Uno, nessuno, centomila: la BPCO in PS

(ovvero: la BPCO non è 1 malattia)

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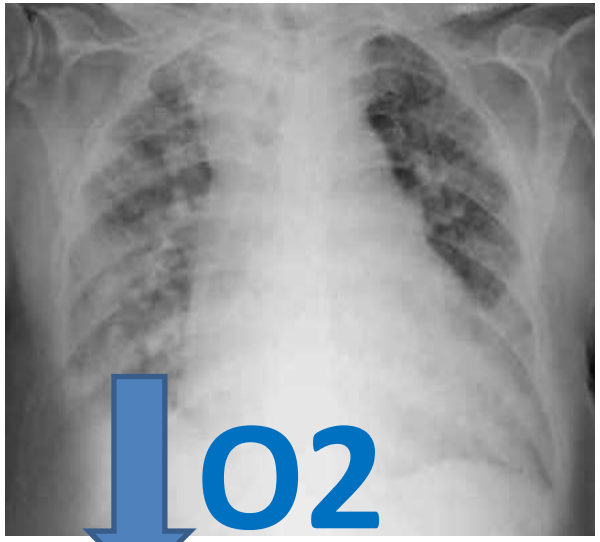
San Benedetto del Tronto

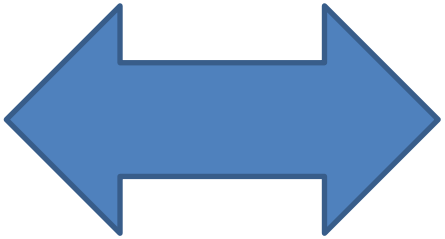
NAPOLI 2016

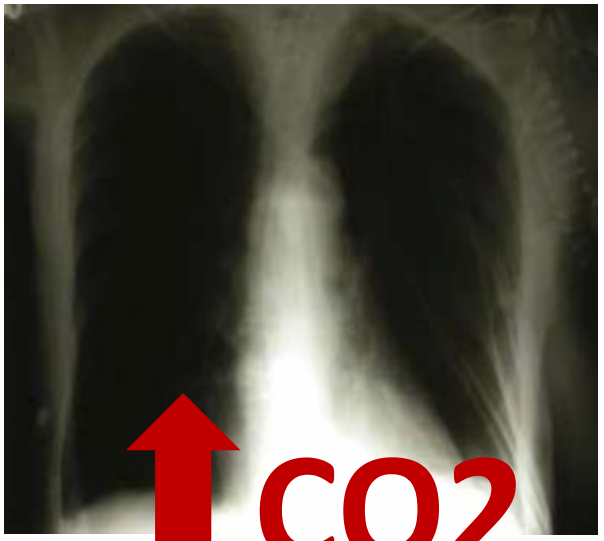
x congresso nazionale
simeu
NAPOLI 18-20 NOVEMBRE 2016

Una visione dicotomica

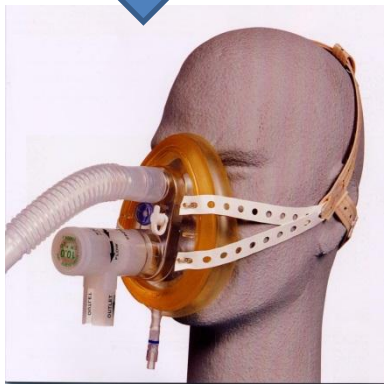


O2





CO2



ACPE
ALI/ARDS
Pneumonia…

COPD
Asthma
ALS…

GOLD 2015

- **COPD**: a common preventable and treatable disease, characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. Exacerbations and comorbidities contribute to the overall severity in individual patients

GOLD 2015

- An **exacerbation of COPD** is an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medications
- Dyspnea, cough, sputum production, wheezing, chest tightness, fatigue, ankle swelling…(tipical signs?)
- A physical examination is **rarely diagnostic** in COPD

Caso clinico

Uomo di 78 aa

Arriva in PS per dispnea ingravescente

In ambulanza: **PA 110/70**

SpO_2 82% (a.a.)

90% (O_2 con O.N. 24%)

Anamnesi

- Demenza senile con sd. ipocinetica
- Ipertensione Arteriosa
- Frequenti ricoveri per “difficoltà respiratoria”
- F.A. cronica

Tp. Domiciliare: Aricept, Seroquel, Exelon, Lanoxin, Kanrenol, Zestoretic. Cardirene. Seretide. Negli ultimi giorni Starcef, Bentelan.

