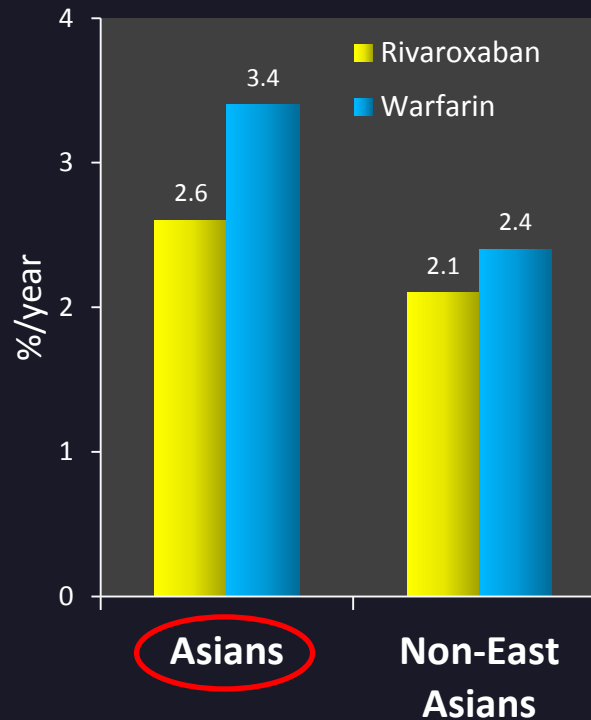
c. Chau PH, et al. Cerebrovasc Dis 2011;31:138-46; Gross CR, et al. Stroke 1984;15:249-55; e. Sivenius J, et al. Stroke 1985;16:188-92

