



Collège  
National des  
Cardiologues des  
Hôpitaux

Toute reproduction même partielle est interdite.

# 23<sup>ème</sup> CONGRÈS DU CNCH

Judi 23 et vendredi 24 novembre 2017

Pullman Paris Centre Bercy



[Programme →](#)

[Inscription →](#)

[Infos pratiques →](#)

[Partenaires →](#)

[Speed Data →](#)

[Annales →](#)



# Insuffisance cardiaque en préhospitalier

## 23<sup>ème</sup> CONGRÈS DU CNCH



Frédéric Lapostolle

Urgences - SAMU 93, UF Recherche

Hôpital Avicenne & Université Paris 13, Bobigny

© 2017 Collège National des Cardiologues des Hôpitaux (CNCH). Tous droits réservés.

# Déclaration de relations avec les industries de santé

- **Conférencier**

Astra-Zeneca, Bayer, BMS, Boehringer-Ingelheim, Daiichy-Sankyo, Lilly, Medtronic, Merck-Serono, Mundipharma, Novartis, Pfizer, Teleflex, The Medicine Company

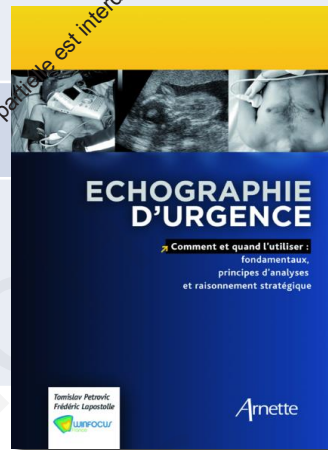
- **Investigateur d'une recherche ou d'une étude clinique**

Astra-Zeneca, Daiichy-Sankyo, Lilly, Merck-Serono, Mundipharma, Novartis, Teleflex, The Medicine Company

