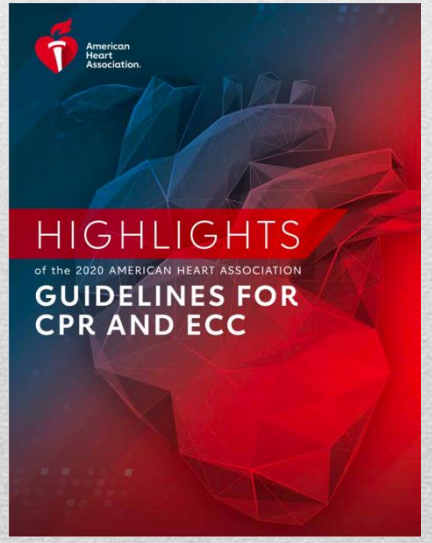
High Quality

Cardio Pulmonary Resuscitation

CPR AHA 2020



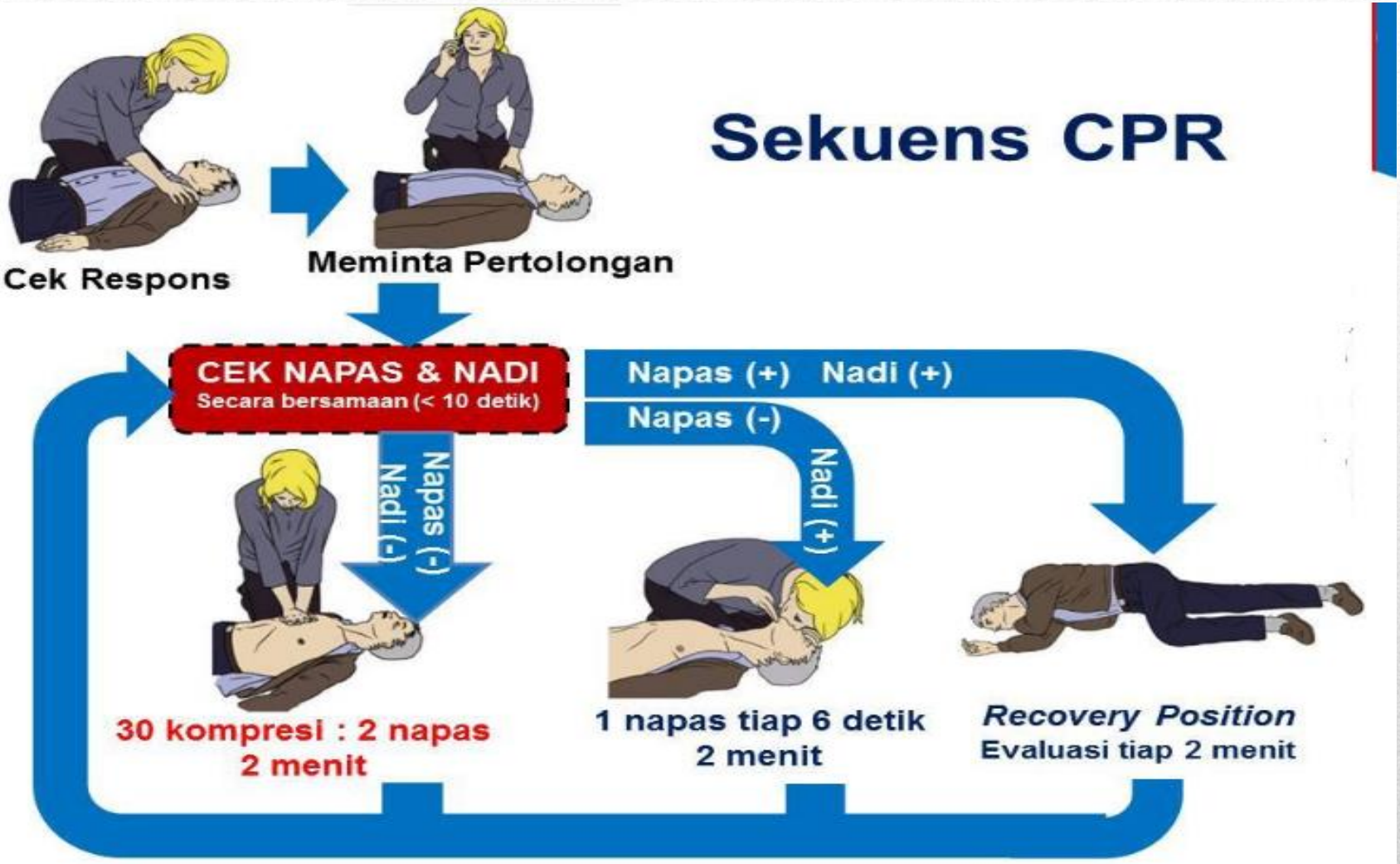
Ns. I Made Suindrayasa, S.Kep., M.Kep
Ns. I Kadek Saputra., S.Kep., M.Erg

