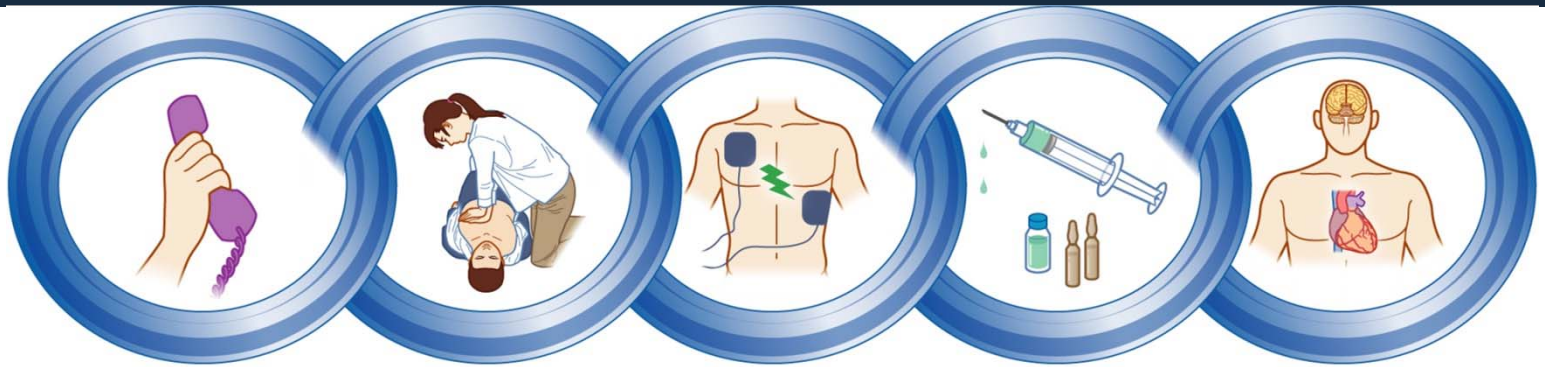
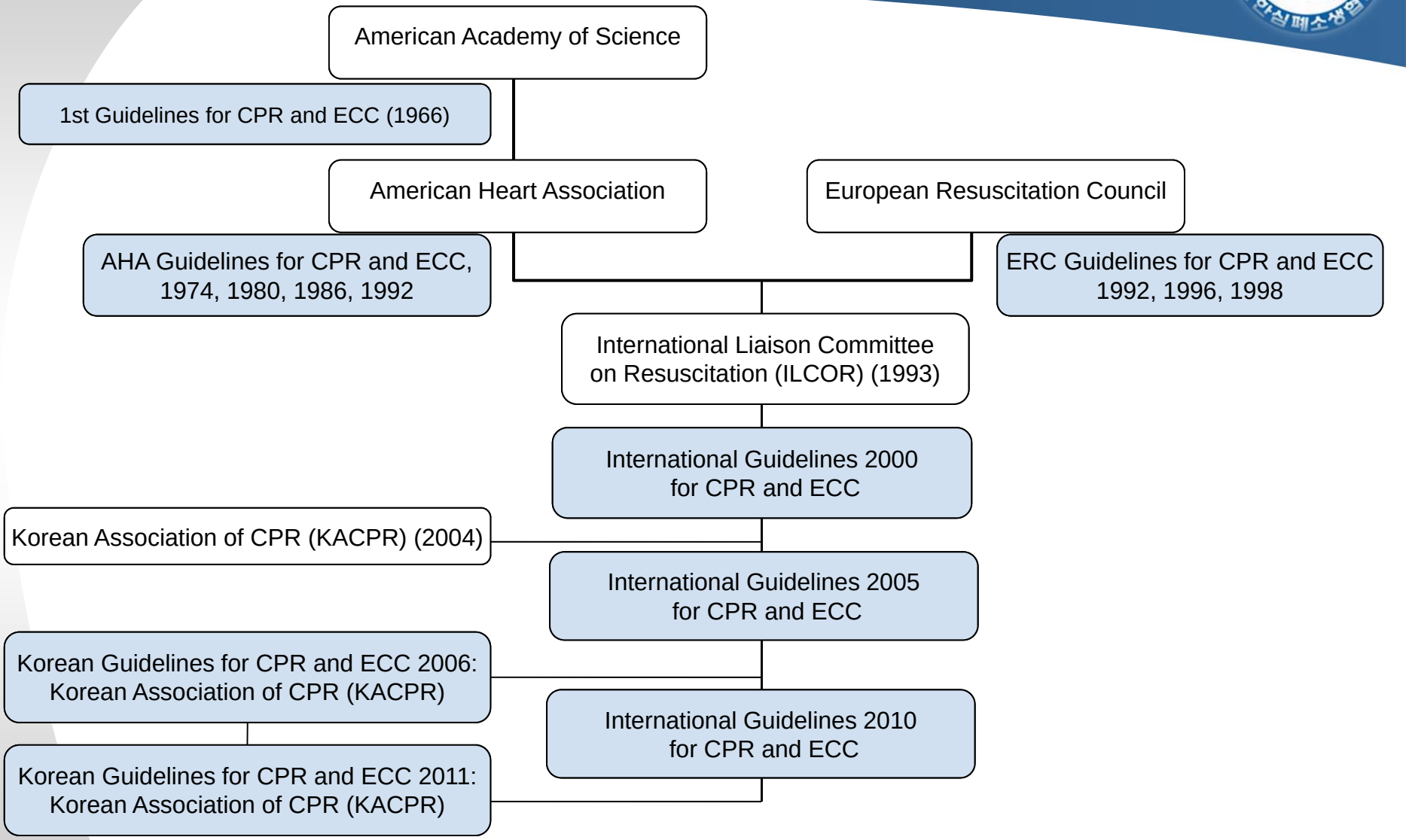
New CPR Guidelines



원주의대 황성오

CPR Guidelines and Organizations



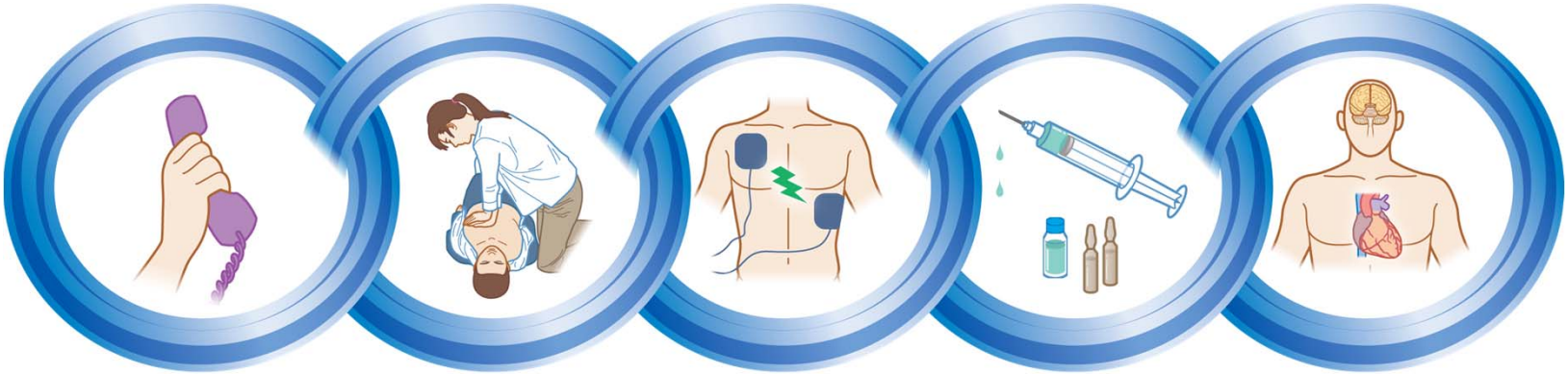
General Principle for New Guidelines

- Confirm the safety and effectiveness of G2005 and introduce new treatment
- Extension of Chain of Survival from prevention of cardiac arrest to post-resuscitation care
- Achievement of higher rate and quality of lay rescuer CPR and establishment of AED programs in the community