Frédéric Lapostolle

Urgences - SAMU 93, UF Recherche

Hôpital Avicenne & Université Paris 13, Bobigny



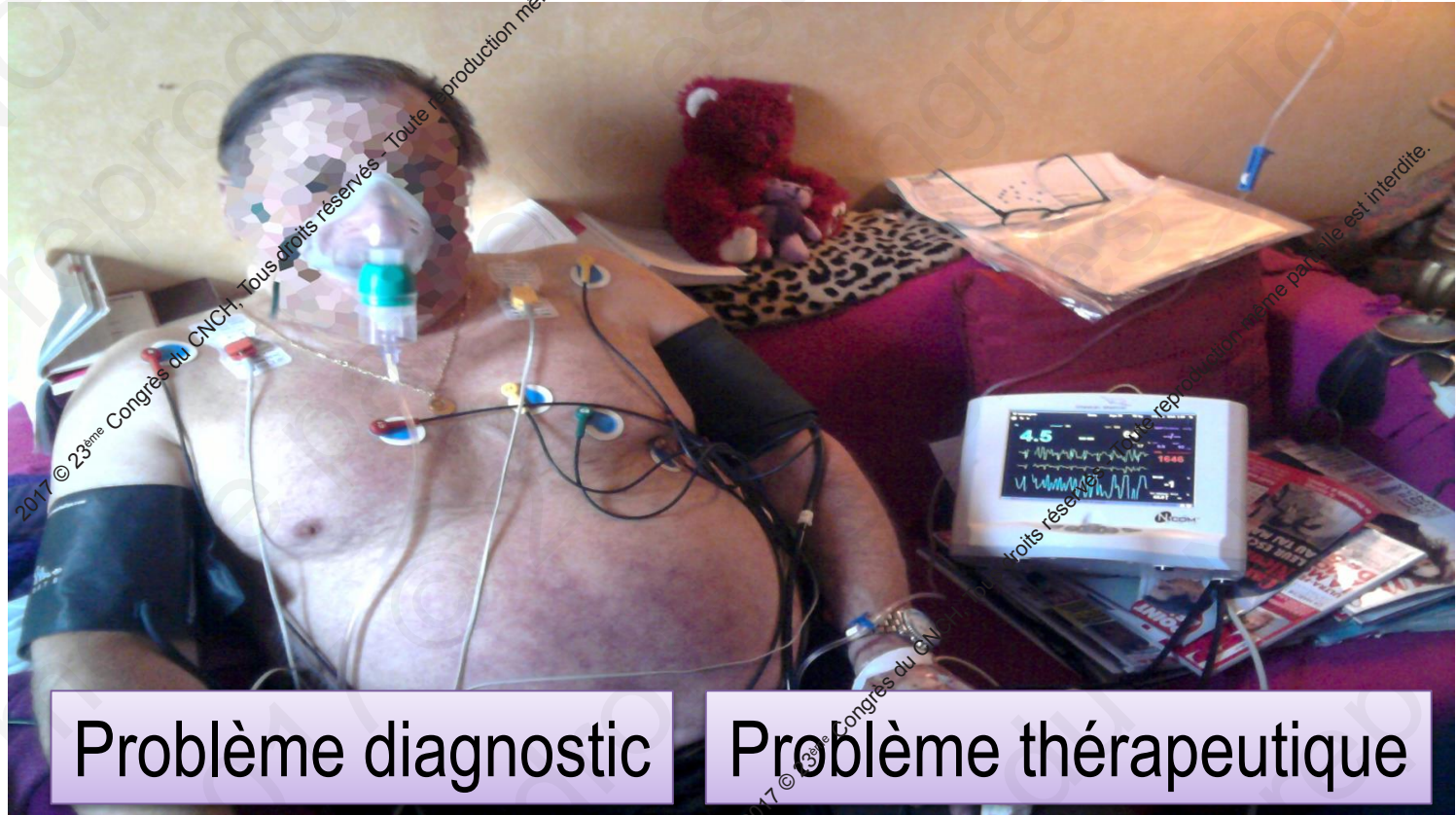
# Dans la peau d'un urgentiste



# Le patient a 75 ans... Il est dyspnéique

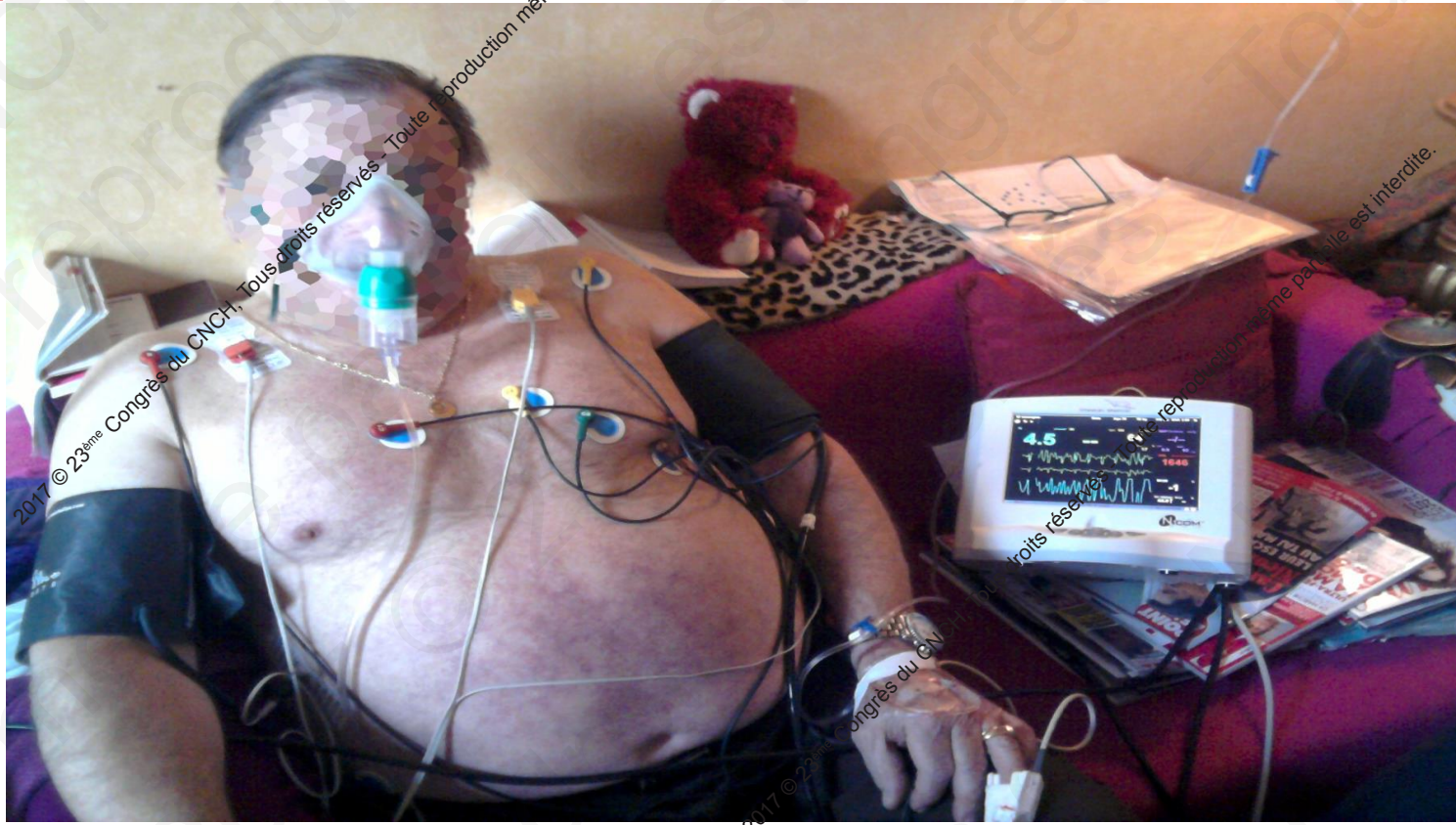
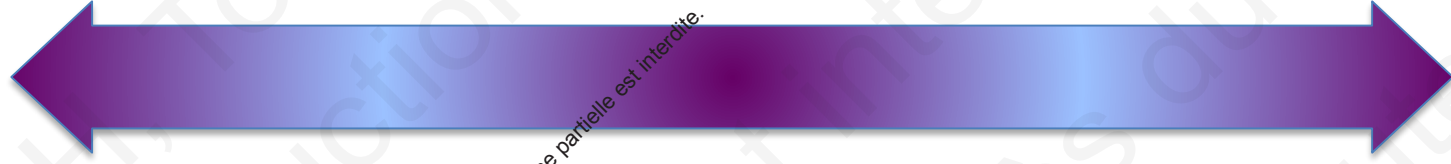
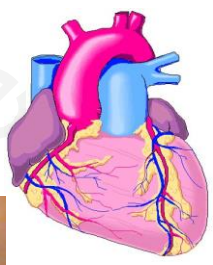
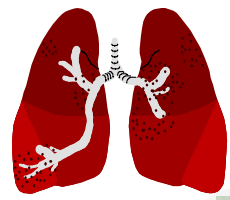


# Le patient a 75 ans... Il est dyspnéique



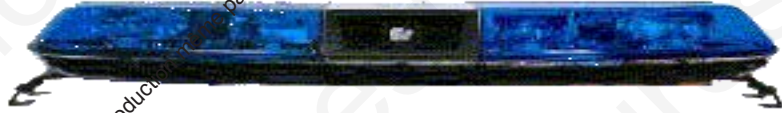
Problème diagnostique

Problème thérapeutique



2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.

# Si vous n'avez droit qu'à un outil



- Votre sens clinique
- Votre stéthoscope
- Un échographe
- Un mini-lab (BNP)





# Vous avez choisi : **le sens clinique & le stéthoscope**



Dr House. Saison 2, épisode 4

## ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012

www.escardio.org/guidelines

European Heart Journal (2012) 33, 110–147  
European Journal of Heart Failure (2012) 14, 803–869

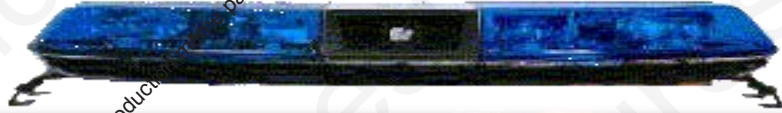


### 3.6 Diagnosis of heart failure

#### 3.6.1 Symptoms and signs

The diagnosis of HF can be difficult, especially in the early stages. Although symptoms bring patients to medical attention, many of the symptoms of HF (*Table 4*) are non-specific and do not, therefore, help discriminate between HF and other problems. Symptoms that are more specific (i.e. orthopnoea and paroxysmal nocturnal dyspnoea) are less common, especially in patients with milder symptoms, and are, therefore, insensitive.<sup>2–6</sup>

Vous avez choisi : **un mini-lab (BNP)**



2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.

## ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012

[www.escardio.org/guidelines](http://www.escardio.org/guidelines)

European Heart Journal (2012) 33, 1787–1847  
European Journal of Heart Failure (2012) 14, 803–810



Measurement of natriuretic peptide (BNP, NT-proBNP, or MR-proANP) should be considered to:

- (i) Exclude alternative causes of dyspnoea (if the level is below the exclusion cut-point—see *Figure 1*—HF is very unlikely)
- (ii) Obtain prognostic information.

**IIa**

**C**

# Vous avez eu raison de choisir : **un échographe**



Vous avez eu raison de choisir : **un échographe**



Pour faire **une échographie**

- Cardiaque
- Pulmonaire
- Vasculaire
- Hémodynamique



2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

<b>Chapitre 2 Échographie de la tête et du cou</b>	
Échographie-Doppler transcrânienne .....	25
Nerf optique .....	42
Pupille .....	49
Voies aériennes supérieures .....	54

<b>Chapitre 7 Échographie interventionnelle</b>	
Abord veineux central sous assistance échographique .....	151
Péricardiocentèse .....	161

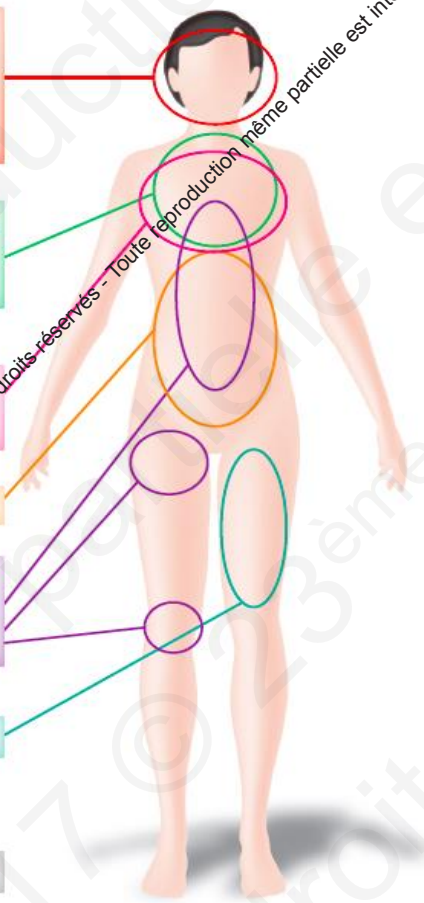
<b>Chapitre 3 Échographie thoracique</b>	
Échographie pulmonaire .....	87
Échographie cardiaque .....	87

<b>Chapitre 4 Échographie abdominale...</b>	109
---	-----

<b>Chapitre 5 Échographie vasculaire</b>	
Aorte et veine cave inférieure .....	121
Échographie veineuse des membres inférieurs .....	139

<b>Chapitre 6 Échographie osseuse .....</b>	147
---	-----

<b>Table des matières générales .....</b>	169
---	-----



Petrovic, Echographie d'urgence, 2013

**ECHOGRAPHIE D'URGENCE**

De la tête au pied  
Du début à la fin de l'intervention

Tomislav Petrovic  
Frédéric Lapostolle

winFOCUS France

Arnette

# L'échographie pulmonaire



Est un outil :

