欧洲新版STEMI指南与临床实践：面临的3大挑战

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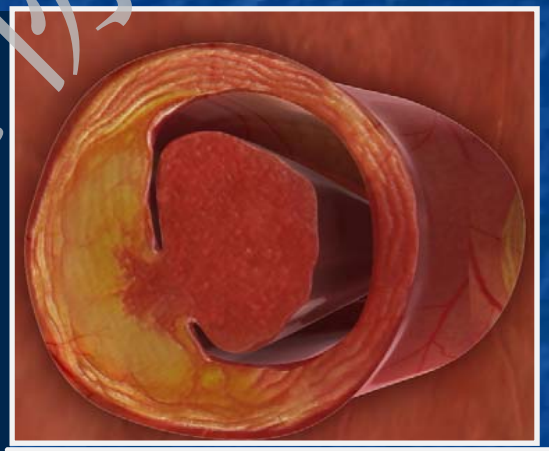
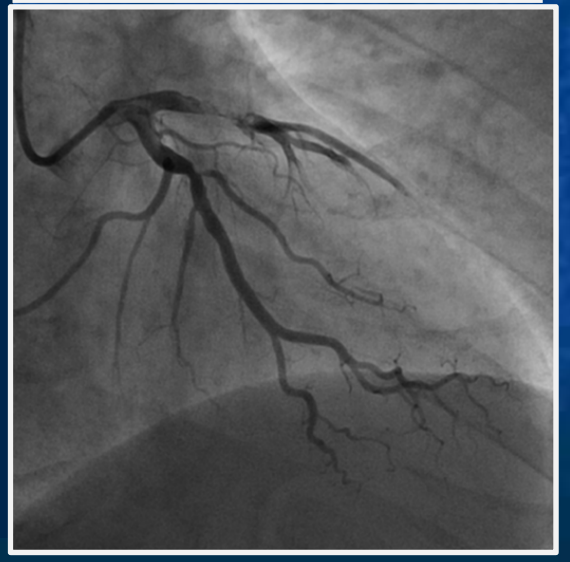
直接PCI的目的

- Restore flow in the culprit artery.
- Optimize myocardial perfusion.
- Preserve LV function.
- Diminish mechanical & electrical complications.
- **Prevent mortality!**





What is new in 2017 Guidelines on AMI-STEMI

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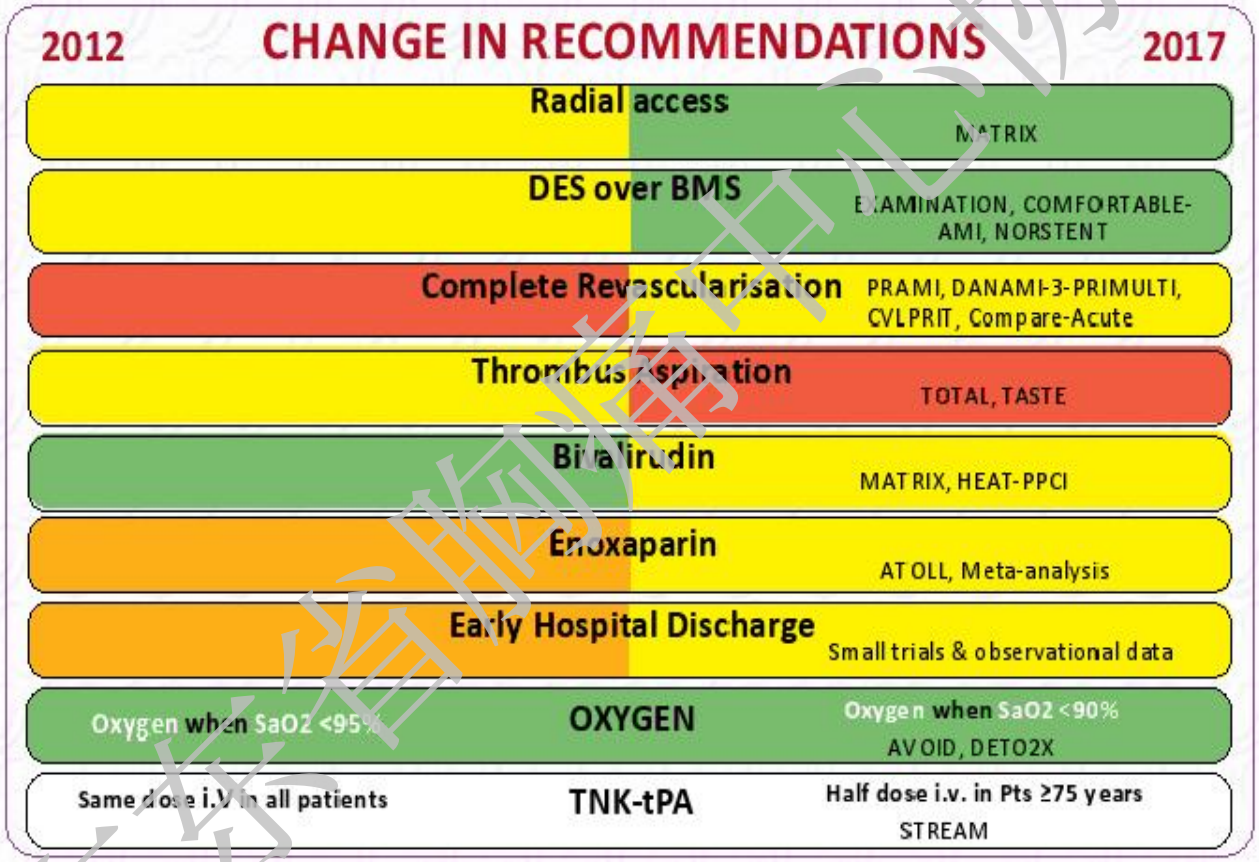

www.escardio.org/guidelines 2017 ESC Guidelines for the Management of AMI-STEMI (European Heart Journal 2017 - doi:10.1093/eurheartj/ehx095)

What is new in 2017 Guidelines on AMI-STEMI
(continued)

