2021 ACLS更新暨亞洲急救指引研討會

ACS: Acute Coronary Syndrome

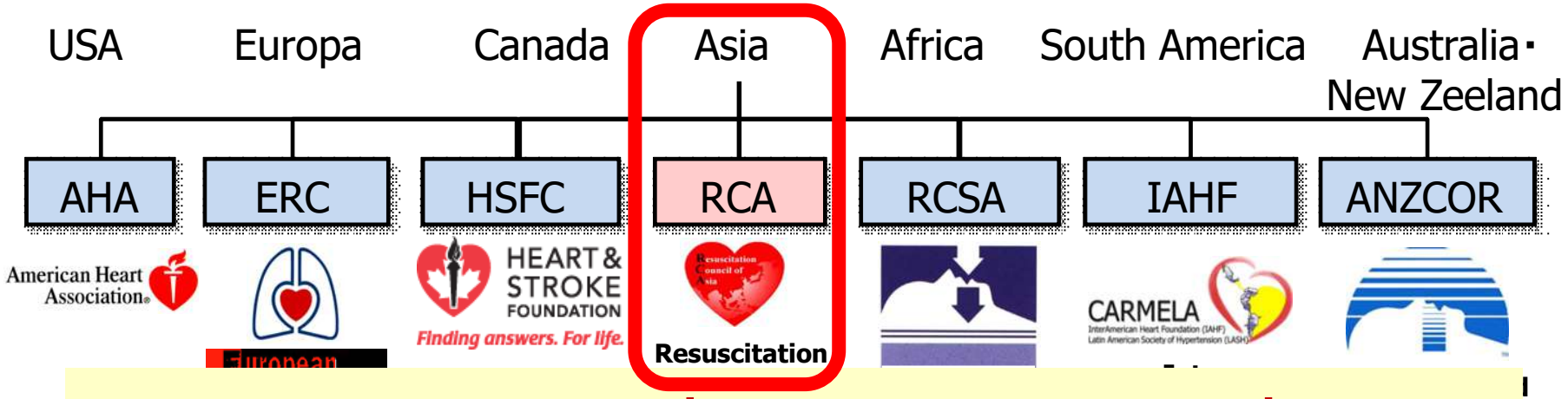
HIGHLIGHTS

of the Resuscitation Council of Asia(RCA) Resuscitation Guidelines 2021

Hiroshi Nonogi、Chair;
on behalf of the ACS Task Force of the RCA Guidelines 2021
Japan Resuscitation Council

2021 ACLS Update & Asian Resuscitation Guidelines Conference

International Liaison Committee on Resuscitation （ILCOR)

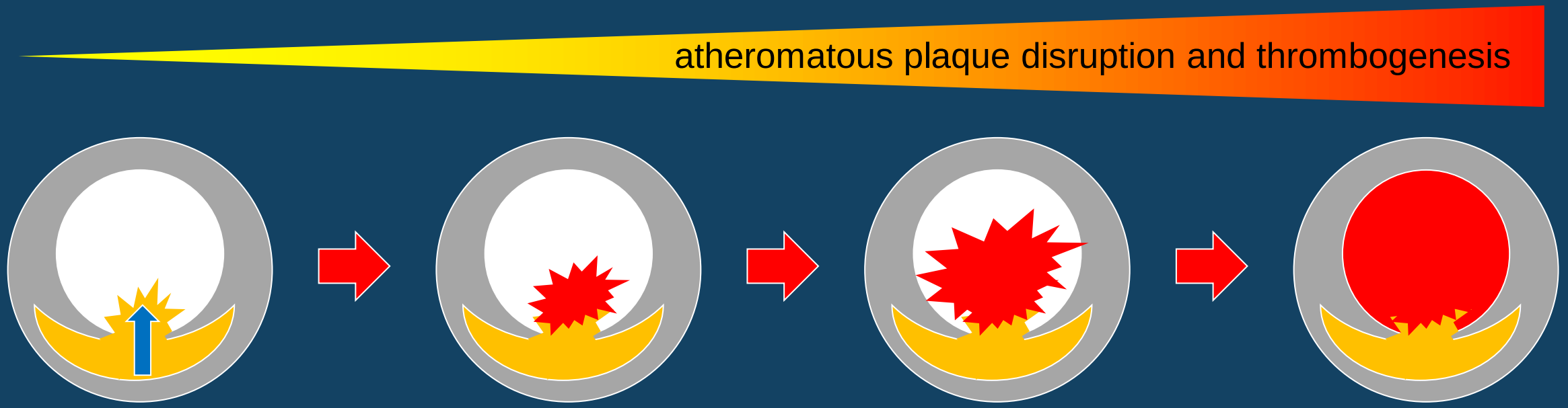


RCA ACS Task Force: 8 Members

- Hiroshi Nonogi(Chair) Japan Resuscitation Council (JRC)
- Lim Swee Han National Resuscitation Council of Singapore
- Parinya Kunawut Thai Resuscitation Council(TRC)
- Francis Lavapie Philippine Heart Association(PHA)
- Mi Jin Lee Korean Association of Cardiopulmonary Resuscitation (KACPR)
- Yoshio Tahara Japan Resuscitation Council (JRC)
- Tzong-Luen Wang Taiwan Resuscitation Council (TRC)
- Chris Wong Resuscitation Council of Hong Kong (RCHK)

Clinical spectrum of ACS

Unstable angina (UA) Acute myocardial infarction (AMI)