- Diagnostique
- Pronostique
- Thérapeutique
- Scientifiquement validé



2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

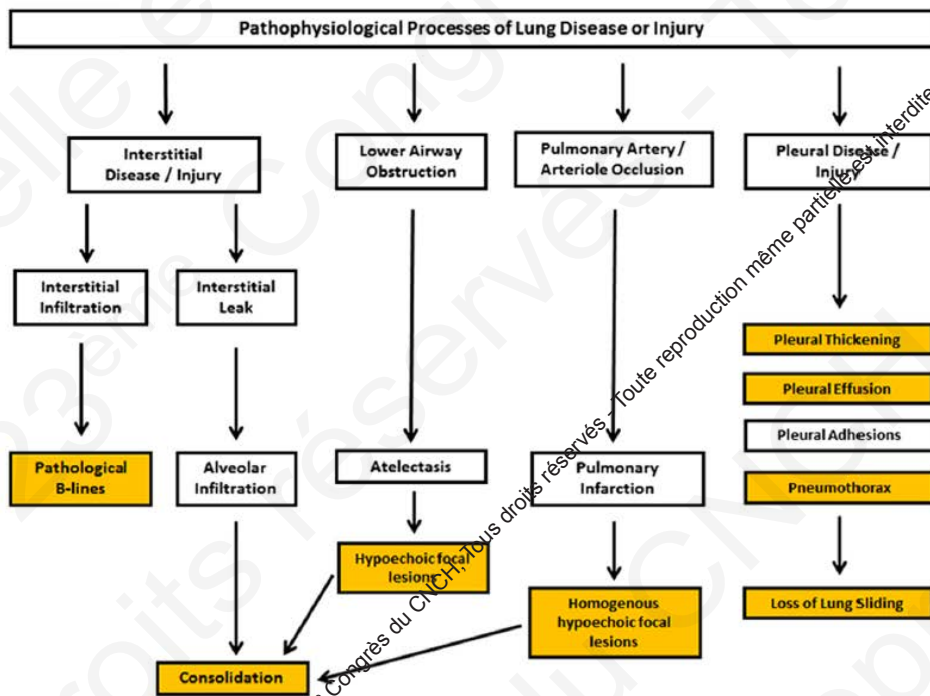




# Lung ultrasound—a primary survey of the acutely dyspneic patient

Francis Chun Yue Lee<sup>1,2</sup>

## J Intensive Care



**Fig. 6** Pathological processes of lung disease and injury. This summarises some of the common endpoints of the pathological processes of lung disease and injury. The endpoints result in discernible features (yellow boxes) in LUS

## Recommendations on pre-hospital and early hospital management of acute heart failure: a consensus paper from the Heart Failure Association of the European Society of Cardiology, the European Society of Emergency Medicine and the Society of Academic Emergency Medicine – short version

# consensus paper from Association of the European Society of Cardiology the European Society of Emergency Medicine the Society of Academic Emergency Medicine – short version

**Table 1** Clinical characteristics of the AHF patients according to the different sites of initial contact and management

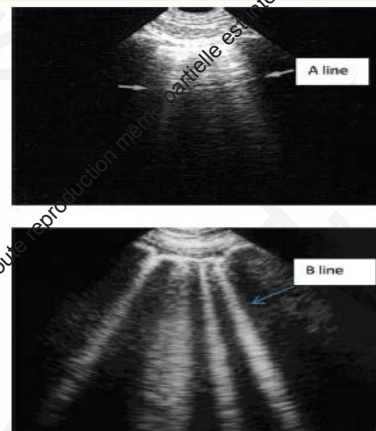
Admission site	Cardiac ICU/CCU		Emergency department		Pre-hospital setting	
	Euro-HF II n = 3580	EFICA n = 599	ADHERE n = 159168	ATTEND n = 1100	Ducros et al. n = 207	Sporer et al. n = 319
Male (%)	61	59	49	59	41	47
Age (years)	70	73	73	72	81	77
SBP > 140 mmHg at admission (%)	63	60	74	71	75	77
CS or SBP < 90 mmHg (%)	3.9	2.9	3	NA	1	3
Initial SBP	135	126	144	147	170	167

Of note, EFICA includes only ICU patients.  
Euro-HF II, EFICA, ADHERE, ATTEND,<sup>11</sup> Ducros et al.,<sup>12</sup> Sporer et al.<sup>13</sup>  
SBP, systolic blood pressure; ICU, intensive care unit; CCU, coronary care unit; CS, cardiogenic shock.

- Medical treatment should be initiated based on blood pressure and/or the degree of congestion using vasodilators and/or diuretics (i.e. furosemide).
- Rapid transfer to the nearest hospital, preferably to a site with a cardiology department and/or CCU/ICU.
- On arrival in the ED/CCU/ICU, initial clinical examination, investigations and treatment should be started immediately and concurrently.

### Initial clinical evaluation and investigations at arrival in the emergency department/coronary care unit/intensive care unit

- In the initial evaluation of suspected AHF (excluding cardiogenic shock), the critical first step is determination of the severity of cardiopulmonary instability based on the level of dyspnoea, haemodynamic status, and heart rhythm. To facilitate this, results of the following assessments should be recorded (Figure 1):
  - Objective measurement of dyspnoea severity, including the respiratory rate, intolerance of the supine position, effort breathing, and degree of hypoxia.
  - Systolic and diastolic blood pressure.
  - Heart rate and rhythm.
  - Objective determination of body temperature and any symptoms of hypoperfusion (cool extremities, narrow pulse pressure, mental status).
- The next step should include a search for congestion including peripheral oedema, audible rales (especially in the absence of fever), and elevated jugular venous pressure.
- Additional testing that may be useful includes:
  - ECG, recognizing that in AHF this is rarely normal, and rarely diagnostic but necessary to exclude ST segment elevation myocardial infarction
  - Laboratory tests (see below)
  - Bedside thoracic ultrasound and for signs of interstitial oedema (Figure 2) and abdominal ultrasound for inferior vena cava diameter (and ascites) if expertise is available



**Figure 2** (A and B) Thoracic ultrasound images in normal and AHF patients. (A) From the pleural line, one repetition of the pleural line, a horizontal line [A line], parallel to the pleural line, is visible, indicating normal lung with no pulmonary oedema. Note some ill-defined vertical comet-tail artefacts, not to be confused with lung rockets. Arrows indicate A lines. (B) Four or five B-lines arise from the pleural line, creating a pattern called lung rockets. B lines are vertical, long, well-defined artefacts arising the A-lines and moving in concert with lung sliding. B lines indicate pulmonary oedema. From Whole Body Ultrasonography in the Critically Ill, Springer 2010 (with kind permission of Springer Science).

# Le patient a 75 ans... Il est dyspnéique



# Décisions thérapeutiques



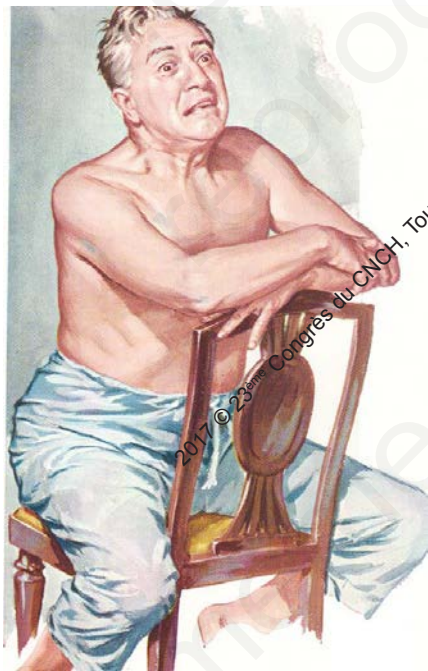




2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

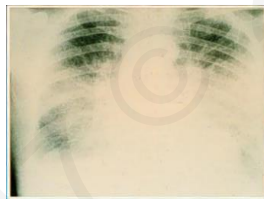
CS1 : dyspnea and/or other signs of congestion + elevated SBP (> 150 mm Hg)