Obiettività

FR 36/min; FC 120/min; Vigile e collaborante

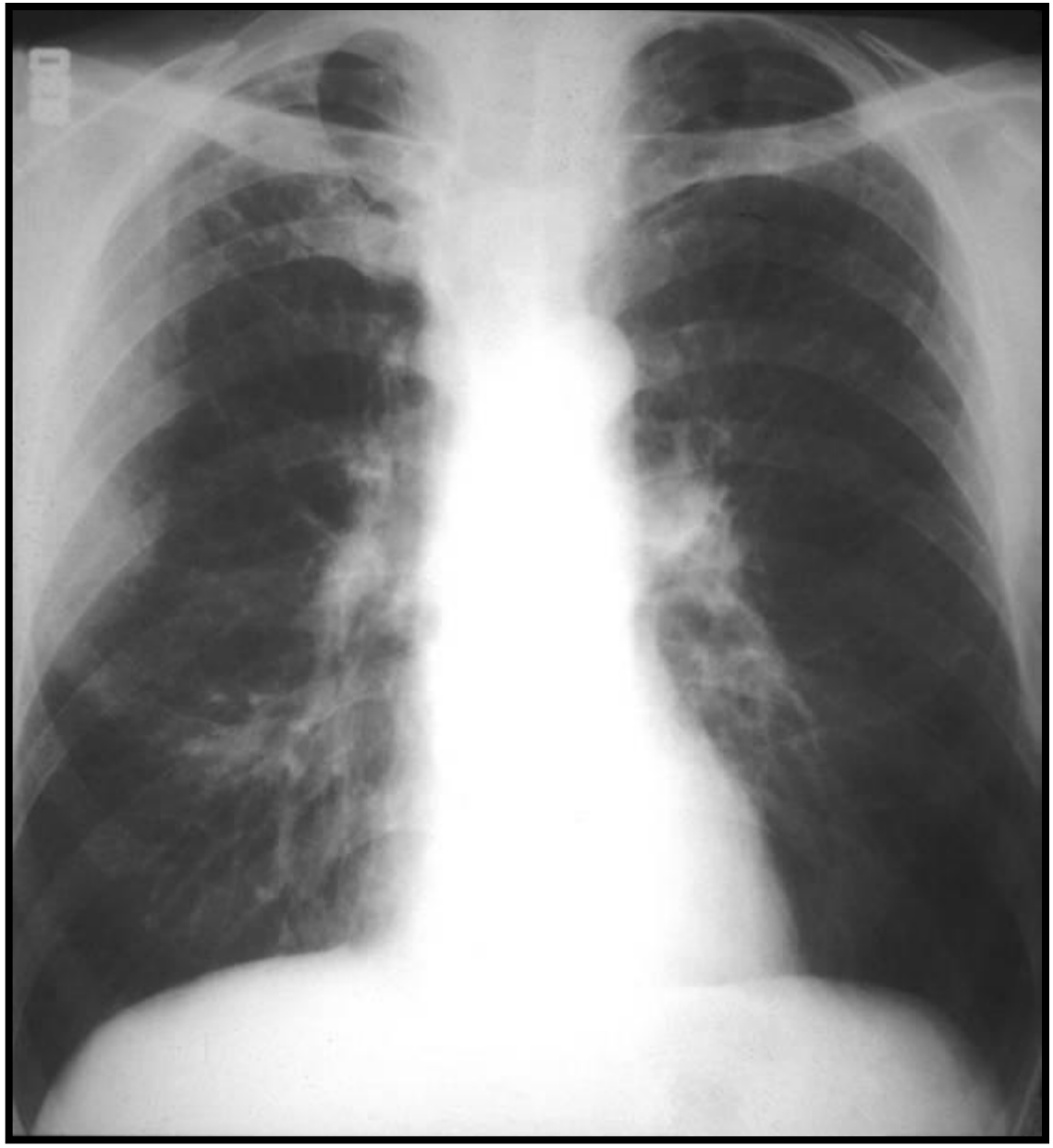
Respiro superficiale

- **MV marcatamente ridotto con sparsi sibili**
- **Cute fredda e sudata**
- **Marezzatura diffusa**

EGA

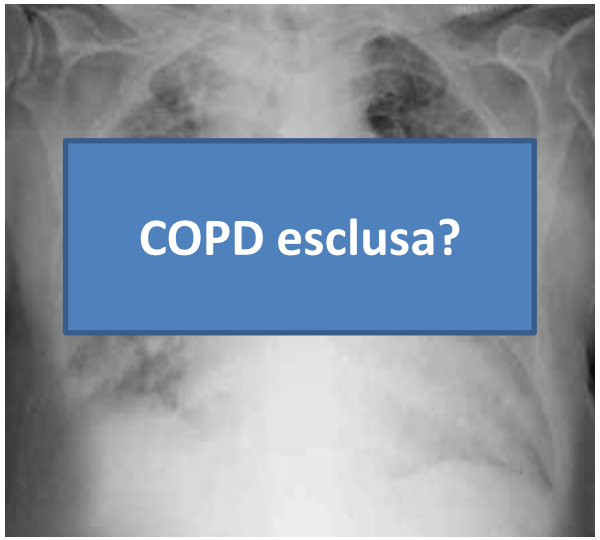
(O_2-24%)

pH	7.25
pCO_2	83
pO_2	66
HCO_3^-	36.4
Sat O_2	90



ACOPDex?

- **Anamnesi**: aspecifica
- **Obiettività**: aspecifica
- **EGA**: insufficienza ventilatoria cronica riacutizzata + discreta risposta ad O2-tp
- **Rx-torace**: *A chest x-ray is not useful to establish a diagnosis in COPD, but is valuable in excluding alternative diagnoses and establishing the presence of* ***significant co-morbidities*** *(GOLD 2015)*
- La presenza di note di iperinflazione polmonare, ipertrasparenza, ipovascolarizzazione periferica correlano con la COPD ma non ne consentono la diagnosi, la loro assenza non la esclude.