# Annual Risk of Stroke & Systemic Embolization for *Asians & Non-Asians* in 3 Clinical Trials of NOAC

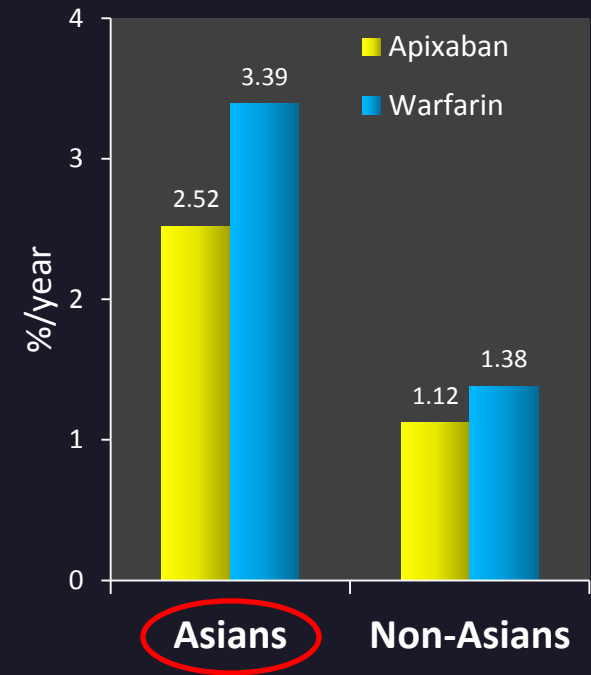
RE-LY trial & RE-LY Asia sub-analysis



ROCKET AF trial & ROCKET AF East Asia sub-analysis



ARISTOTLE trial & ARISTOTLE Asia sub-analysis



**Big issue:** higher risk of stroke & systemic embolization in Asian patients on (N)OAC

# Guidelines & Recommendations On LAA Closure With The Watchman Device™

Guideline	Recommendation to consider LAAC	Class	Level of evidence
ESC AF Guideline 2016 <sup>1</sup>	Pts with <b>high stroke risk &amp; contraindication for long term OAC</b>	<b>IIb</b>	<b>B</b>
EHRA/EAPCI 2014 <sup>2</sup> LAAC Expert Consensus	Pts with <b>high bleeding risk (HASBLED &gt; 3), contraindications for (D)OACs</b> or based on informed <b>pts preference</b>	<b>NA</b>	<b>NA</b>
ESC/EACTS Guidelines on Myocardial Revascularization 2014 <sup>3</sup>	Pts with <b>high stroke risk who are contraindicated for long term antiplatelet &amp; OAC therapy</b>	<b>IIb</b>	<b>B</b>
AHA/ASA 2014 Stroke Guidelines <sup>4</sup>	Pts with <b>high stroke risk</b> who are <b>unsuitable for anticoagulation</b>	<b>IIb</b>	<b>B</b>
FDA label (March 2015)	Non-valvular AF pts <b>eligible for OAC</b> who have an appropriate reason to <b>seek a non-pharmacological alternative to warfarin</b>		

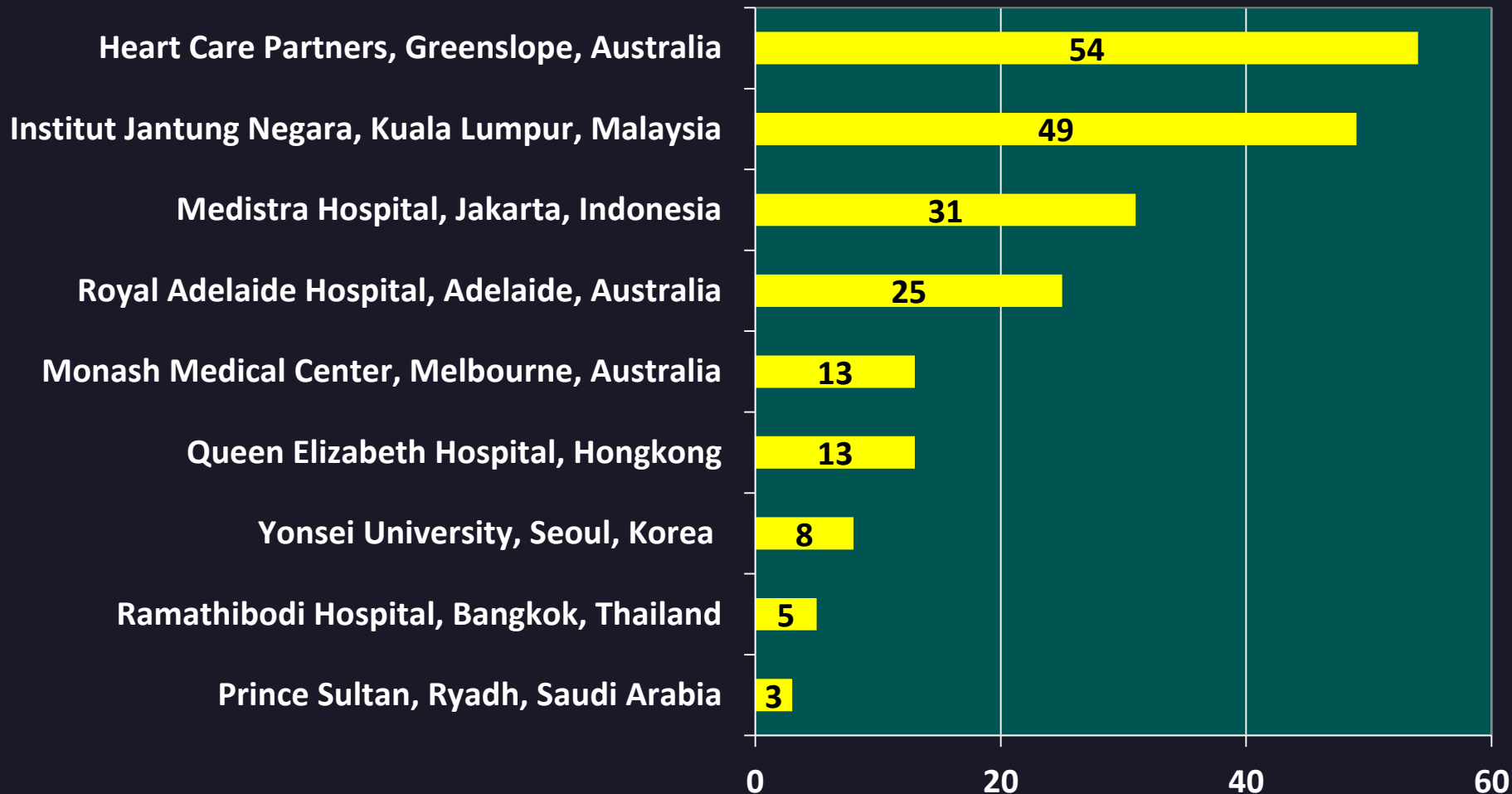
(D)OACs: (direct) oral anticoagulants; OAC: oral anticoagulation; NA: not applicable