Acute pulmonary edema

+

- Dyspnea develops abruptly
- Diffuse pulmonary edema
- Minimal systemic edema

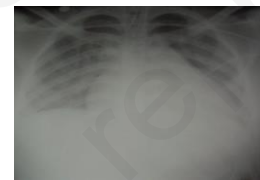


CS2 : dyspnea + normal SBP (110-150 mm Hg)

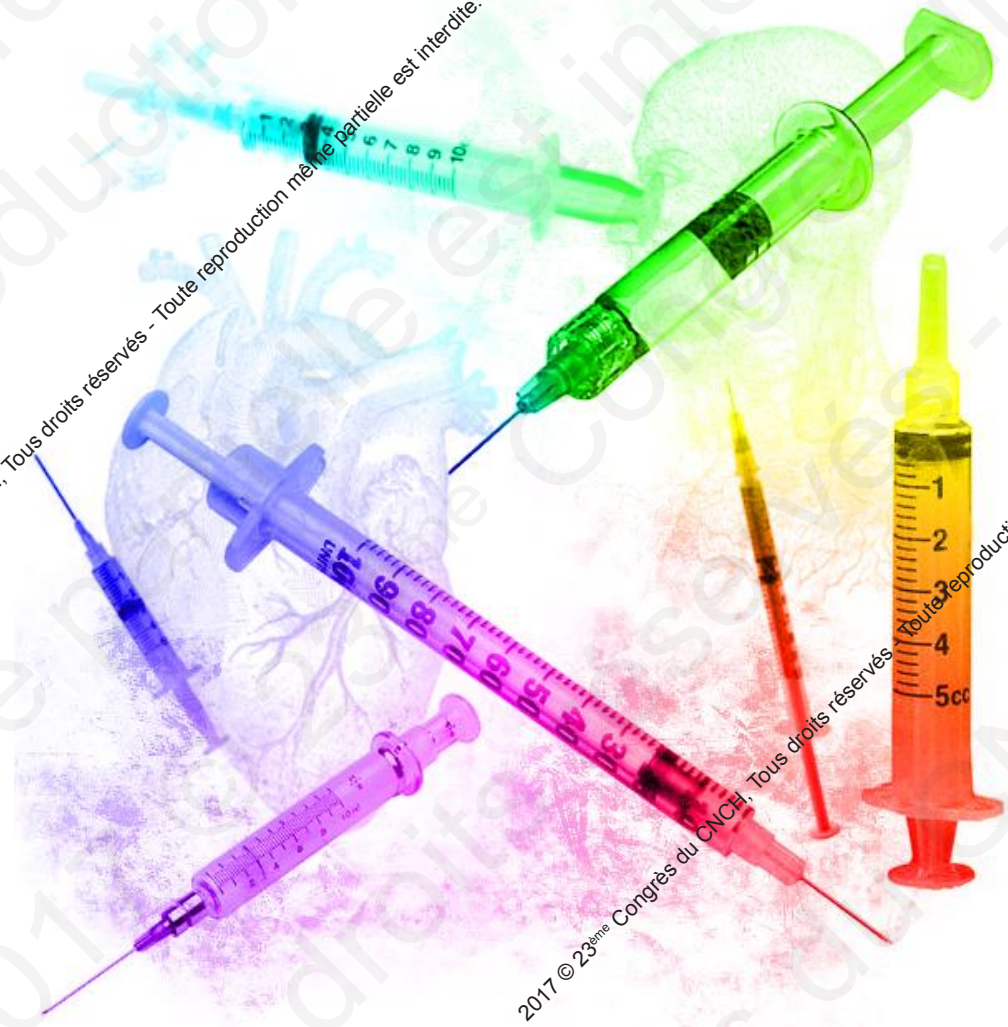


Decompensated chronic heart failure +

- Dyspnea develops gradually
- Gradual increase in body weight
- Systemic edema
- Minimal pulmonary edema

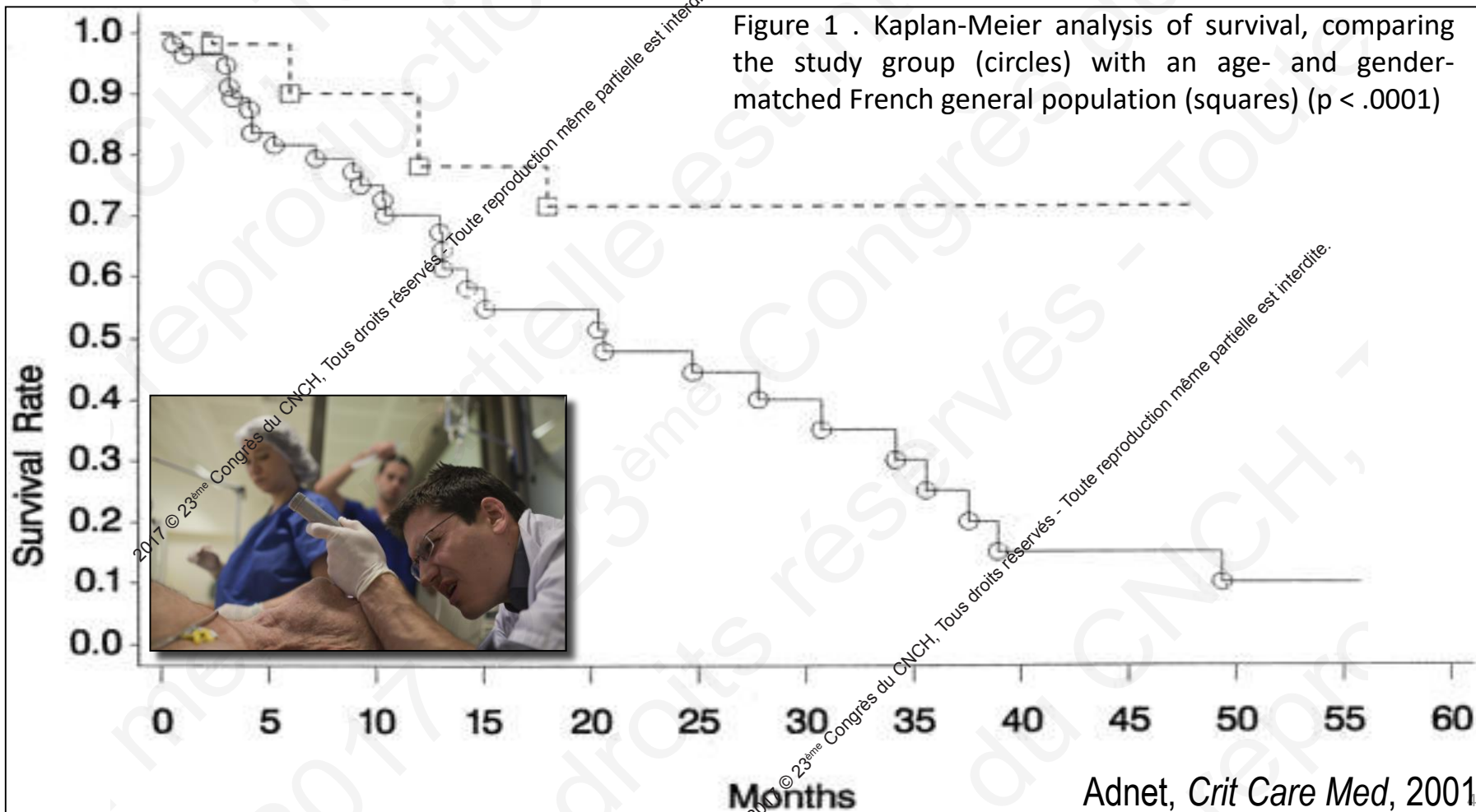


2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.



2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.