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2017 NEW RECOMMENDATIONS

- Additional lipid lowering therapy if LDL >1.8 mmol/L (70 mg/dL) despite on maximum tolerated statins. ***IMPROVE-IT, FOURIER***
- Complete revascularization during index primary PCI in STEMI patients in shock. Expert opinion

- Cangrelor if $P2Y_{12}$ inhibitors have not been given. ***CHAMPION***
- Switch to potent $P2Y_{12}$ inhibitors 48 hours after fibrinolysis. Expert opinion
- Extend Ticagrelor up to 36 months in high-risk patients. ***PEGASUS-TIMI 54***
- Use of polypill to increase adherence. ***FOCUS***

- Routine use of deferred stenting. ***DANAMI 3-DEFER***

I

IIa

IIb

III

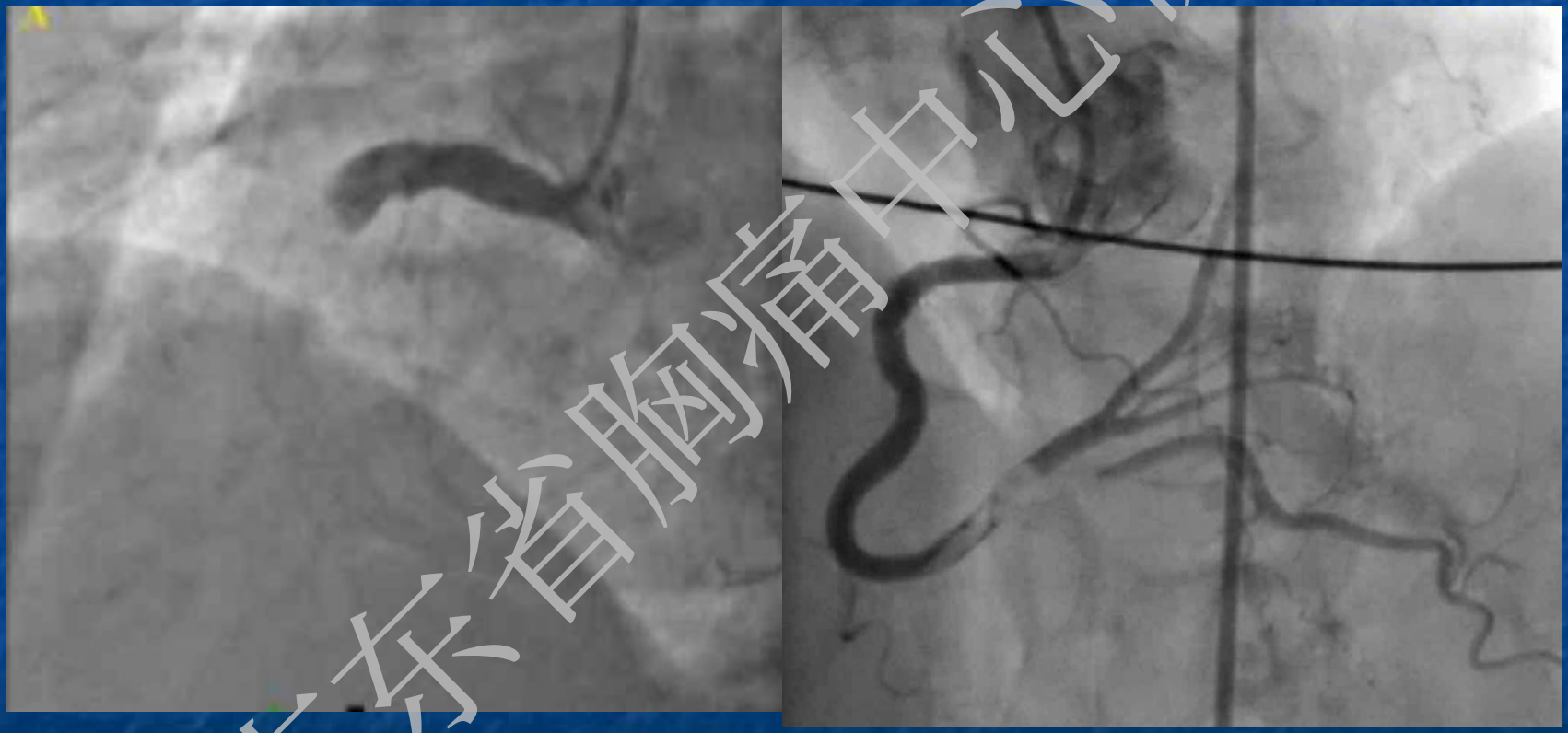
面临的主要挑战

- Shorten time to reperfusion
- Reduce access site related complications
- Choosing the correct stent
- High thrombotic burden
- No reflow phenomenon
- Reperfusion injury
- STEMI with multivessel disease
- STEMI with cardiogenic shock
- Long-term DAPT management

挑战1：血栓抽吸的价值？

Title	Citation		Class	LOE
2012 ESC Guidelines ST-segment elevation myocardial infarction .	European Heart Journal 2012 Oct;33(20):2569-619	Routine aspiration should be considered	IIa	B
2014 ESC/EACTS guidelines on myocardial revascularization	Eur Heart J. 2014 Oct 1;35(37):2541-619	May be considered in selected patients	IIb	A
2015 ACC/AHA focused update PPCI	JACC	Routine thrombectomy not useful	III	A
2015 ACC/AHA focused update PPCI	JACC	Selective and bailout Thrombectomy not well established	IIb	C
2017 ESC Guidelines ST-segment elevation myocardial infarction	European Heart Journal 2017	Routine use of thrombus aspiration is not recommended.	III	A

如何识别获益的患者?



