HỒI SINH TIM PHỔI NÂNG CAO

BS. Hoàng Bùi Hải
BM HSCC- ĐHY Hà Nội

HSTP Nâng Cao

ACLS 2010 Guideline

- HSTP cơ bản
- Ngừng tim
- Nhịp nhanh
- Nhịp chậm

New Zealand Resuscitation Council

Basic Life Support

D — **Dangers?**

R — **Responsive?**

S — **Send** for help

A — Open **Airway**

B — Normal **Breathing?**

C — **Start CPR**
30 compressions : 2 breaths
If unwilling / unable to perform rescue breaths continue chest compressions

D — **Attach Defibrillator (AED)**
as soon as available and follow its prompts

Continue CPR until responsiveness or normal breathing return

December 2010

CPR Changes Emphasise

"Push hard, push fast, minimise interruptions; allow full chest recoil, and don't hyperventilate"

Mất ý thức, ngừng thở hoặc thở ngáp

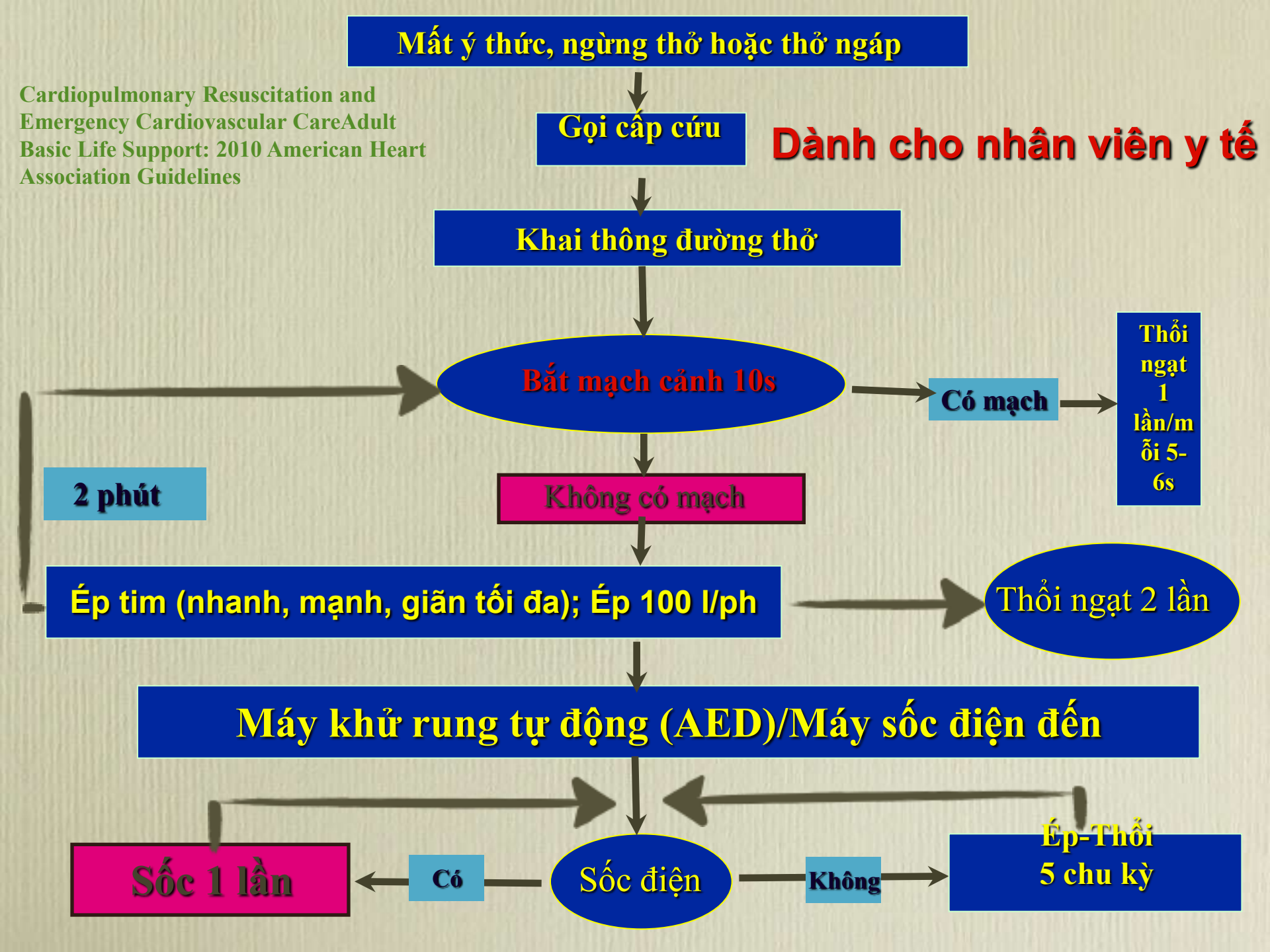
Hoạt hóa hệ thống cấp cứu

Dành cho người chưa được đào tạo

Ép tim
(nhanh, mạnh, thả hết: ép > 100 l/ph, lún ngực 5 cm)

2 phút

Cardiopulmonary Resuscitation and Emergency Cardiovascular CareAdult Basic Life Support: 2010 American Heart Association Guidelines


Mất ý thức, ngừng thở hoặc thở ngáp
Cardiopulmonary Resuscitation and Emergency Cardiovascular CareAdult Basic Life Support: 2010 American Heart Association Guidelines
Gọi cấp cứu
Dành cho nhân viên y tế
Khai thông đường thở
Bắt mạch cảnh 10s
Có mạch
Thổi ngạt 1 lần/mỗi 5-6s
2 phút
Không có mạch
