Bleeding risk after TAVI in Asian cohort

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- Division of cardiology

Potential conflict of interest

Speaker's name : Masanori Yamamoto

☑ I have the following potential conflicts of interest to declare:

Clinical proctors, Receipt of honoraria or consultation fees: Edwards (TAVI), Medtronic (TAVI), Abbott (TAVI, TEER), Boston (LAAC)

Aging society in Asia population

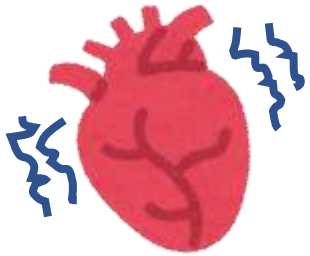
The optimal medical therapy is dynamically changed during the long life

CAD

Stroke

AF

SHD intervention



Atherosclerosis

Long life-expectancy

Malignancy

GI bleeding

Hemorrhagic stroke

Frequent fall

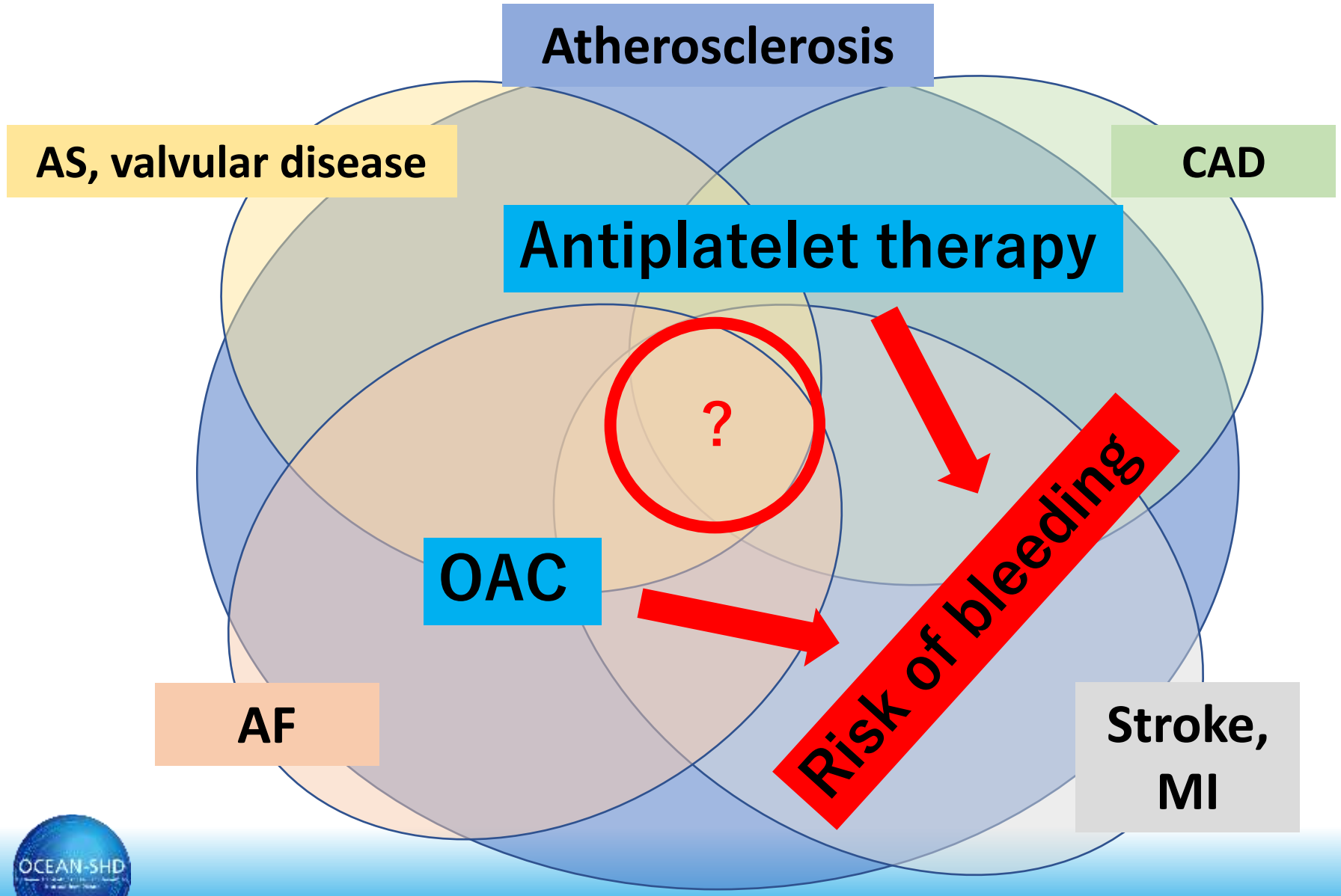
HT

DL

DM

Metabolic syndrome

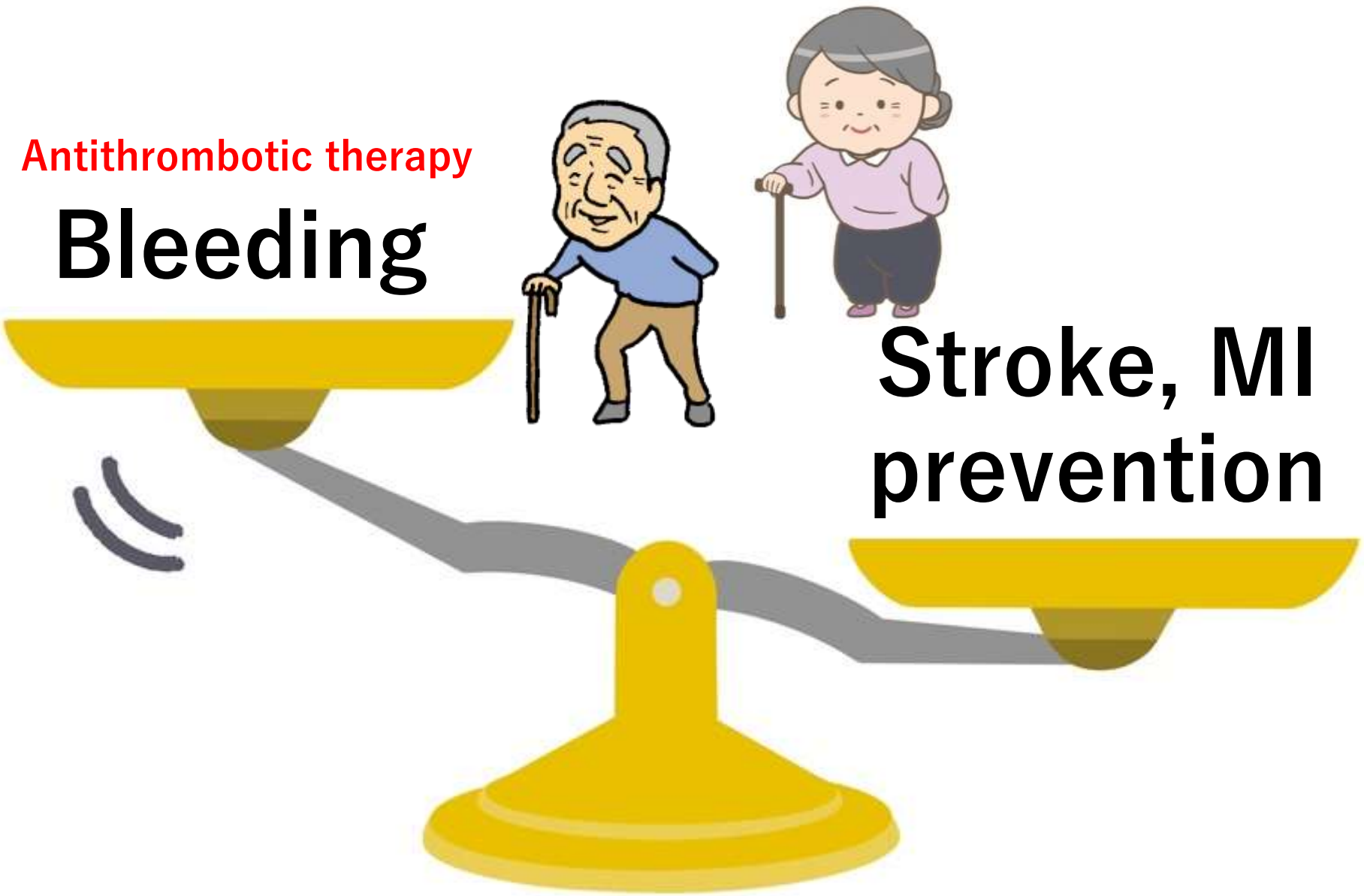
Multiple overlapping disease…



Risk benefit balance

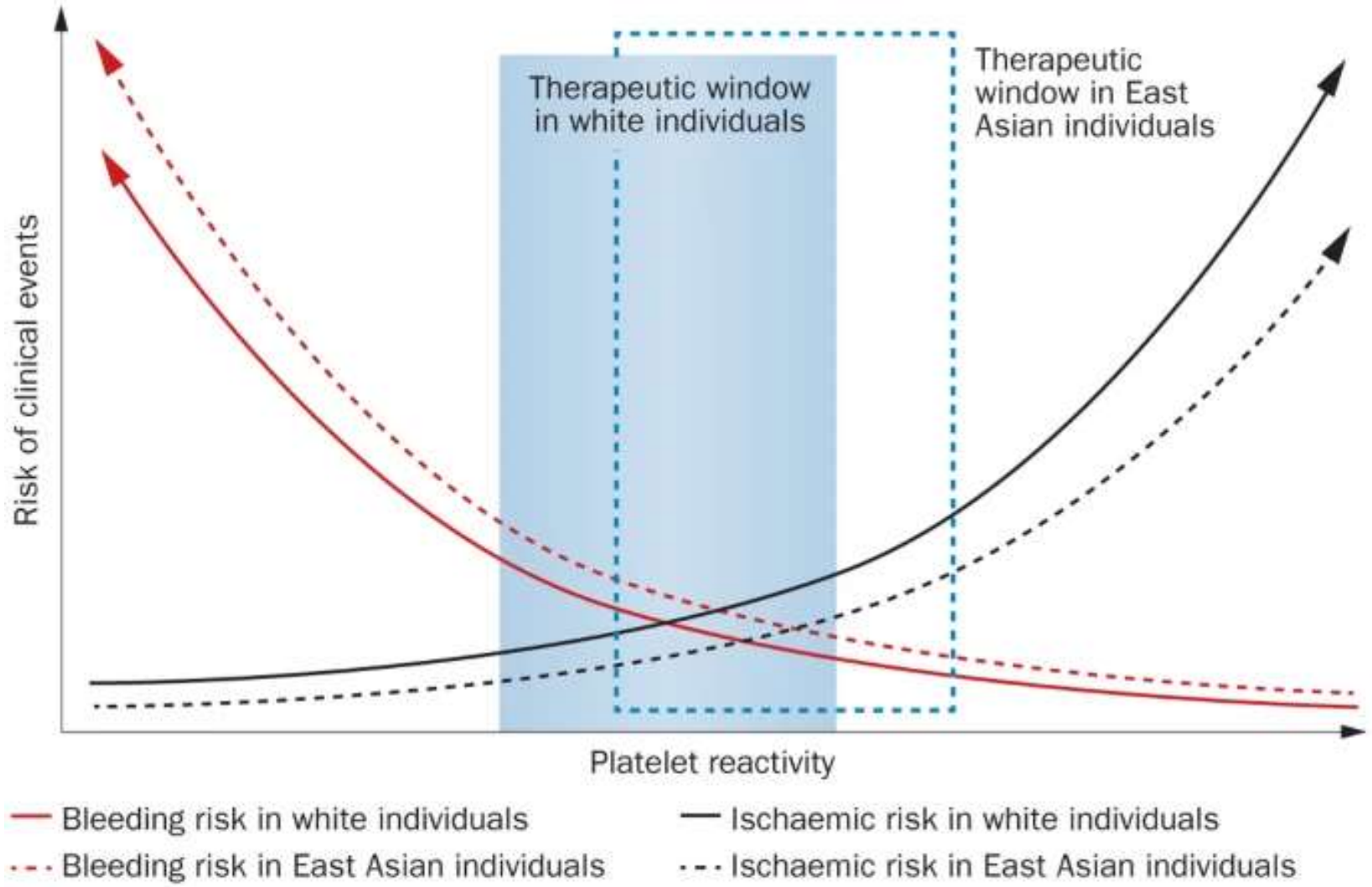
Antithrombotic therapy

Bleeding



Stroke, MI prevention

East Asia paradox



Asian: low ischemic risk, but high bleeding risk

Nat Rev Cardiol. 2014 Oct;11(10):597-606.