Distal Filter Protection Versus Conventional Treatment during PCI in Patients with Attenuated Plaque Identified by IVUS

VAcuuM asPIration thrombus Removal (VAMPIRE) 3 trial

Kiyoshi Hibi, MD

Yokohama City University Medical Center

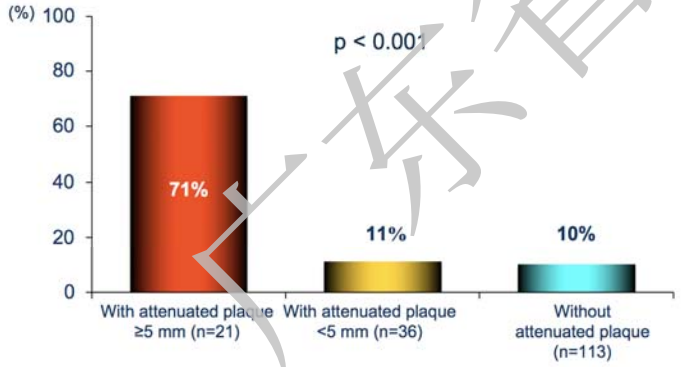
Ken Kozuma MD; Shinjo Sonoda MD; Tsutomu Endo MD; Hiroyuki Tanaka MD; Hiroyuki Kyono MD; Ryoji Koshida MD; Takayuki Ishihara MD; Masaki Awata MD; Teruyoshi Kume MD; Kengo Tanabe MD; Yoshihiro Morino MD; Kengo Tsukahara MD; Yuji Ikari MD; Kenshi Fujii MD; Masao Yamasaki MD; Takeharu Yamanaka PhD; Kazuo Kimura MD; Takaaki Isshiki MD

For the VAMPIRE 3 Investigators

tct2017 Cardiovascular Research Foundation

Background

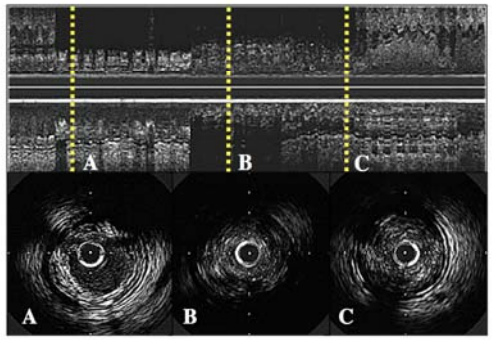
Attenuated plaque length and no-reflow phenomenon



tct2017 Endo, Hibi et al. *JACC Cardiovasc Interv.* 2010;3:540-9 Cardiovascular Research Foundation

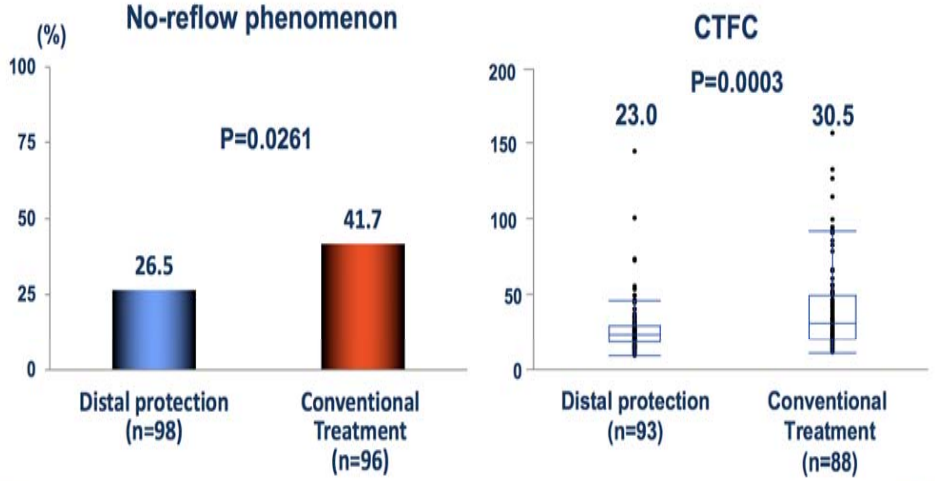
IVUS Eligibility Criteria

- Attenuated plaque with a longitudinal length of ≥5 mm by 40MHz IVUS before PCI
- Attenuated plaque was defined as IVUS images with backward signal attenuation of ≥180° behind plaque without dense calcium



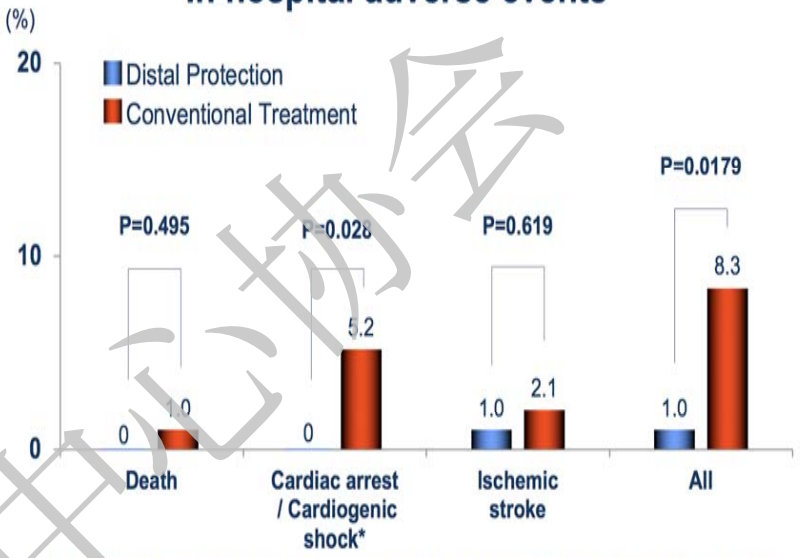
tct2017 Endo, Hibi et al. *JACC Cardiovasc Interv.* 2010;3:540-9 Cardiovascular Research Foundation

Primary endpoint; Incidence of no-reflow phenomenon



tct2017 Analyzed by an independent core laboratory (Cardiocore, Tokyo, Japan) Cardiovascular Research Foundation

In hospital adverse events



*Cardiac arrest/cardiogenic shock after revascularization, requiring defibrillation, CPR, or ECMO

tct2017 Adjudicated by an independent Clinical Event Committee Cardiovascular Research Foundation