Ép tim (nhanh, mạnh, giãn tối đa); Ép 100 l/ph
Thổi ngạt 2 lần
Máy khử rung tự động (AED)/Máy sốc điện đến
Sốc 1 lần
Có
Sốc điện
Không
Ép-Thổi 5 chu kỳ

Nguyên lý cơ bản HSTPNC

- To provide critical blood flow to the vital organs with high quality chest compressions
- Defibrillation as soon as possible provides the best chance of survival in victims with VF or pulseless VT (cf. CPR prior to defib)
- Return of spontaneous circulation as rapidly as possible
- Intensive care support aimed to achieve the best outcomes

HSTPNC – KEY I

- High quality chest compressions with minimal interruptions; continuing compressions during defibrillator charging
- Single (non-stacked) shocks, but stacked shocks may be considered for HPC witnessed arrest*, during cardiac catheterisation or after cardiac surgery
- Precordial thump is de-emphasised
- IV or IO drug administration (ETT de-emphasised)

*Where a monitor / defibrillator is connected at the time

HSTPNC – KEY II

- Adrenaline 1mg for VF/VT after the second shock once chest compressions have restarted and then every 3-5 min (alternate *blocks* of CPR)
- Amiodarone 300mg after third shock
- Atropine no longer recommended for routine use in asystole or PEA
- Less emphasis on early intubation
- Capnography to confirm and continually monitor tracheal tube placement, quality of CPR, and to provide early indication of ROSC