J-HBR Criteria

Circulation Journal
Circ J 2020; 84: 831–865
doi:10.1253/circj.CJ-19-1109

JCS GUIDELINES

JCS 2020 Guideline Focused Update on Antithrombotic Therapy in Patients With Coronary Artery Disease

Masato Nakamura; Kazuo Kimura; Takeshi Kimura; Masaharu Ishihara; Fumiyuki Otsuka; Ken Kozuma; Masami Kosuge; Toshiro Shinke; Yoshihisa Nakagawa; Masahiro Natsuaki; Satoshi Yasuda; Takashi Akasaka; Shun Kohsaka; Kazuo Haze; Atsushi Hirayama

Post PCI
J-HBR : 64%
(CREDO-Kyoto Registry Cohort-3)

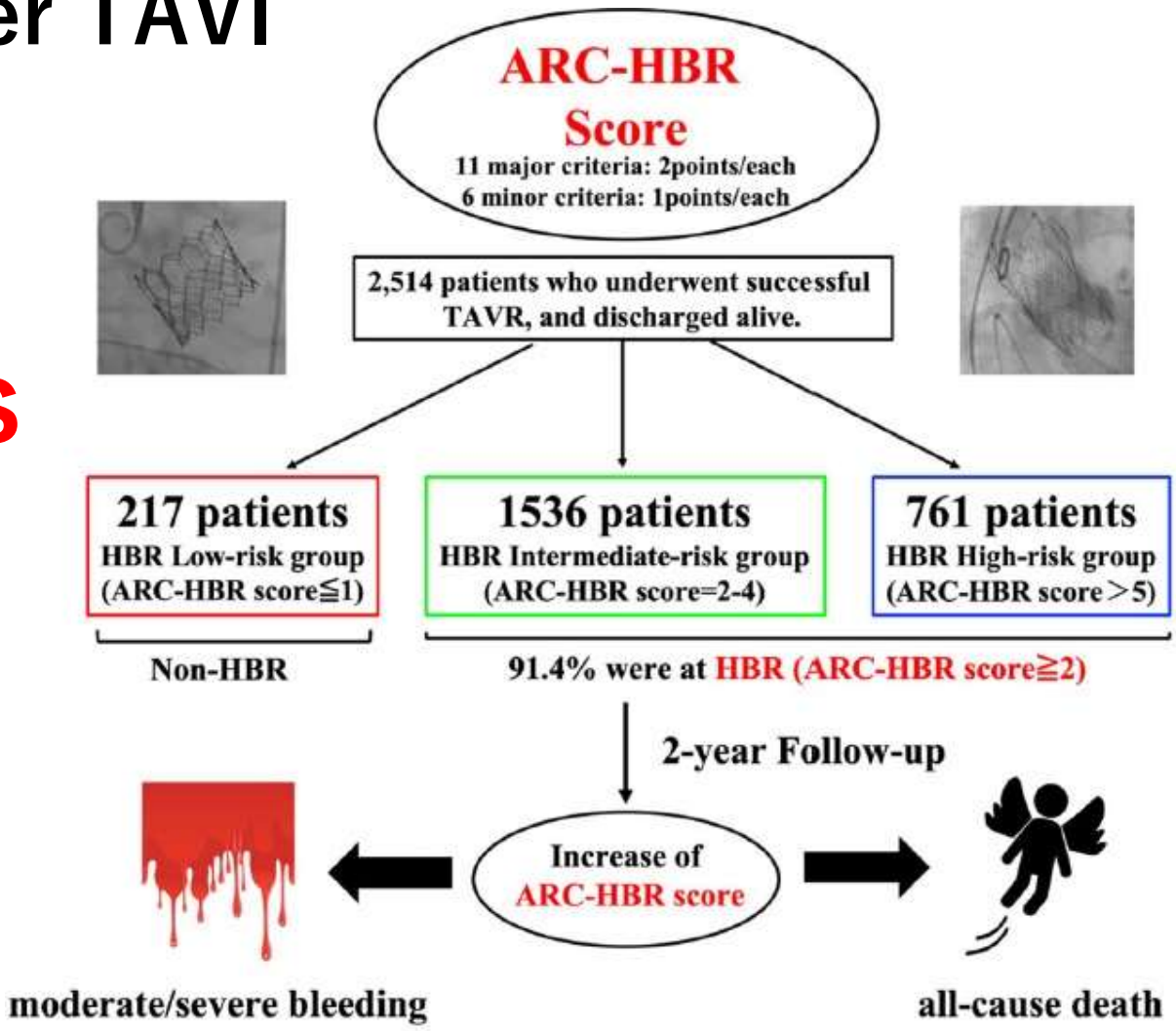
Circ J. 2021 May 25;85(6):769-781.

Circ J. 2020 Apr 24;84(5):831-865.

Number 2514, average about 85 years old Patients after TAVI

HBR rates 91.4% ！ ！

Mizutani K, et al. EHJ open 2022



Abbreviations: ARC, Academic Research Consortium; HBR, high bleeding risk; TAVR, Transcatheter Aortic Valve Replacement