Sudden cardiac death

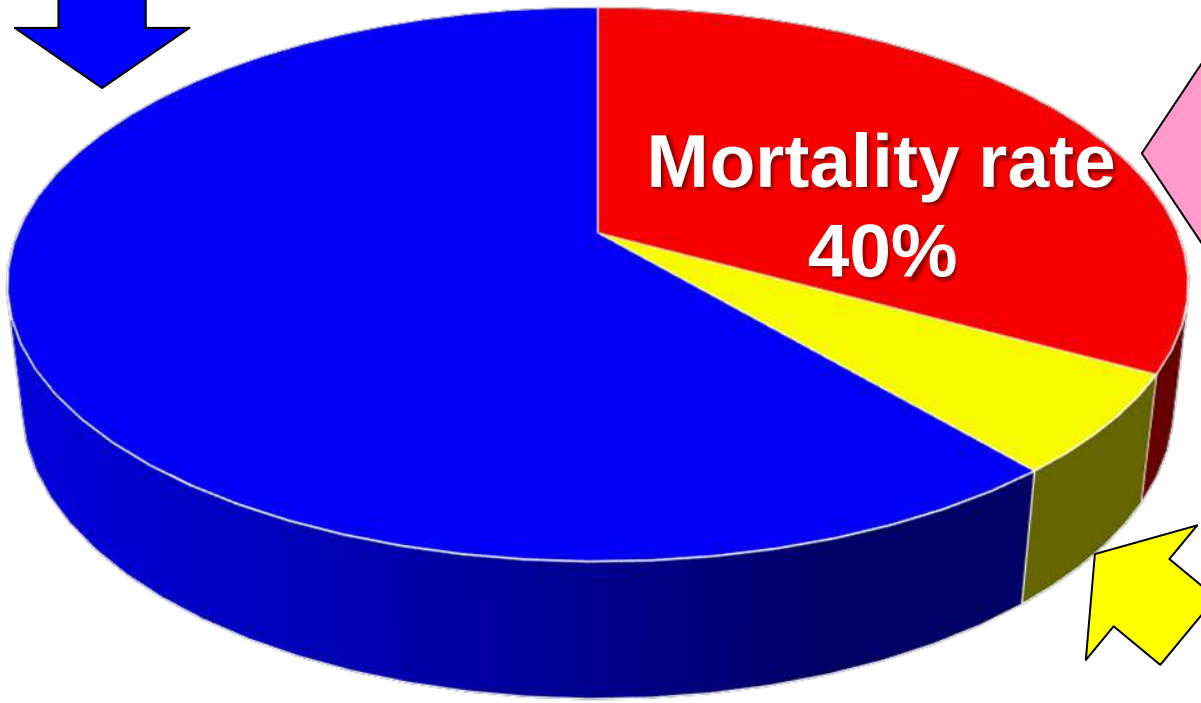
Br Heart J 1985; 53: 363-73, Engl J Med 1992; 326: 242-50.

AMI related mortality

Survival discharges: about 63,000

Total deaths: about 40,000

Ministry of Health, Labour and Welfare



Prehospital deaths

about 34,000

Still very high(33%)

In-hospital deaths: about 6,000

Decrease in CCU

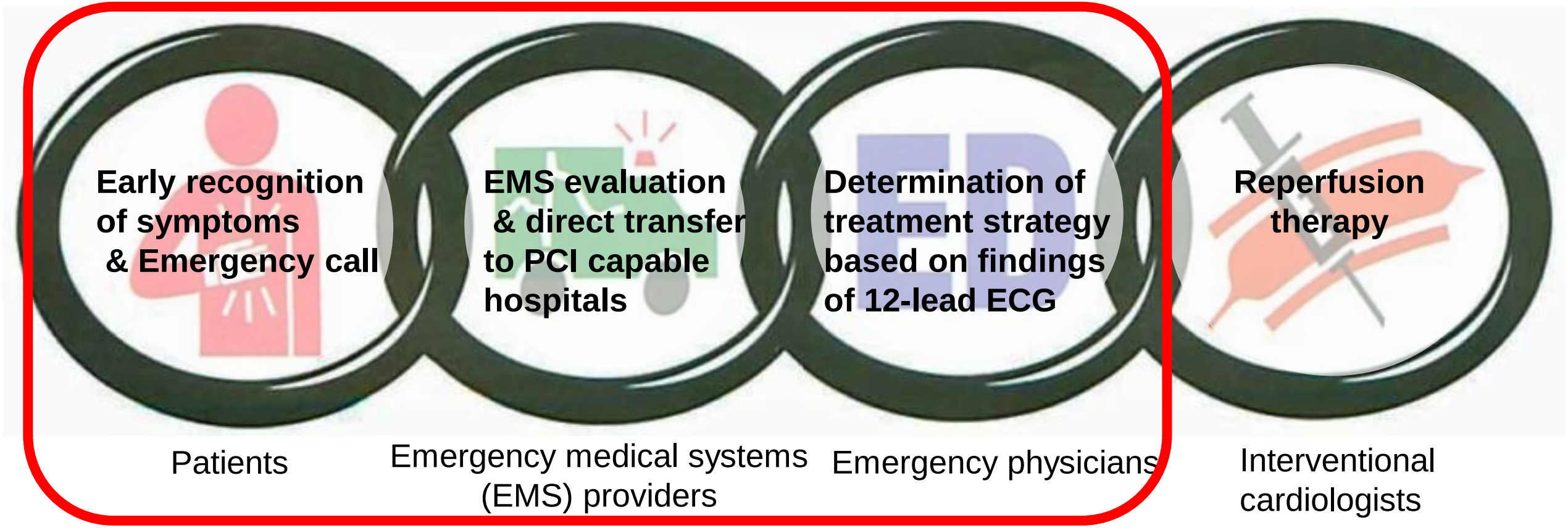
（1970’ 20%⇒2012-2014 6%）

RCA ACS guidelines need to be focused on out-of-hospital efforts to prevent sudden cardiac death.