Tujuan Pembelajaran

High-quality CPR untuk dewasa

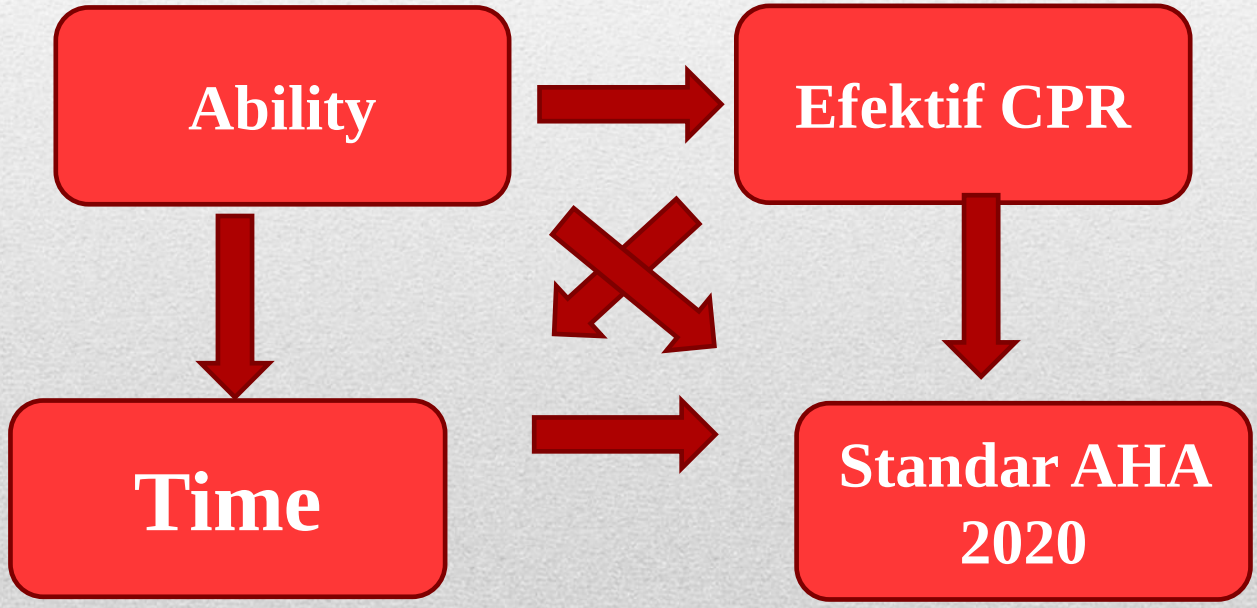
High-quality CPR untuk anak dan bayi

Sekuens CPR


Cek Respons
Meminta Pertolongan
CEK NAPAS & NADI
Secara bersamaan (< 10 detik)
Napas (+) Nadi (+)
Napas (-)
Nadi (-)
Napas (-)
Nadi (+)
30 kompresi : 2 napas
2 menit
1 napas tiap 6 detik
2 menit
Recovery Position
Evaluasi tiap 2 menit

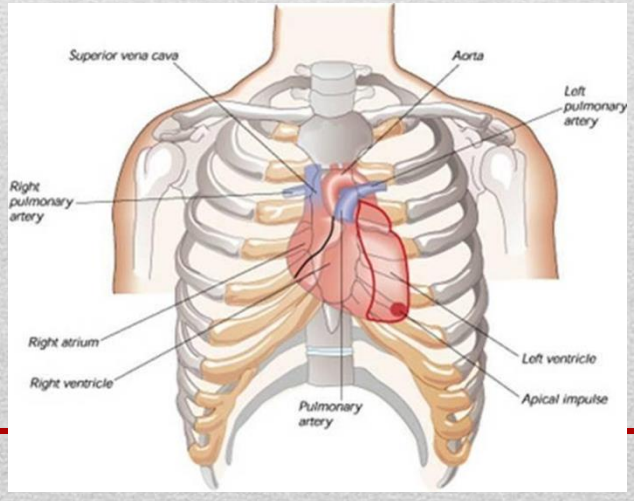
Kedalaman	Rasio	Teknik
Dewasa dan remaja		
5 – 6 cm (2 – 2.4 inchi)	**30:2 (1 atau 2 penolong)**	2 tangan pada seperdua bawah sternum
Anak (1 tahun s.d. puber)		
1/3 diameter dada	**30:2 (1 penolong)** **15:2 (2 penolong)**	2 atau 1 tangan pada seperdua bawah sternum
Bayi (<1 tahun)		
1/3 diameter dada	**30:2 (1 penolong)**	2 jari dibawah *nipple line*
	15:2 (2 penolong)	2 jempol dibawah *nipple line*

