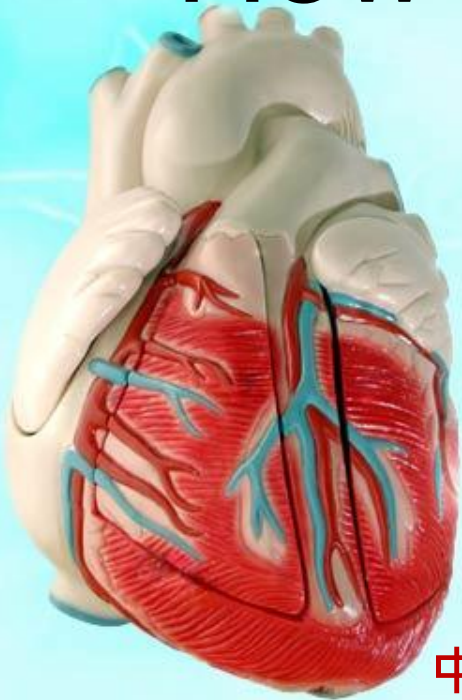


2015 ACLS Update Course

Compression rate and depth –How to perform and monitor



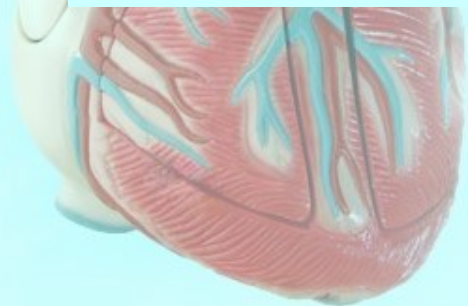
林口長庚醫院 全人醫學部
邱德發

中華民國高級心臟救命術聯合委員會

A more *simultaneous* and *realistic* approach

- Call for nearby help
- Assess breathing and pulse simultaneously
- Activate emergency response system or call for backup

Simultaneous **breathing and pulse check**
in less than 10 seconds



Adult Cardiac Arrest Algorithm— 2015 Update (**Healthcare Provider**)

Verify scene safety.

Victim is unresponsive.
Shout for nearby help.
Activate emergency response system
via mobile device (if appropriate).
Get AED and emergency equipment
(or send someone to do so).

(or send someone to do so).

Normal
breathing,
pulse

Look for no breathing
or only gasping and check
pulse (simultaneously).
Is pulse **definitely** felt
within 10 seconds?

No normal
breathing
has pulse

No breathing
or only gasping,

Basic Life Support Sequence

Step Lay Rescuer Not Trained

- 1 Ensure scene safety.
- 2 Check for response.
- 3 **Shout for nearby help.**
Phone or ask someone to phone 9-1-1 (the phone or caller with the phone remains at the victim's side, with the phone on speaker).
- 4 **Follow the dispatcher's instructions.**

Basic Life Support Sequence

Step	Lay Rescuer Trained
1	Ensure scene safety.
2	Check for response.
3	Shout for nearby help and activate the emergency response system (9-1-1, emergency response). If someone responds, ensure that the phone is at the side of the victim if at all possible.
4	Check for no breathing or only gasping; if none, begin CPR with compressions.



Basic Life Support Sequence

Step Healthcare Provider

1 Ensure scene safety.

2 Check for response.

3 **Shout for nearby help/activate the resuscitation team; can activate the resuscitation team at this time or after checking breathing and pulse.**

4 Check for no breathing or only gasping and check pulse (ideally simultaneously). Activation and retrieval of the AED/emergency equipment by either the lone health care provider or by the second person sent by the rescuer must occur no later than immediately after the check for no normal breathing and no pulse identifies cardiac arrest.