Japanese Registry Of All cardiac and vascular Diseases (JROAD)

Circ J 2018; 82: 2845-51.

The STEMI Chain of Survival



Focus on pre-hospital and emergency room

Circulation 2007; 116: 6-9.

STEMI: ST elevation myocardial infarction

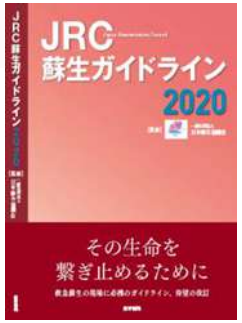
Final Decision in RCA

- ILCOR has decided not to include ACS in CoSTR2020 to coordinate with other organization guidelines (ACC, ESC etc.).
- However, RCA would like to maintain the ACS part because of numerous problems regarding ACS, especially in the pre-hospital phase.
- ACS RCA guidelines from prehospital to ED phase will be prepared according to ILCOR CoSTR2015 and JRC guidelines 2020.

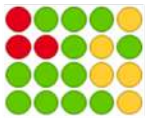
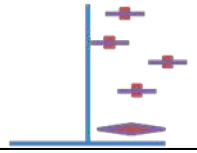
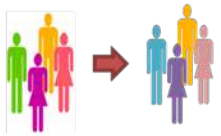
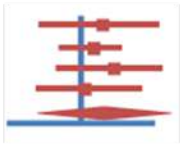
ILCOR

RCA

Evidence evaluation process with systematic reviews using GRADE



Grading of Recommendations Assessment, Development, and Evaluation (GRADE)

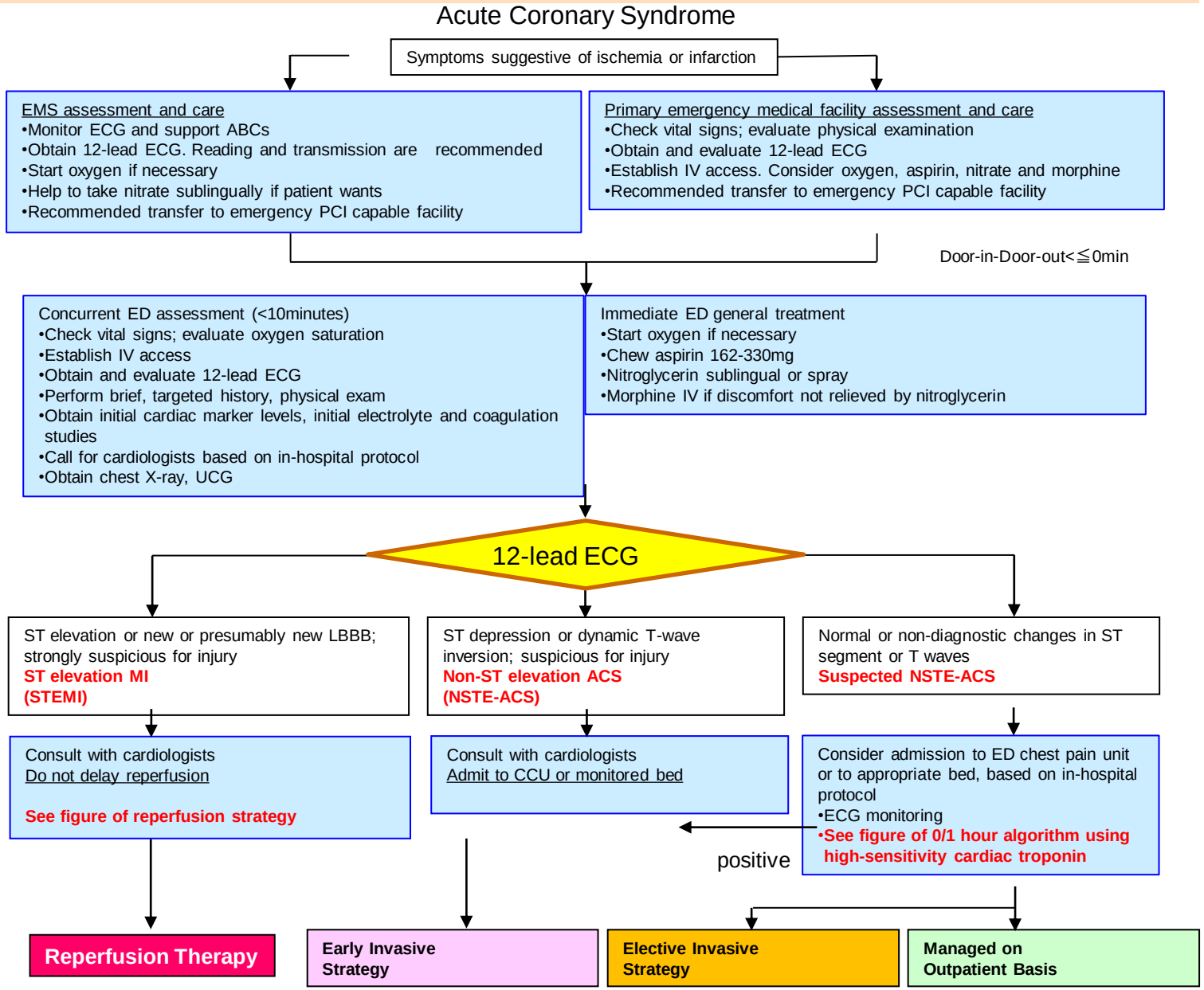
バイアスのリスク (risk of bias)	非一貫性 (inconsistency)	非直接性 (indirectness)	不精確さ (imprecision)	出版バイアス (publication_bias)
				