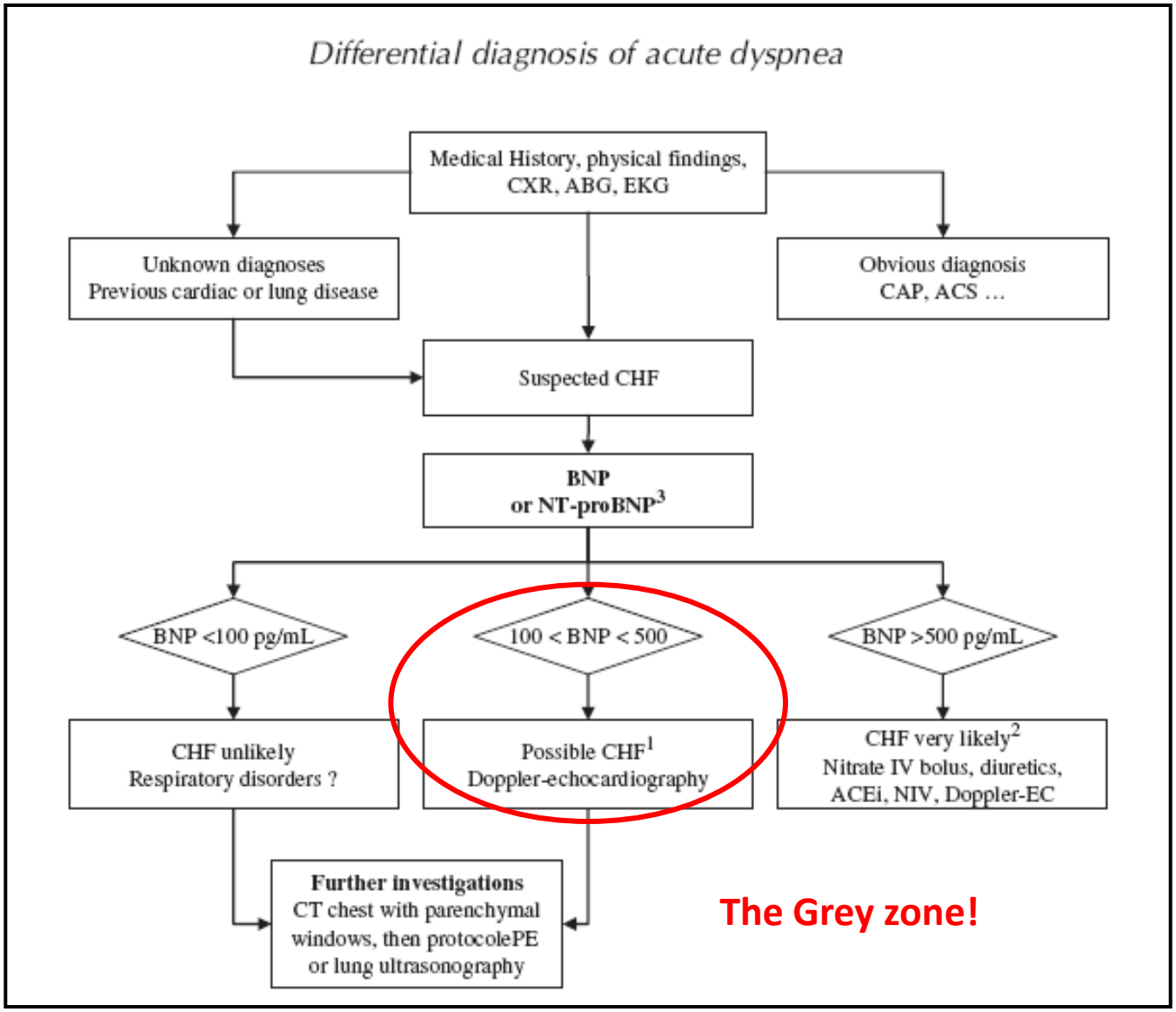


pH	7.25
pCO_2	83
pO_2	66
HCO_3^-	36.4
Sat O_2	90

FiO2 50%, FR 38/min

pH	7.40
pCO_2	40
pO_2	51
HCO_3^-	36.4
Sat O_2	88

A.A., FR 38/min


Differential diagnosis of acute dyspnea
Medical History, physical findings, CXR, ABG, EKG
Unknown diagnoses Previous cardiac or lung disease
Obvious diagnosis CAP, ACS …
Suspected CHF
BNP or NT-proBNP[3]
BNP <100 pg/mL
100 < BNP < 500
BNP >500 pg/mL
CHF unlikely Respiratory disorders ?
Possible CHF[1] Doppler-echocardiography
CHF very likely[2] Nitrate IV bolus, diuretics, ACEi, NIV, Doppler-EC
Further investigations CT chest with parenchymal windows, then protocolePE or lung ultrasonography
The Grey zone!

