Mini-séminaire du DES de Pneumologie

Dyspnée aigue aux urgences: OAP du sujet âgé

Martin Dres

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Service de Pneumologie, Médecine intensive – Réanimation
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Liens d’intérêt

- **Lungpacer**

M. K 72 ans, est adressé aux urgences pour une **dyspnée** évoluant depuis 48 heures. Il est **obèse** (BMI 31 kg/m^2), **hypertendu** et ancien **tabagique**.

Il est dyspnéique au repos

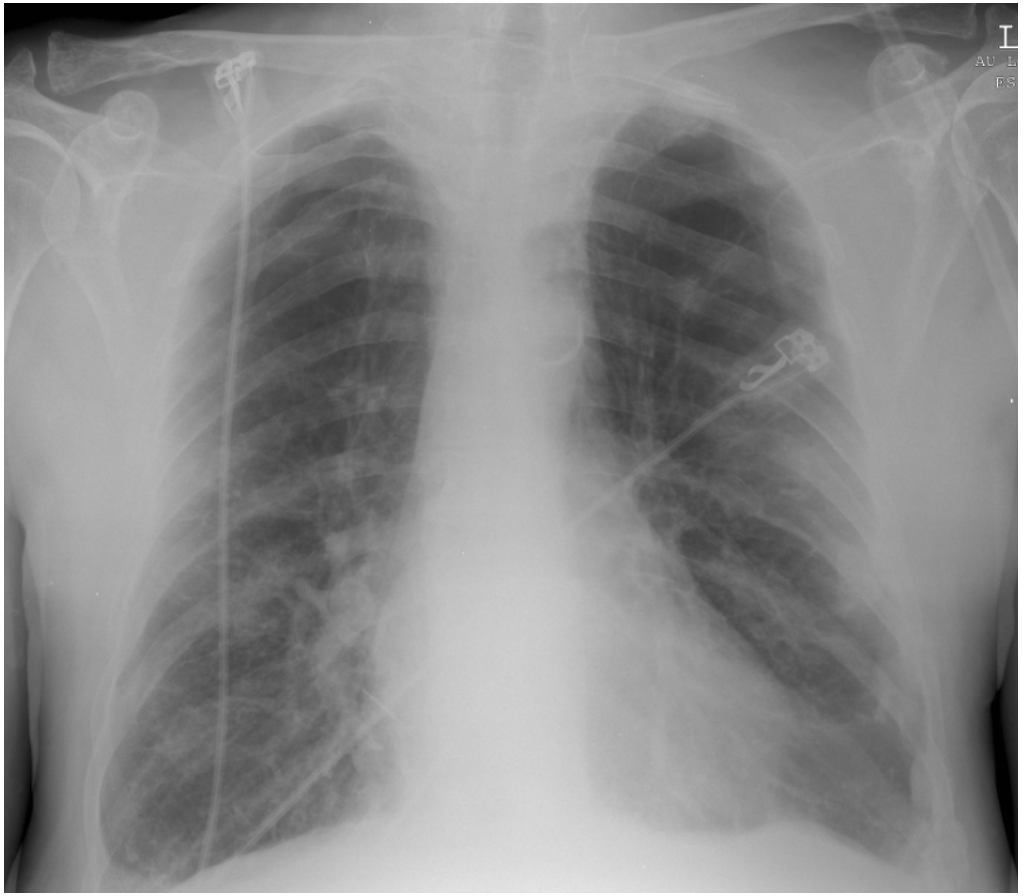
FR 35/min, SpO2 90%

PA 165/85 mmHg, FC 114/min

GDS (02=6L/min)

pH 7.24 PaO2 65 mmHg

PaCO2 55 mmHg



Quelle est la probabilité que la cause de cette dyspnée soit un OAP ?

1. 20%
2. 30%
3. 40%
4. 50%
5. 60%

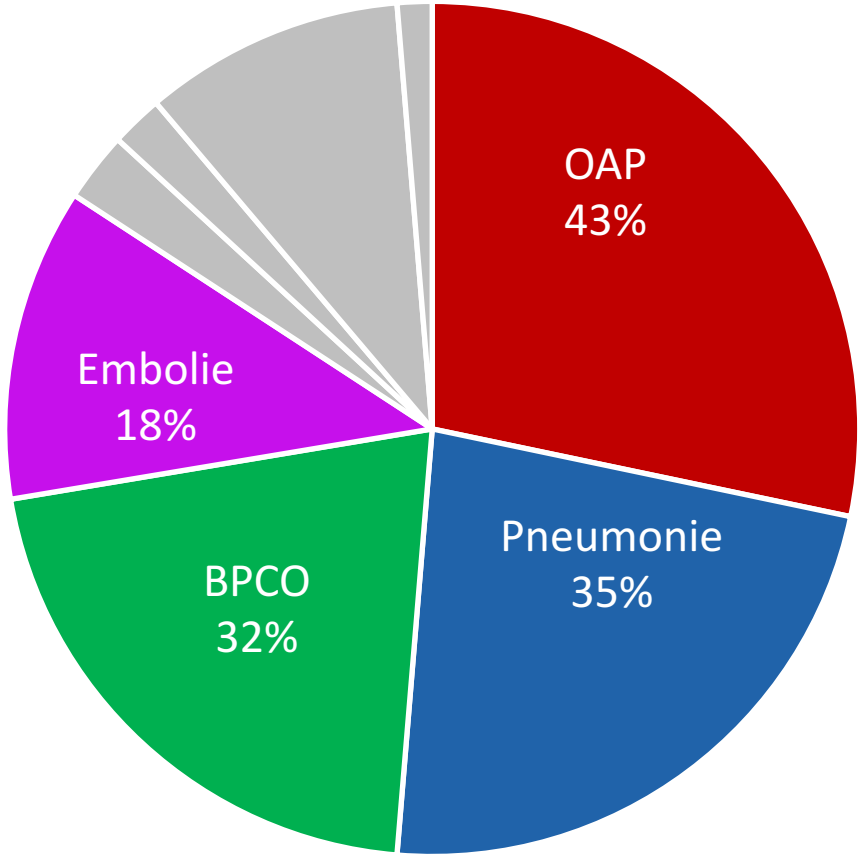
Quelle est la probabilité que la cause de cette dyspnée soit un OAP ?