2011 한국 심폐소생술 지침의 주요 변경 내용

- ❖ 기본소생술 순서의 변경(C-A-B)
- ❖ 가슴압박 방법의 조정과 가슴압박 소생술 도입
- ❖ 심정지 확인과정과 기본소생술 및 전문소생술의 단순화
- ❖ 심정지 후 치료의 중요성 강조

생존 사슬, Chain of Survival



신속한
심정지 확인과 신고

신속한
심폐소생술

신속한
제세동

효과적
전문소생술

심정지 후
통합치료

연세대학교
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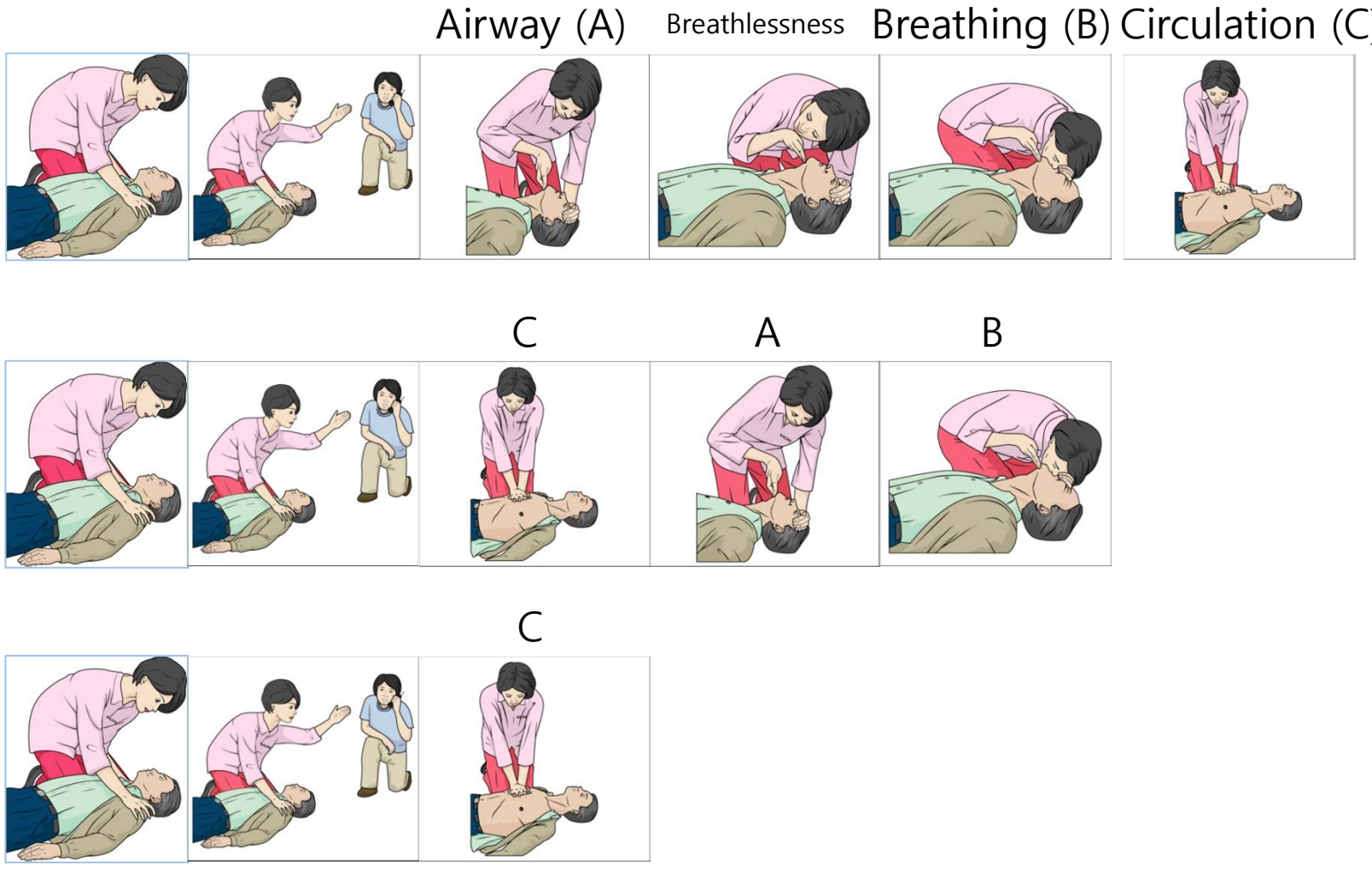
Key changes in the New Guidelines

- **심폐소생술의 단순화, Simplified BLS algorithm**
  - Removal of "look, listen, and feel"
  - Immediate activation of EMS and starting chest compressions for any unresponsive adult victim with no breathing or no normal breathing (ie, only gasps)
- **가슴압박소생술 도입**

  Encourage "hands-only (compression only) CPR" for untrained lay rescuer
- **심폐소생술 순서 변경, C-A-B rather than A-B-C**
  - Beginning CPR with 30 compressions rather than 2 ventilations