1. Kirchhof P, et al. European Heart Journal (2016) 37, 2893–2962;
2. Meier B, et al. EuroIntervention 2014;10: 1109-1125;
3. Windecker S, et al. Eur Heart J 2014;35:2541-2619;
4. Meschia JF, et al. Stroke 2014;45:3754-3852;
5. Maisel WH. Available at: [http://www.accessdata.fda.gov/cdrh\\_docs/pdf13/P130013a.pdf](http://www.accessdata.fda.gov/cdrh_docs/pdf13/P130013a.pdf).

# WATCHMAN™ Asia Pacific Study (WASP)

## Asia Pacific Prospective Multicentre Non-randomized Cohort Study\*

201 pts enrolled between January 2014 and October 2015 across 7 countries



\* ClinicalTrials.gov (NCT01972295)



# WATCHMAN™ Asia Pacific Study (WASP)

## Asia Pacific Prospective Multicentre Non-randomized Cohort Study\*

	<b>Asian N=106</b>	<b>Non Asian N=95</b>	<b>P value</b>
Age	70.7 ± 9.4	70.9 ± 9.4	0.89
Age >80 yrs old	14.2%	16.8%	0.70
Male	63.2%	71.6%	0.23
<b>CHA<sub>2</sub>DS<sub>2</sub>-VASc score</b>	<b>4.1 ± 1.7</b>	<b>3.7 ± 1.6</b>	<b>0.15</b>
<b>HAS-BLED score</b>	<b>2.2 ± 1.4</b>	<b>2.1 ± 1.0</b>	<b>0.74</b>
<b>HAS-BLED score ≥ 3</b>	<b>34.0%</b>	<b>27.4%</b>	<b>0.36</b>
CHF	20.8%	10.5%	0.055
Hypertension	83.0%	83.2%	1.0
<b>Diabetes</b>	<b>46.2%</b>	<b>18.9%</b>	<b>&lt; 0.001</b>
<b>History of TIA/stroke</b>	<b>30.2%</b>	<b>46.3%</b>	<b>0.02</b>
<b>Vascular disease</b>	<b>38.7%</b>	<b>23.2%</b>	<b>0.02</b>
Prior major bleeding	19.8%	17.9%	0.86
Paroxysmal AF pattern	53.8%	46.8%	0.40

# WATCHMAN™ Asia Pacific Study (WASP)

## 30 Day Procedural Complications

Device/procedure related post implant SAEs	Asian No of events	Non Asian No of events
Pericardial effusion requiring intervention	2	0
Hypotension	0	1
Vascular access major bleeding	0	1
Pulmonary edema	0	1
Oesophageal tear due to implant TEE causing death day 32	1	0
Femoral AV fistula	1	0
Device embolization	0	0
Stroke	0	0

Device/procedure related post implant SAEs	Asians KM event rate	Non Asian KM event rate	All pts KM event rate
Kaplan-Meier event rate 7 days	2.9% (0.8, 7.5%)	3.2% (0.9, 8.3%)	3.0% (1.2, 6.1%)
Kaplan-Meier event rate 30 days	3.8% (1.3, 8.8%)	3.2% (0.9, 8.3%)	3.5% (1.6, 6.8%)