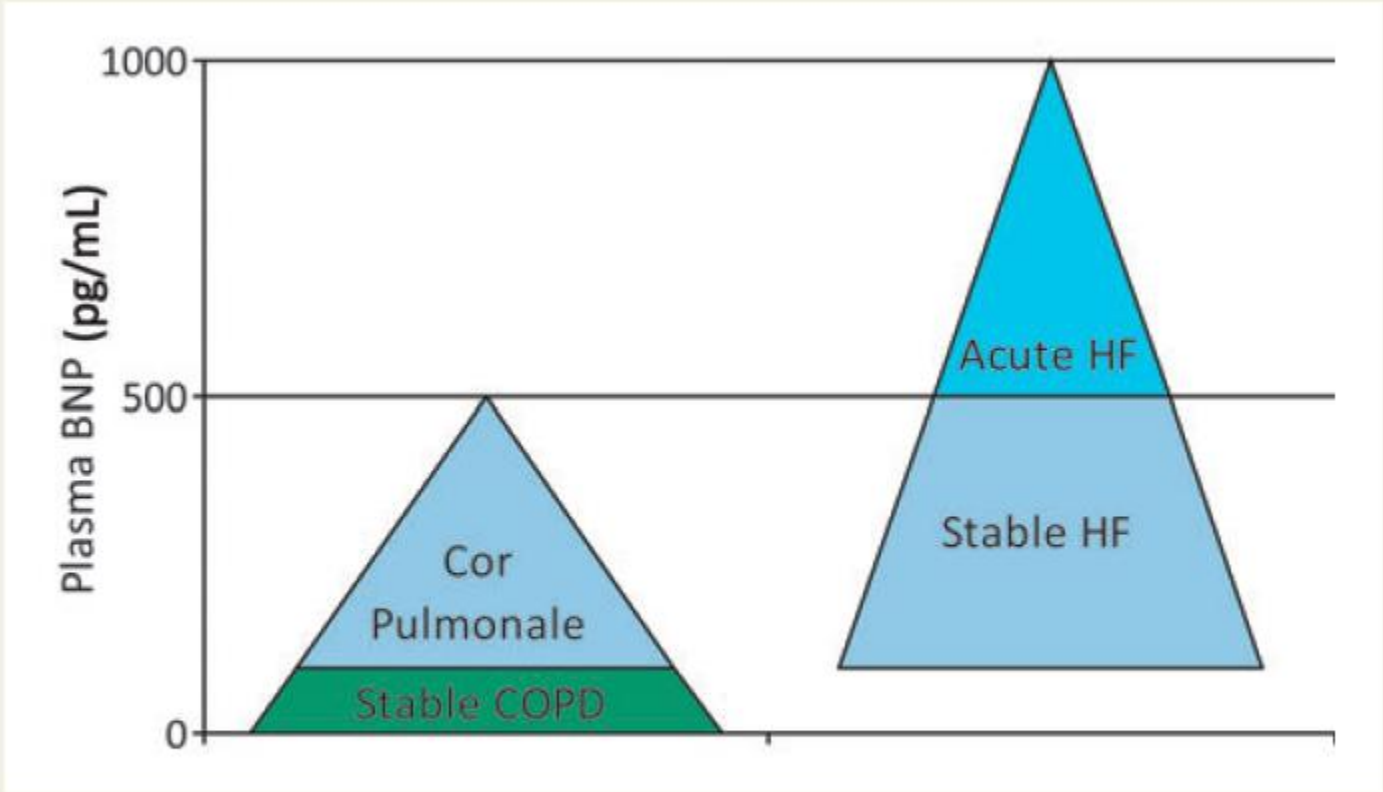
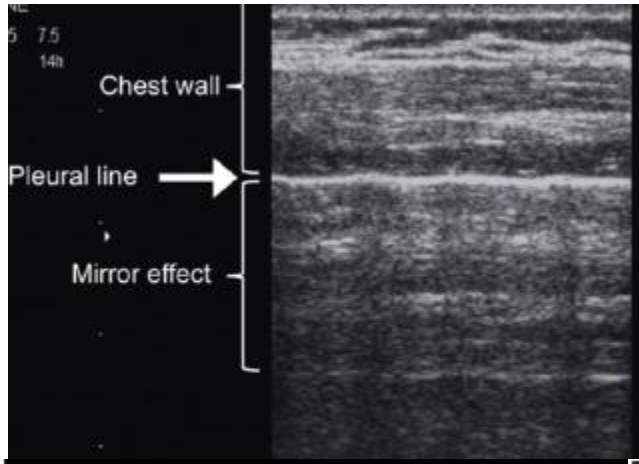
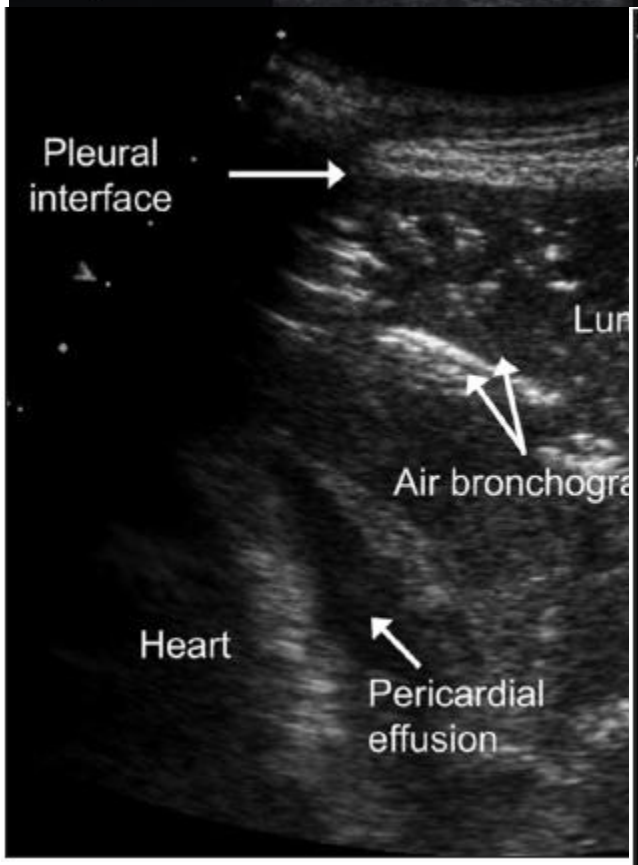
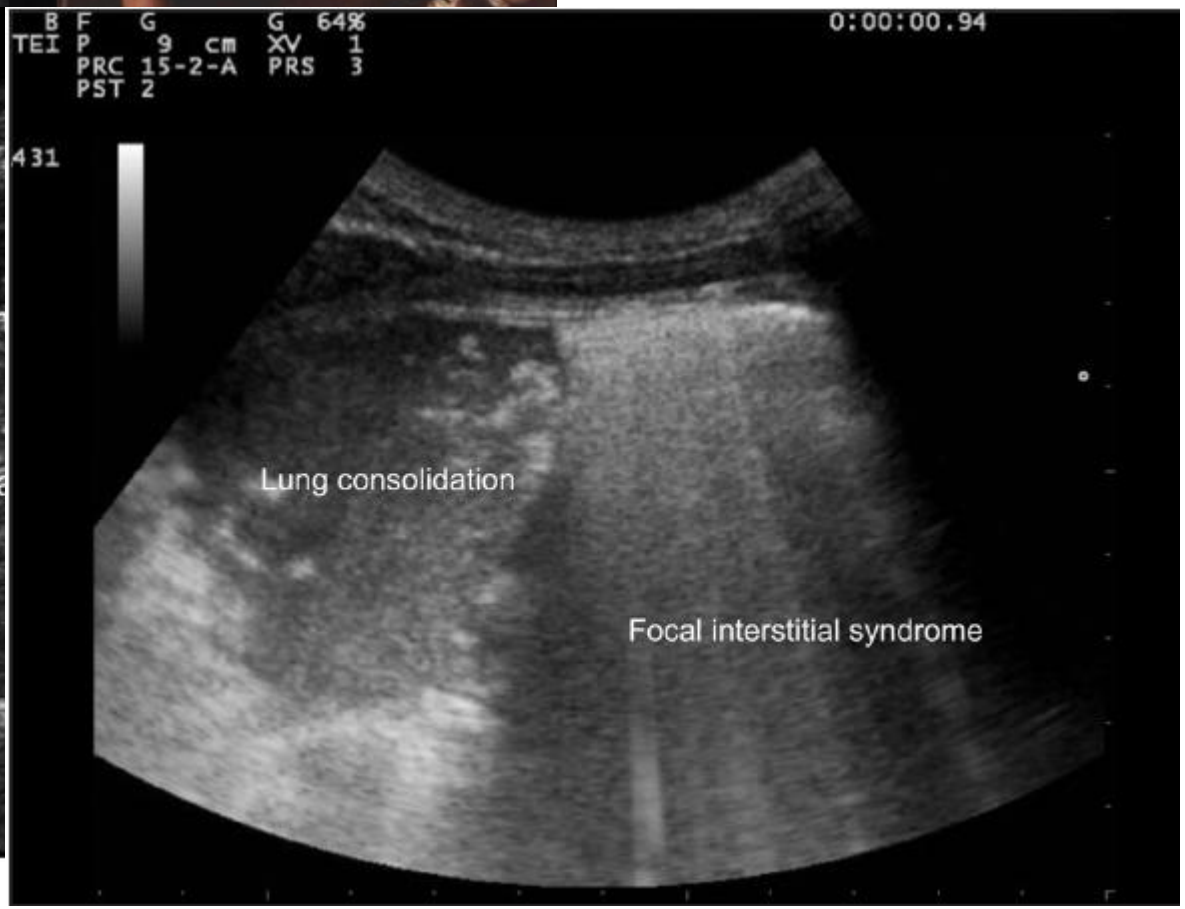