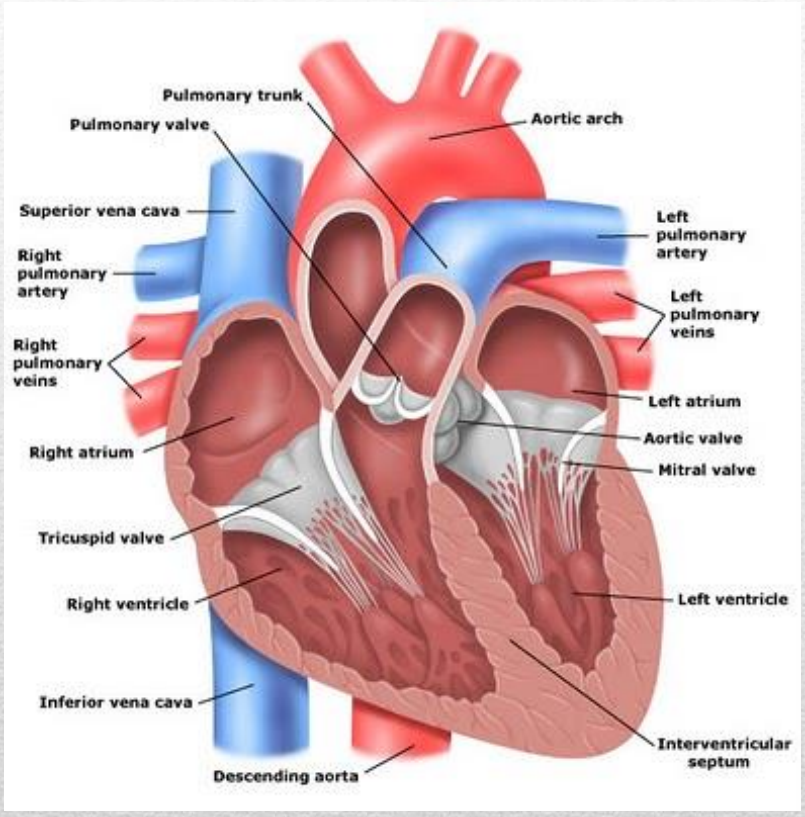
High Quality CPR



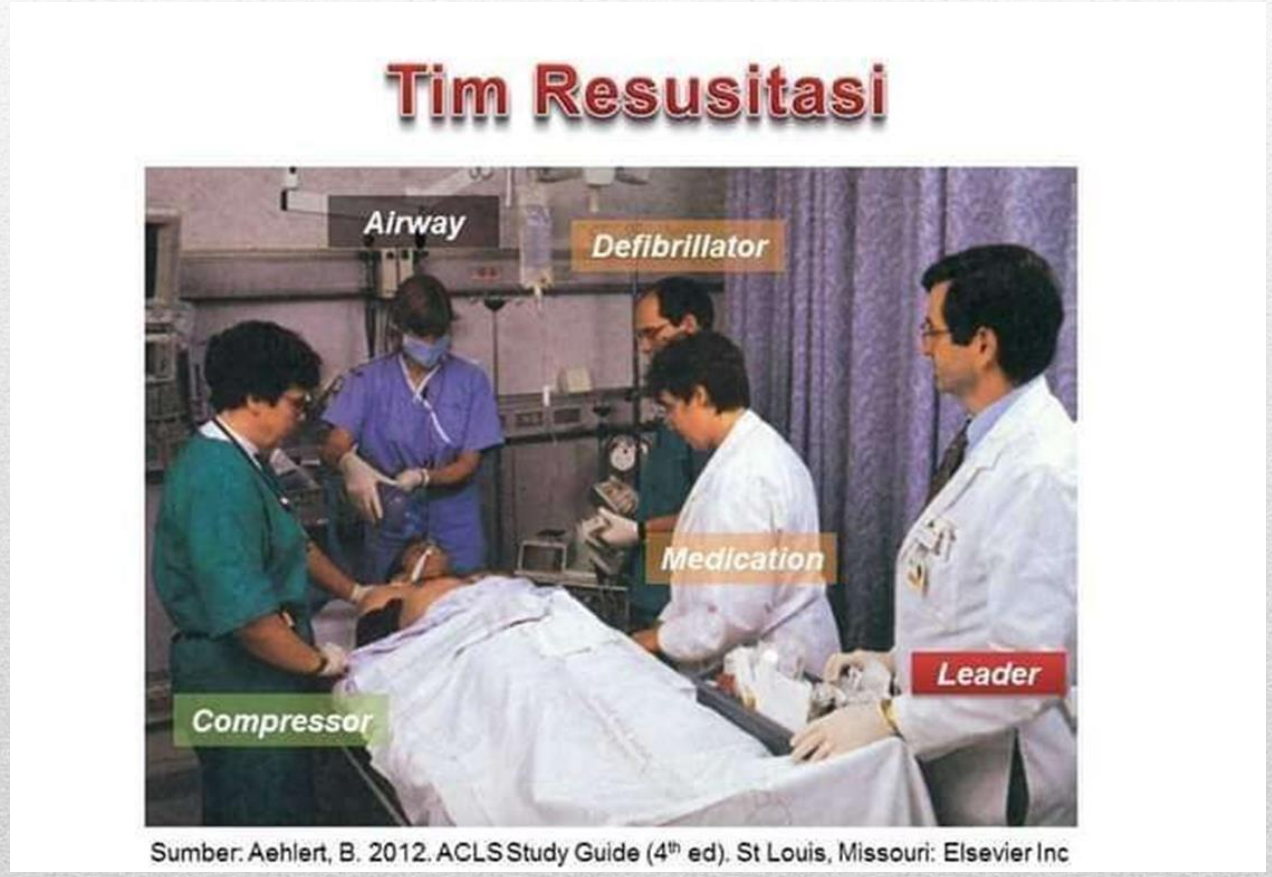
Kriteria

- Tekan cepat (*push fast*)
- Tekan kuat (*push hard*)
- *Full chest recoil*
- Rasio kompresi dada dan ventilasi





Minimal interupsi



Sumber: Aehlert, B. 2012. ACLS Study Guide (4th ed). St Louis, Missouri: Elsevier Inc

(Compressor – C; Ventilations – V; AED – A; Team lead – T; Recorder – R; Medications – M)

– Single rescuer – C/V
– Two rescuers – C=V+A. V role rescuer can operate AED.
– Three rescuers – C=V/A+T

During ACLS scenarios, it's important to have roles of medication and recording.
– Four rescuers – C=V(alternate)/A+M/T+R
– Five rescuers – V/C=A/T/R+M
– Six rescuers – V/C=A/R/T/M

+ Peran Choc of CPR (AHA 2020)

Positions for 6-Person High-Performance Teams*

American Heart Association.
life is why™

Resuscitation Triangle Roles

Compressor

- Assesses the patient
- Does 5 cycles of chest compressions
- Alternates with AED/Monitor/Defibrillator every 5 cycles or 2 minutes (or earlier if signs of fatigue set in)

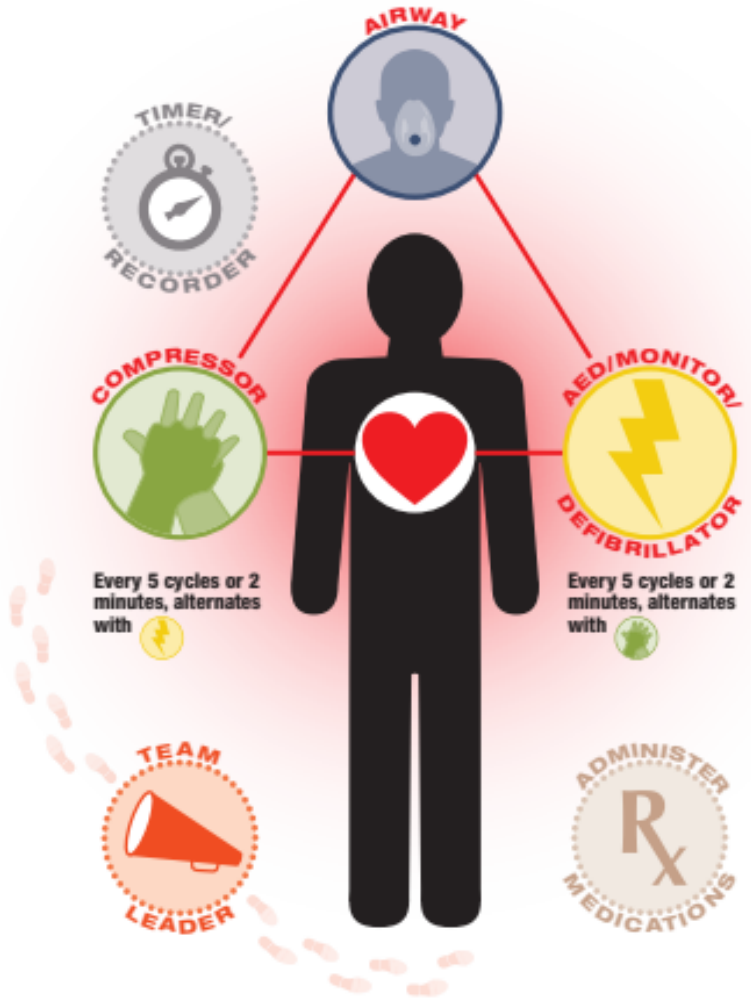
AED/Monitor/Defibrillator

- Brings and operates the AED/monitor/defibrillator
- Alternates with Compressor every 5 cycles or 2 minutes (or earlier if signs of fatigue set in), ideally during rhythm analysis
- If a monitor is present, places it in a position where it can be seen by the Team Leader (and most of the team)

Airway

- Opens and maintains the airway
- Provides ventilation

The team owns the code. No team member leaves the triangle except to protect his or her safety.