Patients with cardiac arrest/cardiogenic shock

Age	Sex	Diagnosis	*Attenuated plaque length	Event	Treatment	Max CK
38	M	STEMI	9 mm	VF	Defibrillation	8285 IU/L
59	F	STEMI	10 mm	VF	Defibrillation CPR	3410 IU/L
71	M	STEMI	12 mm	VT	Defibrillation ECMO	618 IU/L
56	M	STEMI	24 mm	Cardiac arrest Shock	Defibrillation ECMO IABP	12996 IU/L
84	M	NSTEMI	31 mm	Cardiac arrest Shock	CPR, IABP	2293 IU/L

tct2017 *Analyzed by an independent core laboratory (Cardiocore, Tokyo, Japan) Cardiovascular Research Foundation

Conclusions

The use of distal embolic protection applied with a filter device decreased the incidence of no-reflow phenomenon and was associated with fewer serious adverse cardiac events after revascularization than conventional PCI in ACS patients with attenuated plaque ≥5 mm in length.

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实践1：血栓抽吸的价值

- The management of the moderate , large thrombus burden still challenging
- The thrombos apiration still an important tool but not always sufficient , and no always necessary
- The **case by case** strategy using all tools : Balloon , thrombus aspiration ,stent , pharmacological approach Is the best way to come to the end of thrombus

挑战2：部分还是完全血运重建？

Procedural aspects of the primary percutaneous coronary intervention strategy

ESC European Society of Cardiology

Recommendations	Class	Level
IRA technique *(continued)*		
Routine use of thrombus aspiration is not recommended.	III	A
Routine use of deferred stenting is not recommended.	III	B
Non-IRA strategy		
Routine revascularization of non-IRA lesions should be considered in STEMI patients with multivessel disease before hospital discharge.	IIa	A
Non-IRA PCI during the index procedure should be considered in patients with cardiogenic shock.	IIa	C
CABG should be considered in patients with ongoing ischaemia and large areas of jeopardized myocardium if PCI of the IRA cannot be performed.	IIa	C

多支病变：如何处理？

IRA	IRA	MV PPCI

• Early staged strategy for NCL
• FFR-guided strategy (≤0.8)
• Single setting FFR (Compare-Acute) vs. early staged (day 2-3) (DANAMI3)
	• Later staged strategy for NCL
	• FFR-guided strategy (≤0.8)
	• Non-invasive (SPECT, Stress Echo evaluation)
		• Same setting PCI of NCL (MV-PCI)
		• Selected same setting PCI
		  • TIMI<3
		  • Critical lesions ruptured plaques
		  • Cardiogenic Shock
		• C/I in CTO and very complex PCI

The ultimate goal would be to complete the revascularization during or soon following PPCI

IRA = Infarct related artery, NCL = Non culprit lesions

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CULPRIT-SHOCK

CULPRIT-SHOCK: A Randomized Trial of Multivessel PCI in Cardiogenic Shock

Holger Thiele, MD

on behalf of the CULPRIT-SHOCK Investigators

tct2017 Cardiovascular Research Foundation

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Hypothesis

Culprit lesion only PCI (with possible staged revascularization)
is superior to
immediate multivessel PCI
in multivessel coronary artery disease (≥2 mm in diameter, >70% stenosis incl. CTO) patients with cardiogenic shock complicating acute myocardial infarction.

tct2017 Thiele et al. Am Heart J. 2016;172:160-169 Cardiovascular Research Foundation

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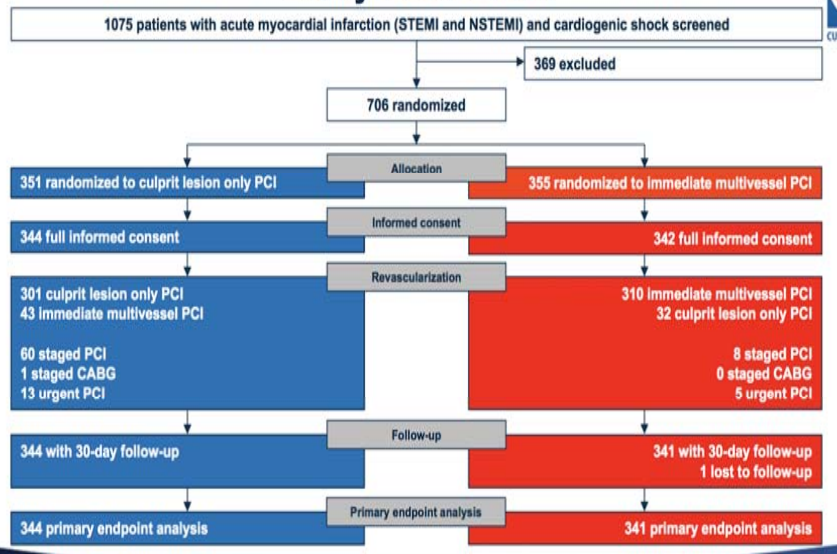
Study Flow Chart



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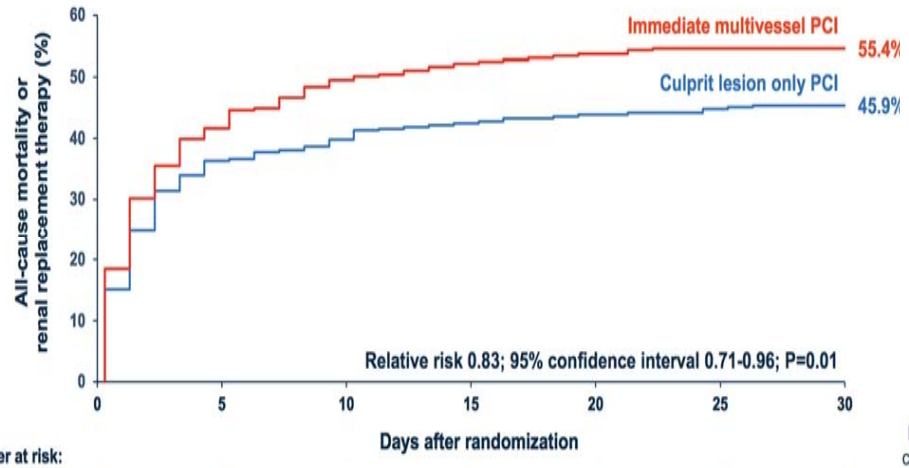
Primary Study Endpoint