Figure 4 Overlap in natriuretic peptide levels between patients with heart failure and chronic obstructive pulmonary disease.

European Heart Journal (2013) **34**, 2795–2803


Chest wall
Pleural line
Mirror effect


Pleural interface
Air bronchogra
Heart
Pericardial effusion


B F G G 64%
TEI P 9 cm XV 1
PRC 15-2-A PRS 3
PST 2
0:00:00.94
431
Lung consolidation
Focal interstitial syndrome

Heart failure and chronic obstructive pulmonary disease: the challenges facing physicians and health services

Nathaniel M. Hawkins[1]*, Sean Virani[2], and Claudio Ceconi[3]

European Heart Journal (2013) **34**, 2795–2803
doi:10.1093/eurheartj/eht192

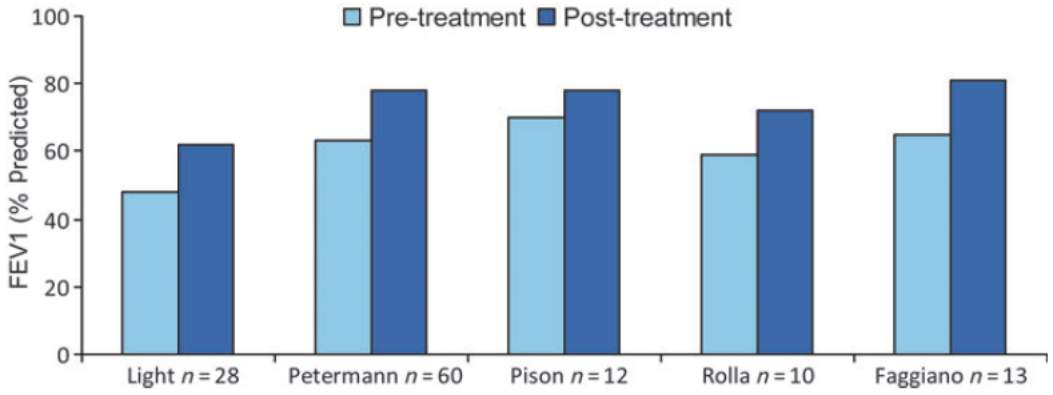


Figure 3 Changes in forced expiratory volume in 1 s following treatment of decompensated heart failure.