Leadership Roles

Team Leader

- **Every resuscitation team must have a defined leader**
- Assigns roles to team members
- Makes treatment decisions
- Provides feedback to the rest of the team as needed
- Assumes responsibility for roles not assigned

Administer Medications

- An ALS provider role
- Administers medications

Timer/Recorder

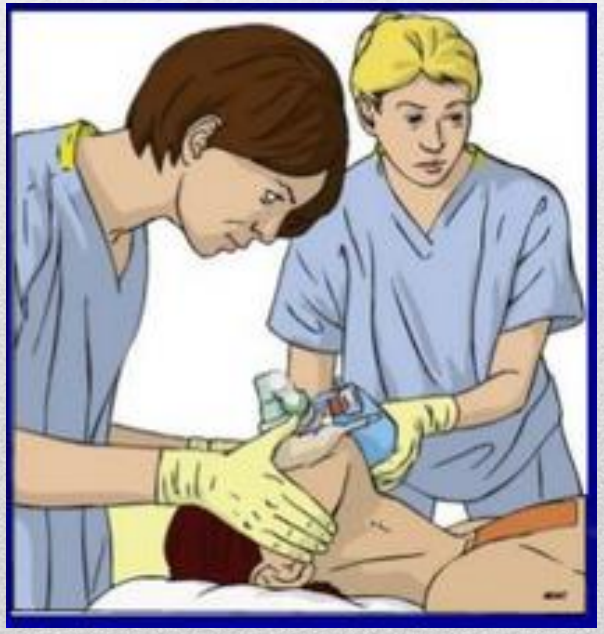
- Records the time of interventions and medications (and announces when these are next due)
- Records the frequency and duration of interruptions in compressions
- Communicates these to the Team Leader (and the rest of the team)

*This is a suggested team formation. Roles may be adapted to local protocol.

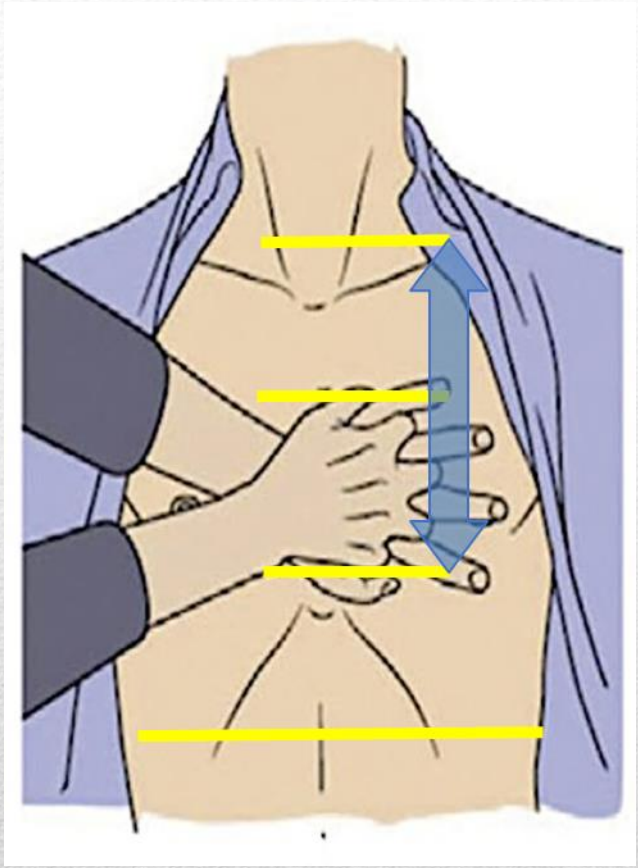
Ventilasi yang adekuat

Rescue breathing : 1 ventilasi selama 6 detik (10 x/menit)

Hitung..!!!!



Posisi Tangan Penolong Harus Tegak Lurus



Posisi

Rekomendasi Pedoman AHA 2020

Didasarkan pada:

- ***Class of Recommendations (COR)*** Menggambarkan besarnya manfaat atas risiko
- ***Level of Evidence (LOE)*** Menggambarkan kepercayaan atau kepastian bukti yang mendukung rekomendasi

Sumber:

Applying Class of Recommendations and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care (Updated May 2019)

https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/tables/applying-class-of-recommendation-and-level-of-evidence

Class of Recommendation (COE)

KELAS (KEKUATAN) REKOMENDASI

KELAS 1 (KUAT) — **Manfaat >>> Risiko**

Ungkapan yang disarankan untuk menulis rekomendasi:

- Disarankan
- Diindikasikan/bermanfaat/efektif/menguntungkan
- Harus dilakukan/diberikan/lainnya
- Frasa Komparatif-Efektivitas†:
  - Penanganan/strategi A lebih disarankan/diindikasikan dibandingkan penanganan B
  - Perawatan A harus dipilih daripada perawatan B

KELAS 2a (MENENGAH) — **Manfaat >> Risiko**

Ungkapan yang disarankan untuk menulis rekomendasi:

- Diperbolehkan
- Dapat bermanfaat/efektif/menguntungkan
- Frasa Komparatif-Efektivitas†:
  - Perawatan/strategi A mungkin lebih disarankan/diindikasikan dibandingkan perawatan B
  - Perawatan A lebih diperbolehkan daripada perawatan B

KELAS 2b (LEMAH) — **Manfaat ≥ Risiko**

Ungkapan yang disarankan untuk menulis rekomendasi:

- Mungkin diperbolehkan
- Dapat dipertimbangkan
- Manfaat/efektivitas tidak diketahui/tidak jelas/diragukan atau tidak ditetapkan dengan baik

KELAS 3: Tidak Ada Manfaat (SEDANG) — **Manfaat = Risiko**
(Umumnya, hanya penggunaan LOE A atau B)

Ungkapan yang disarankan untuk menulis rekomendasi:

- Tidak disarankan
- Tidak diindikasikan/bermanfaat/efektif/menguntungkan
- Tidak boleh dilakukan/diberikan/lainnya

Kelas 3: Berbahaya (KUAT) — **Risiko > Manfaat**

Ungkapan yang disarankan untuk menulis rekomendasi:

- Berpotensi membahayakan
- Membahayakan
- Berkaitan dengan tingginya morbiditas/kematian
- Tidak boleh dilakukan/diberikan/lainnya

Sumber: Applying Class of Recommendations and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care (Updated May 2019)*. https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/tables/applying-class-of-recommendation-and-level-of-

Level of Evidence **(LOE)**

TINGKAT (KUALITAS) BUKTI‡

TINGKAT A

- Bukti berkualitas tinggi‡ dari beberapa RCT
- Meta-analisis RCT berkualitas tinggi
- Satu RCT atau lebih, didukung oleh studi register berkualitas tinggi