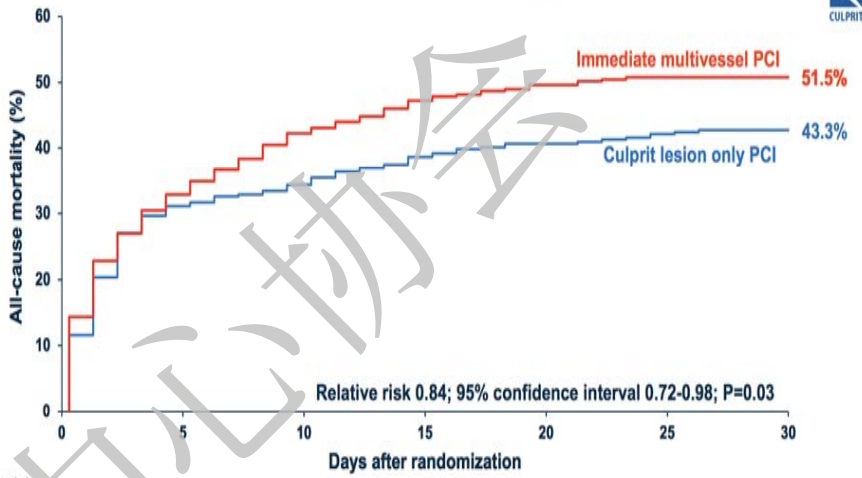
All-Cause Mortality or Renal Replacement Therapy



Number at risk:

Culprit lesion only PCI	344	219	207	198	192	189	184
Immediate multivessel PCI	341	199	172	162	156	153	152

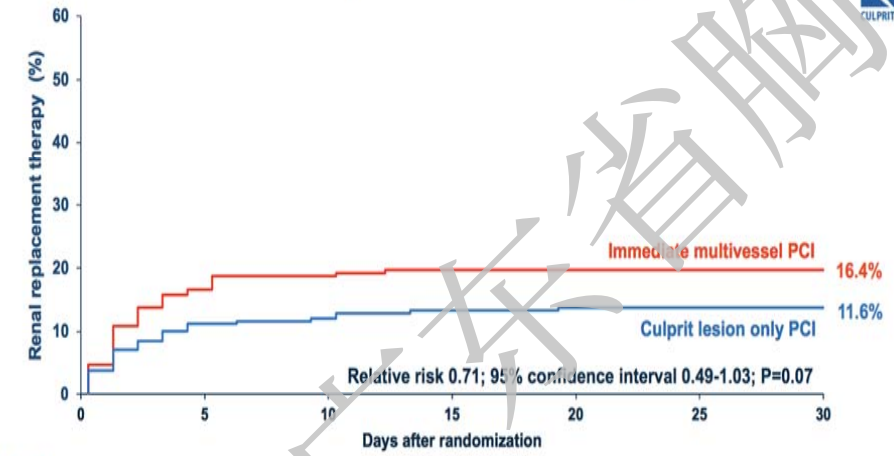
All-Cause Mortality



Number at risk:

Culprit lesion only PCI	344	237	226	211	203	198	193
Immediate multivessel PCI	341	229	197	179	170	166	165

Renal Replacement Therapy



Number at risk:

Culprit lesion only PCI	344	219	207	198	192	189	184
Immediate multivessel PCI	341	199	172	162	156	153	152

Conclusions

- In patients with multivessel coronary artery disease and cardiogenic shock complicating acute myocardial infarction culprit lesion only PCI with possible staged revascularization reduced the composite of mortality or requirement for renal replacement therapy at 30 days.
- This effect in the primary outcome was mainly driven by a 30-day mortality reduction.
- This largest randomized European multicenter trial in cardiogenic shock complicating myocardial infarction challenges current guideline recommendations.

非梗死相关动脉1次性PCI

获益

- Decrease infarct size by increasing collateral flow
- Reduce recurrent MI
  - Plaque stabilisation
- Reduce length of stay?
- Reduce recurrent ischaemia
  - Improve prognosis?

危害

- Increase infarct size
  - N-IRA PCI related
- Contrast induced nephropathy
- Bleeding
- Increase cost with no clinical benefit
- HARM

不应当1次处理！

- It is not supported by the clinical evidence
- It is likely to result in unnecessary PCI
- It is an impractical demand under current circumstances

临床证据不足

- Most relevant RCT's did not employ this strategy
- The data shows that CR does not reduce hard endpoints
- The external validity of the current batch of RCT's is questionable

可能导致不必要的PCI

- Fraction of patients with non-culprit lesions with FFR>0.8:
  - DANAMI: 97/314 (30.9%)
  - Compare-Acute: 275/575 (47.8%)
- Unnecessary PCI of FFR negative lesions
  - Reduced the benefit gained from PPCI of the culprit lesion
  - Reduced cost effectiveness

需要回答的问题

Which patients ?

Should we actually do the N-IRA ? impact

How do we decide if it needs doing ?

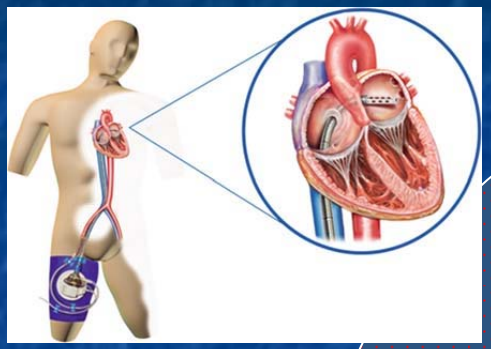
If so- when ?