Managing comorbidities in COPD

International Journal of COPD 2015:10 95–109

International Journal of COPD

Georgios Hillas[1]
Fotis Perlikos[1]
Ioanna Tsiligianni[2,3]
Nikolaos Tzanakis[2]

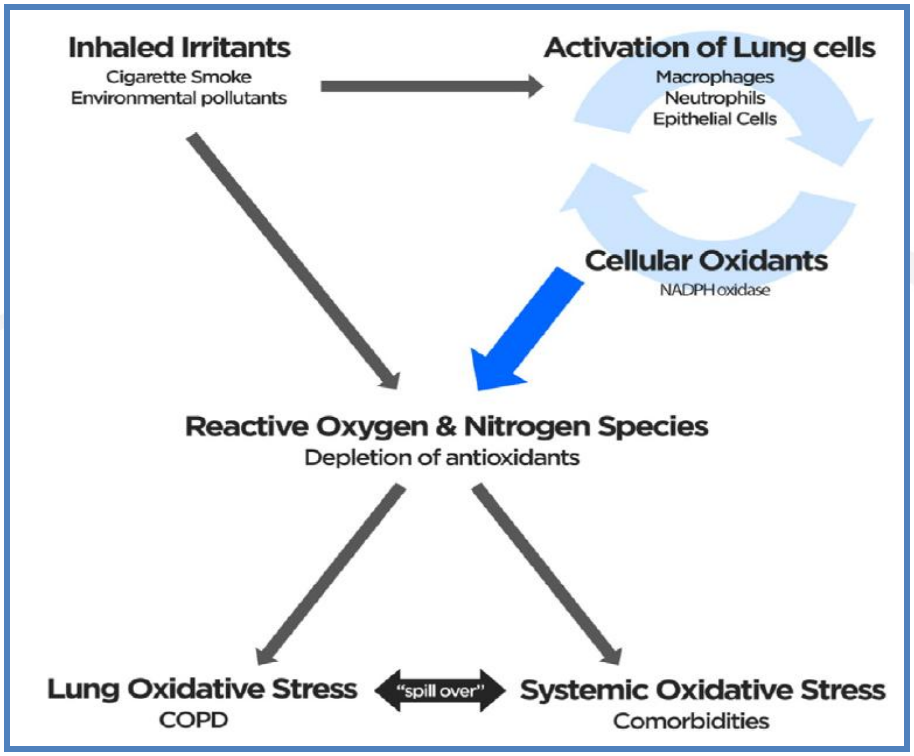
- **Diseases that independently coexist with COPD with no other causation**
- **Diseases that share common risk factors and pathogenetic pathways with COPD**
- **Diseases that are complicated by the interaction with the lung and systemic manifestations and vice-versa**

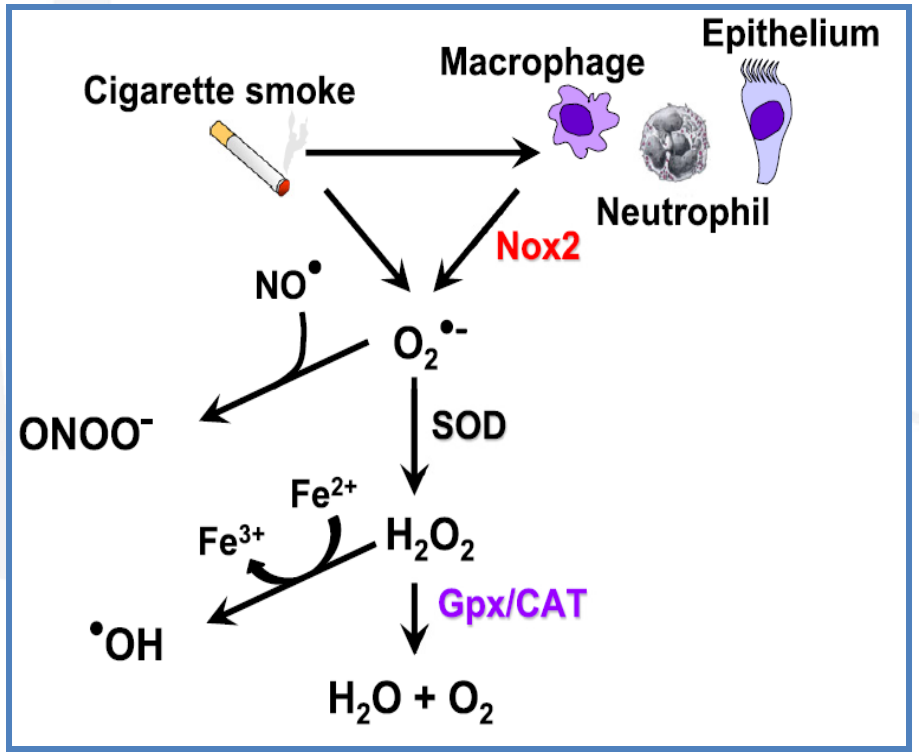
Targeting oxidant-dependent mechanisms for the treatment of COPD and its comorbidities☆