TINGKAT B-R **(Acak)**

- Bukti berkualitas menengah‡ dari 1 RCT atau lebih
- Meta-analisis RCT berkualitas sedang

TINGKAT B-NR **(Tidak Acak)**

- Bukti berkualitas menengah‡ dari 1 atau lebih studi tidak acak, studi observasional, atau studi catatan yang didesain dan dieksekusi dengan baik
- Meta-analisis studi tersebut

TINGKAT C-LD **(Data Terbatas)**

- Studi pengamatan atau register acak maupun tidak acak dengan batasan rancangan atau pelaksanaan
- Meta-analisis studi tersebut
- Penelitian fisiologis atau studi mekanistik pada subjek manusia

TINGKAT C-EO **(Pendapat Ahli)**

- Kesepakatan pendapat ahli berdasarkan pengalaman klinis

Sumber:
Applying Class of Recommendations and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care (Updated May 2019)*
https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/tables/applying-class-of- recommendation-and-level-of-evidence

REAFFIRMED 2020

Rekomendasi-Rekomendasi Pedoman AHA 2020

Recommendations for Recognition of Cardiac Arrest

COR	LOE	Recommendations
1	C-LD	1. If a victim is unconscious/unresponsive, with absent or abnormal breathing (ie, only gasping), the lay rescuer should assume the victim is in cardiac arrest.
1	C-LD	2. If a victim is unconscious/unresponsive, with absent or abnormal breathing (ie, only gasping), the healthcare provider should check for a pulse for no more than 10 s and, if no definite pulse is felt, should assume the victim is in cardiac arrest.

Recommendations for Initiation of Resuscitation: Lay Rescuer (Untrained or Trained)

COR	LOE	Recommendations
1	B-NR	1. All lay rescuers should, at minimum, provide chest compressions for victims of cardiac arrest.
1	C-LD	2. After identifying a cardiac arrest, a lone responder should activate the emergency response system first and immediately begin CPR.
1	C-LD	3. We recommend that laypersons initiate CPR for presumed cardiac arrest, because the risk of harm to the patient is low if the patient is not in cardiac arrest.
2a	C-LD	4. For lay rescuers trained in CPR using chest compressions and ventilation (rescue breaths), it is reasonable to provide ventilation (rescue breaths) in addition to chest compressions for the adult in OHCA.

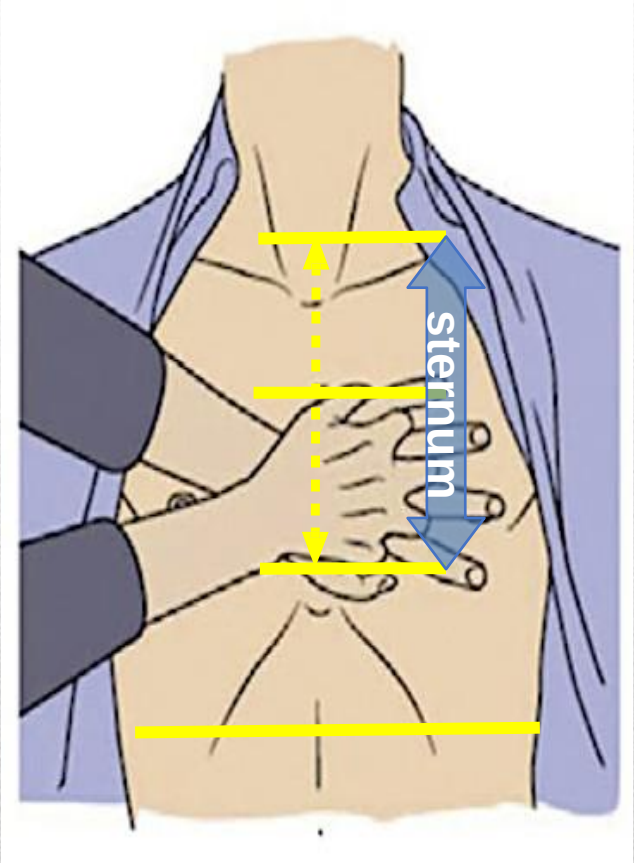
Sumber:

Panchal et al (2020). Part 3: Adult Basic and Advanced Life Support, 2020 American Heart Association Guidelines for Cardiovascular Resuscitation and Emergency Cardiovascular Care. *Circulation*, 142, 16, S366–S468
https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000916

Rekomendasi-Rekomendasi Pedoman AHA 2020 (Lanjutan)

REAFFIRMED 2020

Recommendations for Positioning and Location for CPR		
COR	**LOE**	**Recommendations**
1	C-LD	1. When providing chest compressions, the rescuer should place the heel of one hand on the center (middle) of the victim's chest (the lower half of the sternum) and the heel of the other hand on top of the first so that the hands are overlapped.
1	C-EO	2. Resuscitation should generally be conducted where the victim is found, as long as high-quality CPR can be administered safely and effectively in that location.
2a	C-LD	3. It is preferred to perform CPR on a firm surface and with the victim in the supine position, when feasible.
2b	C-LD	4. When the victim cannot be placed in the supine position, it may be reasonable for rescuers to provide CPR with the victim in the prone position, particularly in hospitalized patients with an advanced airway in place.

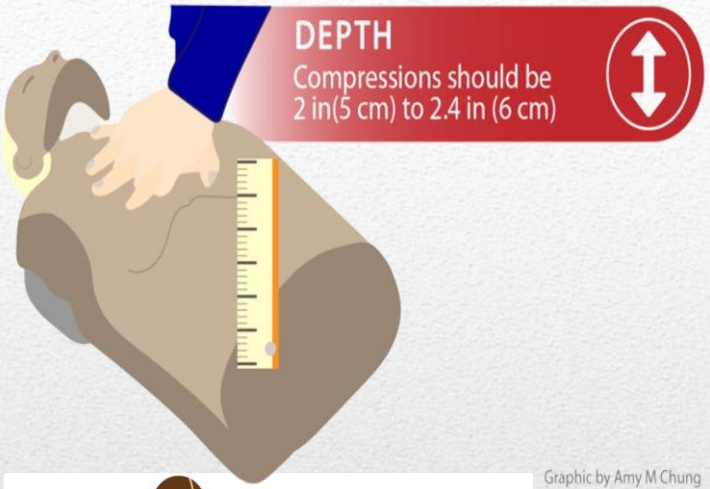


Posisi tangan pada
lower half of sternum

Rekomendasi-Rekomendasi Pedoman AHA 2020 (Lanjutan)

REAFFIRMED 2020

Recommendations for Compression Depth and Rate		
COR	**LOE**	**Recommendations**
1	B-NR	1. During manual CPR, rescuers should perform chest compressions to a depth of at least 2 inches, or 5 cm, for an average adult while avoiding excessive chest compression depths (greater than 2.4 inches, or 6 cm).
2a	B-NR	2. In adult victims of cardiac arrest, it is reasonable for rescuers to perform chest compressions at a rate of 100 to 120/min.
2a	C-LD	3. It can be beneficial for rescuers to avoid leaning on the chest between compressions to allow complete chest wall recoil for adults in cardiac arrest.
2b	C-EO	4. It may be reasonable to perform chest compressions so that chest compression and recoil/relaxation times are approximately equal.