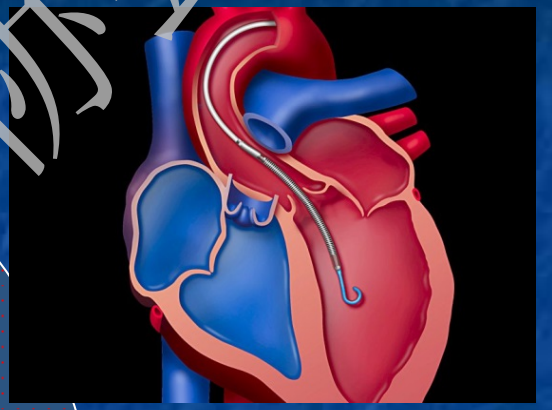
COMPLETE

实践2：1次还是分次处理?

- The current evidence does not support broad use of multivessel intervention during PPCI
- Multivessel interventionin STEMI reduces the need for repeat interventions, not "hard" endpoints such as mortality/MI
- RCT's assessing the benefit of multivesel intervention STEMI were highly selective and their conclusions should be implemented cautiously on the general population

心原性休克和院外心跳骤停者死亡率仍然高





挑战3：器械支持血动学价值？

- *O'Gara et al. JACC. 2013.*
- *Windecker et al. EHJ. 2014.*

ACC/AHA (2013)

CLASS IIa

1. The use of intra-aortic balloon pump (IABP) counterpulsation can be useful for patients with cardiogenic shock after STEMI who do not quickly stabilize with pharmacological therapy (455–459). (*Level of Evidence: B*)

ESC (2014)

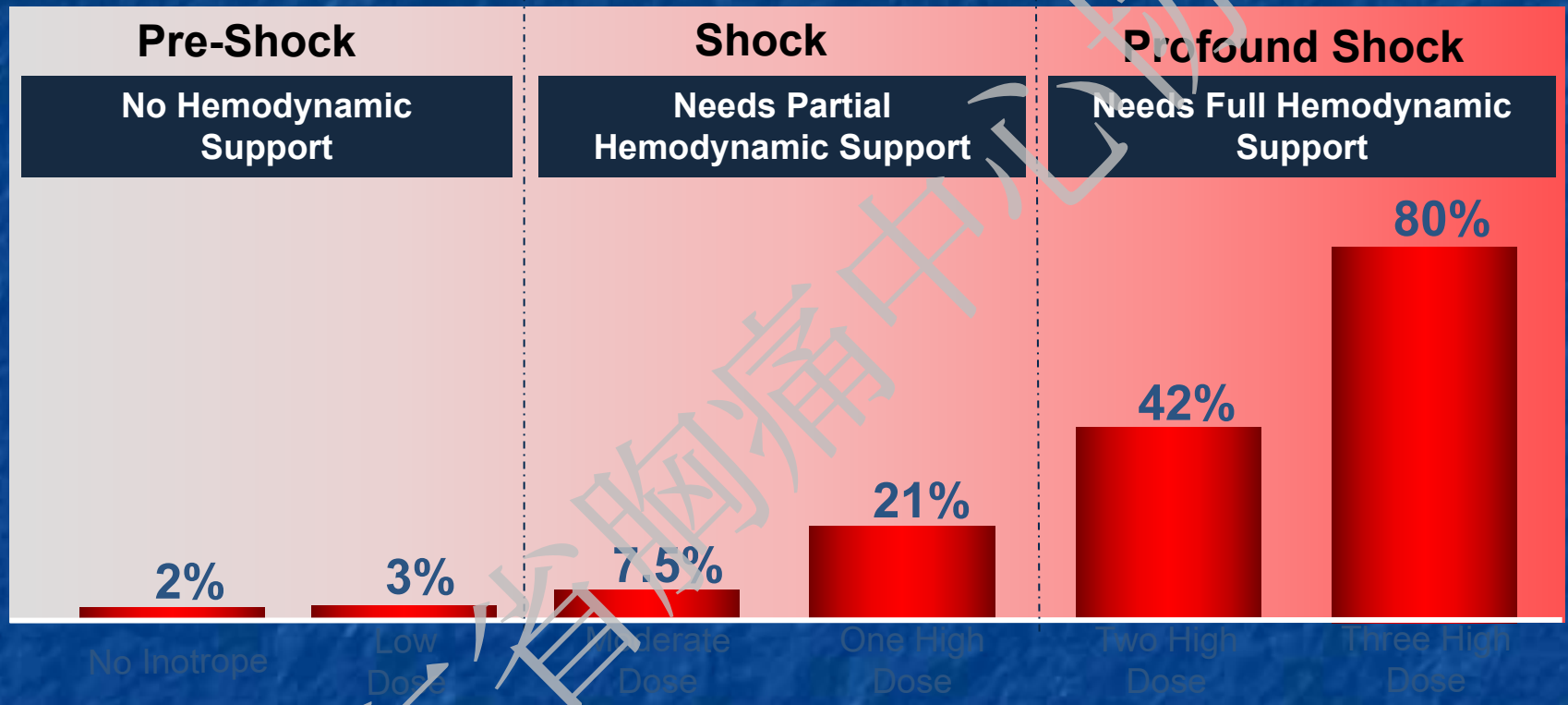
Routine use of IABP in patients with cardiogenic shock is not recommended.	III	A

Management of cardiogenic shock in ST-elevation myocardial infarction *(continued)*

ESC European Society of Cardiology

Recommendations	Class	Level
Fibrinolysis should be considered in patients presenting with cardiogenic shock if a primary PCI strategy is not available within 120 min from STEMI diagnosis and mechanical complications have been ruled out.	IIa	C
Complete revascularization during the index procedure should be considered in patients presenting with cardiogenic shock.	IIa	C
Intra-aortic balloon pumping should be considered in patients with haemodynamic instability/cardiogenic shock due to mechanical complications.	IIa	C
Haemodynamic assessment with pulmonary artery catheter may be considered for confirming diagnosis or guiding therapy.	IIb	B