Key changes in the New Guidelines



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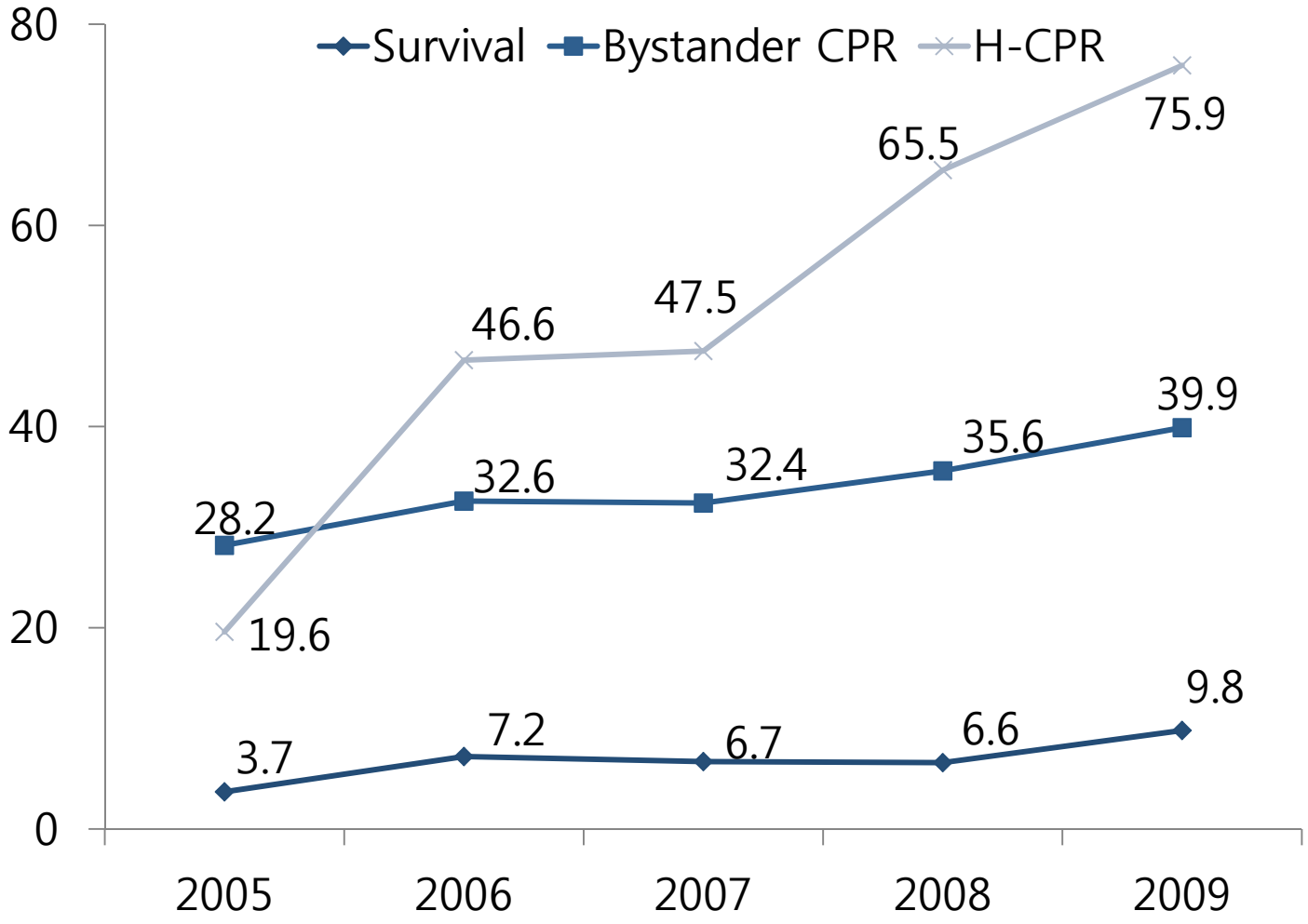
Hands-only CPR, Clinical studies

Study	Outcome	No bystander CPR (%)	CC-only CPR (%)	CC+RB CPR (%)
Bossaert et al. 1989	14-day survival	123/2,055 (6)	17/116 (15)*	71/443 (16)*
Hallstrom et al. 2000	Discharge alive	-	32/240 (15)	29/278 (10)
Waalewijn et al. 2001	Discharge alive	26/429 (6)	6/41 (15)*	61/437 (14)*
Nagao et al. 2007	1-month survival	63/2917 (2)	27/439 (6)*	30/712 (3)
Iwami et al. 2007	1-year survival	70/2,817 (2.5)	19/441 (4.3)*	25/617 (4.1)*
Bohm et al. 2007	1-month survival	-	591/8,209 (7)	77/1,145 (7)

* CC: chest compression, RB: rescue breathing

Annual Lay Bystander CPR Rates and Survival After Hands-only CPR



Bobrow, B. J. et al. JAMA 2010;304:1447-1454

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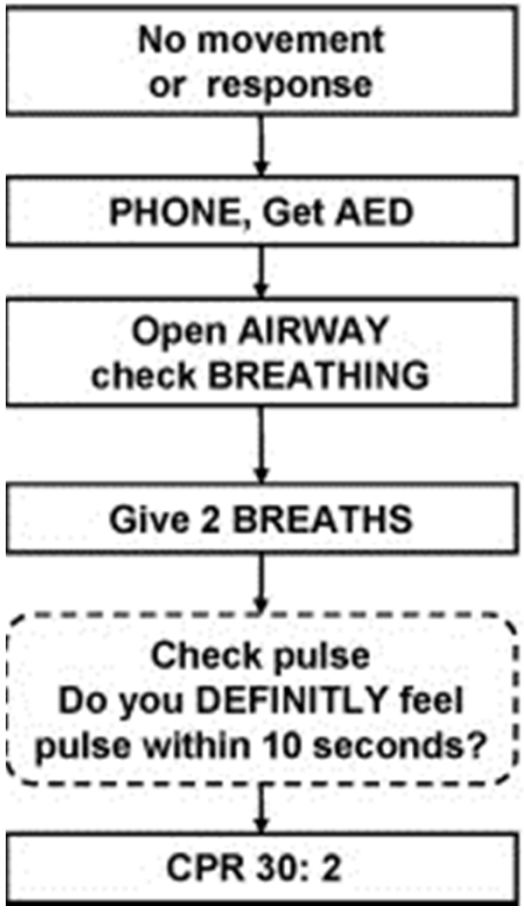
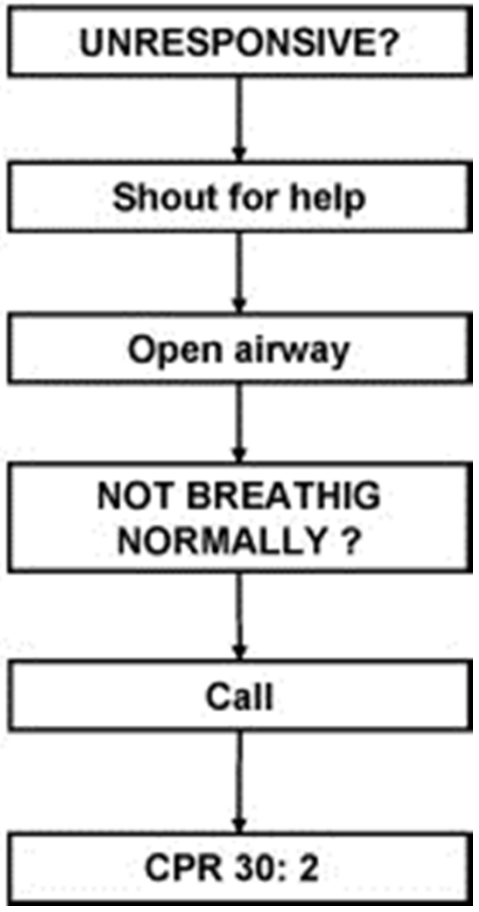
C-A-B from A-B-C
(Ventilation first vs. Compression first)