Ivan Bernardo [a], Steven Bozinovski [a,b], Ross Vlahos [a,b,*]

[a] School of Health Sciences and Health Innovations Research Institute, RMIT University, Bundoora, VIC 3083, Australia
[b] Lung Health Research Centre, Department of Pharmacology & Therapeutics, The University of Melbourne, VIC 3010, Australia

Pharmacology & Therapeutics 155 (2015) 60–79





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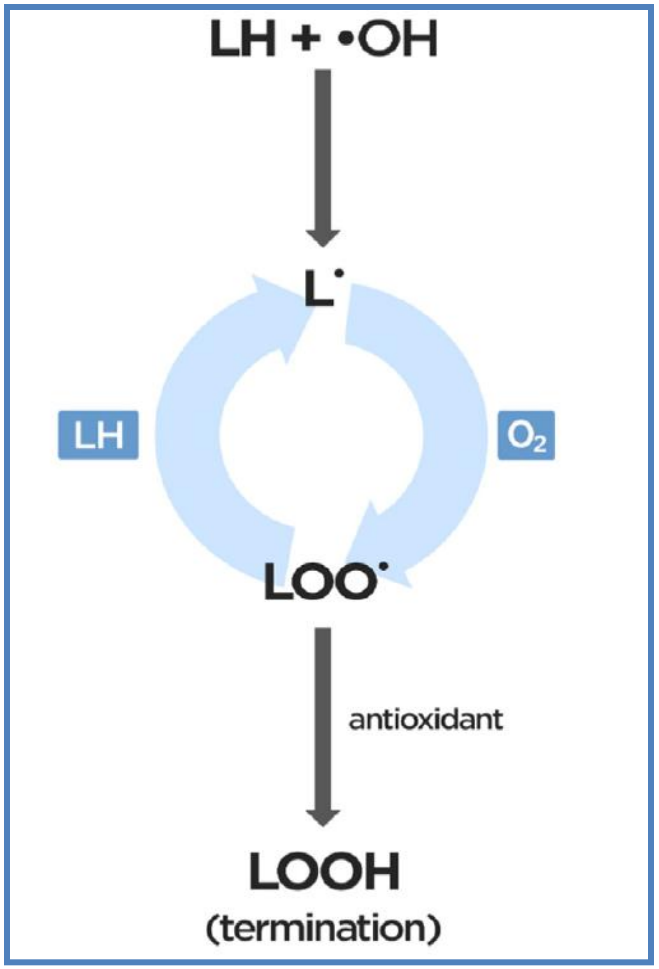
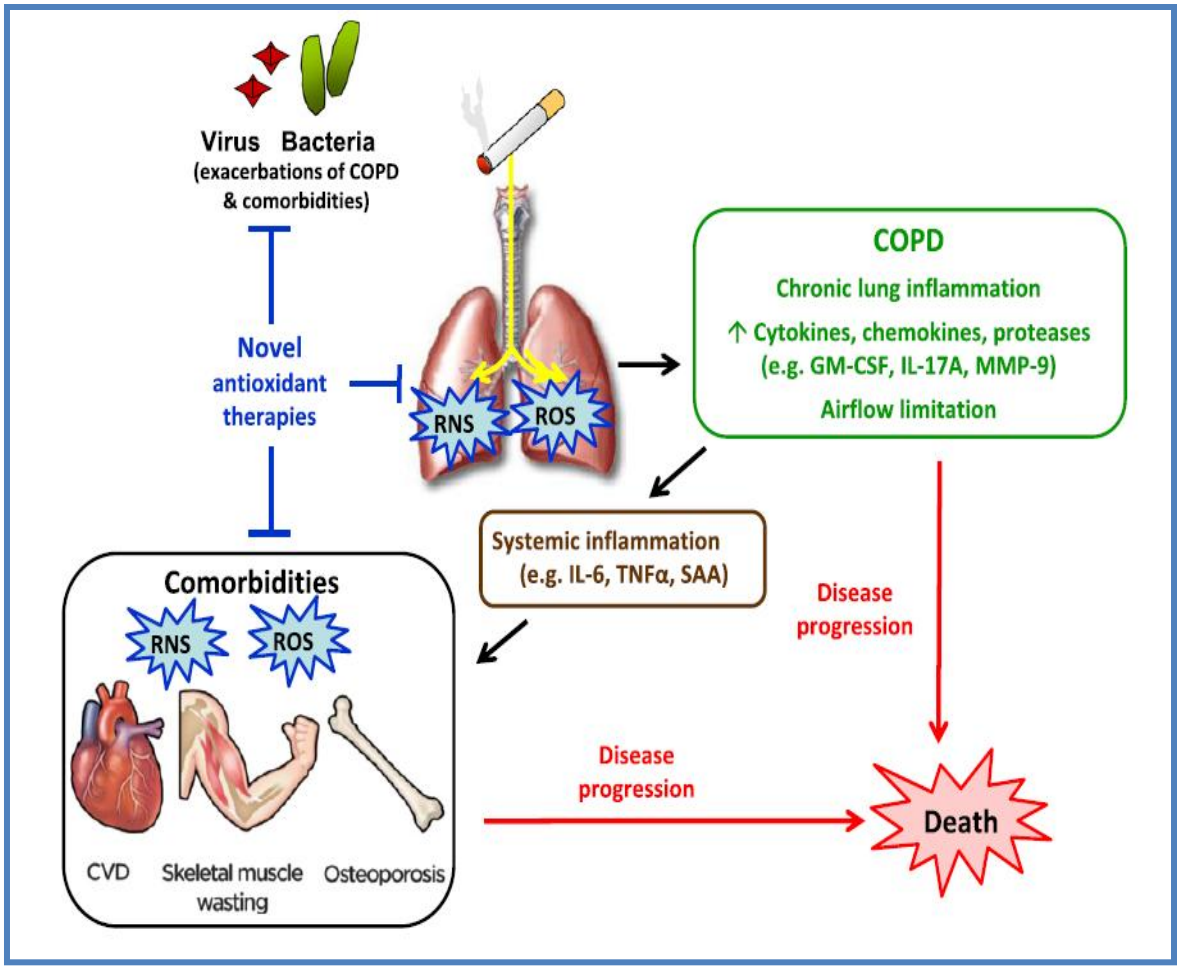