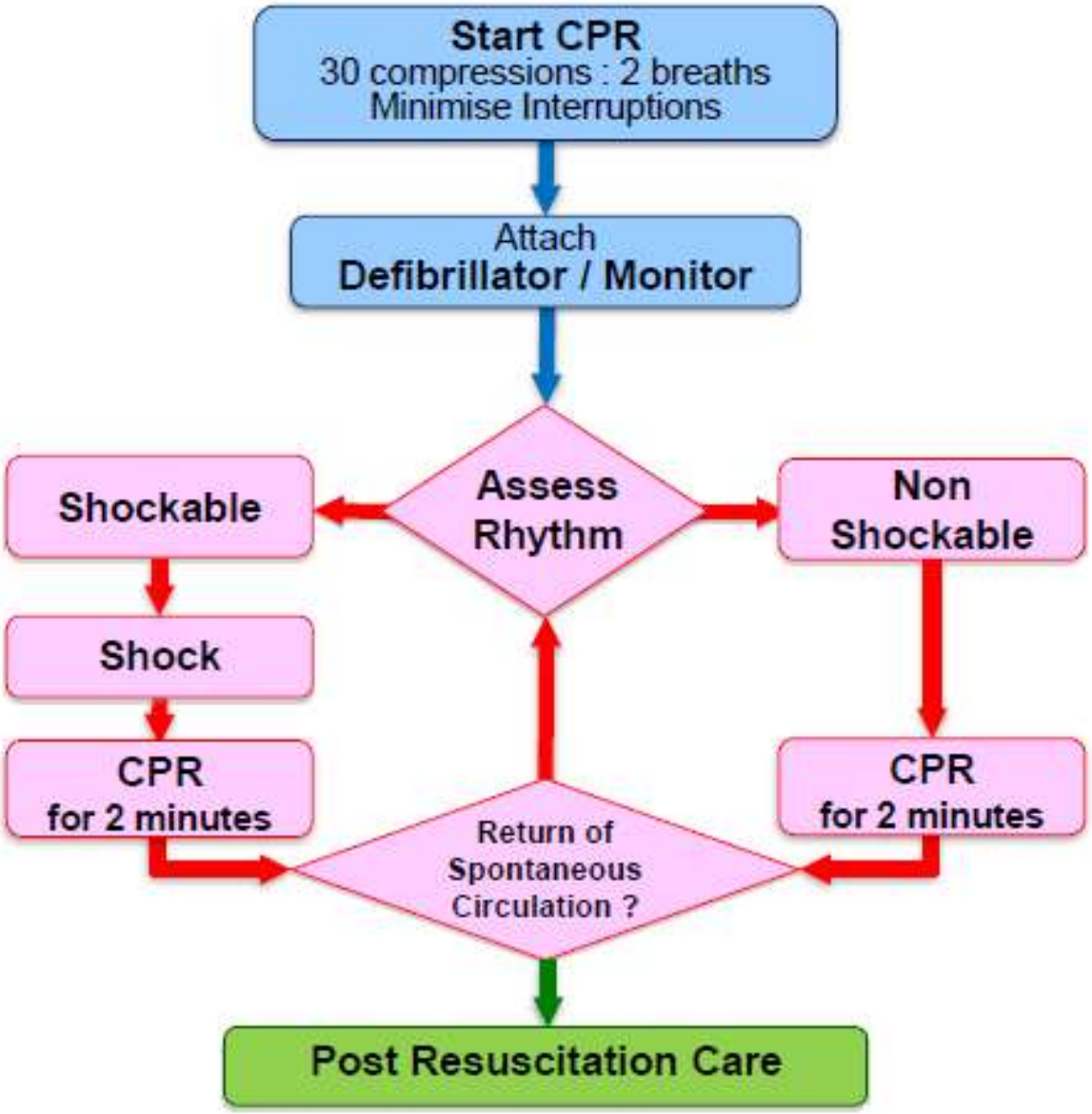
HỒI SỨC SAU NTH

- Recognition that a “post resuscitation care’ protocol may improve survival following ROSC
- Avoid hyperoxaemia – oxygen titration to S_a0_2 94-98%
- Primary PCI in appropriate patients with sustained ROSC
- Normoglycaemic glucose control (BSL >10 mmol/l should be treated but hypoglycaemia avoided)
- Therapeutic hypothermia to include comotose survivors of cardiac arrest of any rhythm

Single Shock Defibrillation Strategy

- Single shock strategy continues to be recommended to improve outcome by reducing interruption of chest compressions
  - Monophasic 360J / Biphasic 200 J (Adult)
  - *Monophasic / Biphasic 4J/kg (Paed)*
- Exception is health professional witnessed VF/VT.
  - Salvo of three stacked shocks (Mono 360J / Biphasic 200J; with rhythm checks between shocks)
  - Followed by CPR and single shock strategy if unsuccessful

Advanced Life Support for Adults



During CPR

Airway adjuncts (LMA / ETT)
Oxygen
Waveform capnography
IV / IO access
Plan actions before interrupting compressions
(e.g. charge manual defibrillator)
Drugs
Shockable
* Adrenaline 1 mg after 2nd shock
(then every 2nd cycle)
* Amiodarone 300 mg after 3rd shock
Non Shockable
* Adrenaline 1 mg immediately
(then every 2nd cycle)