# Le patient a 75 ans... Il est dyspnéique



# Le patient a 75 ans... Il est dyspnéique

PA : 185/95 mm Hg - FC : 95 /min - SpO2 : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
**Evolution favorable** sous O<sub>2</sub> + dérivés nitrés (+ diurétique)



# Le patient a 75 ans... Il est dyspnéique

PA : 185/95 mm Hg - FC : 95 /min - SpO2 : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
**Evolution favorable** sous O<sub>2</sub> + dérivés nitrés (+ diurétique)



**Urgences**

**USIC**

**Réanimation**

**USC**

# Le patient a 75 ans... Il est dyspnéique



# Le patient a 75 ans... Il est dyspnéique

PA = 185/95 mm Hg - FC = 95/min - SpO<sub>2</sub> : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
**Résiste** au traitement par O<sub>2</sub> + dérivés nitrés (+ diurétique)



# Le patient a 75 ans... Il est dyspnéique

PA = 185/95 mm Hg - FC = 95/min - SpO2 : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
**Résiste** au traitement par O<sub>2</sub> + dérivés nitrés (+ diurétique)



Je double les doses

Le cardiologue se débrouillera

Je tente la VNI

Je le saigne

# Le patient a 75 ans... Il est dyspnéique

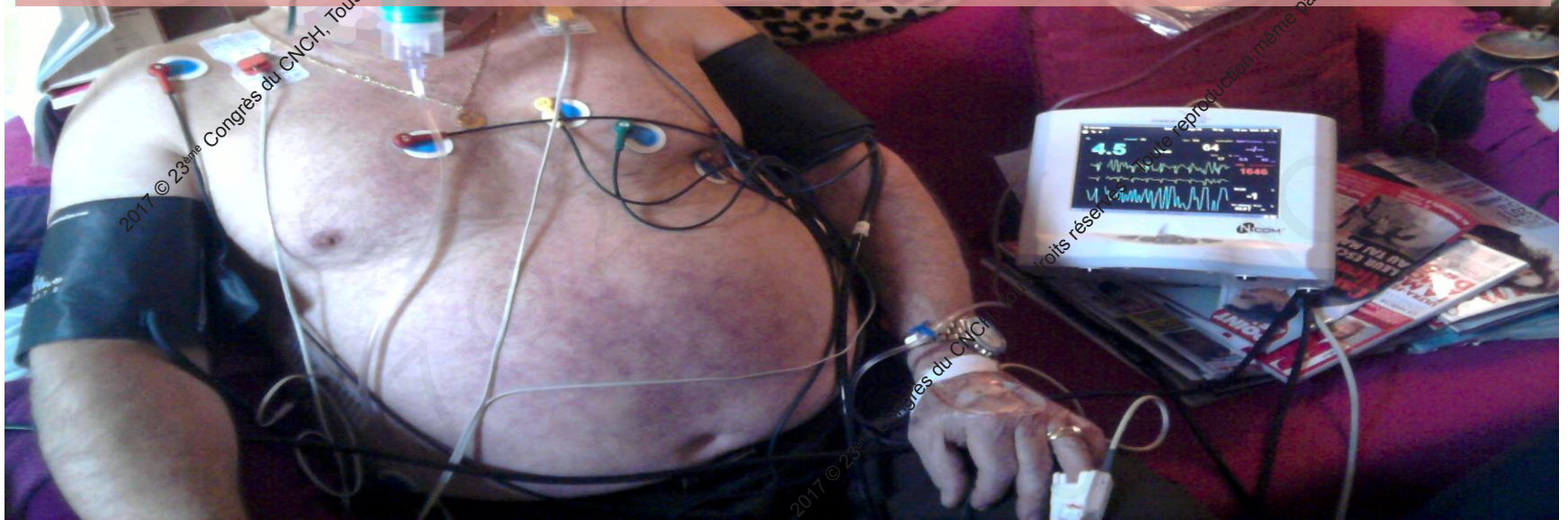
PA = 185/95 mm Hg - FC = 95/min - SpO<sub>2</sub> : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
**Résiste** au traitement par O<sub>2</sub> + dérivés nitrés (+ diurétique)





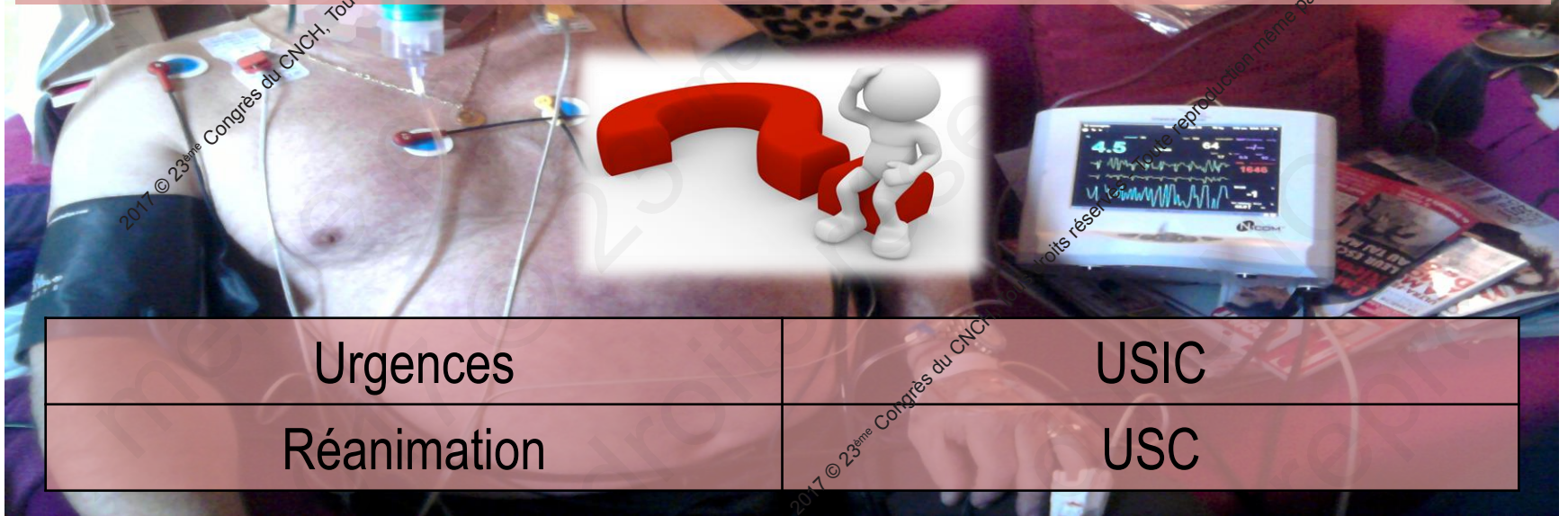
# Le patient a 75 ans... Il est dyspnéique

PA = 185/95 mm Hg - FC = 95/min - SpO2 : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
Traitement par dérivés nitrés + diurétique + **VNI**



# Le patient a 75 ans... Il est dyspnéique

PA = 185/95 mm Hg - FC = 95/min - SpO2 : 85% AA - Profil B  
C'est un premier OAP sur poussée hypertensive  
Traitement par dérivés nitrés + diurétique + **VNI**