# WATCHMAN™ Asia Pacific Study (WASP)

## 12 Month Serious Bleeding Events

Bleeding event	Asian (n=106) No of events	Non Asian (n=95) No of events
Vascular access major bleeding	0	1
Gastrointestinal bleeding	2	3
Menorrhagia	1	0
Varicose vein bleeding	0	1
Traumatic knee hematoma	0	1

Post-implant Bleeding SAEs	Asians KM event rate	Non Asian KM event rate	All pts KM event rate
Kaplan-Meier <b>ALL</b> bleeding event rate 30 days	1.0% (0.1, 4.8%)	4.3% (1.4, 9.8%)	2.5% (1.0, 5.5%)
Kaplan-Meier <b>ALL</b> bleeding event rate 365 days	2.9% (0.7, 8.1%)	6.5% (2.6, 12.9%)	4.6% (2.2, 8.4%)
Kaplan-Meier <b>MAJOR</b> bleeding event rate 30 days	0%	3.2% (0.9, 8.3%)	1.5% (0.4, 4.1%)
Kaplan-Meier <b>MAJOR</b> bleeding event rate 365 days	1.0% (0.1, 5.2%)	5.4% (1.9, 11.5%)	3.1% (1.2, 6.4%)

# WATCHMAN™ Asia Pacific Study (WASP)

## Efficacy Outcome At 12 Months – Stroke / Systemic Embolism

Stroke / Systemic Embolism Events	Asian No of events	Non Asian No of events	Days post implant
Left ischaemic CVA complicating oesophageal tear/sepsis – death day 32	1		6
Small ischemic CVA - recovered		1	39
Small MCA territory ischaemic CVA - recovered	1		212
Left frontal gyrus ischemic CVA - recovered		1	329

**12 Month Stroke/TIA /Systemic Embolism  
KM Event Rate = 2.1% (0.7, 5.1)**

**EWOLUTION Study\*: 3 Month Ischemic Stroke  
KM Event Rate = 0.4%**

- Real world data from 1005 pts, at 47 European centres;  
**73.5% of the pts were deemed contraindicated for long-term OAC therapy**

# WATCHMAN™ Asia Pacific Study (WASP)

## Efficacy Outcome At 12 Months – Mortality

Deaths	Asian No of events	Non Asian No of events	Days post implant
Sepsis complicating oesophageal tear	1		32
Liver malignancy	1		97
Septic shock – systemic infection	1		122
Thymus cancer	1		129
Cardiac arrest - unexplained	1		153
Delirium – old age		1	153
Old age	1		185
Sepsis – systemic infection	1		199
Septic shock – severe pneumonia	1		258
Renal insufficiency	1		259