Consider and Correct

Hypoxia
Hypovolaemia
Hyper / hypokalaemia / metabolic disorders
Hypothermia / hyperthermia
Tension pneumothorax
Tamponade
Toxins
Thrombosis (pulmonary / coronary)

Post Resuscitation Care

Re-evaluate ABCDE
12 lead ECG
Treat precipitating causes
Re-evaluate oxygenation and ventilation
Temperature control (cool)

December 2010

NGỪNG TIM

ĐƯỜNG TRUYỀN TĨNH MẠCH

- “provision of high-quality CPR and rapid defibrillation are of primary importance and drug administration is of secondary importance”
- 20ml Bolus after drug

ĐƯỜNG TRUYỀN QUA XƯƠNG

- Reasonable to establish access if IV access is not readily available

MASK THANH QUẢN

- CPR more important than airway initially
- Put in a supraglottic if intubation is going to be “hard”
- LMA
- King LT

ĐO CO2 KHÍ THỞ RA

- 100% sensitive and specific for tracheal intubation
- Helps count 8-10 breaths minute
- Predictor of outcome

KHÔNG Atropin: VÔ TÂM THU VÀ HĐ ĐIỆN VÔ MẠCH

- “Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit”

Thuốc = Máy tạo nhịp

- It hurts!
- No better than drugs
- Ok to go from drugs to TV pacing
- NOT ROUTINE in arrest

TÌM NGUYÊN NHÂN CÓ THỂ ĐIỀU TRỊ

- 5Hs
- Hypoxia
- Hypovolemia
- Hyperacidosis
- Hyperkalemia
- Hypothemia

- 5Ts
- Thrombus (MI)
- Thrombus (PE)
- Tension PTX
- Toxins
- Tamponade

THUỐC CO MẠCH

- VF continues after epi and CPR - vasopressor
- Amiodarone is first line
- Not proven to result in long term outcome
- Lidocaine is useless also

Epinephrine

- Never any evidence that it works!
- A Randomized placebo controlled trial of adrenaline in cardiac arrest- the PACA trial
- Conclusion: The use of adrenaline in cardiac arrest was associated w significant increase in the proportion of pts achieving ROSC however this improvement did not extend to survival to hospital discharge.

Tóm lại- với Ngừng tim

- Atropine OUT for PEA/Asystole
- CPR first and fast
- Airway- supraglottic emerges
- Still have amiodarone even though it don’t work
- Hope lies in a reversible cause

NHỊP NHANH

Nhịp nhanh – 5 nguyên tắc

1. Pearl 1: Don’t cardiovert to sinus rhythm
2. Pearl 2: Rates<150 don’t usually cause instability in normal healthy hearts
3. Pearl 3: Many arrhythmias caused by hypoxia- Fix that first
4. Pearl 4: If unstable use electricity- except narrow complex when adenosine may be ok
5. Pearl 5: IF THEY ARE PRETTY STABLE - GET A 12 LEAD ECG

Adenosine

- “ More rapid and less severe side effects than calcium blockers”

- “recent evidence suggests that adenosine is relatively safe for both treatment and diagnosis” in Wide Complex Tachycardia

Adenosine

- May be considered in the initial diagnosis of stable, undifferentiated, regular, monomorphic, wide-complex tachycardia. Not to be used if the pattern is irregular.
- New evidence of safety and potential efficacy. Help diagnose and treat SVT with aberrant conduction.

BÀN CÃI

- Not for irregular or polymorphic
- SVT should slow or convert
- VT usually will not

Lựa chọn khác cho Nhịp nhanh QRS giãn rộng, đều – Bệnh nhân ổn định

- Cardioversion, Procainamide, Amiodarone, Sotalol
- Generally only try one!
- Procaine 20-50mg/hour (17mg/kg or QRS 50% narrowed, or hypotension)

QRS giãn rộng, đều: Amiodarone

- An option- better than lidocaine
- 150 mg IV over 10 minutes Can repeat 2.2 g IV total in 24 hours