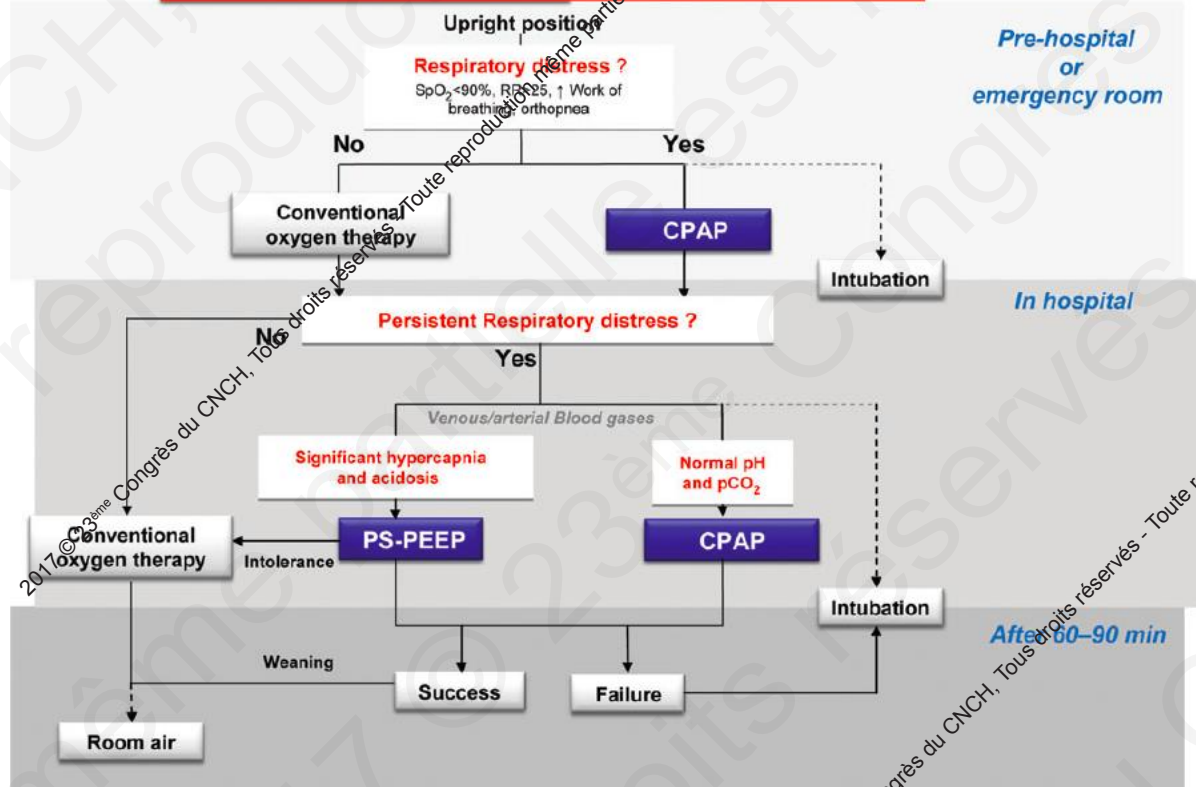
Urgences

USIC

Réanimation

USC

## Oxygen therapy and ventilatory support in AHF



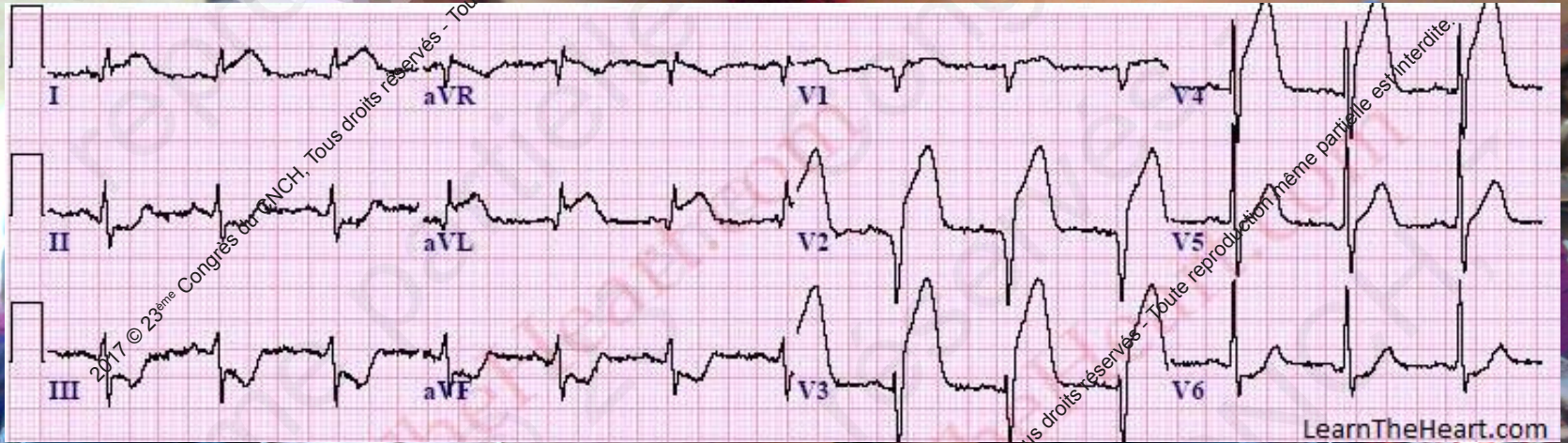
**Figure 3** Oxygen and ventilatory support in acute heart failure. PS-PEEP, pressure support-positive end-expiratory pressure. CPAP, continuous positive airway pressure; RR, respiration rate;  $SpO_2$ , oxygen saturation.

# Le patient a 75 ans... Il est dyspnéique



# Le patient a 75 ans... Il est dyspnéique

PA = 85/45 mm Hg - FC = 115/min - SpO2 : 85% AA - Profil B



# Le patient a 75 ans... Il est dyspnéique

PA = 85/45 mm Hg - FC = 115/min - SpO2 : 85% AA - Profil B



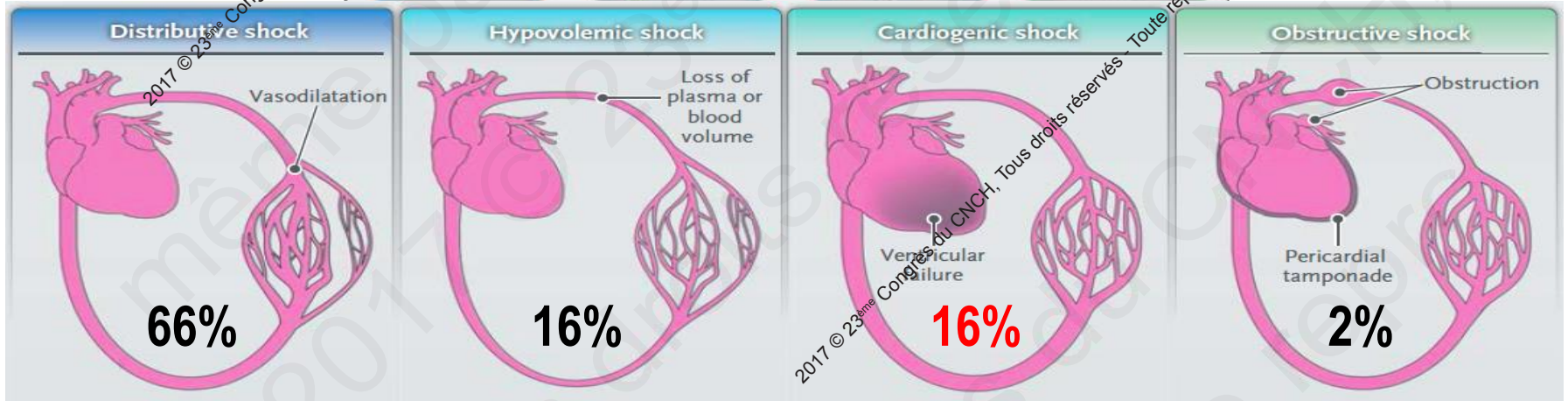
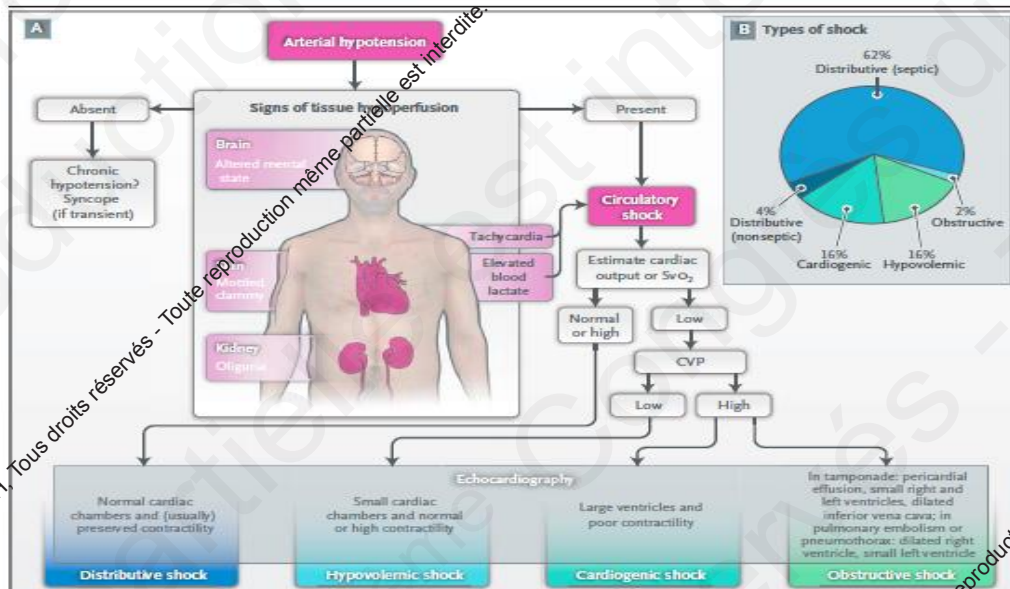
Fibrinolyse