1. 20%
2. 30%
3. **40%**
4. 50%
5. 60%

Acute respiratory failure in the elderly: etiology, emergency diagnosis and prognosis

Patrick Ray[1], Sophie Birolleau[2], Yannick Lefort[2], Marie-Hélène Becquemin[3], Catherine Beigelman[4], Richard Isnard[5], Antonio Teixeira[6], Martine Arthaud[7], Bruno Riou[1] and Jacques Boddaert[8]

N=234 patients



Critical Care 2006

Parmi les signes suivants, lesquels vous permettraient de porter le diagnostic **d'œdème aigu pulmonaire**?

1. Hypertension artérielle
2. Hypercapnie
3. Œdème des mollets
4. Reflux hépato-jugulaire
5. Douleur thoracique

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Quels examens biologiques réalisez vous?

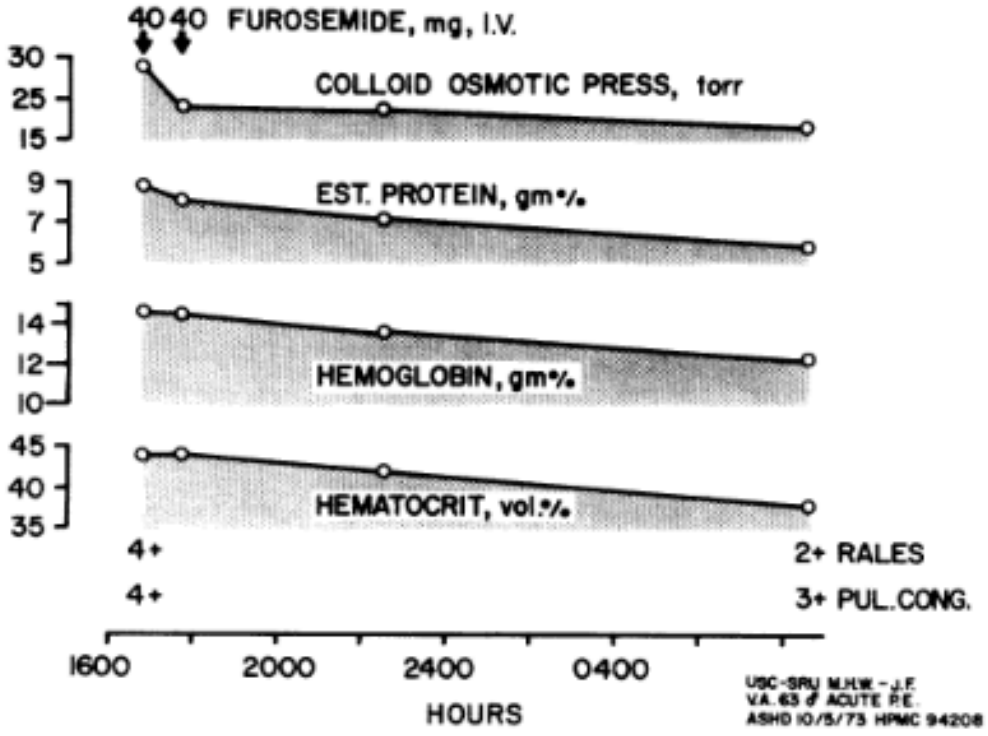
1. D-dimères
2. BNP
3. Troponine
4. C-reactive protein
5. Protidémie

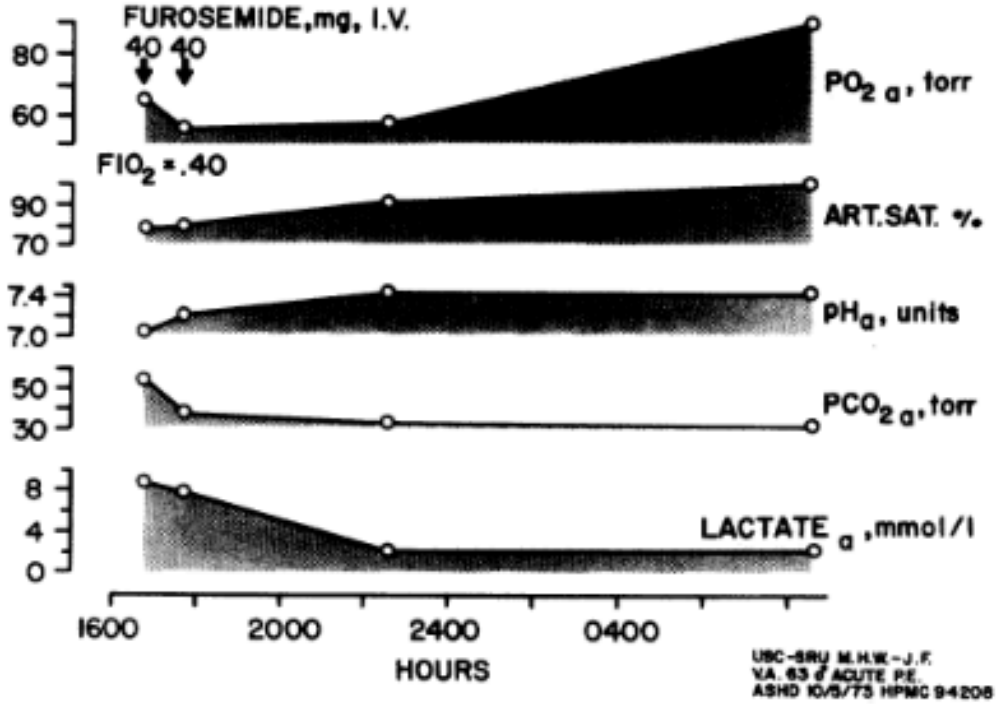
Quels examens biologiques réalisez vous?