Poor prognosis in patients with HBR

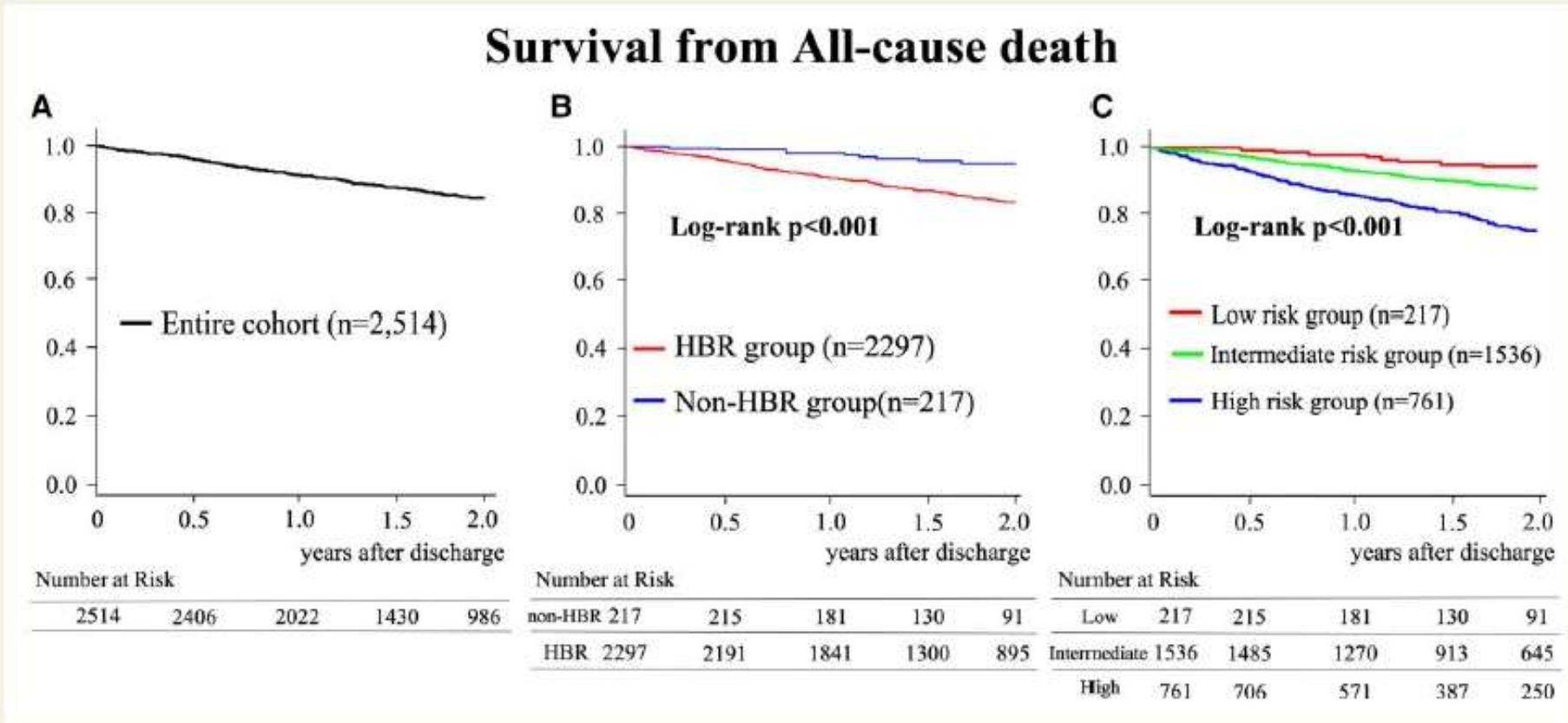


Figure 2 Incidence of mortality. (*A*) The mortality rate in the entire patient population is shown. (*B*) The mortality rates are compared between patients at high-bleeding risk (HBR; HBR group) and the non-HBR group. (*C*) The mortality rates are compared between patients in the HBR low-, intermediate-, and high-risk groups.

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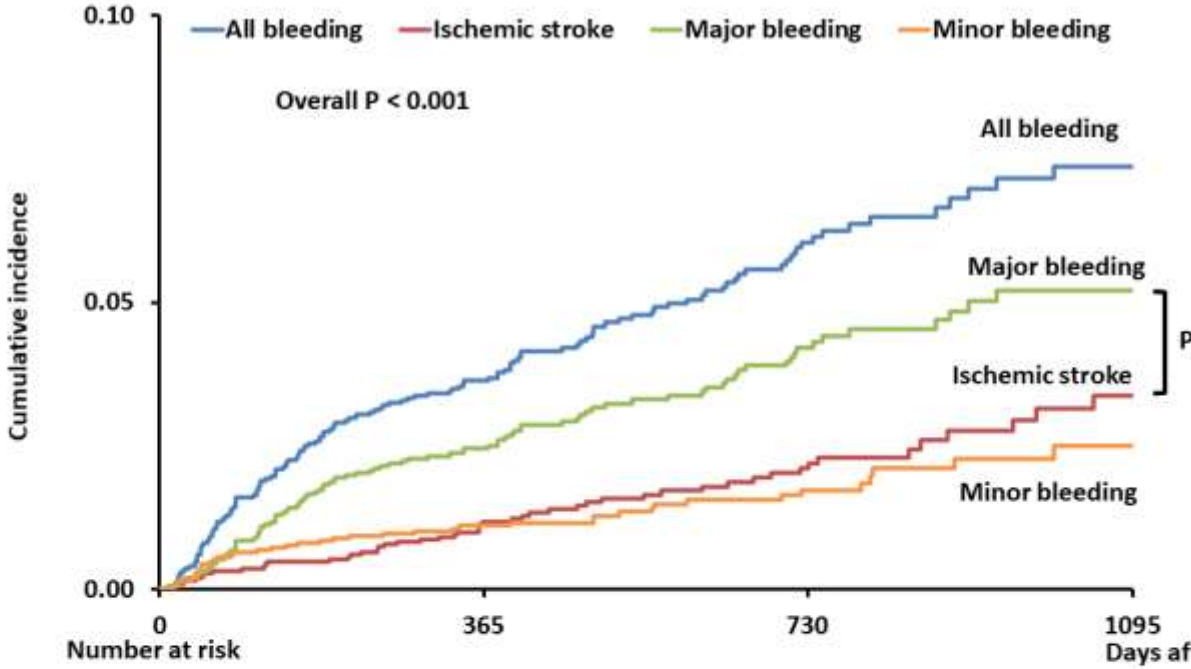
Late bleeding after TAVI (in elderly Asia cohort)



7.4% bleeding

3.4% stroke

Number at risk

All bleeding	2518	2129	1091	372
Ischemic stroke	2518	2171	1120	381
Major bleeding	2518	2153	1107	377
Minor bleeding	2518	2166	1121	382

Cumulative rates

All bleeding	0.0%	3.6%	6.1%	7.4%
Ischemic stroke	0.0%	1.1%	2.1%	3.4%
Major bleeding	0.0%	2.5%	4.2%	5.2%
Minor bleeding	0.0%	1.2%	1.7%	2.5%