QRS giãn rộng – Không đều

- Atrial fibrillation
- Atrial fib - accessory pathway
- Polymorphic VT

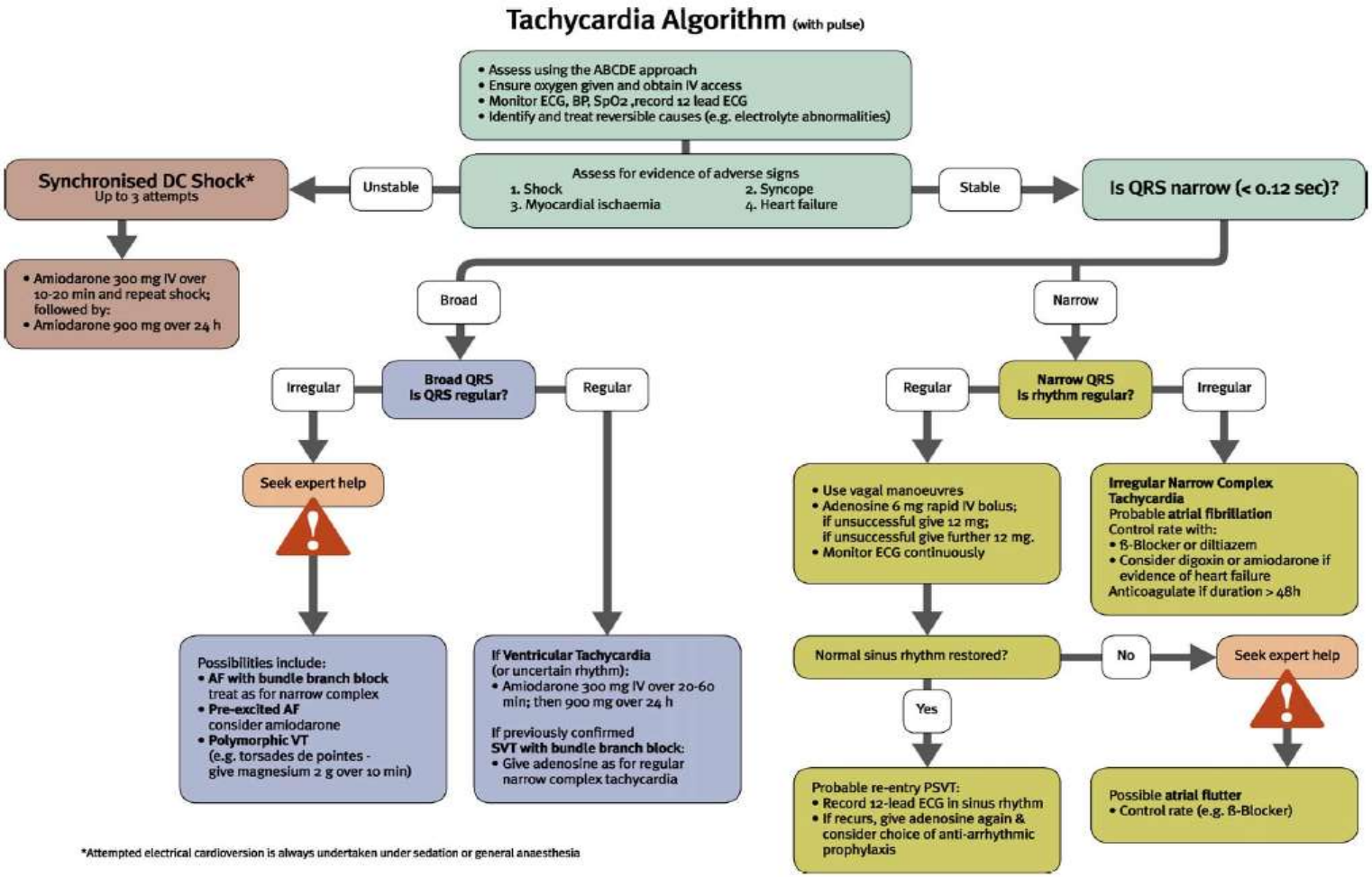
Nhịp nhanh thất đa hình thái

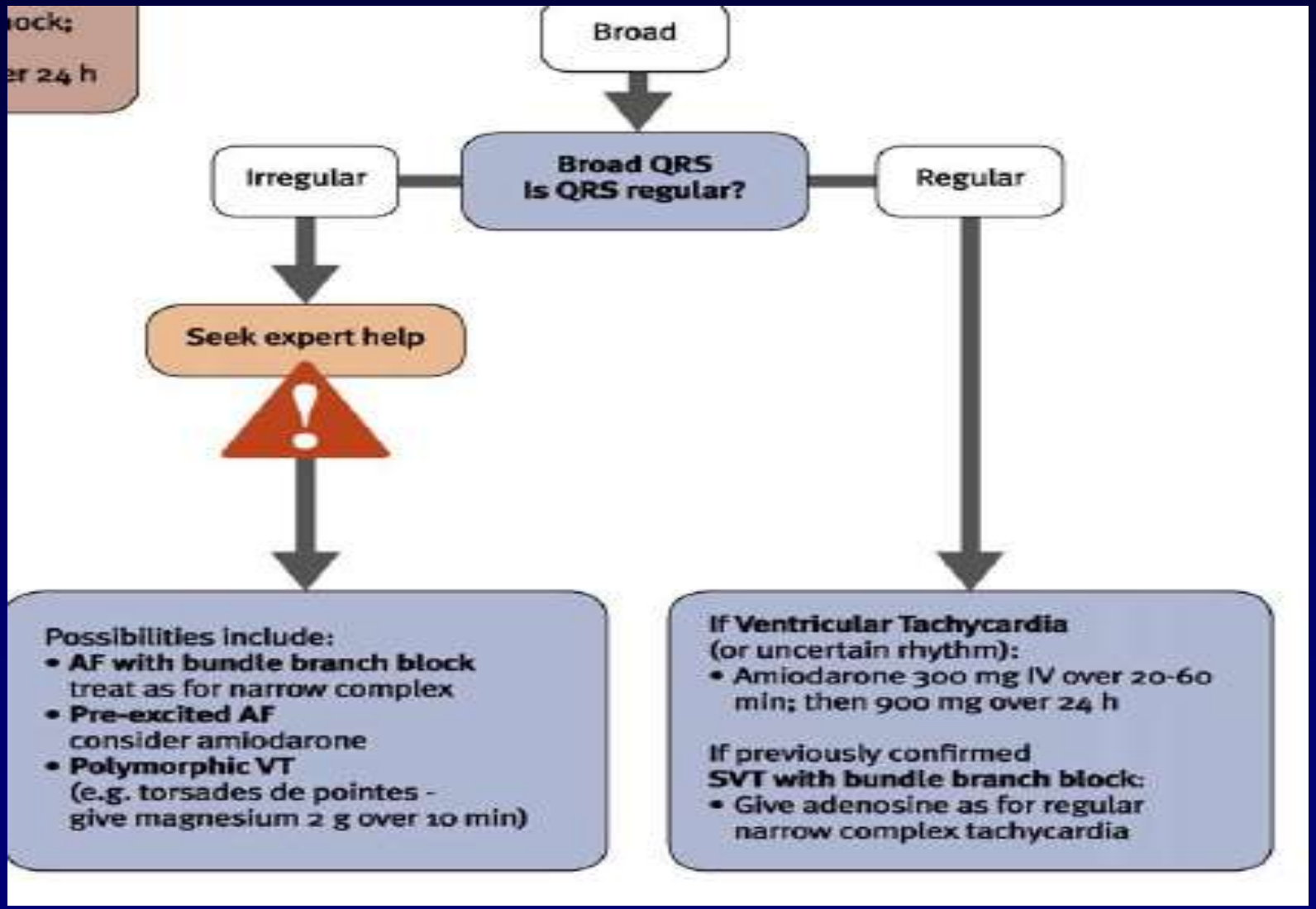
- Defibrillation

3 kiểu NNT đa hình thái

1. Prolonged QT : Magnesium
2. Familial : IV Magnesium Pacing Beta-blockers No Isoprel
3. Ischemic: Amiodarone, BB, revascularization