Sumber:

Panchal et al (2020). Part 3: Adult Basic and Advanced Life Support. 2020 American Heart Association Guidelines for Cardiovascular Resuscitation and Emergency Cardiovascular Care. *Circulation*, 142, 16, S366–S468 https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000916

Rekomendasi-Rekomendasi Pedoman AHA 2020 (Lanjutan)

NEW IN 2020

Recommendations for CPR Feedback and Monitoring

COR	LOE	Recommendations
2b	B-R	1. It may be reasonable to use audiovisual feedback devices during CPR for real-time optimization of CPR performance.
2b	C-LD	2. It may be reasonable to use physiological parameters such as arterial blood pressure or end-tidal CO_2 when feasible to monitor and optimize CPR quality.

REAFFIRMED 2020

Rekomendasi-Rekomendasi Pedoman AHA 2020 (Lanjutan)

Recommendations for Fundamentals of Ventilation During Cardiac Arrest

COR	LOE	Recommendations
2a	C-LD	1. For adults in cardiac arrest receiving ventilation, tidal volumes of approximately 500 to 600 mL, or enough to produce visible chest rise, are reasonable.
2a	C-EO	2. In patients without an advanced airway, it is reasonable to deliver breaths either by mouth or by using bag-mask ventilation.
2b	C-EO	3. When providing rescue breaths, it may be reasonable to give 1 breath over 1 s, take a "regular" (not deep) breath, and give a second rescue breath over 1 s.
3: Harm	C-LD	4. Rescuers should avoid excessive ventilation (too many breaths or too large a volume) during CPR.

Recommendations for Ventilation During Cardiac Arrest: Special Situations

COR	LOE	Recommendations
2a	C-LD	1. It is reasonable for a rescuer to use mouth-to-nose ventilation if ventilation through the victim's mouth is impossible or impractical.
2b	C-EO	2. For a victim with a tracheal stoma who requires rescue breathing, either mouth-to-stoma or face mask (pediatric preferred)–to–stoma ventilation may be reasonable.

Recommendation for Ventilation in Patients With Spontaneous Circulation (Respiratory Arrest)

COR	LOE	Recommendation
2b	C-LD	1. If an adult victim with spontaneous circulation (ie, strong and easily palpable pulses) requires support of ventilation, it may be reasonable for the healthcare provider to give rescue breaths at a rate of about 1 breath every 6 s, or about 10 breaths per minute.

High-quality CPR untuk anak dan bayi

Kedalaman	Rasio	Teknik
Dewasa dan remaja		
5 – 6 cm (2 – 2.4 inchi)	**30:2 (1 atau 2 penolong)**	2 tangan pada seperdua bawah sternum
Anak (1 tahun s.d. puber)		
1/3 diameter dada	**30:2 (1 penolong)** **15:2 (2 penolong)**	2 atau 1 tangan pada seperdua bawah sternum
Bayi (<1 tahun)		
1/3 diameter dada	**30:2 (1 penolong)**	2 jari dibawah *nipple line*
	15:2 (2 penolong)	2 jempol dibawah *nipple line*

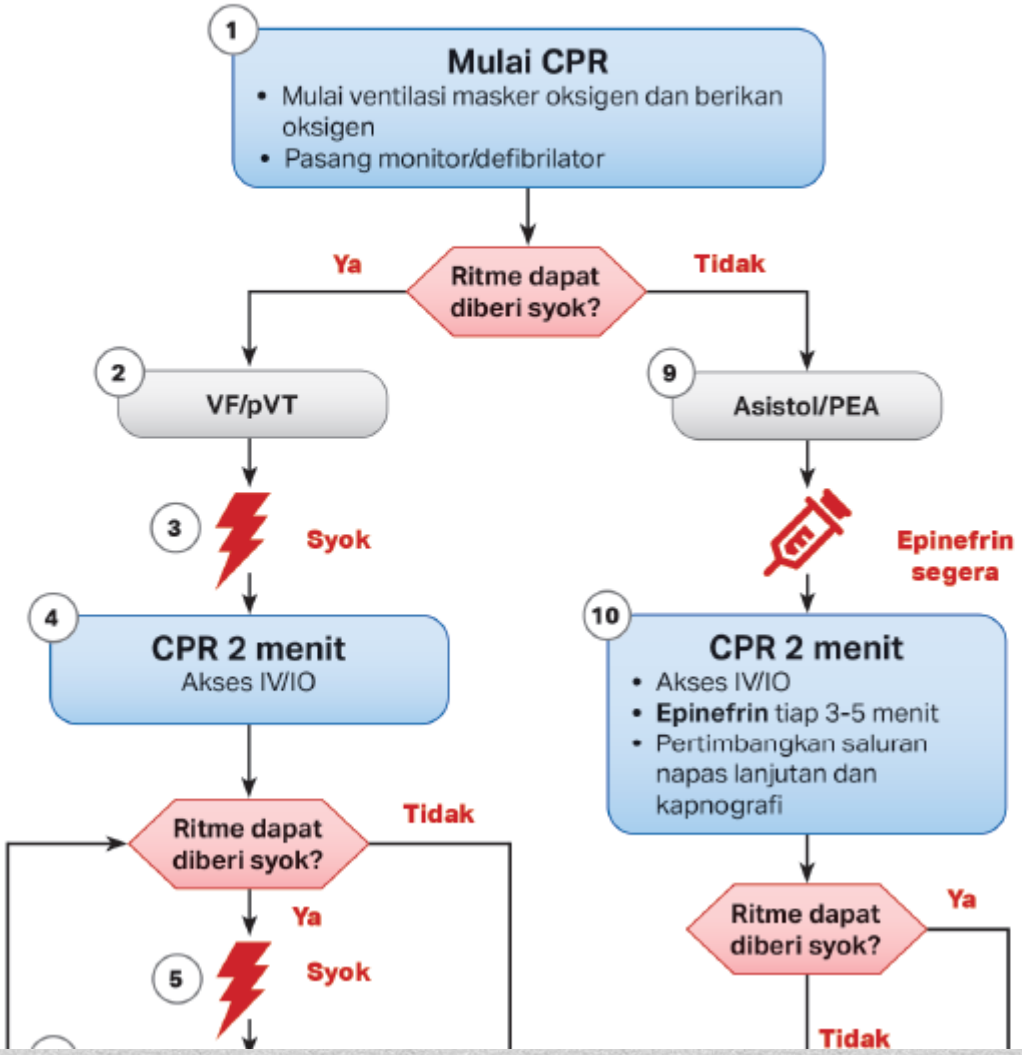
Rantai Bertahan Hidup AHA untuk IHCA dan OHCA pediatrik.