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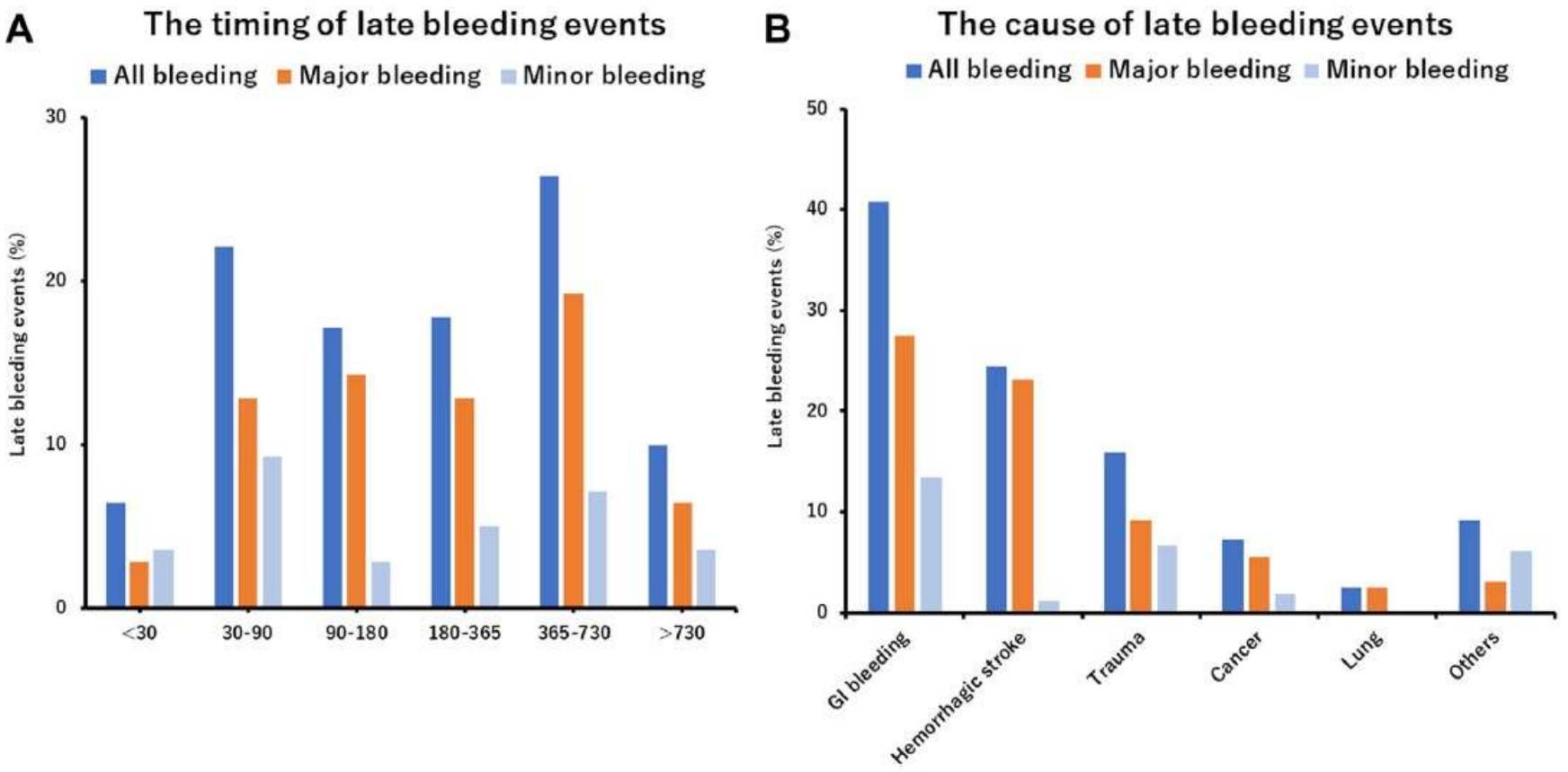
FIGURE 1 Timing and Causes of Late Bleeding Events After TAVR



(A) The phase of late bleeding evens after transcatheter aortic valve replacement (TAVR) was calculated. The late bleeding events occurred from early to late phase after TAVR. **(B)** The detailed cause of bleeding information was investigated. The main cause of late bleeding was of gastrointestinal (GI) origin. The second cause of bleeding was hemorrhagic stroke that mainly associated with major bleeding. The other causes of bleeding were trauma, cancer, lung, and other organs including the eye, nose, and the genitourinary system.

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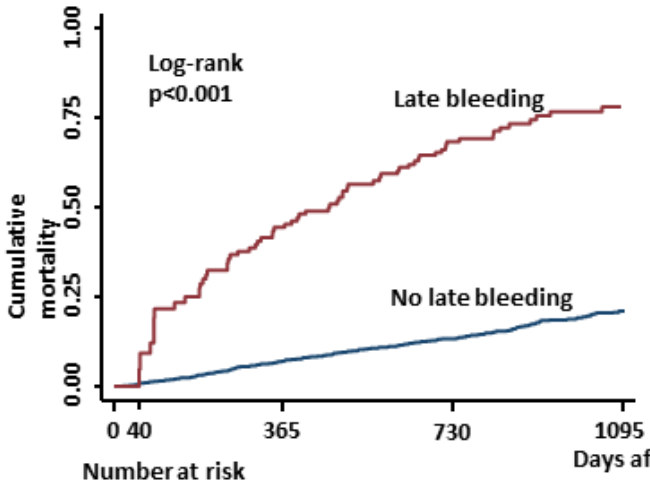
Impact of late bleeding after TAVI on mortality