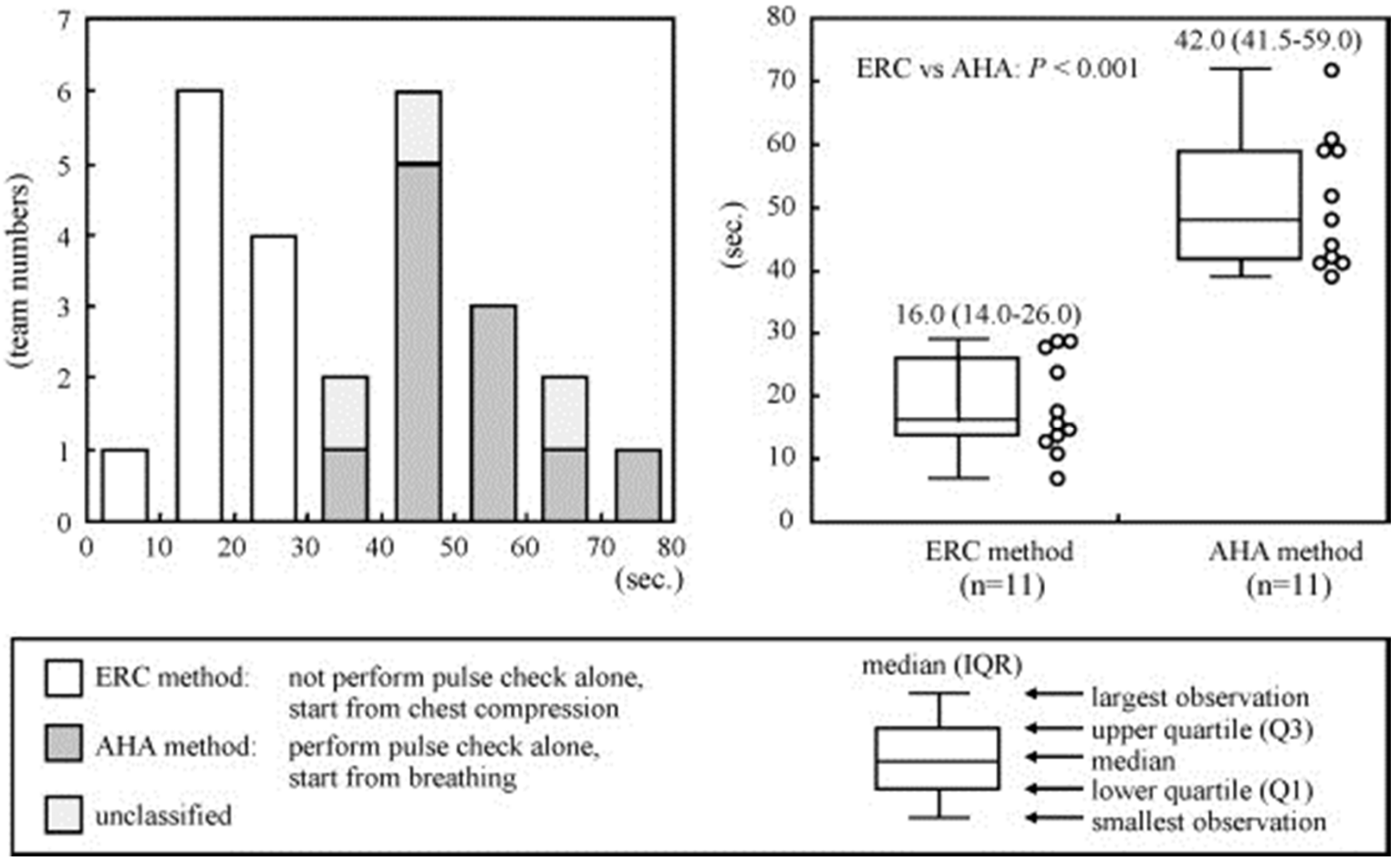
AHA Guidelines 2005



ERC Guidelines 2005

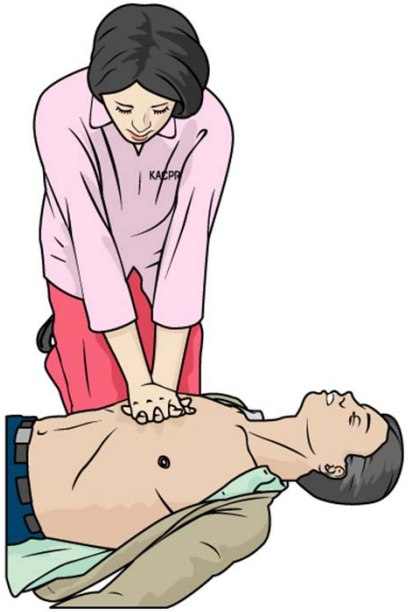


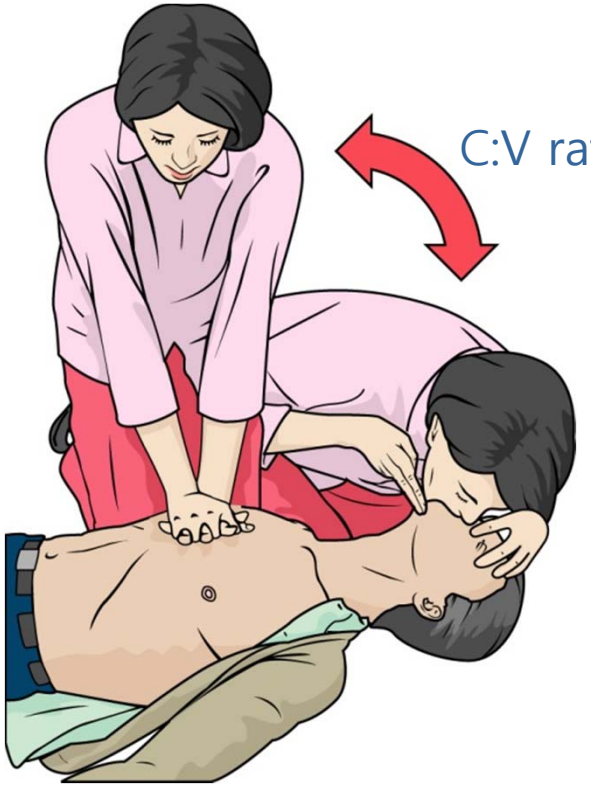
C-A-B: Manikin simulation study



Kobayashi M, et al. Resuscitation 2008;78:333-9

Key changes in the New Guidelines
Basic Life Support, 가슴압박 방법의 조정





At least 100 compressions per minute
(not exceeding 120 /min, Korea, Europe)
At least 5 cm in depth
(not exceeding 6 cm, Korea, Europe)
Minimize pause less than 10 sec
Complete recoil