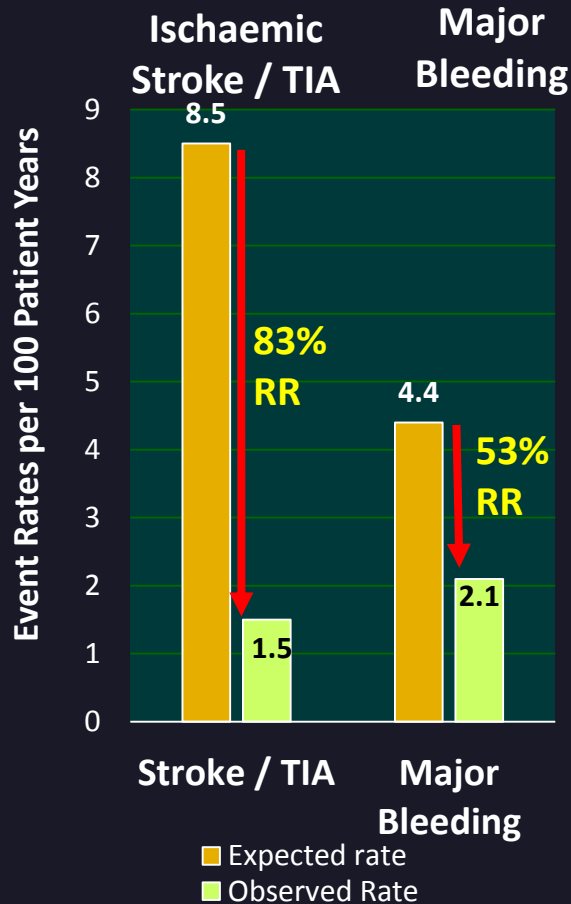
**12 Month Mortality Rate = 5.1%**

**Device Or Procedure Related Mortality Rate = 0.5%**

# WASP

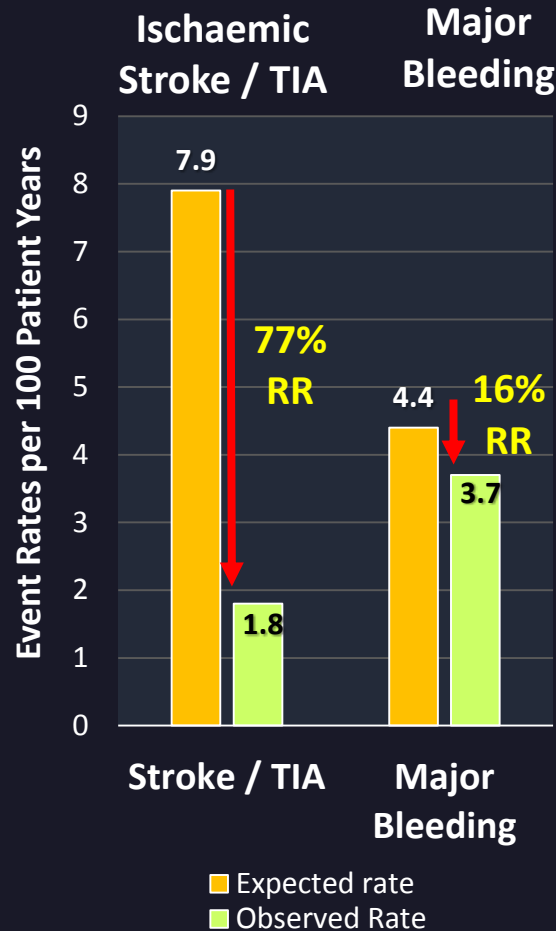
## Expected vs Observed Event Rates per 100 Patient Years

### ALL



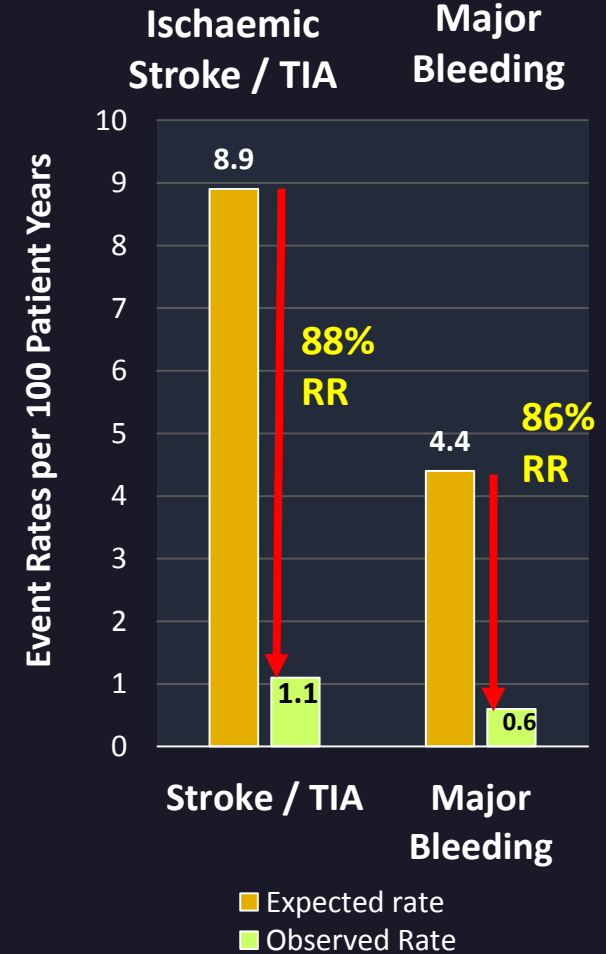
Based on  
CHA2DS2VASc &  
HASBLED scores