SysRev: 9 Clinical questions and PICOs were analyzed and recommendations were completed by JRC-ACS task forces.

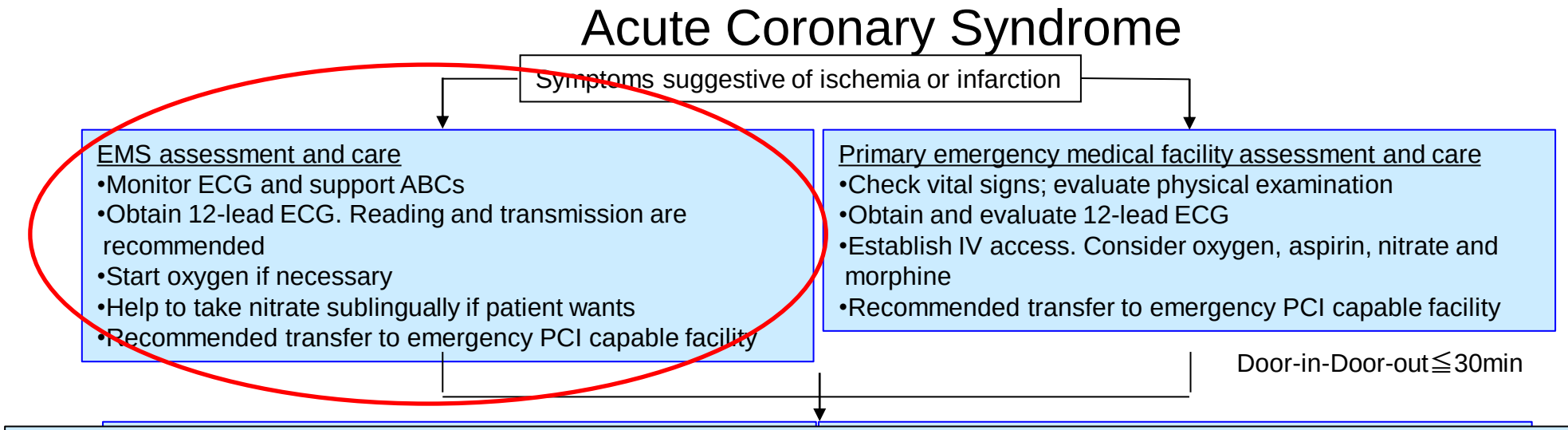
RCA ACS Task Force members

RCA ACS algorithm 2021

RCA ACS Guideline 2021 algorithm



ACS Guideline 2021 algorithm



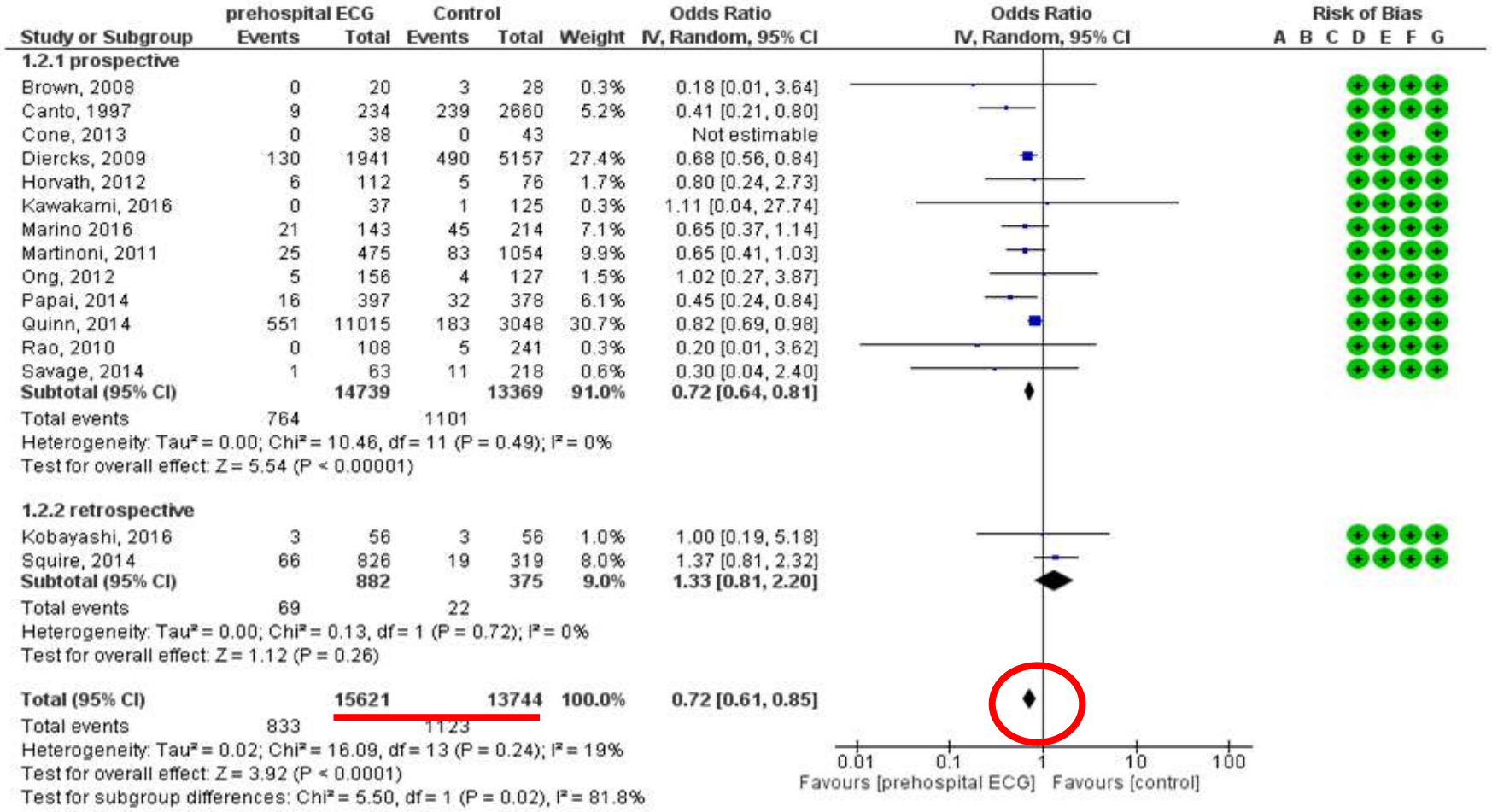
EMS assessment and care

- Monitor ECG and support ABCs
- Obtain 12-lead ECG. Reading and transmission are recommended
- Start oxygen if necessary
- Help to take nitrate sublingually if patient wants
- Recommended transfer to emergency PCI capable facility