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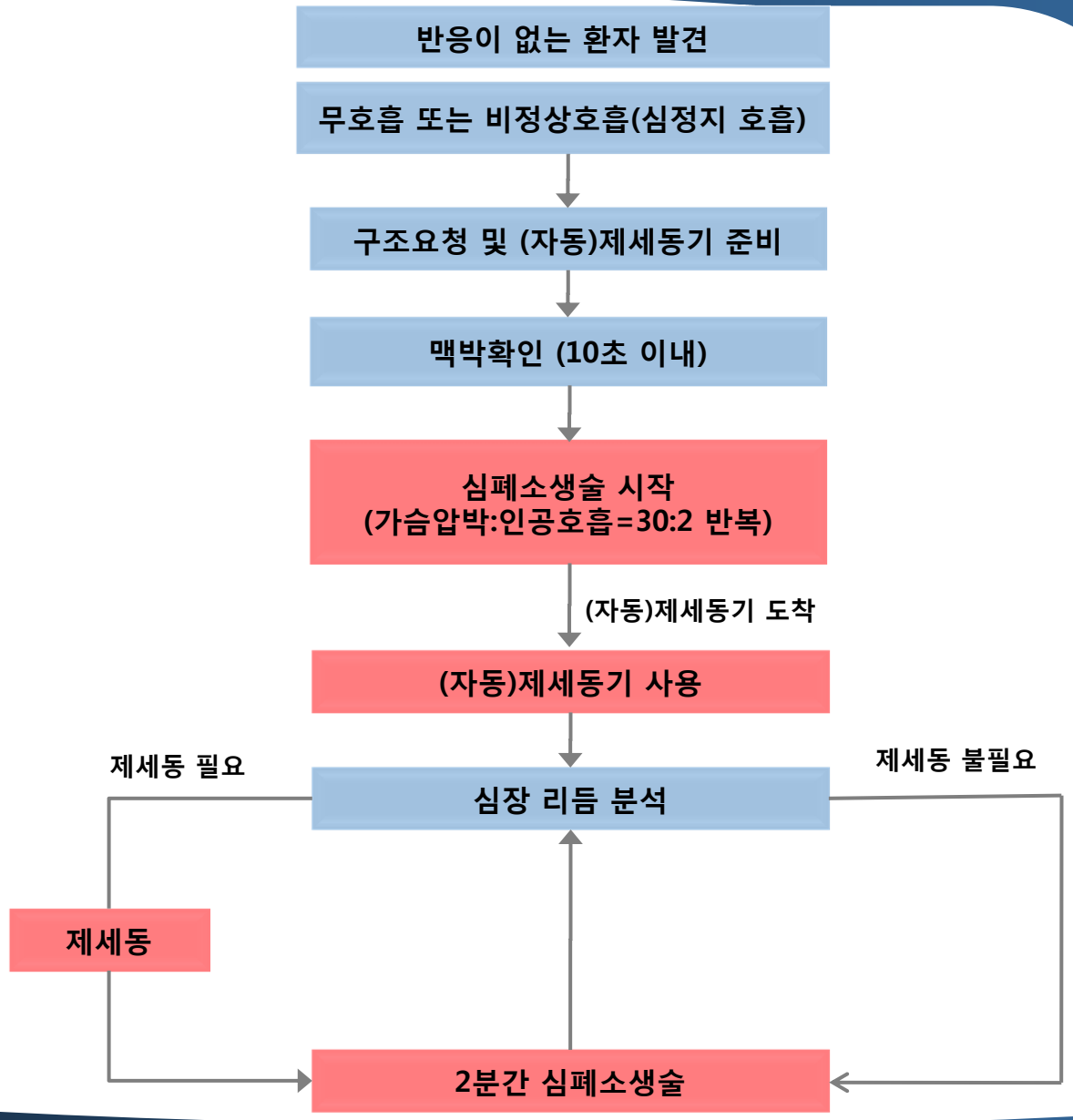
기본소생술 흐름도(일반인)

기본소생술 흐름도(의료종사자)



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전문소생술, Advance Cardiovascular Life Support

❖ 호기말 이산화탄소압 측정 장치의 유용성 강조

Use of quantitative waveform capnography for confirmation and monitoring of endotracheal tube placement

❖ 심폐소생술 중 약물 투여

Vasopressors, antiarrhythmic agents: unchanged

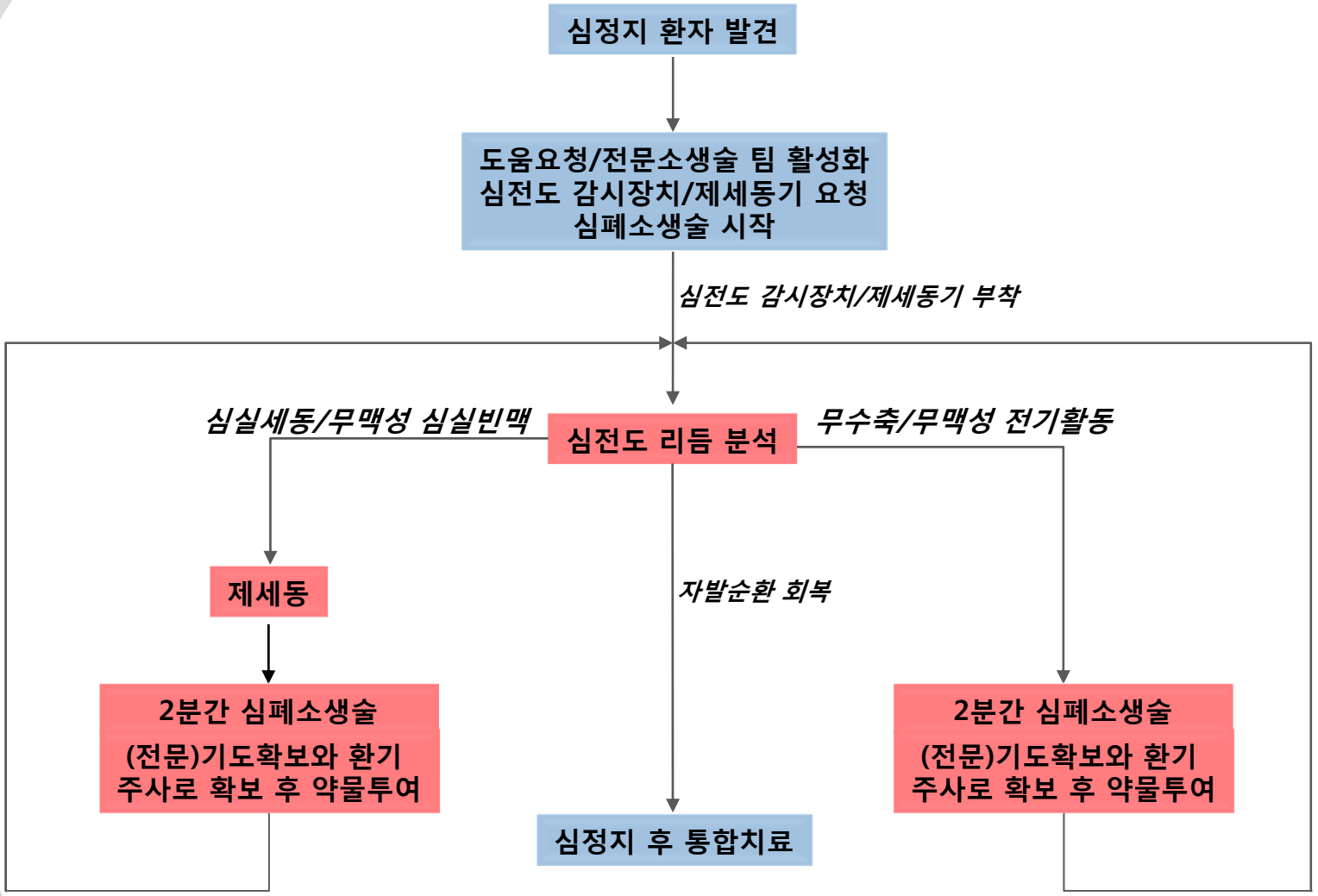
Atropine is no longer recommended for routine use in the management of PEA/asystole