1. D-dimères
2. **BNP**
3. Troponine
4. C-reactive protein
5. **Protidémie**

Hémoconcentration à la phase initiale de l'OAP

Increases in Plasma Oncotic Pressure During Acute Cardiogenic Pulmonary Edema





Blood Volume Prior to and Following Treatment of Acute Cardiogenic Pulmonary Edema

JAIME FIGUERAS, M.D., AND MAX HARRY WEIL, M.D., PH.D.

The concept that acute heart failure with pulmonary edema is associated with an increase in intravascular volume is therefore not supported. To the contrary, there is a reduction of blood volume during acute pulmonary edema. During reversal of acute pulmonary edema with diuresis, there was re-expansion rather than contraction of blood volume.

CIRCULATION VOL 57, NO 2, FEBRUARY 1978

Que signifie BNP?

1. Peptide nasal de type B
2. Brain Natriuretic Peptide
3. Basal N-glycosamine Peptide
4. Bilevel Natrial Peptide
5. Bone Nitray Peptide

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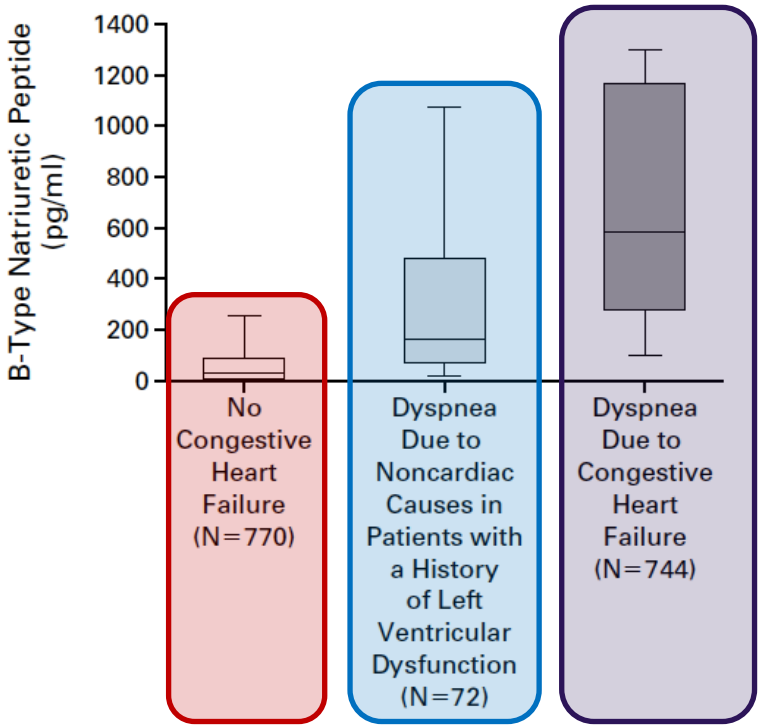
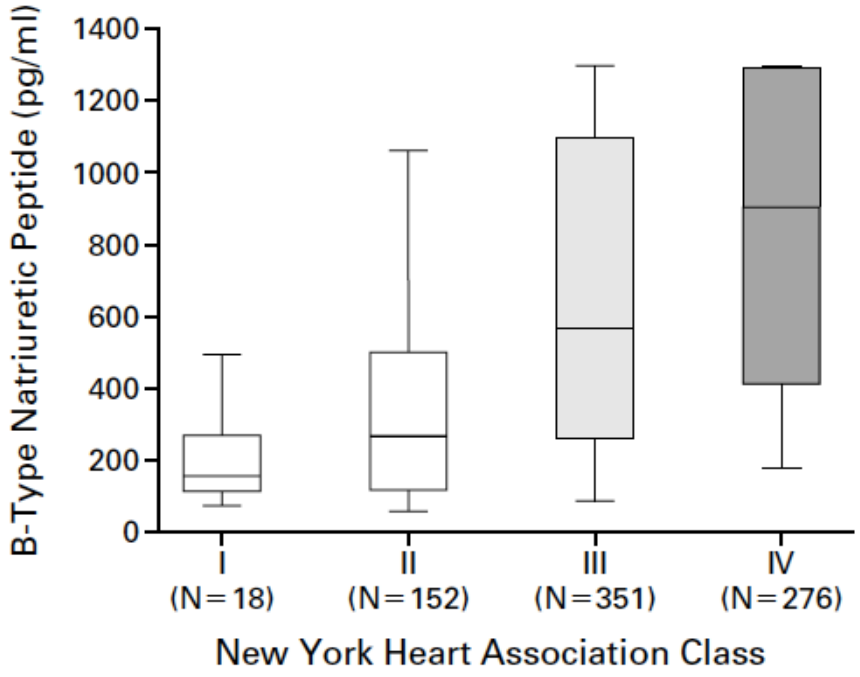
The New England Journal of Medicine