NHỊP NHANH


Tachycardia Algorithm (with pulse)
• Assess using the ABCDE approach
• Ensure oxygen given and obtain IV access
• Monitor ECG, BP, SpO2 ,record 12 lead ECG
• Identify and treat reversible causes (e.g. electrolyte abnormalities)
Assess for evidence of adverse signs
1. Shock
2. Syncope
3. Myocardial ischaemia
4. Heart failure
Unstable
Stable
Synchronised DC Shock*
Up to 3 attempts
• Amiodarone 300 mg IV over 10-20 min and repeat shock; followed by:
• Amiodarone 900 mg over 24 h
Is QRS narrow (< 0.12 sec)?
Broad
Narrow
Broad QRS
Is QRS regular?
Irregular
Regular
Seek expert help
Possibilities include:
• AF with bundle branch block
treat as for narrow complex
• Pre-excited AF
consider amiodarone
• Polymorphic VT
(e.g. torsades de pointes -
give magnesium 2 g over 10 min)
If Ventricular Tachycardia
(or uncertain rhythm):
• Amiodarone 300 mg IV over 20-60 min; then 900 mg over 24 h
If previously confirmed
SVT with bundle branch block:
• Give adenosine as for regular narrow complex tachycardia
Narrow QRS
Is rhythm regular?
Regular
Irregular
• Use vagal manoeuvres
• Adenosine 6 mg rapid IV bolus;
if unsuccessful give 12 mg;
if unsuccessful give further 12 mg.
• Monitor ECG continuously
Irregular Narrow Complex Tachycardia
Probable atrial fibrillation
Control rate with:
• ß-Blocker or diltiazem
• Consider digoxin or amiodarone if evidence of heart failure
Anticoagulate if duration > 48h
Normal sinus rhythm restored?
No
Seek expert help
Yes
Probable re-entry PSVT:
• Record 12-lead ECG in sinus rhythm
• If recurs, give adenosine again & consider choice of anti-arrhythmic prophylaxis
Possible atrial flutter
• Control rate (e.g. ß-Blocker)
*Attempted electrical cardioversion is always undertaken under sedation or general anaesthesia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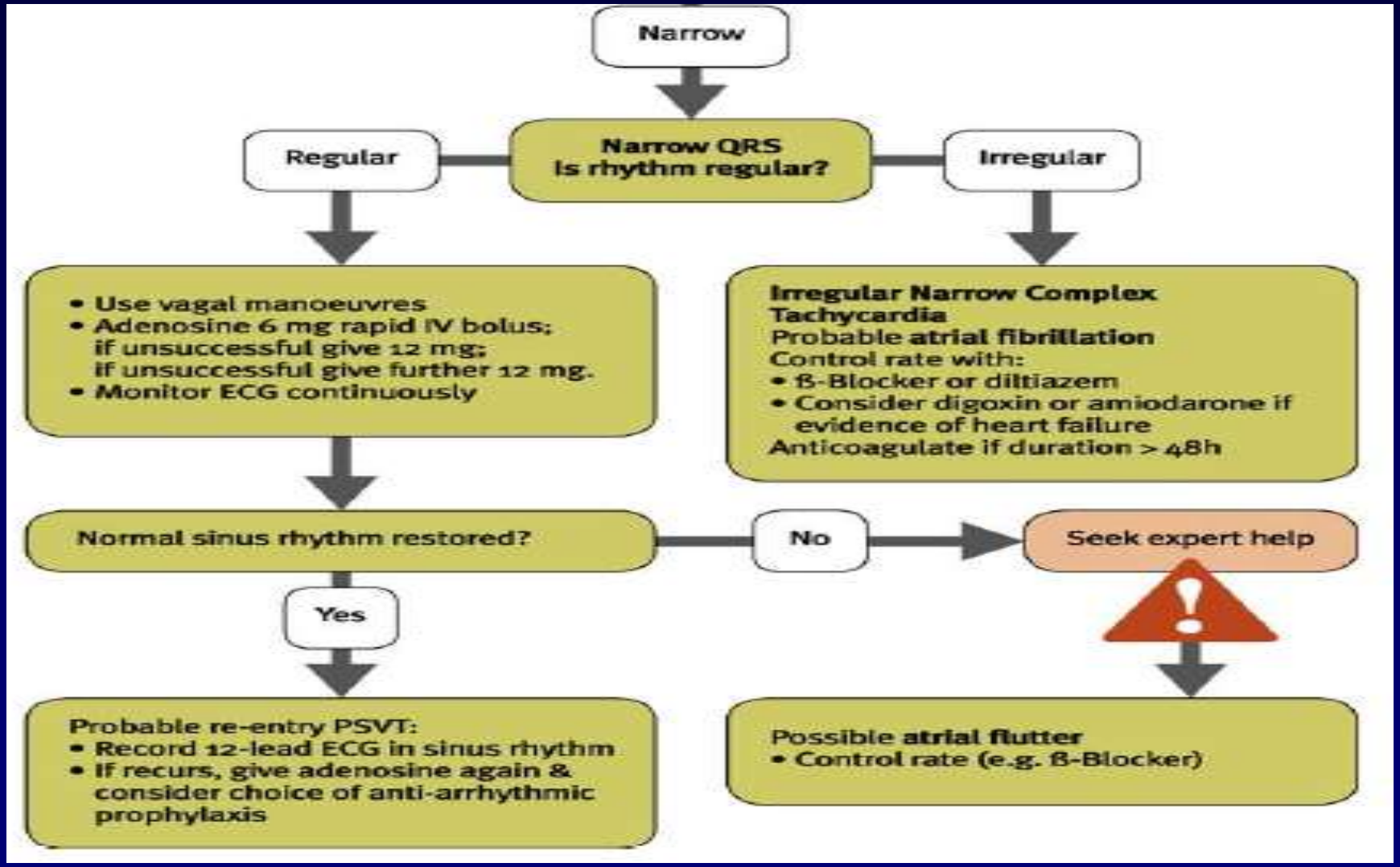
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Morphin