Prehospital 12-lead ECG

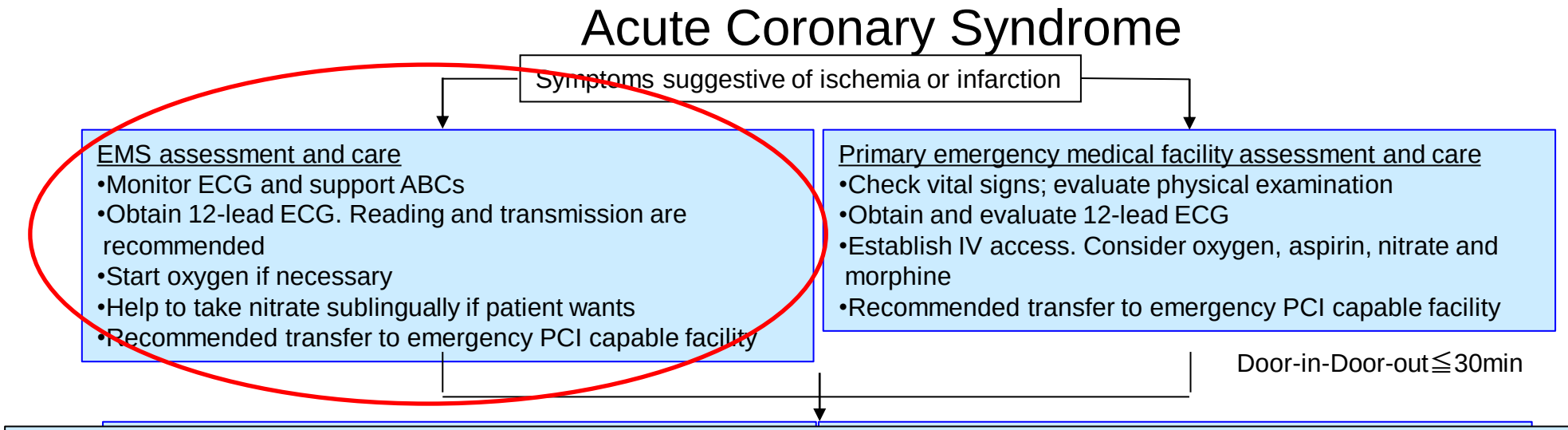
15 observational studies short-term mortality

Nakashima (submitted)



Prehospital 12-lead ECG recording with notification has lower short-term mortality than no ECG recording or no notification among the patients suspected STEMI outside of a hospital. Prehospital 12-lead ECG recording is recommended (strong recommendation, low-certainty evidence, Grade 1C)

Supplementary oxygen in ACS



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Supplementary oxygen in STEMI