RAPID MEASUREMENT OF B-TYPE NATRIURETIC PEPTIDE IN THE EMERGENCY DIAGNOSIS OF HEART FAILURE





The New England Journal of Medicine

RAPID MEASUREMENT OF B-TYPE NATRIURETIC PEPTIDE IN THE EMERGENCY DIAGNOSIS OF HEART FAILURE

PREDICTOR	P VALUE	ODDS RATIO (95% CI)*
Age	0.04	1.02 (1.00–1.03)
History of congestive heart failure	<0.001	11.08 (6.55–18.77)
History of myocardial infarction	<0.001	2.72 (1.63–4.54)
Rales	<0.001	2.24 (1.41–3.58)
Cephalization of vessels	<0.001	10.69 (5.32–21.47)
Edema	<0.001	2.88 (1.81–4.57)
Jugular venous distention	0.04	1.87 (1.04–3.36)
B-type natriuretic peptide ≥100 pg/ml	<0.001	29.60 (17.75–49.37)

Patrick Ray
Martine Arthaud
Yannick Lefort
Sophie Birolleau
Catherine Beigelman
Bruno Riou
the EPIDASA Study Group

Usefulness of B-type natriuretic peptide in elderly patients with acute dyspnea

Facteurs de risque pour OAP

	Odds ratio (95% CI)	*p* value
BNP ≥250 pg/ml	24.4 (12.0–49.6)	<0.001
Lower extremity edema	4.6 (2.0–10.6)	<0.001
Rales	3.1 (1.6–6.0)	0.001
History of cardiac disease	2.9 (1.4–6.1)	0.005

	Emergency physician	BNP level
Sensitivity	0.74 (0.66–0.80)	0.78 (0.71–0.84)
Specificity	0.80 (0.73–0.85)	0.90 (0.84–0.93)*
Positive predictive value	0.75 (0.68–0.82)	0.87 (0.80–0.91)*
Negative predictive value	0.78 (0.71–0.84)	0.83 (0.77–0.88)
Accuracy	0.77 (0.72–0.81)	0.84 (0.80–0.88)*
Positive likelihood ratio	3.62 (2.64–4.97)	7.66 (4.84–12.12)
Negative likelihood ratio	0.33 (0.25–0.44)	0.24 (0.18–0.33)

Intensive Care Med (2004) 30:2230–2236

Dans quelle(s) situations le **dosage du BNP** est pris en **défaut** pour diagnostiquer une dyspnée **d'origine cardiaque**?

1. Prise chronique d'inhibiteurs de l'enzyme de conversion
2. Obésité
3. Insuffisance rénale
4. Sujet âgé
5. Insuffisance cardiaque chronique

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3. **Insuffisance rénale**
4. **Sujet âgé**
5. Insuffisance cardiaque chronique

Quand ne pas utiliser le BNP

The impact of B-type natriuretic peptide levels on the diagnoses and management of congestive heart failure

Ramin Tabbibizar, MD, and Alan Maisel, MD, FACC

BNP élevé
Sans OAP

Factors that can account for high BNP levels and no CHF
- Age
- Sex
- Renal failure
- Myocardial infarction
- Acute coronary syndrome
- Lung disease with right-sided failure
- Acute, large pulmonary embolism

BNP non élevé
Avec OAP

Factors that can account for low BNP levels with CHF
- Flash pulmonary edema
- CHF secondary to causes upstream from the left ventricle
  - Acute mitral regurgitation
  - Mitral stenosis
  - Atrial myxoma
- Stable NYHA class I patients with low ejection fractions.

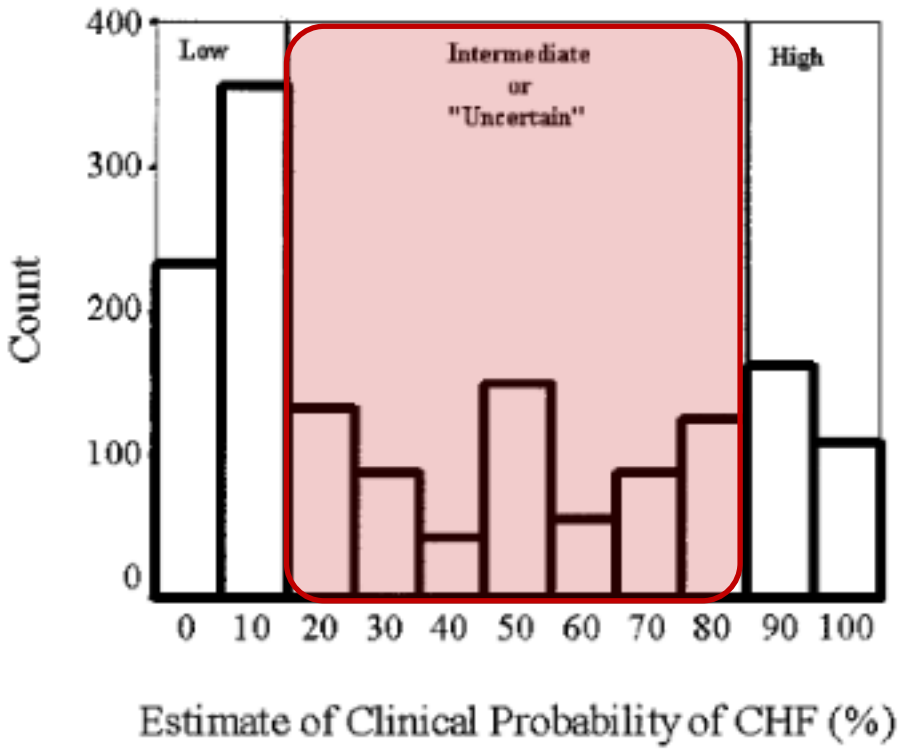
Current Opinion in Cardiology 2002, 17:340–345