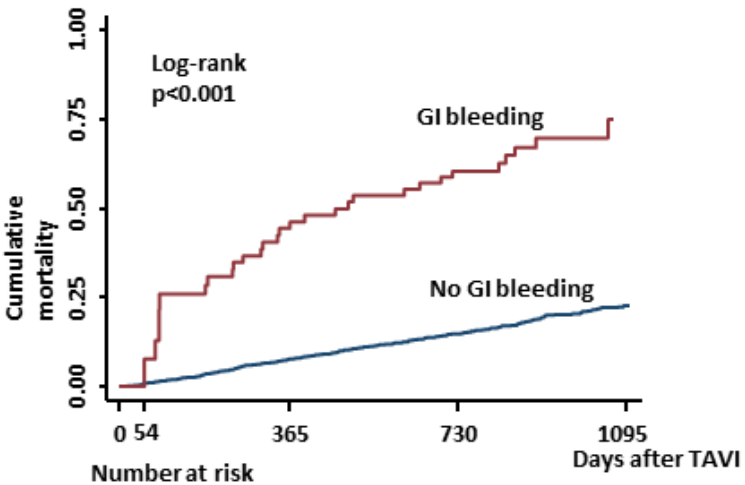
Figure 4A



Number at risk

Late bleeding	140	59	43	14
No late bleeding	2518	2119	1091	367

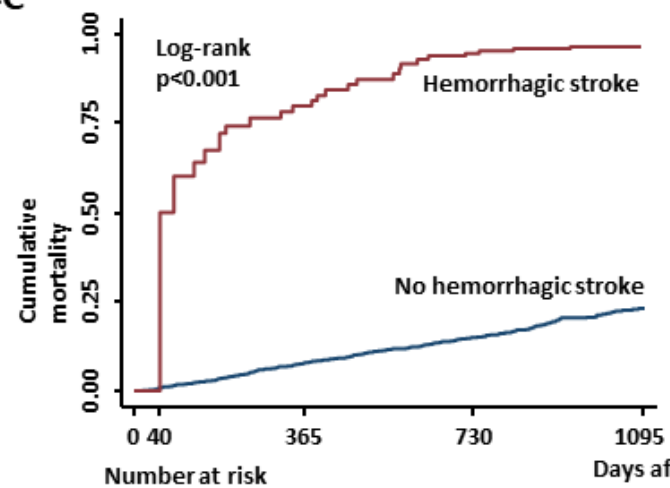
Figure 4B



Number at risk

GI bleeding	67	29	26	4
No GI bleeding	2518	2159	1108	377

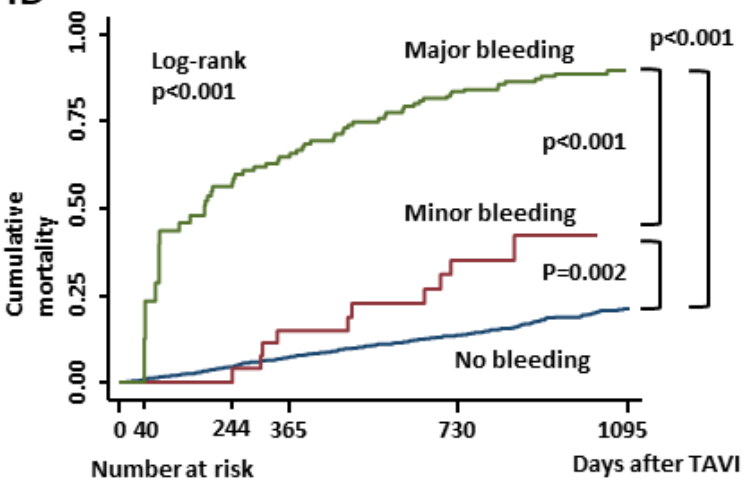
Figure 4C



Number at risk

Hemorrhagic stroke	40	13	9	7
No hemorrhagic stroke	2518	2175	1125	374

Figure 4D



Number at risk

Major bleeding	96	35	27	9
Minor bleeding	44	24	16	5
No bleeding	2518	2129	1091	367

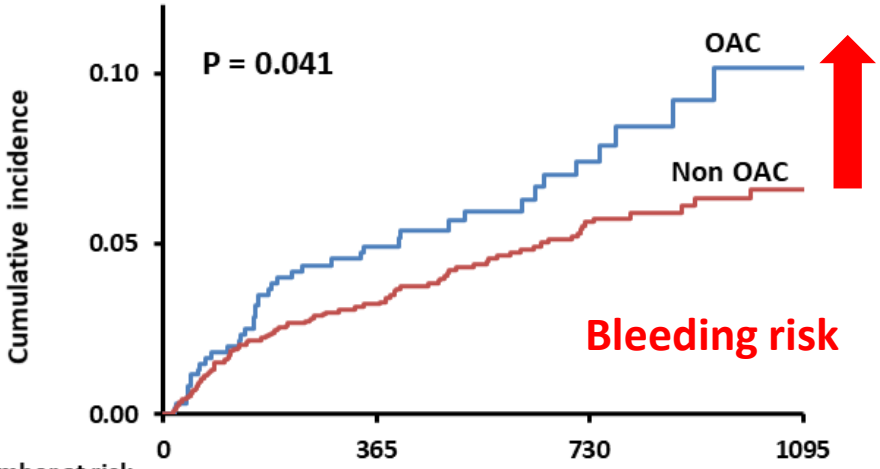
Bleeding risk (OCEAN data)

TABLE 4 Multivariate Analysis for the Association Between Late Bleeding and Clinical Findings

Explanatory Variables	Multivariate Analysis		
	OR	95% CI	*P* Value
Baseline characteristics			
Age (per 1 y)	1.01	0.98-1.04	0.60
Male	1.25	0.86-1.82	0.25
High CFS(≥4)	1.55	1.05-2.28	0.027
NYHA functional class III/IV (for I/II)	1.58	1.09-2.27	0.015
Pulmonary disease	1.41	0.96-2.07	0.084
Liver disease	1.93	0.92-4.07	0.084
Active cancer	1.87	0.98-3.54	0.057
Low platelet count ($<14.9 \times 10^4/\mu L$)	1.94	1.36-2.77	<0.001
Procedural bleeding complications	0.92	0.61-1.40	0.70

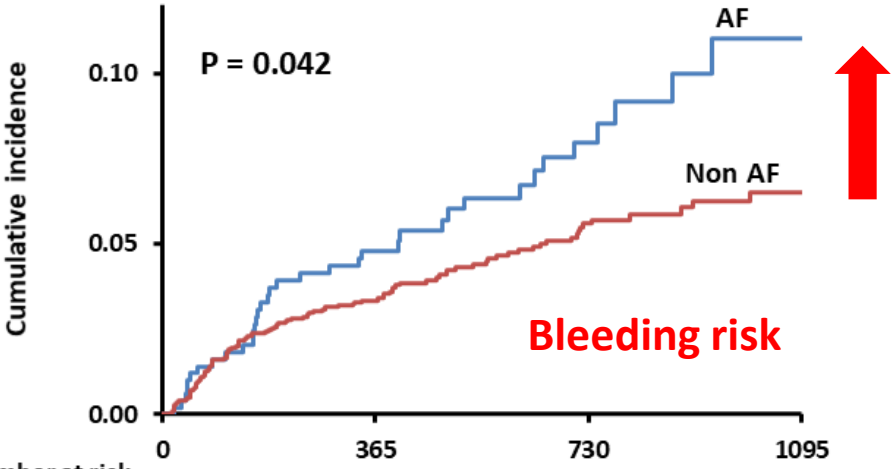
Abbreviations as in Table 1.