Adenosine for undifferentiated, regular, wide QRS tachycardia

❖ 약물 투여 경로: IV and IO, equally effective

Intratracheal route: not recommended

전문심장소생술 흐름도(성인)



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심정지 후 치료, Post-Cardiac Arrest Care

- **체온 조절, Temperature control**

  Therapeutic hypothermia (32-34℃) during first 12-24 hours

- **급성관상동맥증후군의 치료, Active intervention of acute coronary syndrome**

  PCI for ST elevation on EKG after resuscitation

- **심폐기능 및 관류의 정상화, Optimize cardiopulmonary function and vital organ perfusion including oxygenation and ventilation**

  Avoid hyperoxia (SaO2 94~96%) and hypo- or hypercapnea (PaCO2 40-45 mm Hg)

- **혈당 조절, Glucose control**

  Conventional glycemic control (144-180 mg/dl)

- **통합적 심정지 후 치료 체계 도입, Comprehensive post-cardiac arrest care system**

Effect of Therapeutic Hypothermia by Cochrane Review

For good neurologic outcome

Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 Conventional cooling without extracorporal methods (IPD, best ever reached CPC of 1 or 2 during hospital stay)					
Bernard 2002	21/43	9/34		12.9 %	1.84 [0.97, 3.49]
HACA 2002	75/136	54/137		69.1 %	1.40 [1.08, 1.81]
Hachimi-Idrissi 2001	8/16	2/17		2.5 %	4.25 [1.06, 17.08]
Subtotal (95% CI)	**195**	**188**		**84.5 %**	**1.55 [1.22, 1.96]**

For survival

Study or subgroup	Experimental n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 Conventional cooling without extracorporal methods (IPD, survival to discharge)					
Bernard 2002	21/43	11/34		15.4 %	1.51 [0.85, 2.68]
HACA 2002	85/136	67/137		83.4 %	1.28 [1.03, 1.58]
Hachimi-Idrissi 2001	4/16	1/17		1.2 %	4.25 [0.53, 34.10]
Subtotal (95% CI)	**195**	**188**		**100.0 %**	**1.35 [1.10, 1.65]**

Arrich J, et al. Cochrane Database Syst Rev 2009;7:CD004128

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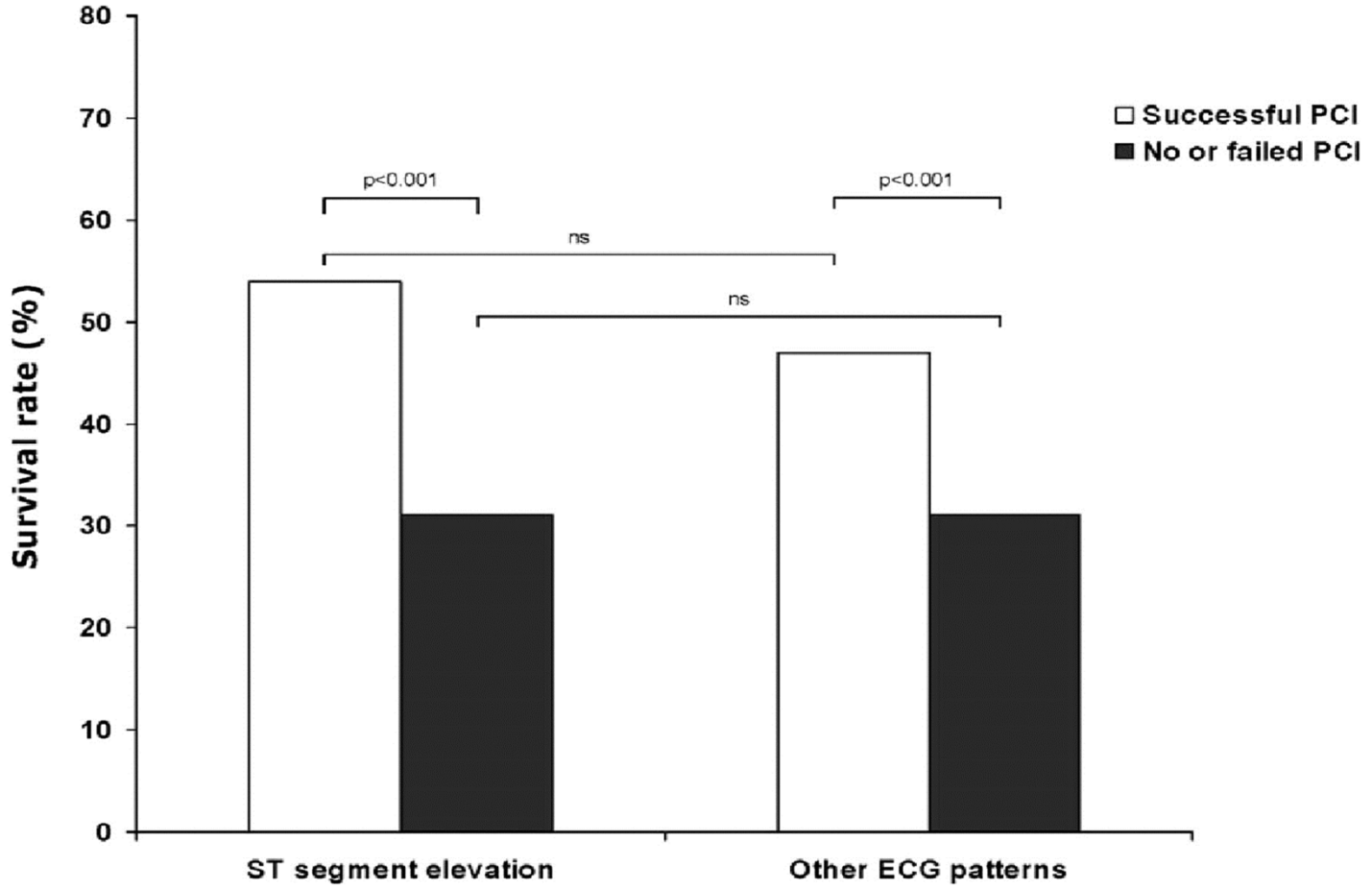
Immediate PCI and Survival in 714 OHCA

PCI is a predictor of better prognosis (OR=2.06, 1.16-3.66)