Saignée

Remplissage vasculaire

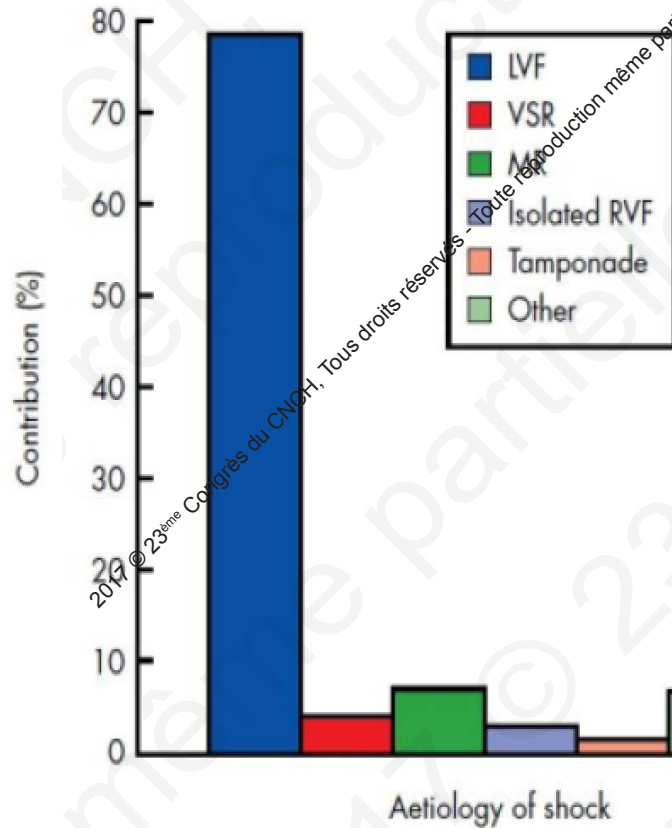
Catécholamine

Vincent JL,  
NEJM, 2013



reproduction même partielle est interdite.

2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.



**Figure 1** Aetiology of suspected cardiogenic shock in the combined SHOCK trial registry and trial (total n = 1422, only first 232 trial patients are included). "Other" includes shock caused by prior severe valvar disease, dilated cardiomyopathy, excess  $\beta$  blockade/calcium channel blockade, haemorrhage, and procedural complications. Aortic dissection, pulmonary embolism, and dynamic subaortic outflow obstruction should also be considered. LVF, left ventricular failure; MR, mitral regurgitation; RVF, right ventricular failure; VSR, ventricular septal rupture.

2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.





## Main results

Four eligible, very small studies were identified from a total of 4065 references. Three trials with high overall risk of bias compared levosimendan to standard treatment (enoximone or dobutamine) or placebo. Data from a total of 63 participants were included in our comparisons, 31 were treated with levosimendan and 32 served as controls. Levosimendan showed an imprecise survival benefit in comparison with enoximone based on a very small trial with 32 participants (HR 0.33; 95% CI 0.11 to 0.97). Results from the other similarly small trials were too imprecise to provide any meaningful information about the effect of levosimendan in comparison with dobutamine or placebo. Only small differences in haemodynamics, length of hospital stay and the frequency of major adverse cardiac events or adverse events overall were found between study groups.

Only one small randomised controlled trial with three participants was found for vasodilator strategies (nitric oxide gas versus placebo) in AMI complicated by CS or LCOS. This study was too small to draw any conclusions on the effects on our key outcomes.

## Authors' conclusions

At present there are no robust and convincing data to support a distinct inotropic or vasodilator drug based therapy as a superior solution to reduce mortality in haemodynamically unstable patients with CS or low cardiac output complicating AMI.

## Definition, initial management and monitoring of cardiogenic shock including device therapy

- Cardiogenic shock is defined as hypotension (SBP < 90 mmHg) despite adequate filling status and signs of hypoperfusion: (oliguria, cold peripheries, altered mental status, lactate > 2 mmol/L, metabolic acidosis, SvO<sub>2</sub> < 65%)
- A patient with suspected cardiogenic shock (CS) should undergo immediate assessment
- ECG and echocardiography are required immediately in all patients with suspected CS
- Invasive monitoring with arterial line is needed
- There is no agreement on optimal method of hemodynamic monitoring in assessing and treating the patient in CS, including pulmonary artery catheter
- Fluid challenge (saline or ringer lactate 200 mL/15–30 min) is recommended as the first line treatment if there is no sign of overt fluid overload
- Dobutamine may be used to increase cardiac output; levosimendan may be considered, especially in CHF patients on oral beta-blockade
- Vasopressors should only be used if there is a strict need to maintain systolic BP in the presence of persistent hypoperfusion; if needed, norepinephrine is recommended over dopamine
- All CS should be rapidly transferred to a tertiary care centre which has a 24/7 service of cardiac catheterization, and a dedicated ICU with availability of short-term mechanical circulatory support
- Intraaortic balloon pump is not routinely recommended in CS
- Short-term mechanical circulatory support may be considered in refractory CS depending on patient age, comorbidities and neurological function
- Based on current evidence, we do not recommend one mode of short-term circulatory support over another



European Heart Journal  
doi:10.1093/eurheartj/ehv066

CURRENT OPINION

## Recommendations on pre-hospital and early hospital management of acute heart failure: a consensus paper from the Heart Failure Association of the European Society of Cardiology, the European Society of Emergency Medicine and the Society of Academic Emergency Medicine – short version

Remplissage

Dobutamine

(Noradrénaline)

2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

# Le patient a 75 ans... Il est dyspnéique

PA = 85/45 mm Hg - FC = 115/min - SpO2 : 85% AA - Profil B



**Urgences**

**USIC**

**Réanimation**

**USC**

# ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

European Heart Journal (2012) 33, 2569–2619



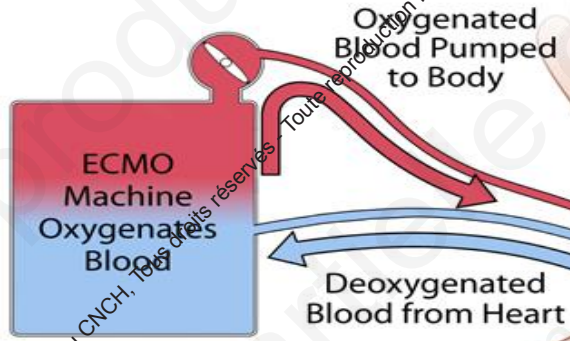
LV assist devices may be considered for circulatory support in patients in refractory shock.