A. All bleeding between OAC and non OAC



Number at risk				
OAC	612	490	226	73
Non OAC	1906	1639	869	300

B. All bleeding between AF and non AF



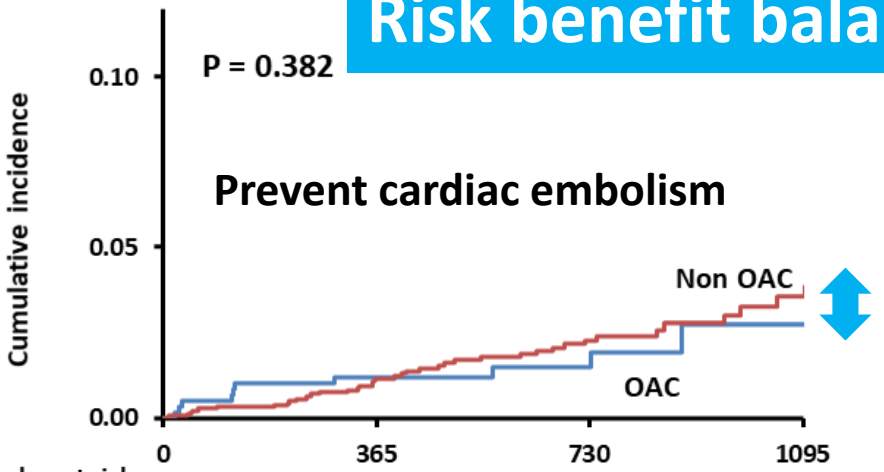
Number at risk				
AF	502	399	199	62
Non AF	2016	1730	895	310

0 365 730 1095

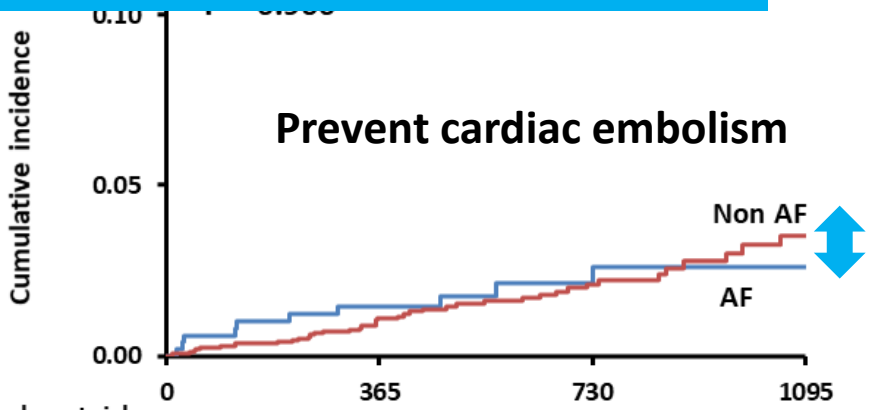
Cumulative incidence, %			
OAC			11.1
Non OAC			6.5

23.8% of patients did not receive OAC
Risk benefit balance should be considered

C. Ischemic stroke between



Number at risk				
OAC	612	507	235	76
Non OAC	1906	1664	889	306



Number at risk				
AF	502	411	207	66
Non AF	2016	1760	916	315

0 365 730 1095

Cumulative incidence, %			
OAC	1.2	1.5	2.8
Non OAC	1.2	2.3	3.5
AF	1.4	2.1	2.6
Non AF	1.1	2.1	3.5

The NEW ENGLAND JOURNAL of MEDICINE

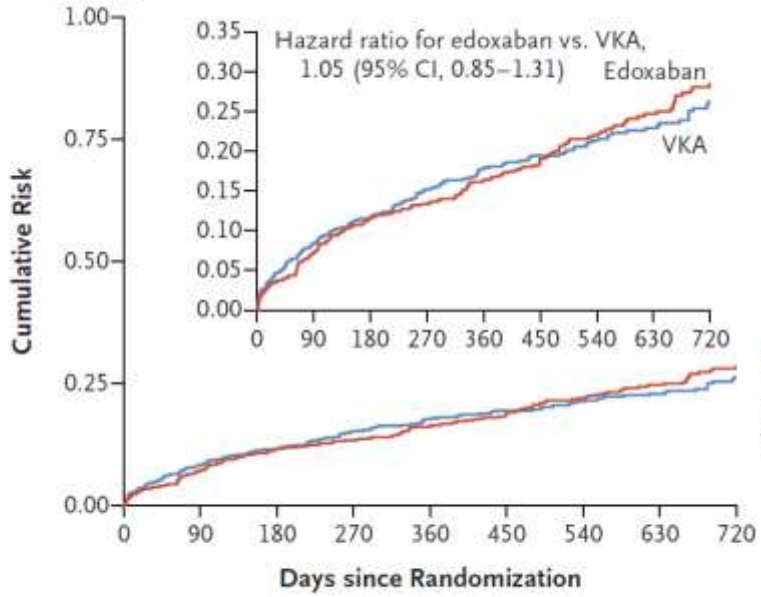
ORIGINAL ARTICLE

Edoxaban versus Vitamin K Antagonist for Atrial Fibrillation after TAVR

N.M. Van Mieghem, M. Unverdorben, C. Hengstenberg, H. Möllmann

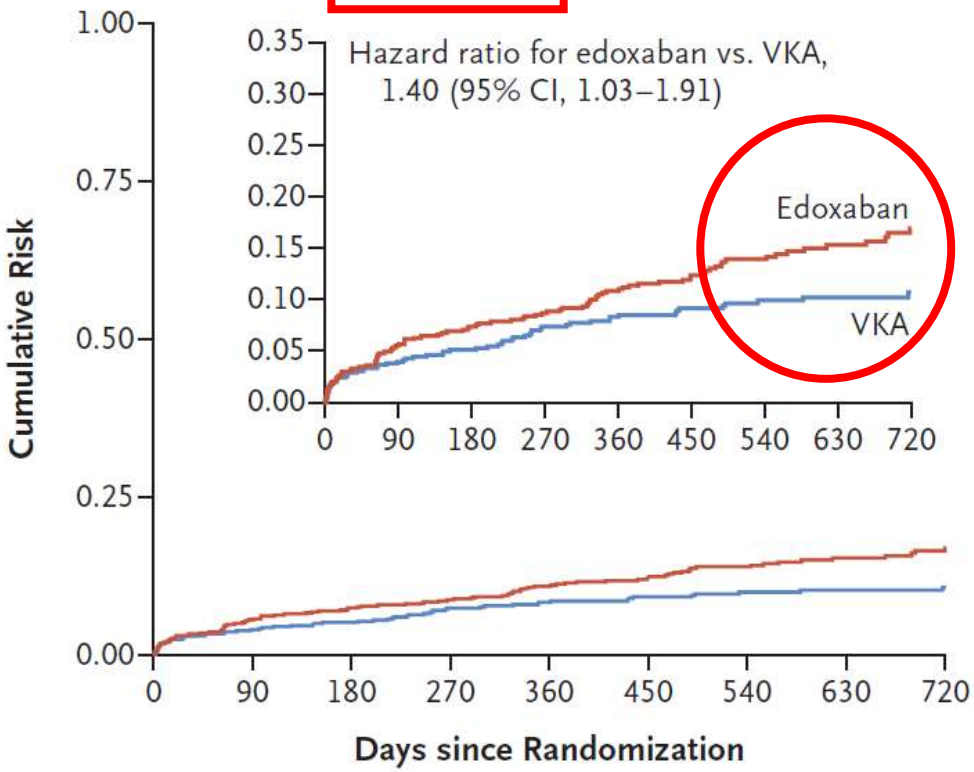
DOAC vs. VKA in AF patients after TAVI

A Primary Efficacy Outcome: Net Adverse Clinical Events



No. at Risk									
Edoxaban	713	618	568	543	504	410	332	245	181
VKA	713	597	545	510	474	387	322	247	175

B Primary Safety Outcome: Major Bleeding by ISTH Definition



No. at Risk									
Edoxaban	713	626	582	557	518	422	343	255	190
VKA	713	604	556	522	486	397	332	258	184

DOAC is not a gold standard therapy In elderly AF population?