### Non-Asian Patients



Based on  
CHA2DS2VASc score 3.7  
& HASBLED score 2.1

### Asian Patients



Based on  
CHA2DS2VASc score 4.1  
& HASBLED score 2.2

# WATCHMAN™ Asia Real World Data

## Comparative Demographics With PROTECT AF, CAP, PREVAIL

Characteristic	PROTECT AF N=463	CAP N=566	PREVAIL N=269	Kim N=46	Huang N=106	Chen N=115 (PP 68/SP: 47)*	WASP N=201	Authors' series N=133
Age, years	71.7 ± 8.8 (46.0, 95.0)	74.0 ± 8.3 (44.0, 94.0)	74.0 ± 7.4 (50.0, 94.0)	65.6±8.8	64.2 ± 8.6	PP: 64.06 ± 8.49 SP: 65.49 ± 7.84	70.8 ± 9.4	68 ± 13 (36.0, 95.0)
Gender (Male)	326 (70.4%)	371 (65.5%)	182 (67.7%)	27 (58.7%)	63 (59.4%)	PP: 45 (66.18%) SP: 27 ( 57.44%)	135 (67.2%)	82 (61.7%)
CHADS <sub>2</sub> Score (Continuous)	2.2 ± 1.2 (1.0, 6.0)	2.5 ± 1.2 (1.0, 6.0)	2.6 ± 1.0 (1.0, 6.0)	4.1±1.7	3.6 ± 1.6	PP: 1.93 ± 1.09 SP: 4.09 ± 1.06	3.9 ± 1.7	3.7 ± 1.8 (1.0, 5.0)
<b>CHADS<sub>2</sub> Risk Factors</b>								
CHF	124 (26.8%)	108 (19.1%)	63 (23.4%)	24 (52.2%)	ND	ND	32 (15.9%)	20 (15.0%)
Hypertension	415 (89.6%)	503 (88.9%)	238 (88.5%)	35 (76.1%)	66 (62.3%)	PP: 40 ( 58.82%) SP: 33 ( 70.21%)	167 (83.1%)	101 (75.9%)
Age ≥ 75	190 (41.0%)	293 (51.8%)	140 (52.0%)	ND	ND	ND	> 80 yrs = 5.4%	36 (27.1%)
Diabetes	113 (24.4%)	141 (24.9%)	91 (33.8%)	17 (37.0%)	12 (11.3%)	PP: 45 (66.18%) SP: 27 ( 57.44%)	61 (30.3%)	41 (30.8%)
Stroke/TIA	82 (17.7%)	172 (30.4%)	74 (27.5%)	20 (43.5%)	41 (38.7%)	PP: 0 SP: 47 (100%)	76 (37.8%)	34 (25.6%)
HASBLED Score	ND	ND	ND	2.8±1.2	ND	PP: 1.26 ± 0.87 SP: 1.83 ± 1.0	2.1 ± 1.2	2.2 ± 1.0

\*PP = primary prevention, SP = secondary prevention. ND=no data; Reddy, VY et al. *Circulation* 2011;123:417-424; Kim JS, et al. *Circ J C* 2016; 80:1123 – 1130; Huang WP, et al. *Chinese Med J* 2017;130:434-438; Chen YH, et al. *Pacing Clin Electrophysiol* 2017; Phillips K, et al. *APHRS* 2017 (submitted for publication)