IHCA

OHCA

eccguidelines.heart.org

Algoritme Henti Jantung Anak-anak.



Kualitas CPR

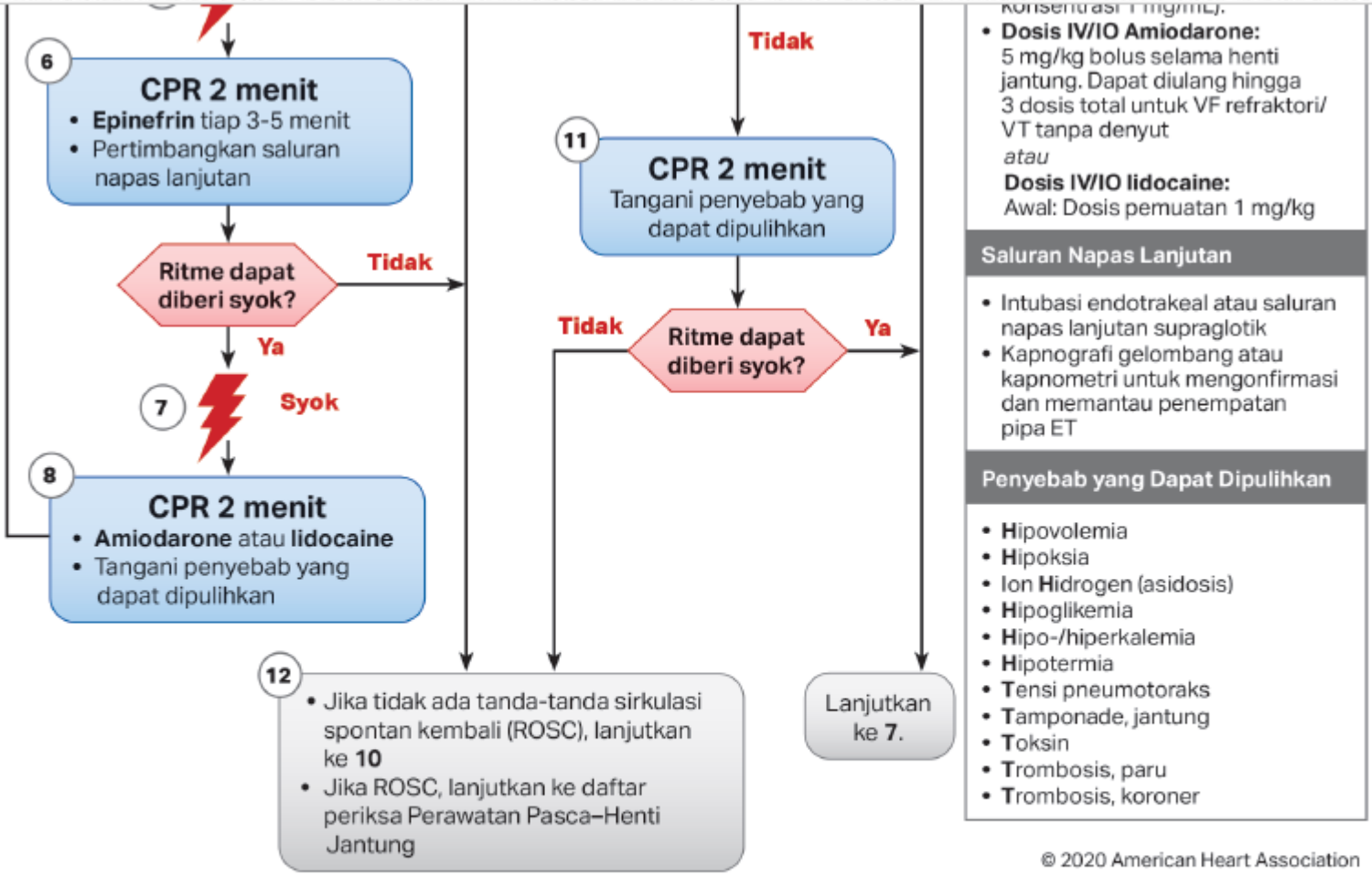
- Tekan kuat (≥⅓ dari diameter anteroposterior dada) dan cepat (100-120/menit) dan biarkan rekoil dada selesai
- Minimalisir interupsi dalam kompresi
- Ganti kompresor tiap 2 menit, atau lebih awal jika kelelahan
- Jika tidak ada saluran napas lanjutan, rasio ventilasi-kompresi 15:2
- Jika ada saluran napas lanjutan, berikan kompresi terus-menerus dan berikan napas setiap 2-3 detik

Energi Syok untuk Defibrilasi

- Syok pertama 2 J/kg
- Syok kedua 4 J/kg
- Syok seterusnya ≥4 J/kg, maksimum 10 J/kg atau dosis dewasa