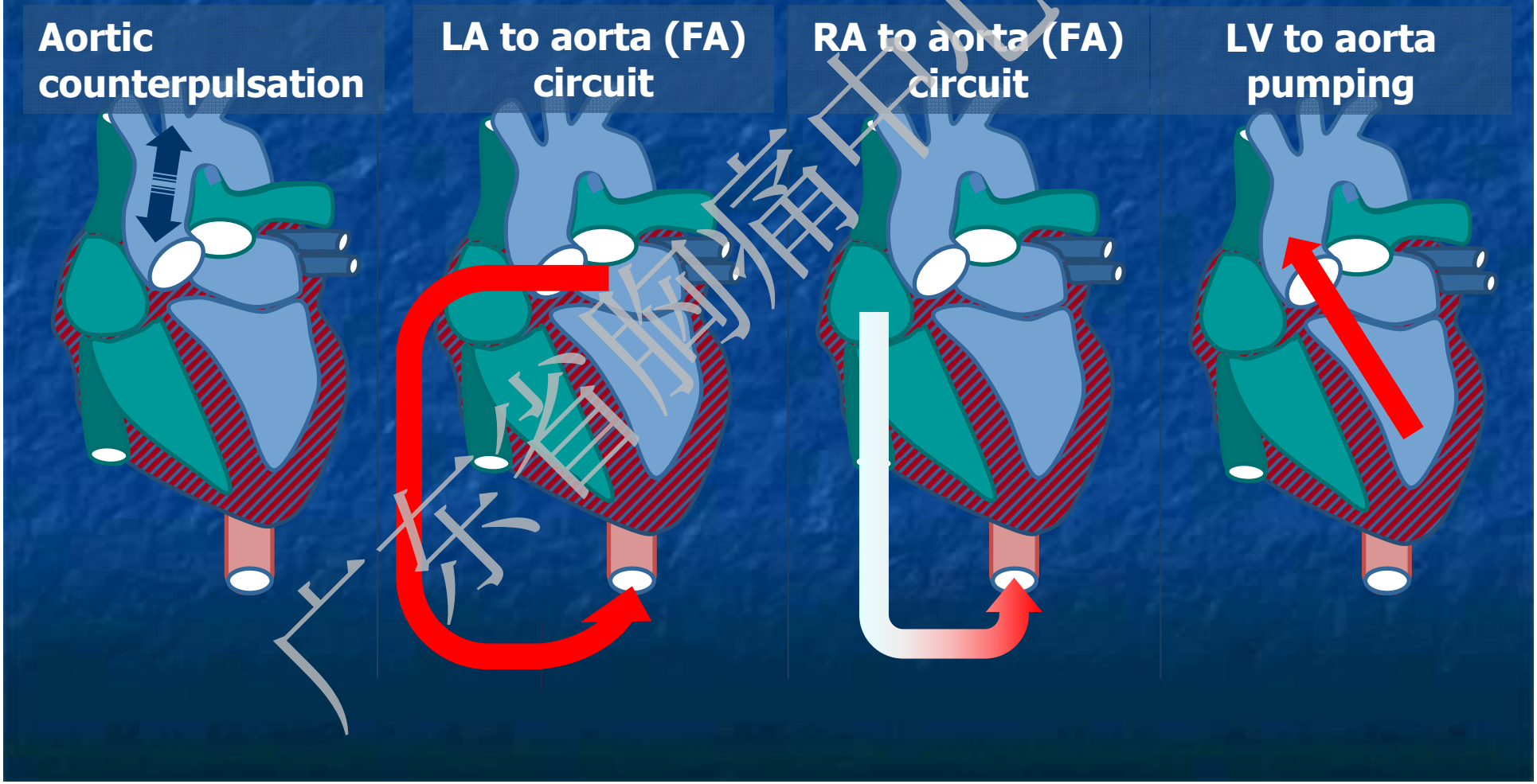
心原性休克的发展



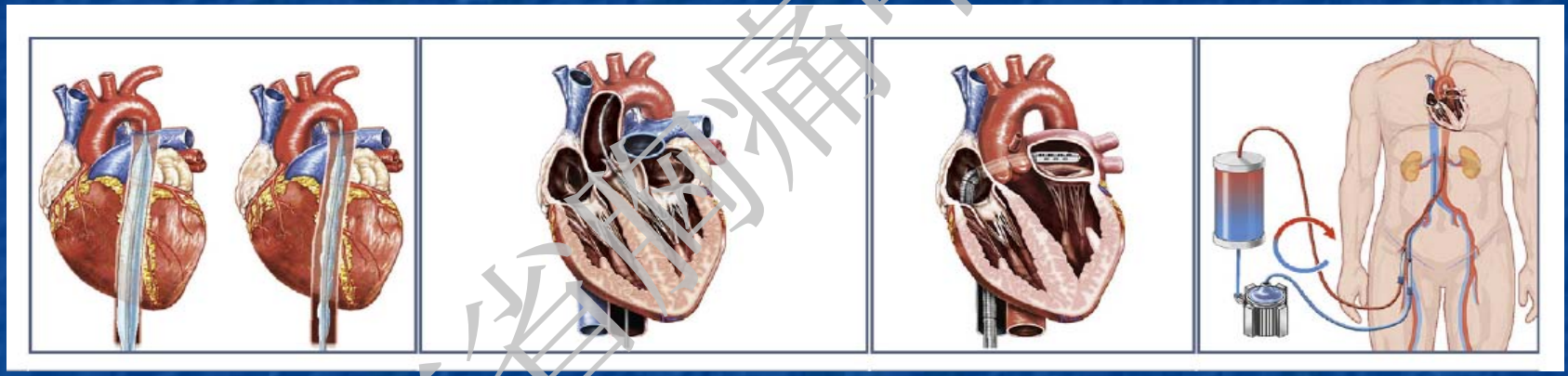
Mortality Risk with Inotrope **Dosing**

Adapted from Samuels LE et al , J Card Surg. 1999 Jul-Aug;14(4):288-93

经皮循环支持模式

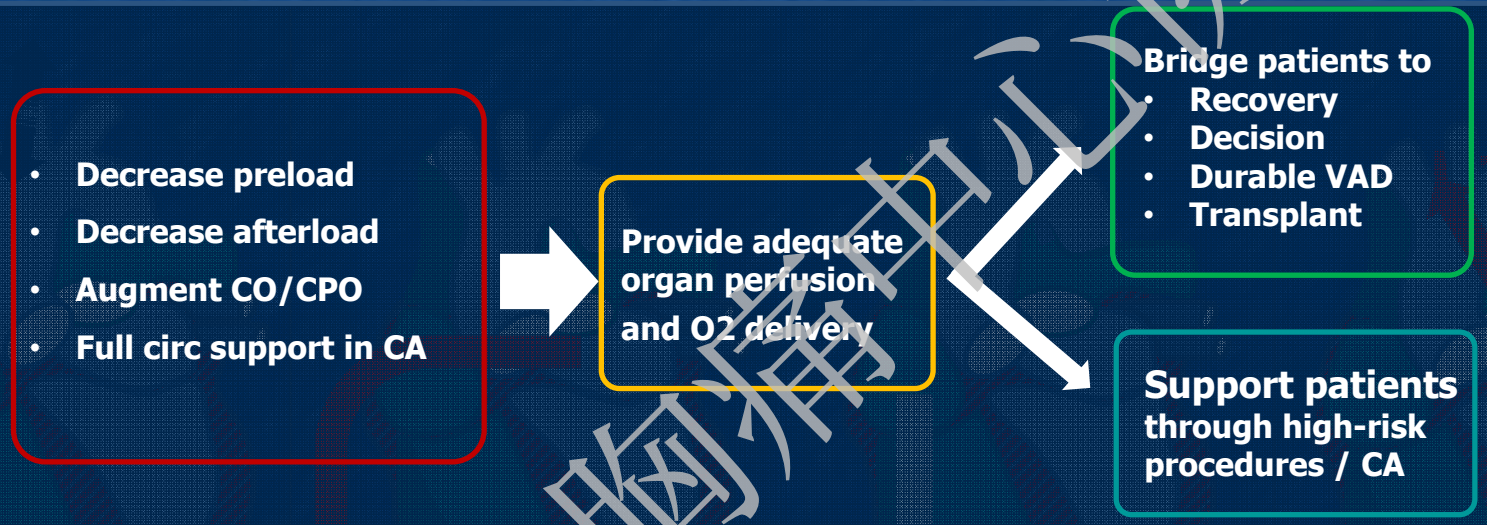


基于支持水平选择策略



Atkinson TM, et al. *JACC: Cardiovasc Interv* 2016; 9(9): 871-883.

经皮循环支持的目的



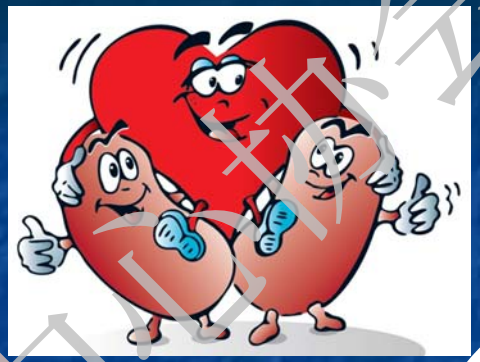
Selection of an MCS strategy should be determined by:

- Level of support required
- Hemodynamic profile desired
- Availability of equipment and local expertise
- Ability to provide support quickly

Failing Heart

Nearly Dead Heart

Happy and Alive Heart



MCS

Failing Heart

Nearly Dead Heart

Happy and Alive Heart

美国指南的演变

2011 Guidelines for PCI

↳ 2011 Guidelines for CABG

↳ 2014 Guidelines for NSTEMI

↳ 2013 Guidelines for STEMI

↳ 2015 Focused Guidelines Update for PCI/STEMI

美国指南要点

In a patient with STEMI, cardiogenic shock and cardiac arrest the US documents say . . .

. . . Nothing about this unique combination

1. For Shock: Revascularization by PPCI or CABG – Class I (absolutely)
   - Regardless of the time delay, but the sooner the better
2. For Arrest: STEMI patient resuscitated from an OHCA – Class I
3. "In suitable patients" – requires considerable clinical judgment
4. Because of public reporting, be careful of heroic efforts

有选择性应用

- Mechanical support devices improve hemodynamics
- Improved hemodynamics is the way out of shock

- Thus far no evidence for unselected patient populations
- Weigh risk (complications) benefit (hemodynamics)