Japanese sub-analysis（ OCEAN cohort ）

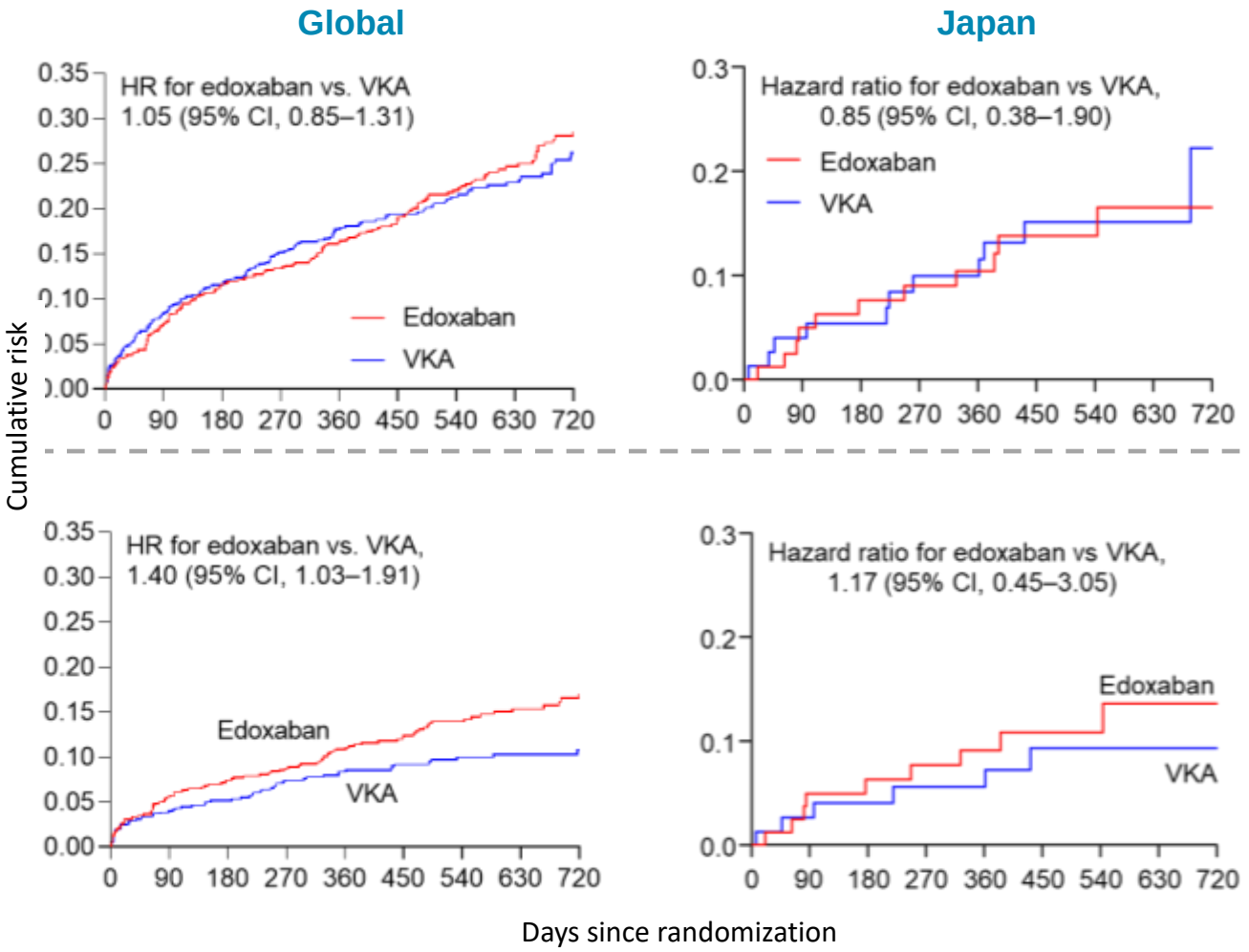
DOAC is equivalent for VKA in Asian elderly cohort

Net adverse clinical events

(all-cause death, MI, ischaemic stroke, systemic thromboembolic event, valve thrombosis, and ISTH-defined major bleeding)

Major Bleeding

(ISTH definition)



Watanabe Y, Hayashida K, Yamamoto M, on the behalf of OCEAN-TAVI investigators. Circ J in press

Data from OCEAN-LAAC within 45 days

The OCEAN-LAAC registry
N = 548

mean $CHADS_2$ score of 3.1 ± 1.3, CHA_2DS_2-VASc score of 4.7 ± 1.5, and HAS-BLED score of 3.2 ± 1.0 points

Device success:	96.5%
Technical success:	96.0%
Procedural success:	90.5%

Use OAC 45 days

	Younger group (age ≤70) N = 104	Middle-aged group (70< age ≤80) N = 271	Elderly group (80< age) N = 173
	In-hospital/at 45-day	In-hospital/at 45-day	In-hospital/at 45-day
All-cause death	0.0%/0.0%	0.0%/0.0%	0.0%/0.0%
Any strokes	0.0%/0.0%	0.0%/0.7%	0.0%/0.0%
Any bleedings	1.9%/5.8%	1.5%/5.9%	4.6%/10.4%
Pericardial effusion	1.0%/1.0%	1.5%/1.5%	2.9%/4.6%
Device embolization	0.0%/0.0%	0.0%/0.0%	0.0%/0.0%

Over 80 years = extreme high risk of bleeding
Major bleeding: 6.9%, OAC is harmful…

OCEAN-SHD

Asami M, et al. JACC ASIA in press

Risk benefit balance in elder patients

Antithrombotic therapy

Bleeding

Stroke, MI prevention

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