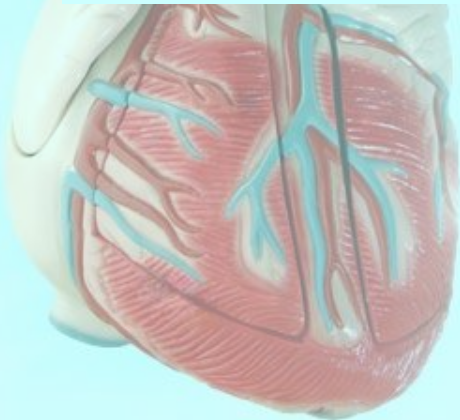
Shock first vs CPR first

2010

- 1½ to 3 minutes of CPR may be considered before attempted defibrillation

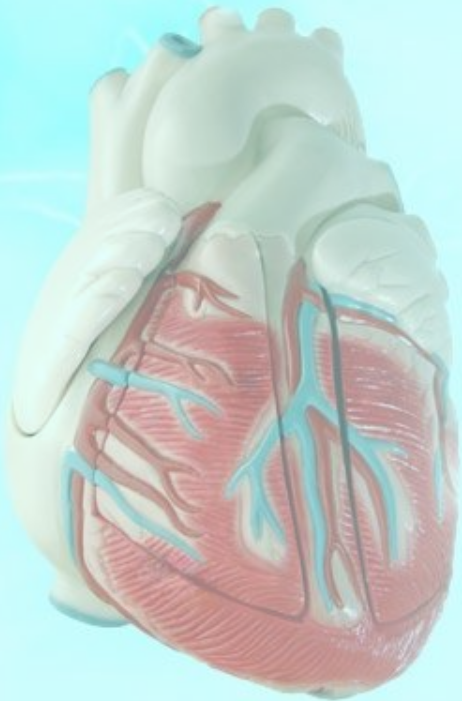
2015

- when an AED is immediately available, use as soon as it is ready

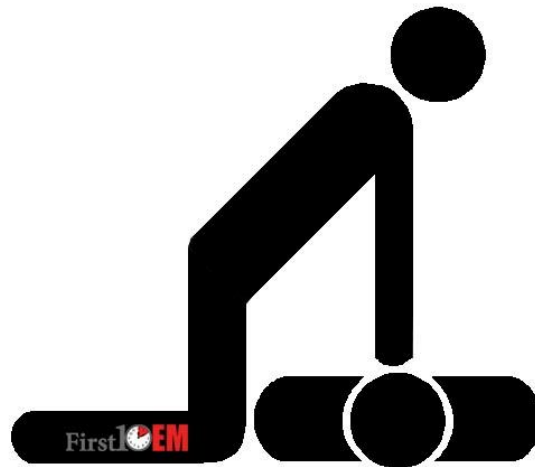


Chest compression rate & depth

- Rate : 100-120/min (Class IIa, LOE C-LD)
- Depth for adults : 5-6 cm (Class I, LOE C-LD)



**Not too fast;
Not too hard**



**100-120/min
5-6cm deep**

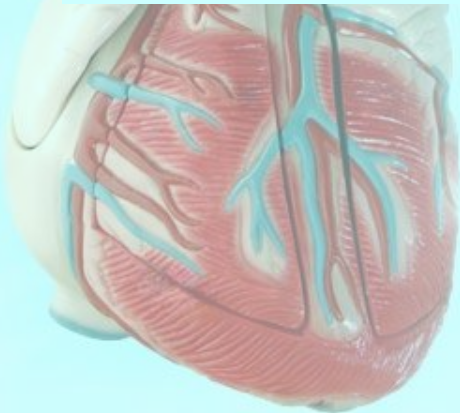
Chest compression rate & depth

- An interdependent relationship between rate and depth
- as rate increases $> 120/\text{min}$, depth decreases in a dose-dependent manner

Rate	Depth < 3.8 cm
100 to 119/min	35%
120 to 139/min	50%
$\geq 140/\text{min.}$	70%

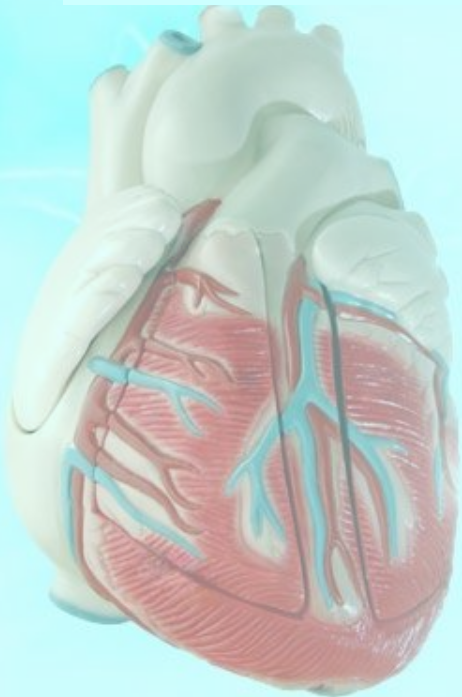
Emphasis on chest compression depth

- **Difficult to judge compression depth**
 - without use of feedback devices
- Chest compression depth is more often **too shallow than too deep**
- Research suggests potential injury when compressions are too deep (**> 6 cm**)