- Select device on SHOCK severity and patient. No IABP.

- MCS will be effective in a selective patient population
- We need to execute these difficult studies

应当全部应用

- There is increasing mortality in cardiogenic shock complicating myocardial infarction
- There is very low use of LV support
- IABP and inotropes increase mortality
- Mechanical Hemodynamic Support in Cardiogenic Shock Should be Used in All Patients!
- *AND SHOULD BE PLACED BEFORE PCI*

实践3：器械支持血动学价值

- Cardiogenic shock carries a high mortality risk and requires rapid identification and intervention
- Multi-disciplinary collaborative approach benefits patients and aids decision making
- Rapid assessment, treatment, and frequent reassessment are necessary
- Rapid escalation of support (when appropriate) in case of inadequate response
- Think about the RV when planning initial support strategy
- Timely acute reperfusion is the most important treatment to improve outcome of STEMI
  - With or without cardiac arrest
  - With or without cardiogenic shock
- Mortality is closely related to cardiogenic shock, cardiac arrest, and the combination
- Regional systems of care – including direct transport to PCI centers, and efficient transfer systems – are essential to optimize timely reperfusion and likely will improve outcome for these high risk patients

欧洲新版STEMI指南与临床实践

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颜红兵教授看 STEMI 指南：理解精髓 意识差异 指导实践

原创 2017-08-28 颜红兵

中国医学论坛报特邀国家心血管病中心中国医学科学院阜外医院颜红兵教授点评 ESC 新版 STEMI 指南。

STEMI 领域面临的重要问题