- Morphine should be given with caution to pts with unstable angina.
- Morphine is indicated in STEMI when CP unresponsive to nitrates.
- Morphine found to be associated with an increase mortality with angina and unstable angina large registry.

NHỊP CHẬM

Atropin

- Atropine is not recommended for PEA/Asystole.
- Use of atropine unlikely to have a therapeutic benefit

- First Dose-->0.5mg bolus
- Repeat every 3-5 minutes
- Max Dose 3mg

NẾU ATROPIN THẤT BẠI

- Transcutaneous Pacing
- or
- Dopamine 2-10 mcg per minute
- Epinephrine 2-10mcg per minute

Không dùng Atropine khi nào

- Cardiac Transplant- ineffective
- or brady Wide complex Type 2 or 3 blocks

Chronotropic Drugs

- For symptomatic or unstable bradycardia, chronotropic drug infusion are recommended as an alternative to pacing.
- Epi, Dopamine acceptable alternative to external transcutaneous pacing when atropine is ineffective.

5 nguyên nhân có thể chữa được của Hoạt động điện vô mạch

- Hypoxia
- Tension PTX
- Hypovolemia
- Cardiac Tamponade
- Toxic-Metabolic

5 Xử trí tại khoa Cấp cứu

- Oxygenate and Ventilate
- Secure IV Access
- Look for 3 Causes (ECG, Temp, Vol status)
- Epinephrine (1mg q 3mins)
- Review all 5 causes

5 Nguyên nhân có thể tìm nhờ Siêu âm

- Tamponde
- Hypovolemia
- Massive PE
- Cardiogenic Shock
- Normal->Lung view

Hoạt động điện vô mạch – Siêu âm 4 buồng tim

- Pericardial Effusion + RV Strain=Tamponade
- RV Strain=LV Strain=Hypovolemia
- RV dil + RA dil vs LV Strain=PE
- Poor contractility= Cardiogenic Shock
- Nl = Lung view

TÓM LẠI

1. HSTP cơ bản tối ưu
2. Sốc điện được hay không?
3. Nhịp nhanh hay chậm
4. Tìm nguyên nhân có thể điều trị
5. Chăm sóc sau ngừng tuần hoàn

XIN CẢM ƠN

2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care, Circulation. 2010;122:S729-S767