Dumas F et al. Circ Cardiovasc Interv 2010;3:200-207

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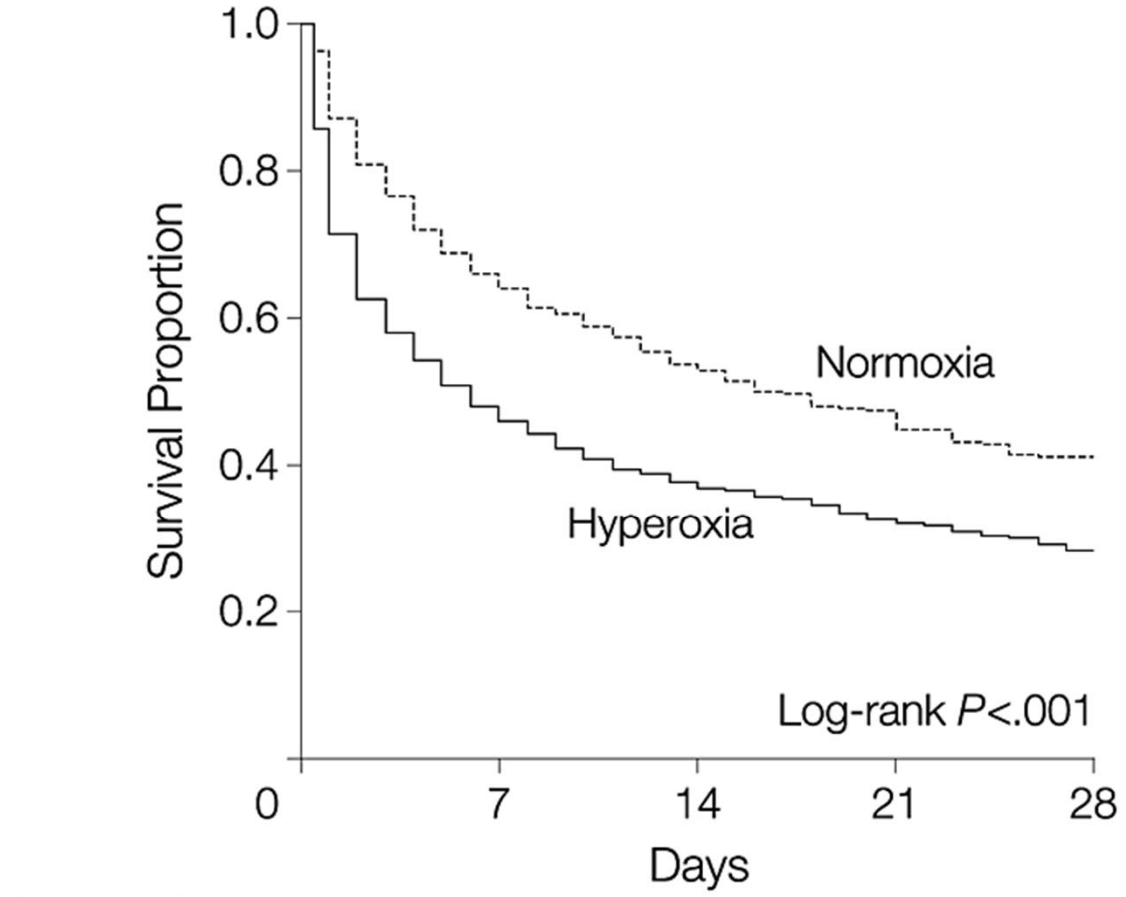
Hyperoxia during post-resuscitation



No. at risk					
Normoxia	1171	514	236	129	83
Hyperoxia	1156	406	211	115	70

Kilgannon, J. H. et al. JAMA 2010;303:2165-2171

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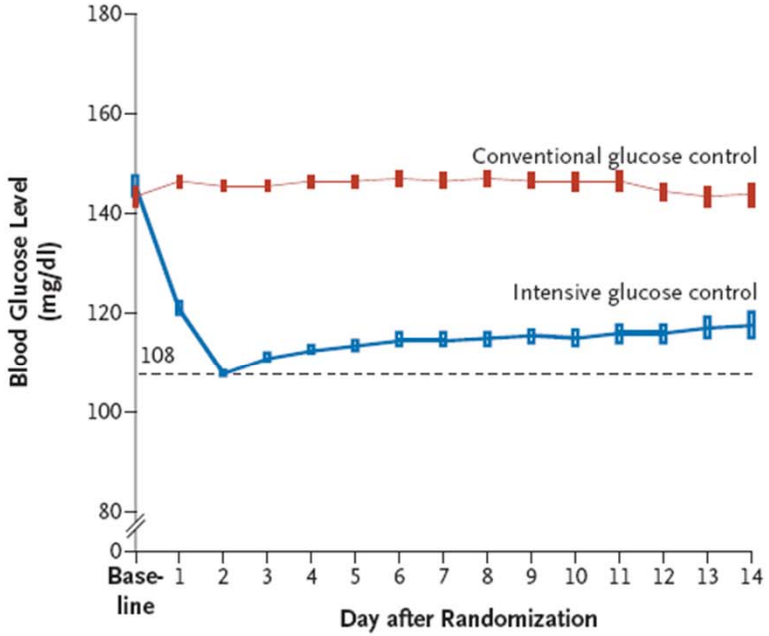
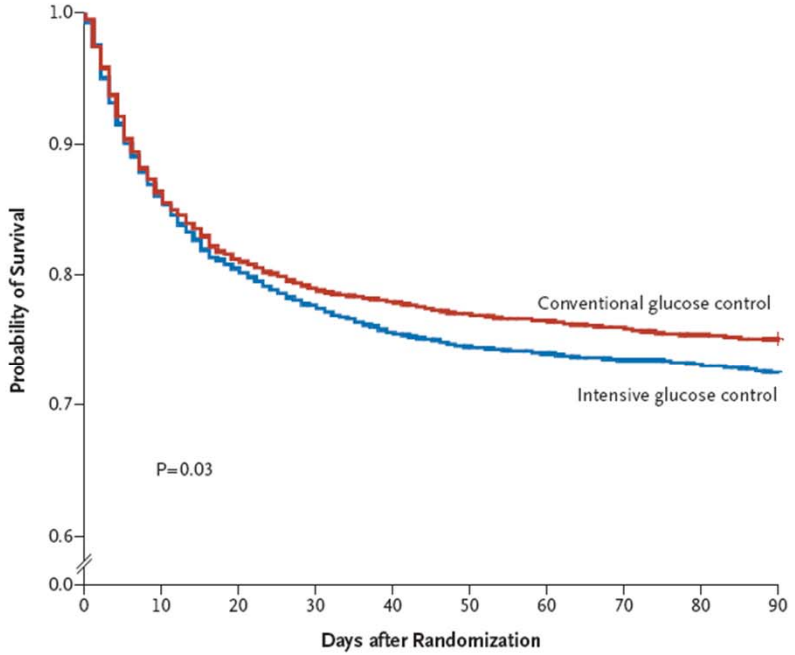
Intensive (81-108) vs. conventional glucose control(<180 mg/dl) (NICE-SUGAR study, n=6,104)