**IIb**

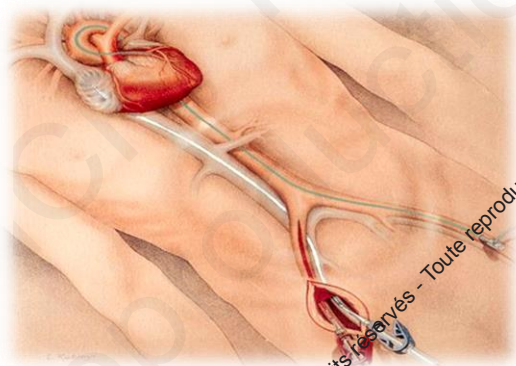
**C**

2017 © 23<sup>ème</sup> Congrès du CNCH, Tous droits réservés - Toute reproduction même partielle est interdite.

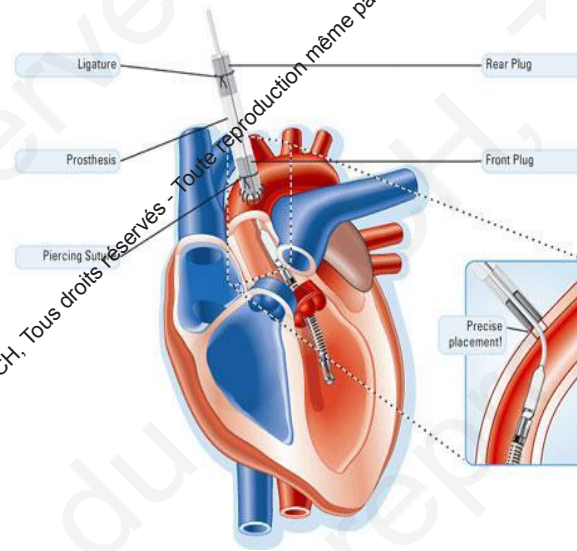
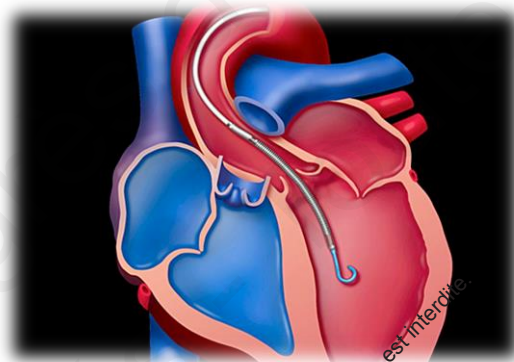
# ECMO



2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

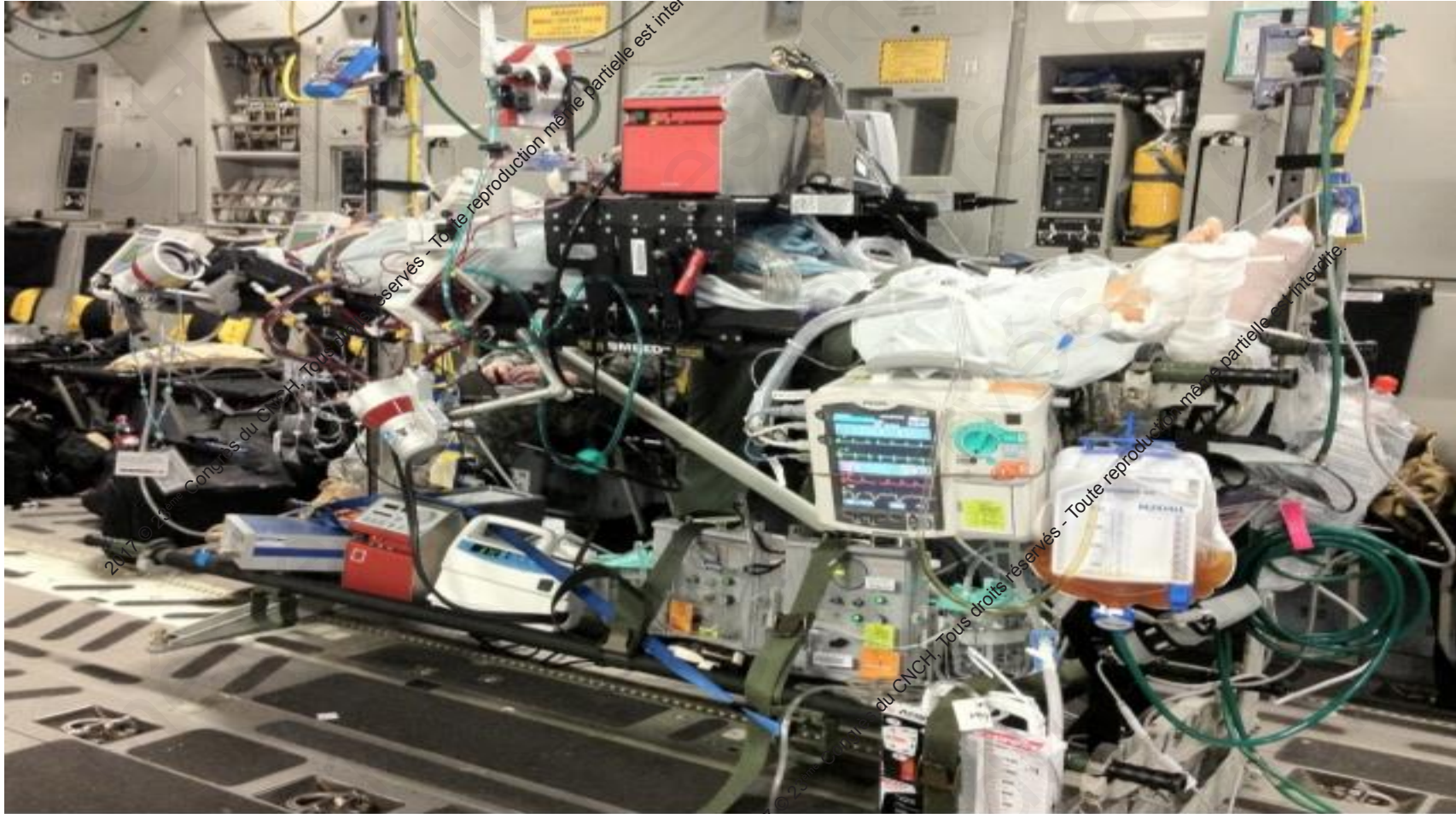


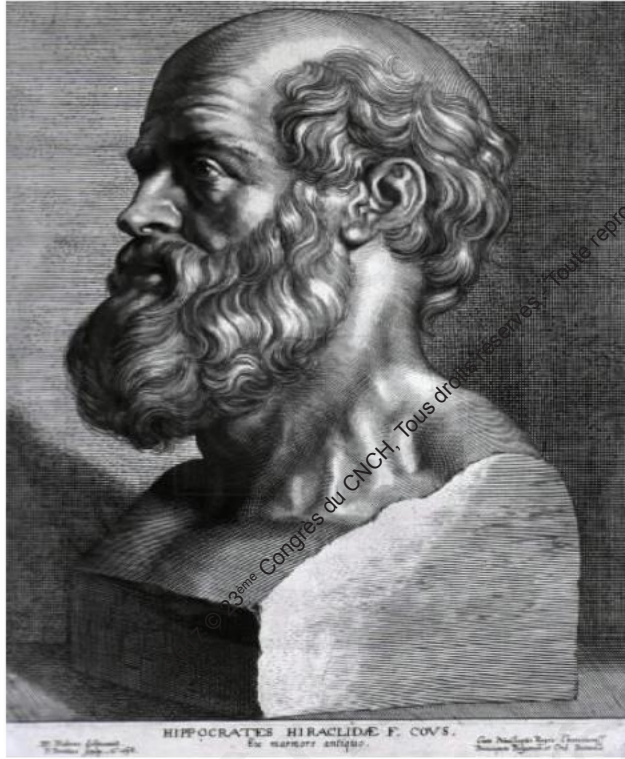
# ECMO & Impella®



2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.

2017 © 23<sup>ème</sup> Congrès du CNCH. Tous droits réservés - Toute reproduction même partielle est interdite.





Hippocrate  
(460-356 av. JC)

“Les moments pour intervenir passent promptement et la mort survient si on a trop différé.

Il existe ainsi des moments opportuns dans toutes les maladies.”