# WATCHMAN™ Asia Real World Data

## Comparative Success & Safety Outcomes vs. PROTECT AF, CAP, PREVAIL

Percentage	PROTECT AF N=463	CAP N=566	PREVAIL N=269	Kim N=46	Huang N=106	Chen N=115	WASP N=201	Authors's series N=133
Implant success*	90.9	94.3	95.1	97.8	94.3	99	98	96
All 7-day procedural complications (%)	8.7	4.2	4.5	13.0	9.4	1.7	3.5	3.0
Pericardial effusion requiring surgery (%)	1.6	0.2	0.4	0	0.9	0.9	0	0
Pericardial effusion wx pericardiocentesis (%)	2.4	1.2	1.5	2.2	0	0	1.0	0.7
Procedure-related strokes (%)	1.1	0.0	0.7	0	0.9	0.9	0	0
Device embolization (%)	0.4	0.2	0.7	0	0	0	0	1.5
Death (%)	0	0	0	0	0	0	0.5	0.7



# WATCHMAN™ Asia Real World Data

## Comparative Success & Safety Outcomes

Percentage	Kim N=46	Huang N=106	Chen N=115	WASP N=201	Authors's series N=133
Implant success*	97.8	94.3	99	98	96
All 7-day procedural complications, n (%)	6(13.0)	10 (9.4)	2 (1.7)	7 (3.5)	4 (3.0)
Pericardial effusion requiring surgery, n (%)	0	1 (0.9)	1 (0.9)	0	0
Pericardial effusion with pericardiocentesis, n (%)	1 (2.2)	0	0	2 (1.0)	1 (0.7)
Procedure-related strokes, n (%)	0	1 (0.9)	1 (0.9)	0	0
Device embolization, n (%)	0	0	0	0	2 (1.5)
Perforation, n (%)	0	0	0	0	1 (0.7)
Major bleeding, n (%)	0	0	0	1 (0.5)	0
Takotsubo syndrome, n (%)	0	0	0	0	1 (0.7)
Death, n (%)	0	0	0	1 (0.5)	1 (0.7)
<b>FOLLOW UP (months, mean)</b>	<b>22</b>	<b>12</b>	<b>12</b>	<b>12</b>	<b>Mean 39 (3, 73)</b>
Stroke & embolization, n (%)	2 (4.3)	2 (1.9)	1 (0.9)	4 (2.0)	2 (1.5)
Major bleeding, n (%)	0	1 (0.9)	0	8 (3.9)*	0
Death, n (%)	3 (6.5)*	0	0	0	1* (0.7)

Reddy, VY et al. *Circulation*. 2011;123:417-424;Holmes DJ, et al. *J Am Coll Cardiol* 2015;65:2614--23; Huang WP, et al. *Chinese Med J*

\*unrelated 2017;130:434-438;Chen YH, et al. *Pacing Clin Electrophysiol* 2017;40:607-614; Phillips K, et al. *APHRS* 2017 (submitted for publication)

# Summary

1. **Real world experience with Watchman LAAC in Asia-Pacific** region has shown:

- High successful implant rate & low peri-procedural risk
- Efficacious stroke prevention with low bleeding risk on long term follow up
- Compared to Non Asian patients, Asian patients seem to have less ischemic stroke/TIA & less major bleeding complications

2. As LAA closure provides life-long stroke prophylaxis without the need for daily OAC, it is even **more attractive to use in Asian patients:**

- Large group of eligible AF pts do not receive (novel) oral anticoagulation
- Issues of compliance & bleeding as side effect
- The response of Asian pts to (N)OAC therapy is not as good as Non-Asian pts
- Higher prevalence of intra-cerebral hemorrhage, relative to other stroke subtypes, in Asian-Pacific countries vs. Western regions (i.e.: USA & Europe)

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