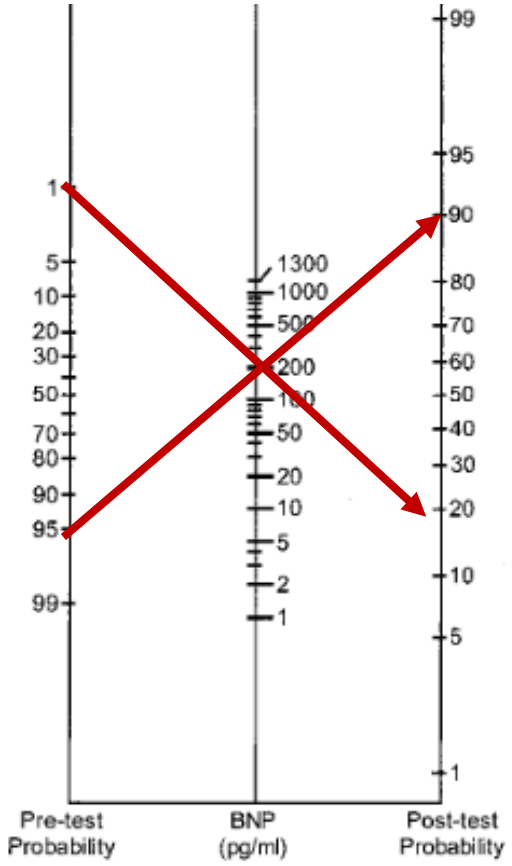
Circulation

Volume 106. Issue 4. 23 July 2002. Pages 416-422

B-Type Natriuretic Peptide and Clinical Judgment in Emergency Diagnosis of Heart Failure

Analysis From Breathing Not Properly (BNP) Multinational Study

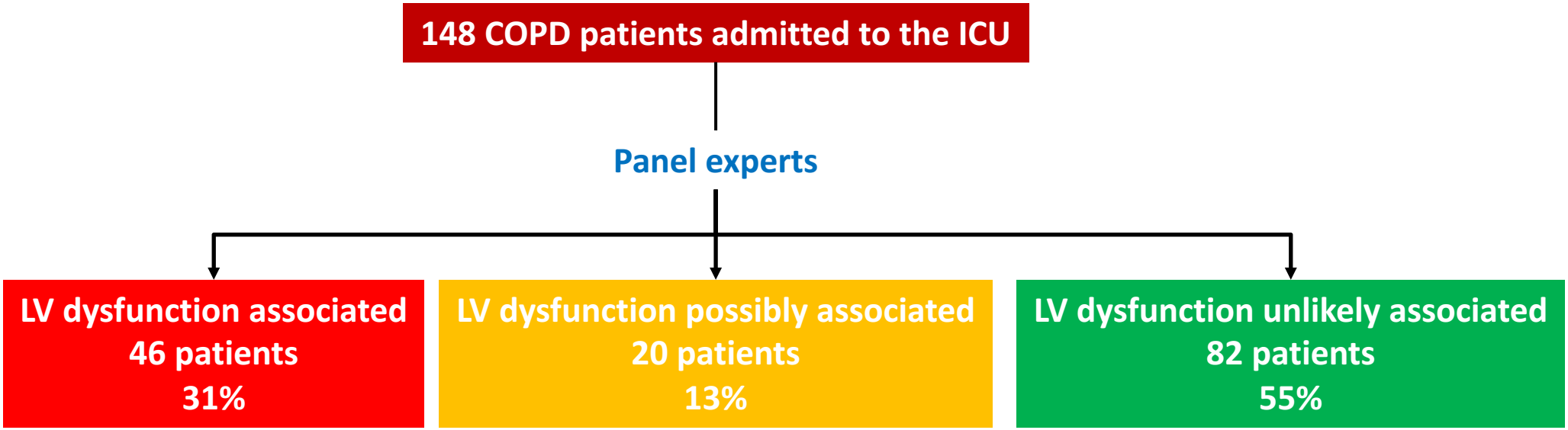




Association of Left-Heart Dysfunction with Severe Exacerbation of Chronic Obstructive Pulmonary Disease

Diagnostic Performance of Cardiac Biomarkers

Fekri Abroug, Lamia Ouanes-Besbes, Noureddine Nciri, Noura Sellami, Faouzi Addad, Khaldoun Ben Hamda, Adel Ben Amor, Mohamed F. Najjar, and Jalel Knani

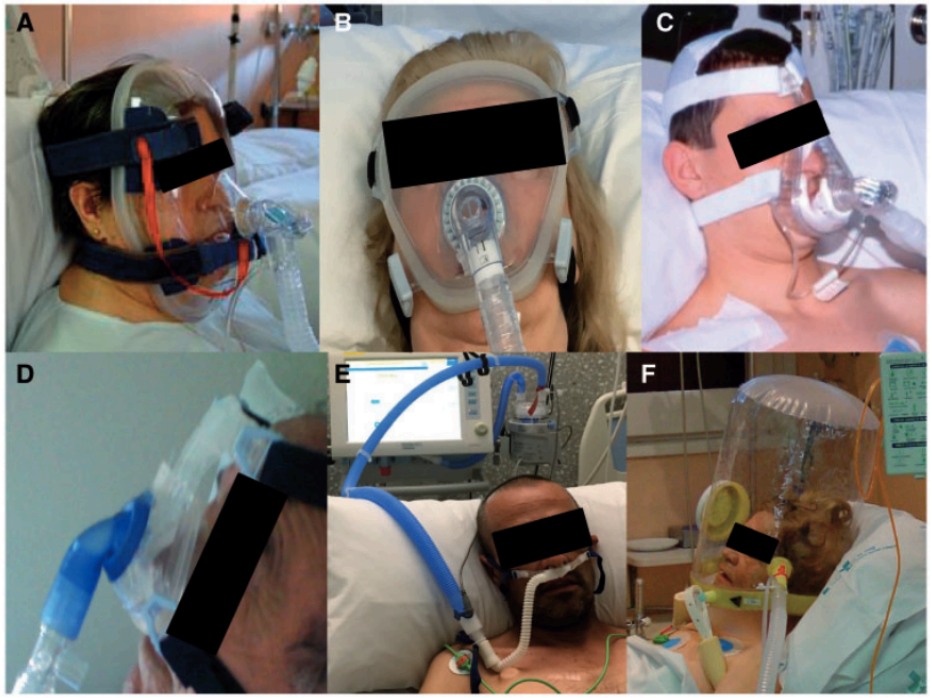


Am J Respir Crit Care Med Vol 174. pp 990–996, 2006

Indications and practical approach to non-invasive ventilation in acute heart failure