Pediatric compression depth

- Infants: Approximately **1.5 inches (4 cm)**
- Children: **2 inches (5 cm)**
- At puberty: **Follow adult recommendations**



Chest recoil

Fully Recoil !

do not leaning on chest

Class IIa, LOE C-LD

2010

- Allow complete recoil of the chest after each compression

2015

- Avoid leaning on the chest between compressions to allow full chest wall recoil

Minimizing interruptions

❖ **Achieve chest compression fraction (CCF)**

unprotected airway $\geq 60\%$

(Class IIb, LOE C-LD)



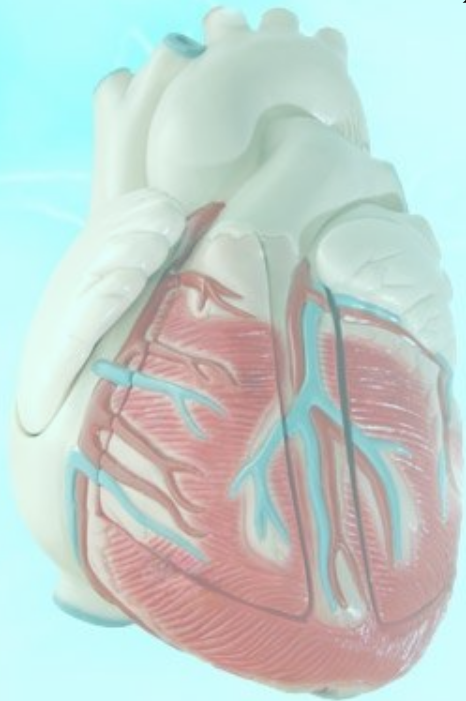
$$\text{CCF} = \frac{105}{120} = 87.5$$



a goal of 80% is often achievable with good teamwork

Chest Compression Feedback

- It may be reasonable to **use audiovisual feedback devices** during CPR for real-time optimization of CPR performance (***Class IIb, LOE B-R***)





Audiovisual Feedback Devices during CPR



Real-time monitoring, recording, and feedback about CPR quality

Physiologic patient parameters and rescuer performance metrics

- Some evidence: may be effective in modifying chest compression rates that are too fast
- Separate evidence: decreases the leaning force during chest compressions.
- Studies to date: not demonstrated a significant improvement in favorable neurologic outcome or survival to hospital

Delayed ventilation

**witnessed OHCA with a shockable
rhythm**

+ EMS



**3 cycles of 200 continuous
compressions**

**+ passive oxygen insufflation & airway
adjuncts**

Class IIb, LOE C-LD

Ventilation during CPR with an advanced airway

2010

2015

> 8-10

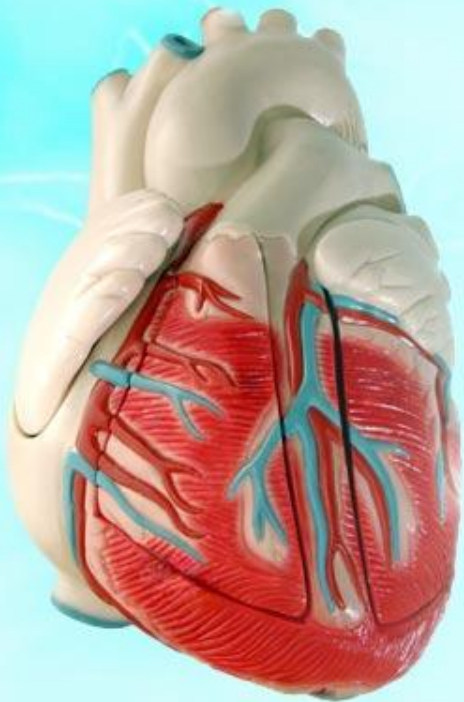
10

Class IIb, LOE C-LD

single rate for adults, children, and infants



*Thanks for
your attention!*



- Emphasis has been increased about dispatch-guided CPR
- PAD programs in public locations(eg, airports, casinos, sports facilities)