Metaanalysis of 3RCTs with normoxic patients

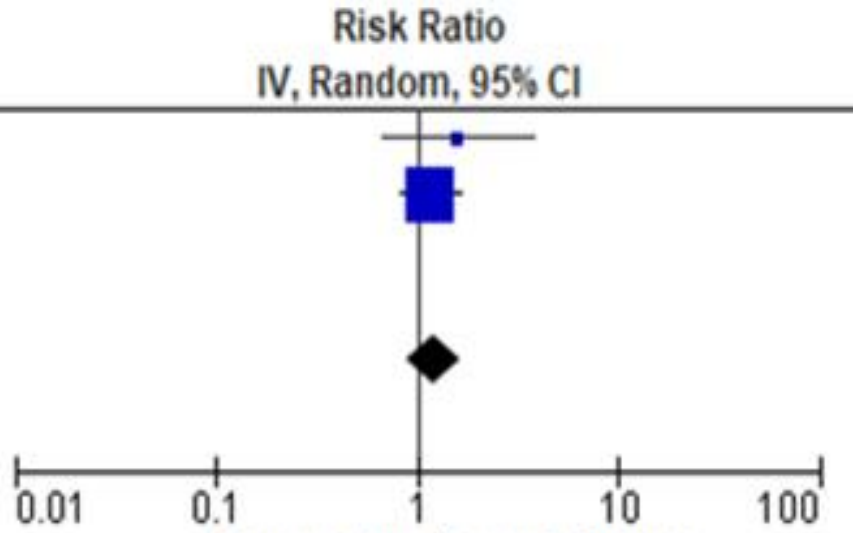
Kojima (submitted)

mortality

Study or Subgroup	Air Events	Air Total	Oxygen Events	Oxygen Total	Weight	Risk Ratio IV, Random, 95% CI	Year
Stub, 2015	13	223	8	218	13.5%	1.59 [0.67, 3.76]	2015
Hofmann, 2018	71	1446	57	1361	86.5%	1.17 [0.83, 1.65]	2018
Khoshnood-1, 2018	0	41	0	46		Not estimable	2018
Total (95% CI)		**1710**		**1625**	**100.0%**	**1.22 [0.89, 1.68]**	
Total events	84		65				

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.41$, $df = 1$ ($P = 0.52$); $I^2 = 0\%$

Test for overall effect: $Z = 1.24$ ($P = 0.22$)



- About supplement oxygen(≧6L/min) in ACS, no difference in mortality using 3RCT meta-analysis.
- Withholding oxygen in comparison with routine oxygen in normoxic patients with ACS is suggested (weak recommendation, very-low certainty evidence, Grade2D).

Door-in to door-out time

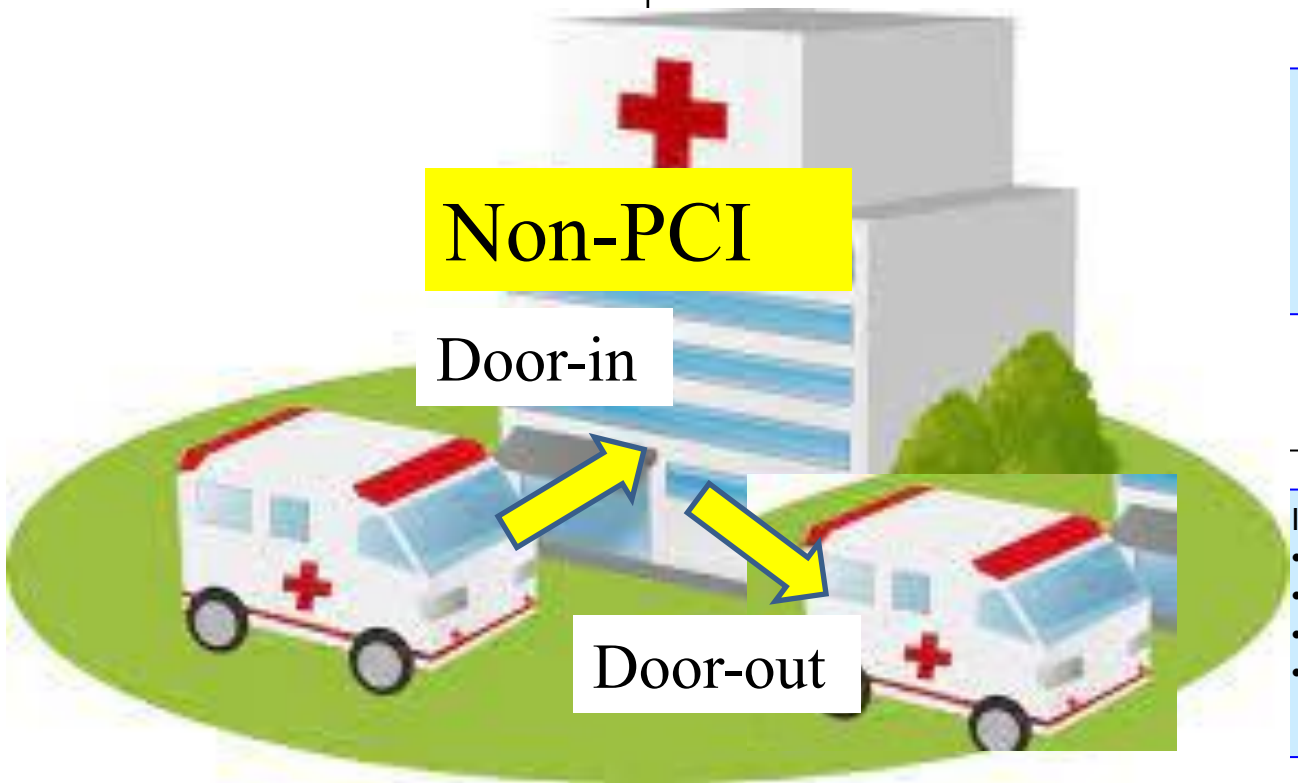
the time delay between arrival to and transfer from a non–PCI-capable hospital (Door-in to door-out time)<30min

2013 ACCF/AHA guideline for the management of ST-elevation myocardial infarction recommended DIDO time<30min.

J Am Coll Cardiol. 2013;61:e78-140.