ESC European Society of Cardiology

European Heart Journal (2018) **39**, 17–25
doi:10.1093/eurheartj/ehx580



Absolute	Cardiac or respiratory arrest
	Anatomical abnormality (unable to fit the interface)
	Inability to keep patent airway (uncontrolled agitation, coma[a] or obtunded mental status)
	Refractory hypotension
Relative	Mild agitation or poor cooperation
	Mild hypotension
	Upper gastrointestinal haemorrhage or vomiting
	Inability to expectorate copious secretions
	Recent frail upper gastrointestinal or airway surgery
	Multiorgan failure
	Isolated right ventricular failure

Official ERS/ATS clinical practice guidelines: noninvasive ventilation for acute respiratory failure

Bram Rochwerg[1], Laurent Brochard[2,3], Mark W. Elliott[4], Dean Hess[5], Nicholas S. Hill[6], Stefano Nava[7] and Paolo Navalesi[8] (members of the steering committee); Massimo Antonelli[9], Jan Brozek[1], Giorgio Conti[9], Miquel Ferrer[10], Kalpalatha Guntupalli[11], Samir Jaber[12], Sean Keenan[13,14], Jordi Mancebo[15], Sangeeta Mehta[16] and Suhail Raoof[17,18] (members of the task force)

Clinical indication#	Certainty of evidence¶	Recommendation
Prevention of hypercapnia in COPD exacerbation	⊕⊕	Conditional recommendation against
Hypercapnia with COPD exacerbation	⊕⊕⊕⊕	Strong recommendation for
Cardiogenic pulmonary oedema	⊕⊕⊕	Strong recommendation for
Acute asthma exacerbation		No recommendation made
Immunocompromised	⊕⊕⊕	Conditional recommendation for
***De novo* respiratory failure**		No recommendation made
Post-operative patients	⊕⊕⊕	Conditional recommendation for
Palliative care	⊕⊕⊕	Conditional recommendation for
Trauma	⊕⊕⊕	Conditional recommendation for
Pandemic viral illness		No recommendation made
Post-extubation in high-risk patients (prophylaxis)	⊕⊕	Conditional recommendation for
Post-extubation respiratory failure	⊕⊕	Conditional recommendation against
Weaning in hypercapnic patients	⊕⊕⊕	Conditional recommendation for

Intensive Care Med (2016) 42:82–92
DOI 10.1007/s00134-015-4087-4

ORIGINAL

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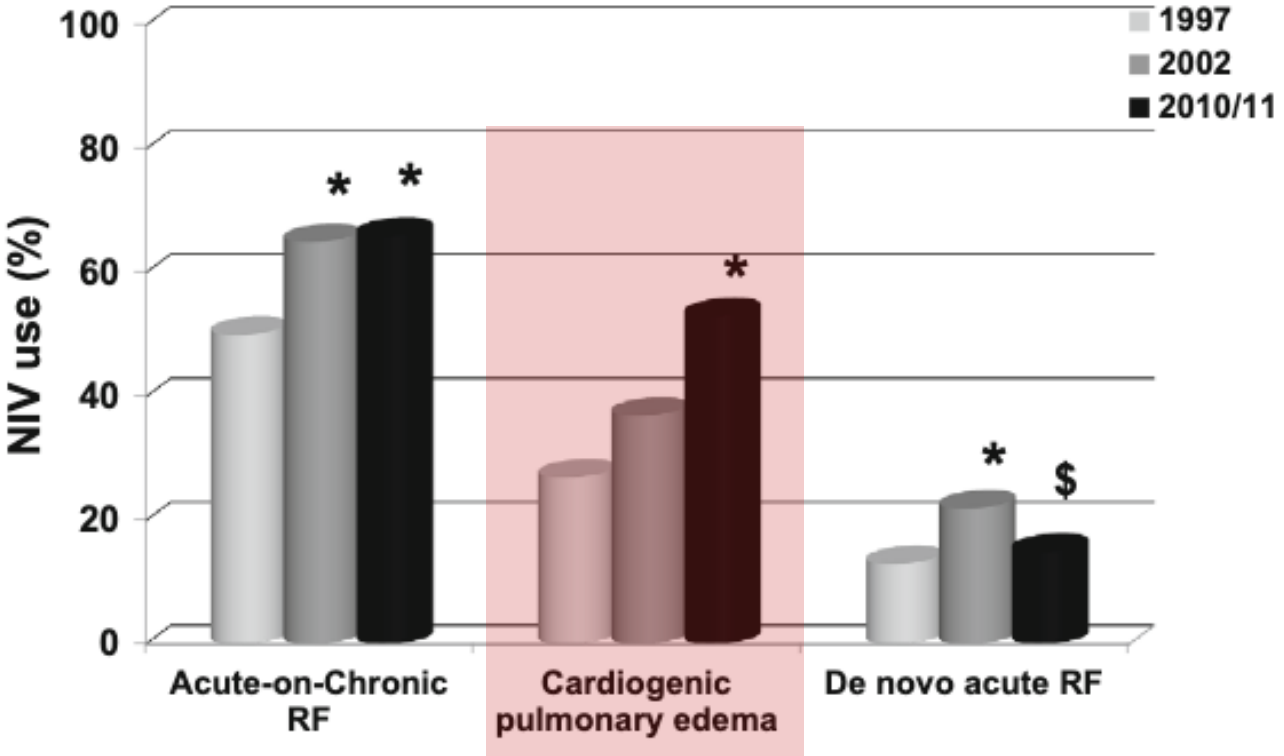
REVA