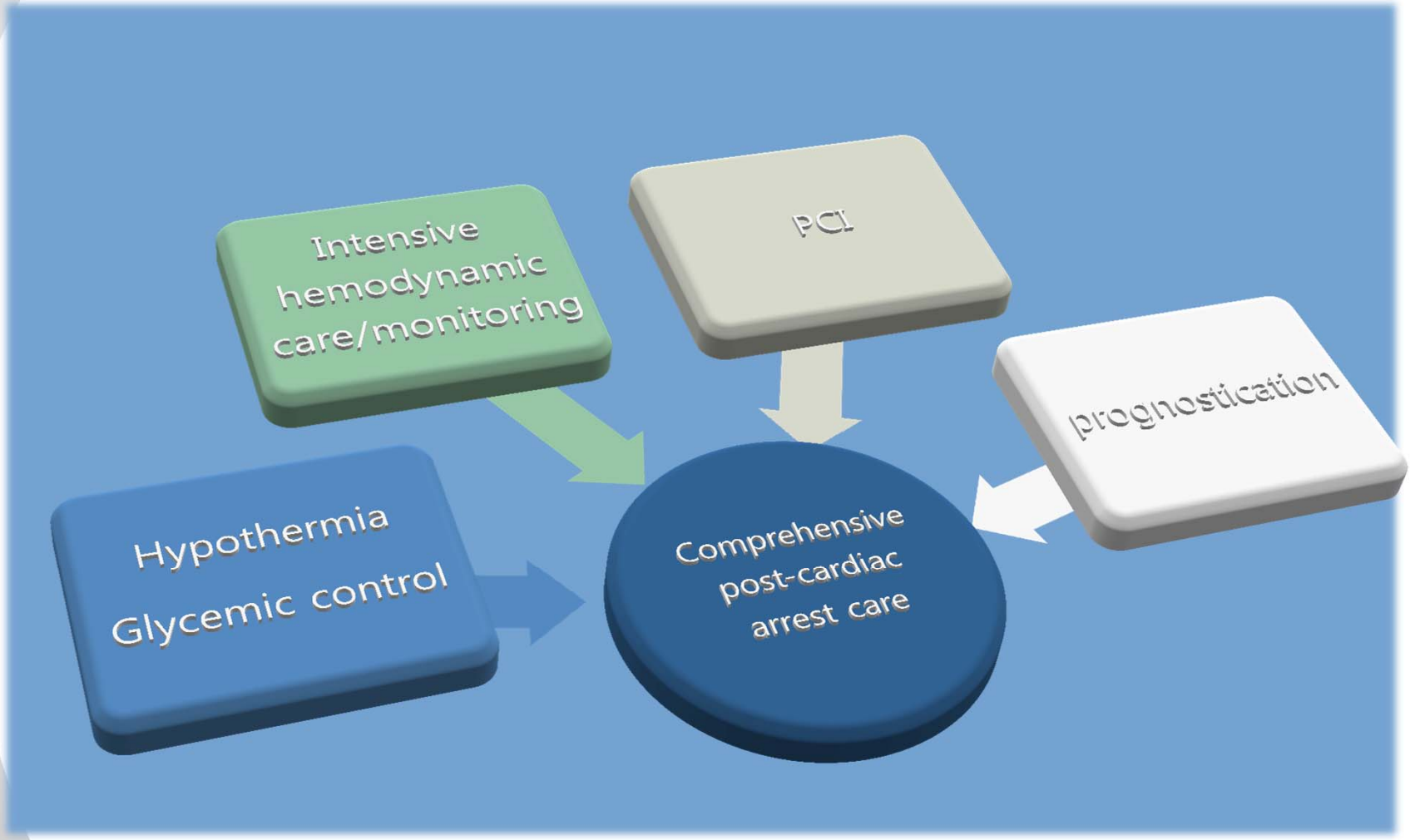


No. of Patients					
Conventional control	2995	2233	1380	909	583
Intensive control	2989	2260	1428	908	562

No. at Risk				
Conventional control	3014	2379	2304	2261
Intensive control	3016	2337	2227	2182

The NICE-SUGAR Investigators, N Engl J Med 2009; 360:1283-1297

Comprehensive post-cardiac arrest care



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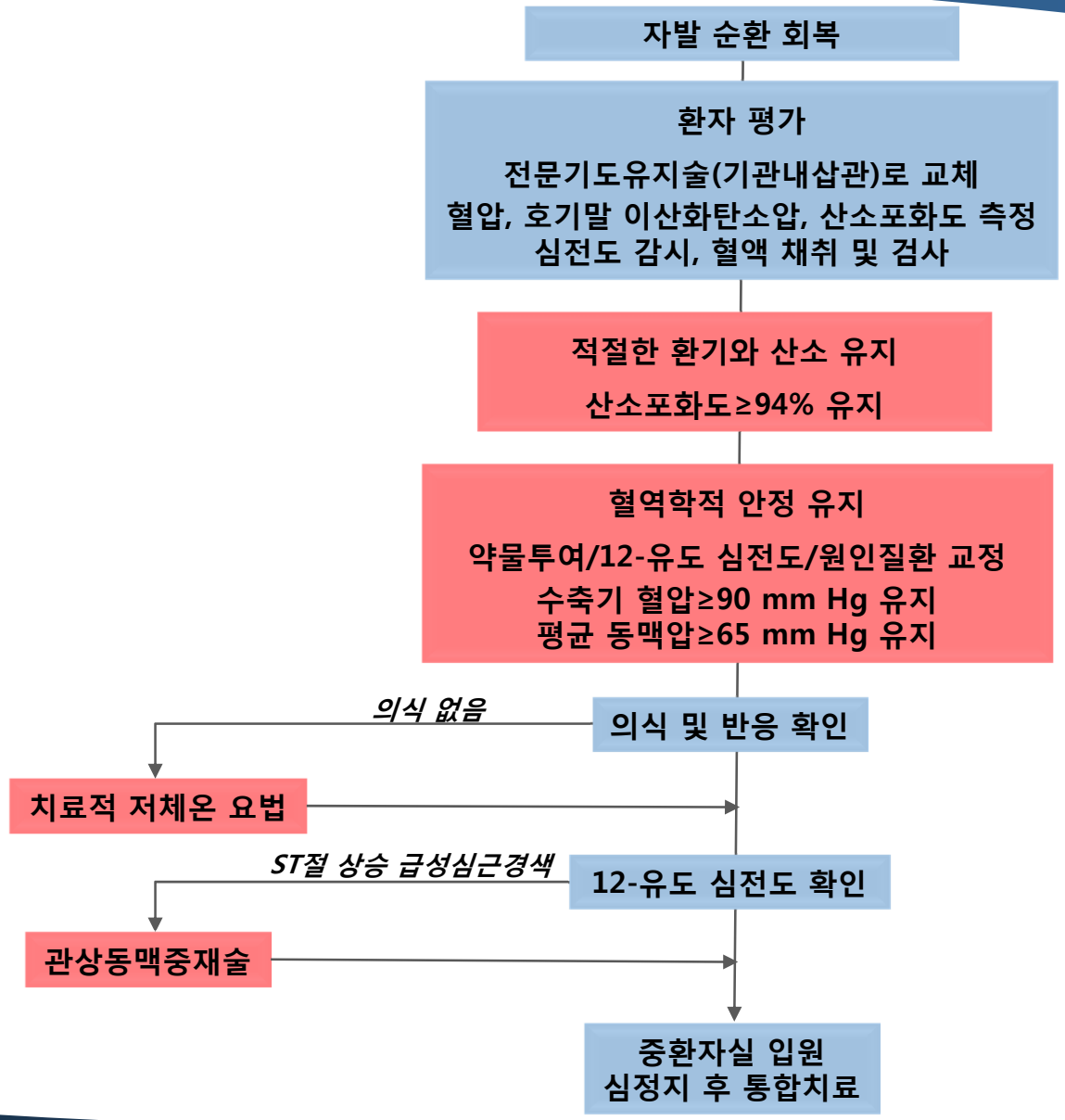
소생 후 통합치료과정의 흐름도



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Acknowledgement
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감사합니다