Acute Coronary Syndrome

Symptoms suggestive of ischemia or infarction



Primary emergency medical facility assessment and care
- Check vital signs; evaluate physical examination
- Obtain and evaluate 12-lead ECG
- Establish IV access. Consider oxygen, aspirin, nitrate and morphine
- Recommended transfer to emergency PCI capable facility

Door-in-Door-out ≦30min

Immediate ED general treatment
- Start oxygen if necessary
- Chew aspirin 162-330mg
- Nitroglycerin sublingual or spray
- Morphine IV if discomfort not relieved by nitroglycerin

In-hospital/30-day mortality
for a **DIDO time** ≤ 30 minutes vs. DIDO time > 30 minutes

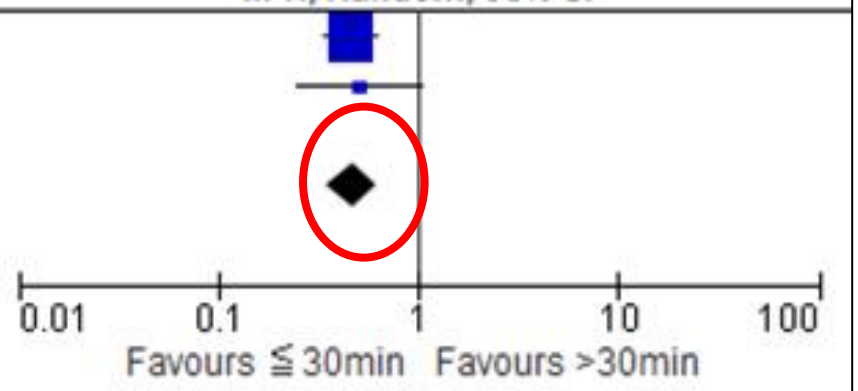
Two observational studies

Tanaka (submitted)

Study or Subgroup	DIDO≦30min Events	Total	DIDO>30min Events	Total	Weight	Risk Ratio M-H, Random, 95% CI	Year
Wang2011	43	1600	768	13030	84.9%	0.46 [0.34, 0.62]	2011
Shi2018	8	194	63	772	15.1%	0.51 [0.25, 1.04]	2018
Total (95% CI)		**1794**		**13802**	**100.0%**	**0.46 [0.35, 0.61]**	
Total events	51		831				

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.07$, df = 1 (P = 0.80); $I^2 = 0\%$

Test for overall effect: Z = 5.41 (P < 0.00001)



- A door-in–door-out (DIDO) time ≤30 minutes was associated with a lower in-hospital mortality rate.
- We suggest that DIDO time be reduced to 30 minutes or less for STEMI patients (weak recommendation, very low-certainty evidence, Grade 2D).

High sensitivity troponin

Consider admission to ED chest pain unit or to appropriate bed, based on in-hospital protocol

- ECG monitoring
- **See figure of 0/1 hour algorithm using high-sensitivity cardiac troponin**

ST elevation or
strongl

changes in ST
ves
-ACS

Consult with ca
Do not delay re

See figure of re

chest pain unit
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rdiac

Repe

0/1 algorithm: Algorithm for determining rule-in (diagnosis as NSTEMI) and rule-out (excluding NSTEMI) by performing high-sensitivity troponin measurement at the time of visit (0 hours) and 1 hour after the patient suspected of NSTEMI. European Society of Cardiology 0/1-hour algorithm.

Eur Heart J 2016;37:267-315

the 0/1-hour algorithm for diagnosing NSTEMI in the ED

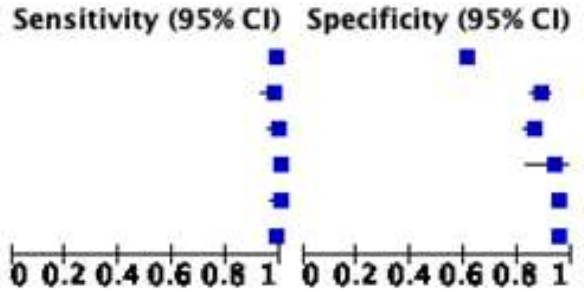
Troponin I

16 observational studies

pooled sensitivity of 99.3%, pooled specificity of 90.1%

Nomura (submitted)

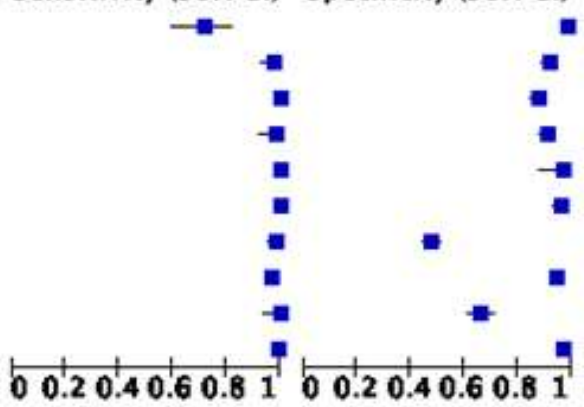
Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)
Boeddinghaus, 2017	444	921	7	1456	0.98 [0.97, 0.99]	0.61 [0.59, 0.63]
Boeddinghaus, 2018, middle, BACC	92	35	2	281	0.98 [0.93, 1.00]	0.89 [0.85, 0.92]
Boeddinghaus, 2018, Old, BACC	129	63	1	379	0.99 [0.96, 1.00]	0.86 [0.82, 0.89]
Boeddinghaus, 2018, Young, BACC	410	3	0	46	1.00 [0.99, 1.00]	0.94 [0.83, 0.99]
Jaeger, 2015	97	29	0	624	1.00 [0.96, 1.00]	0.96 [0.94, 0.97]
Pickering, 2016	233	99	3	1881	0.99 [0.96, 1.00]	0.95 [0.94, 0.96]