Changing use of noninvasive ventilation in critically ill patients: trends over 15 years in francophone countries



Intensive Care Med (2014) 40:582–591
DOI 10.1007/s00134-014-3222-y

ORIGINAL

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Noninvasive mechanical ventilation in acute respiratory failure: trends in use and outcomes

Analyse multivariée survie hospitalière

Population	Crude HR (95 % CI)	*P* value	Adjusted HR[a] (95 % CI)	*P* value
Study cohort ($n = 3{,}163$)	0.82 (0.75–0.89)	<0.0001	0.75 (0.68–0.83)	<0.0001
Acute-on-chronic respiratory failure ($n = 1{,}036$)	0.50 (0.40–0.62)	<0.0001	0.71 (0.57–0.90)	0.004
Cardiogenic pulmonary edema ($n = 1{,}156$)	0.87 (0.77–0.99)	0.044	0.85 (0.70–1.03)	0.10
De novo respiratory failure immunocompromised ($n = 461$)	0.80 (0.66–0.99)	0.036	0.89 (0.70–1.13)	0.35
De novo respiratory failure immunocompetent ($n = 510$)	0.98 (0.79–1.20)	0.81	1.18 (0.87–1.59)	0.30

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European Heart Journal (2016) **37**, 2129–2200
doi:10.1093/eurheartj/ehw128

ESC GUIDELINES

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)

Recommendations	Class[a]
Monitoring of transcutaneous arterial oxygen saturation (SpO_2) is recommended.	I
Measurement of blood pH and carbon dioxide tension (possibly including lactate) should be considered, especially in patients with acute pulmonary oedema or previous history of COPD using venous blood. In patients with cardiogenic shock arterial blood is preferable.	IIa
Oxygen therapy is recommended in patients with AHF and SpO_2 <90% or PaO_2 <60 mmHg (8.0 kPa) to correct hypoxaemia.	I
Non-invasive positive pressure ventilation (CPAP, BiPAP) should be considered in patients with respiratory distress (respiratory rate >25 breaths/min, SpO_2 <90%) and started as soon as possible in order to decrease respiratory distress and reduce the rate of mechanical endotracheal intubation. Non-invasive positive pressure ventilation can reduce blood pressure and should be used with caution in hypotensive patients. Blood pressure should be monitored regularly when this treatment is used.	IIa
Intubation is recommended, if respiratory failure, leading to hypoxaemia (PaO_2 <60 mmHg (8.0 kPa)), hypercapnia ($PaCO_2$ >50 mmHg (6.65 kPa)) and acidosis (pH <7.35), cannot be managed non-invasively.	I

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European Heart Journal (2016) **37**, 2129–2200
doi:10.1093/eurheartj/ehw128

ESC GUIDELINES

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

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Recommendations	Class [a]
Diuretics	
Intravenous loop diuretics are recommended for all patients with AHF admitted with signs/symptoms of fluid overload to improve symptoms. It is recommended to regularly monitor symptoms, urine output, renal function and electrolytes during use of i.v. diuretics.	I
In patients with new-onset AHF or those with chronic, decompensated HF not receiving oral diuretics the initial recommended dose should be 20–40 mg i.v. furosemide (or equivalent); for those on chronic diuretic therapy, initial i.v. dose should be at least equivalent to oral dose.	I
It is recommended to give diuretics either as intermittent boluses or as a continuous infusion, and the dose and duration should be adjusted according to patients' symptoms and clinical status.	I
Combination of loop diuretic with either thiazide-type diuretic or spironolactone may be considered in patients with resistant oedema or insufficient symptomatic response.	IIb
Vasodilators	
i.v. vasodilators should be considered for symptomatic relief in AHF with SBP >90 mmHg (and without symptomatic hypotension). Symptoms and blood pressure should be monitored frequently during administration of i.v. vasodilators.	IIa
In patients with hypertensive AHF, i.v. vasodilators should be considered as initial therapy to improve symptoms and reduce congestion.	IIa