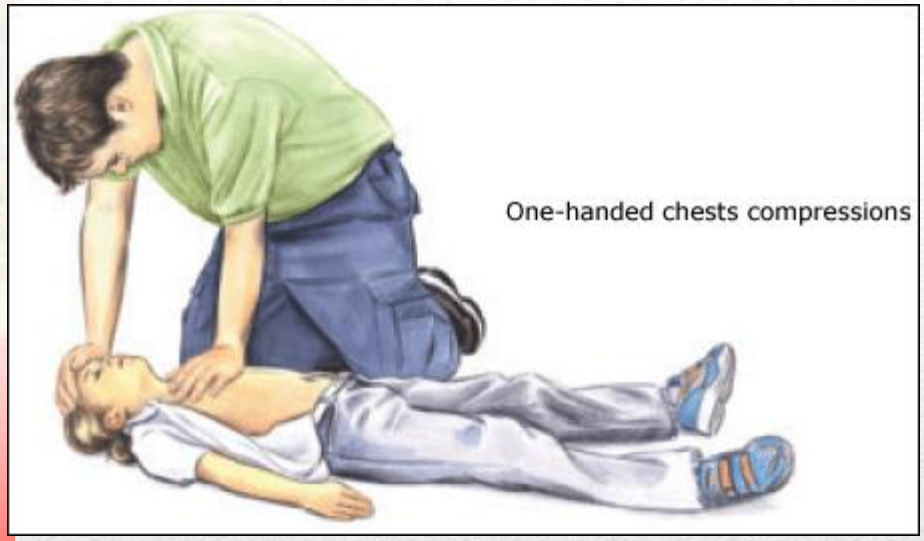
Terapi Obat

- **Dosis IV/IO epinefrin:**
  0,01 mg/kg (0,1 mL/kg dari konsentrasi 0,1 mg/mL).
  Dosis maks 1 mg.
  Ulangi tiap 3-5 menit.
  Jika tidak ada akses IO/IV, boleh memberikan dosis endotrakeal:
  0,1 mg/kg (0,1 mL/kg dari konsentrasi 1 mg/mL).
- **Dosis IV/IO Amiodarone:**



Anak-anak
(1- 8 thn)

Bayi
(< 1 thn)



Video

- https://www.youtube.com/watch?v=FqzjmX7gyWw
- https://www.youtube.com/watch?v=qfrkv7Ayfwk
- https://www.youtube.com/watch?v=EWyw-XvaL4c
- https://drive.google.com/file/d/1cPRSkzb8HETiOzIoVCNarMxKhih3AC88/view?usp=sharing
- https://drive.google.com/file/d/1irI4nLBpGyoB89BWFq5MTvgfAqYyDNzA/view?usp=sharing
- https://drive.google.com/file/d/15I8qMhACRJ8dOHc7lqdYRqVDghaGDuoS/view?usp=sharing

Kesimpulan

- Tekan cepat (push fast)
- Tekan kuat (push hard)
- Full chest recoil
- Minimal interupsi
- Ventilasi adekuat
- Rasio kompresi dada dan ventilasi
- Posisi

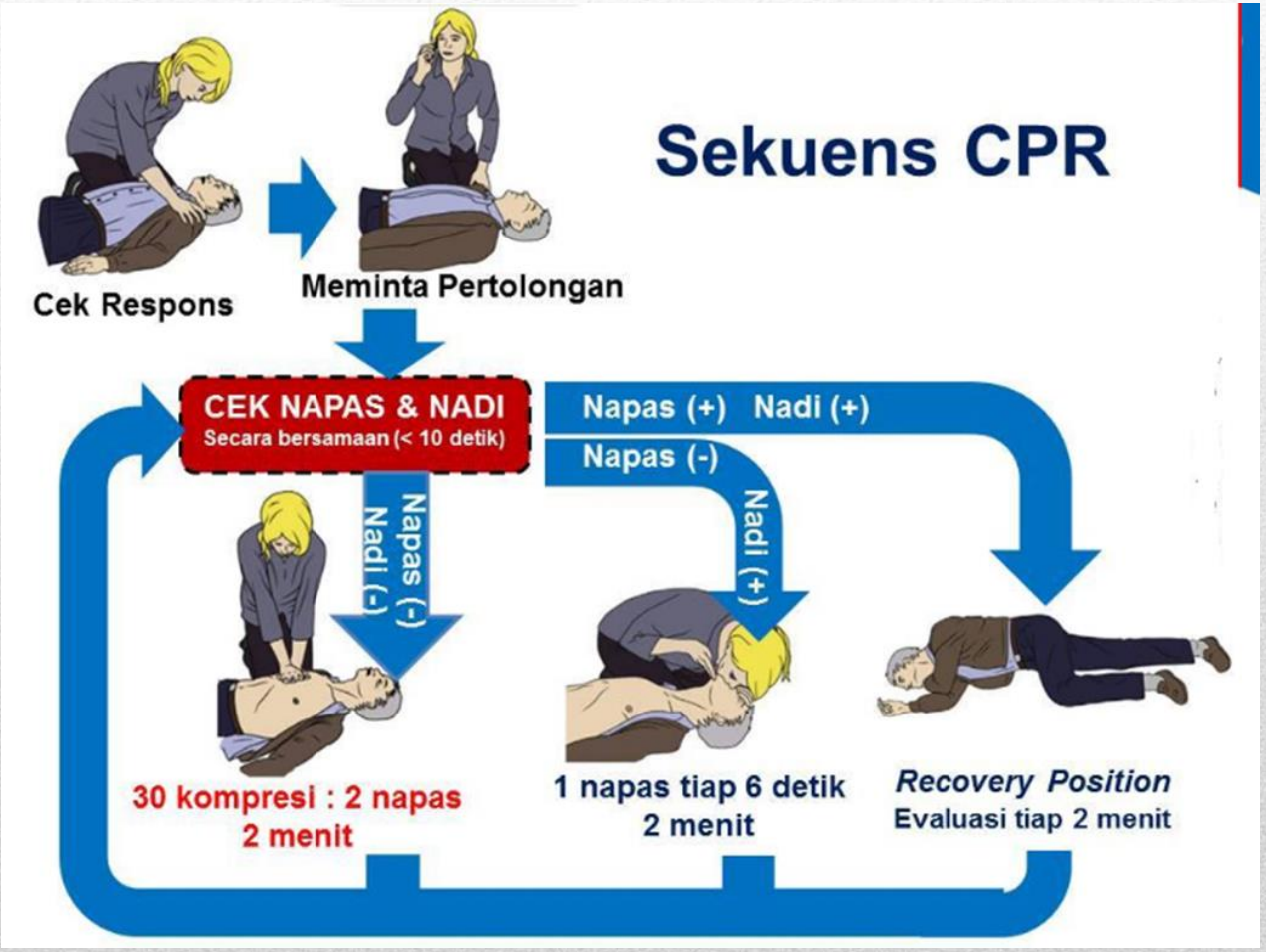
DAFTAR PUSTAKA

- American Heart Association (AHA). 2020. Highlights of the 2020 american heart association. Guidelines for CPR and ECC
- American Heart Association (AHA). 2020. Kejadian penting American Heart Association Tahun 2020. Pedoman CPR dan ECC
- Zoominar PPNI. 2020. Muhamad Adam. Update AHA 2020

Link :

- https://drive.google.com/file/d/1VeGzksbFKkNBSk_w2C_sLKRyF60p4w-F/view?usp=sharing
- https://drive.google.com/file/d/1_YGLgwWQOc0AP59_9S--vLsoiJSa-Z4a/view?usp=sharing

Matur Suksma



Kasus