Troponin T

pooled sensitivity and specificity, 99.3% and 91.7%

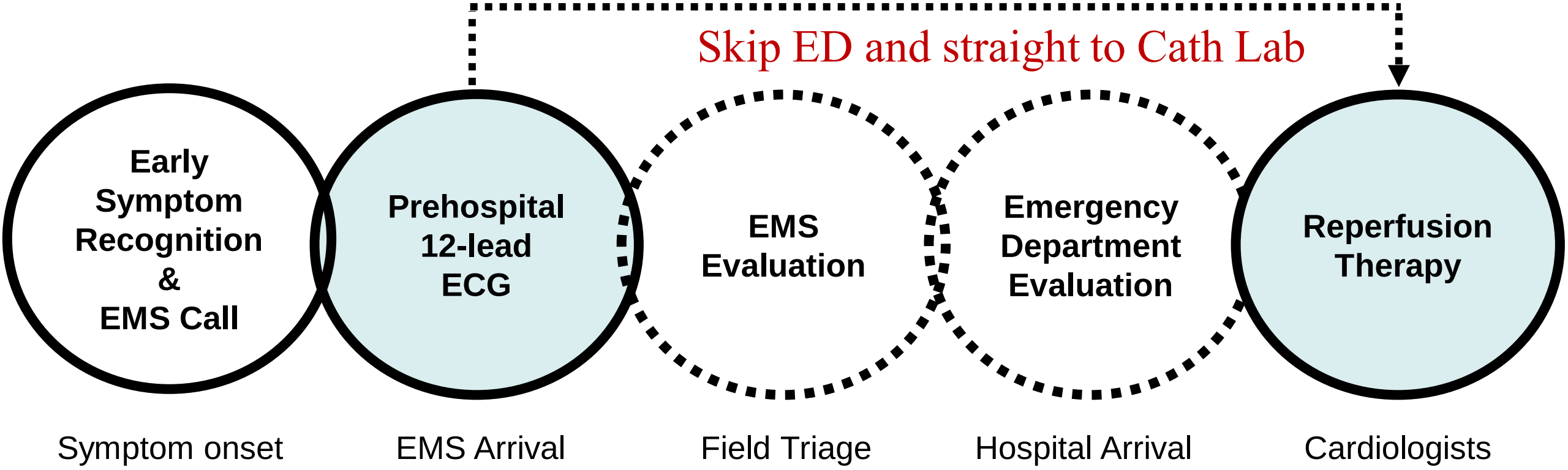
Study	TP	FP	FN	TN	Sensitivity (95% CI)	Specificity (95% CI)
Boeddinghaus, 2018, middle, TRAPID-AMI	48	5	19	340	0.72 [0.59, 0.82]	0.99 [0.97, 1.00]
Boeddinghaus, 2018, middle, BACC	97	26	2	301	0.98 [0.93, 1.00]	0.92 [0.89, 0.95]
Boeddinghaus, 2018, Old, BACC	147	58	0	409	1.00 [0.98, 1.00]	0.88 [0.84, 0.90]
Boeddinghaus, 2018, Old, TRAPID-AMI	65	32	1	327	0.98 [0.92, 1.00]	0.91 [0.88, 0.94]
Boeddinghaus, 2018, Young, BACC	410	2	0	57	1.00 [0.99, 1.00]	0.97 [0.88, 1.00]
Boeddinghaus, 2018, Young, TRAPID-AMI	210	8	0	203	1.00 [0.98, 1.00]	0.96 [0.93, 0.98]
Mokhtari, 2017	196	429	3	392	0.98 [0.96, 1.00]	0.48 [0.44, 0.51]
Pickering, 2016	279	104	8	1830	0.97 [0.95, 0.99]	0.95 [0.94, 0.96]
Shiozaki, 2017	57	120	0	236	1.00 [0.94, 1.00]	0.66 [0.61, 0.71]
Twerenbold, 2018	361	84	3	2319	0.99 [0.98, 1.00]	0.97 [0.96, 0.97]



- ESC 0/1-h algorithm is suggested to rule-in and rule-out patients with non-ST-segment elevation myocardial infarction. (weak recommendation, very low-certainty evidence, Grade 2D).

Reperfusion goals: Symptom onset-to-reperfusion < 120 min
EMS-to-Device < 90 min

Prehospital ECG interpreted by EMS or transmitted by cell phone to hospital
Pre-arrival activation of catheterization laboratory



CONCLUSIONS

- ACS RCA guidelines for prehospital phase will be published on 2021 according to ILCOR CoSTR2015.
- Key issues in RCA guidelines for ACS include;

1) Prehospital 12-lead ECG with hospital notification or transmission
2) Withholding oxygen in normoxic patients with ACS
3) Door-in–door-out (DIDO) time ≤30 minutes in non–PCI-capable hospital
4) Troponin to rule out ACS in low-risk patients

Thank you for your attention

謝謝