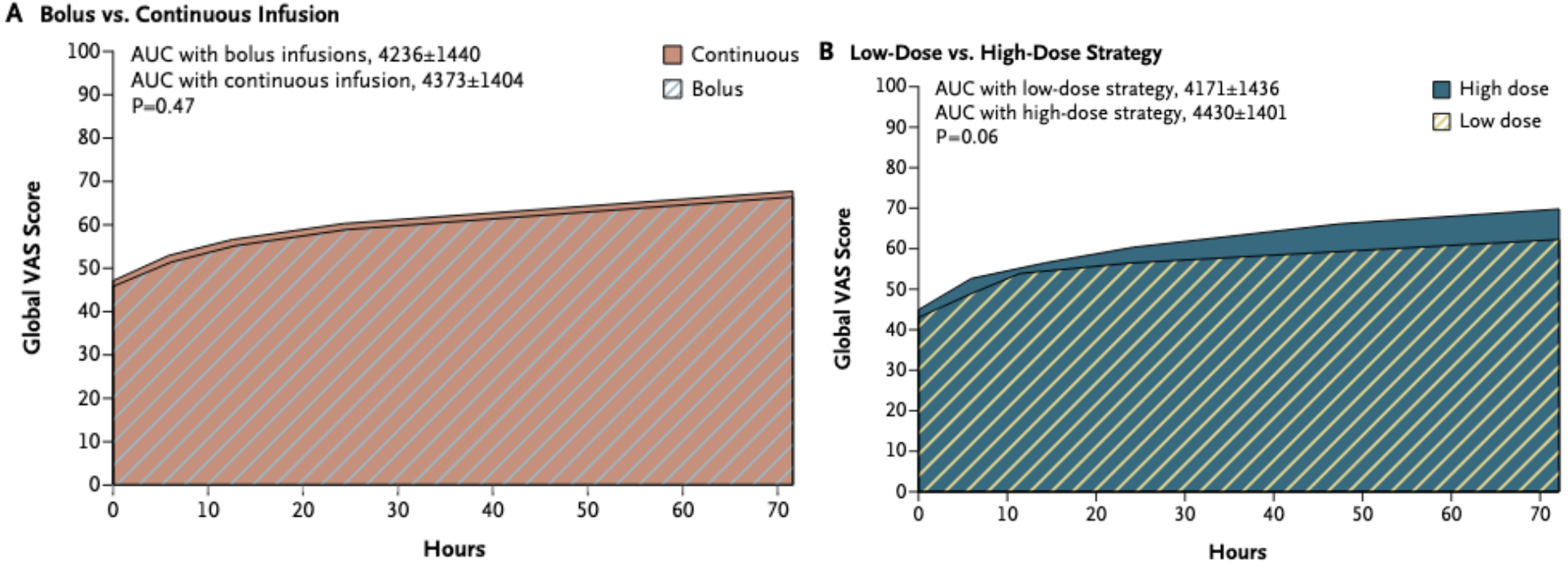
Diurétiques

bolus ou ivse?

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 3, 2011 VOL. 364 NO. 9

Diuretic Strategies in Patients with Acute Decompensated Heart Failure



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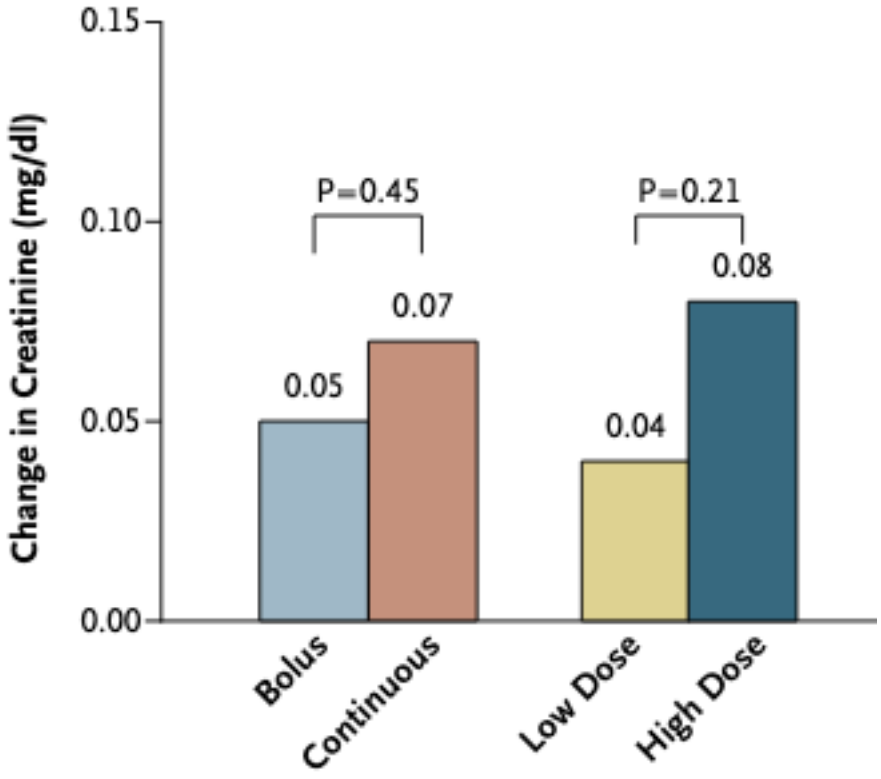

Traitement médical de l'œdème aigu pulmonaire

Suspicion OAP

Choc cardiogénique

Support circulatoire

- Noradrénaline
- Expansion volémique

Détresse respiratoire

Support ventilatoire

- Oxygénothérapie
- VNI (CPAP, BiPAP)
- VMi

Identification d'une étiologie cardiologique aigue

- **C-**oronarien (ECG+++)
- **H-**ypertension maligne
- **A**r-ythmie (fibrillation auriculaire)
- **M-**écanismes
- **P-**ulmonary Embolism

Traitement médical de l'œdème aigu pulmonaire

soulager le patient	assurer oxygénation tissulaire	accélérer résorption œdème pulmonaire	Traitement d'un facteur déclenchant
oxygénothérapie *haut débit* SpO2>90% **morphiniques** *iv-ivse* *dyspnée*	**↘ travail respiratoire** *CPAP - VNI* *fréquence respiratoire* *PaO_2 – $PaCO_2$*	**bronchodilateurs** *β^{2+}* **dérivés nitrés** *PA systolique* **diurétiques** *diurèse*	**infection** *radio thorax, CRP/PCT* **embolie pulmonaire** *probabilité clinique, d-dimères* **ischémie** *ECG – troponine* **exacerbation BPCO** *GDS - anamnèse*

œdème aigu pulmonaire

Cause **fréquente** de dyspnée

Souvent **multifactorielle**, surtout chez le sujet âgé (BPCO, pneumonie)

Intérêt du **BNP** (probabilité prétest)

Traitement **symptomatique** (oxygénothérapie, morphinique, Béta2+)

Traitement **curatif** (diurétiques, nitrés)

Traitement **étiologique** (FA, ischémie, HTA, diagnostic associé)

Traitement **ventilatoire** (CPAP/VNI/OHD)