Review

Chronic Obstructive Pulmonary Disease and Left Ventricle☆

Karina Portillo,[a,*] Jorge Abad-Capa,[a] Juan Ruiz-Manzano[a,b]

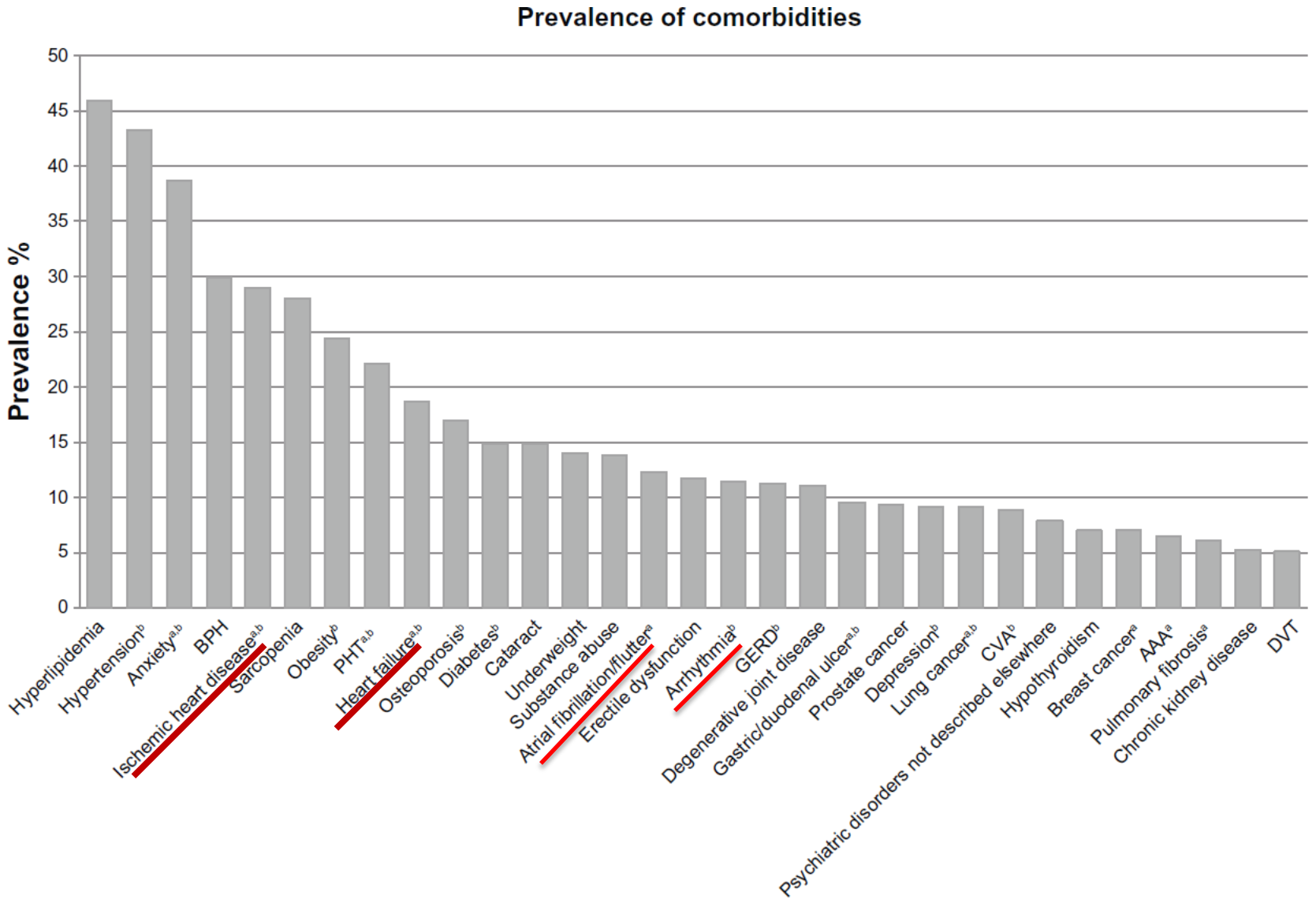
Arch Bronconeumol. 2015;51(5):227–234

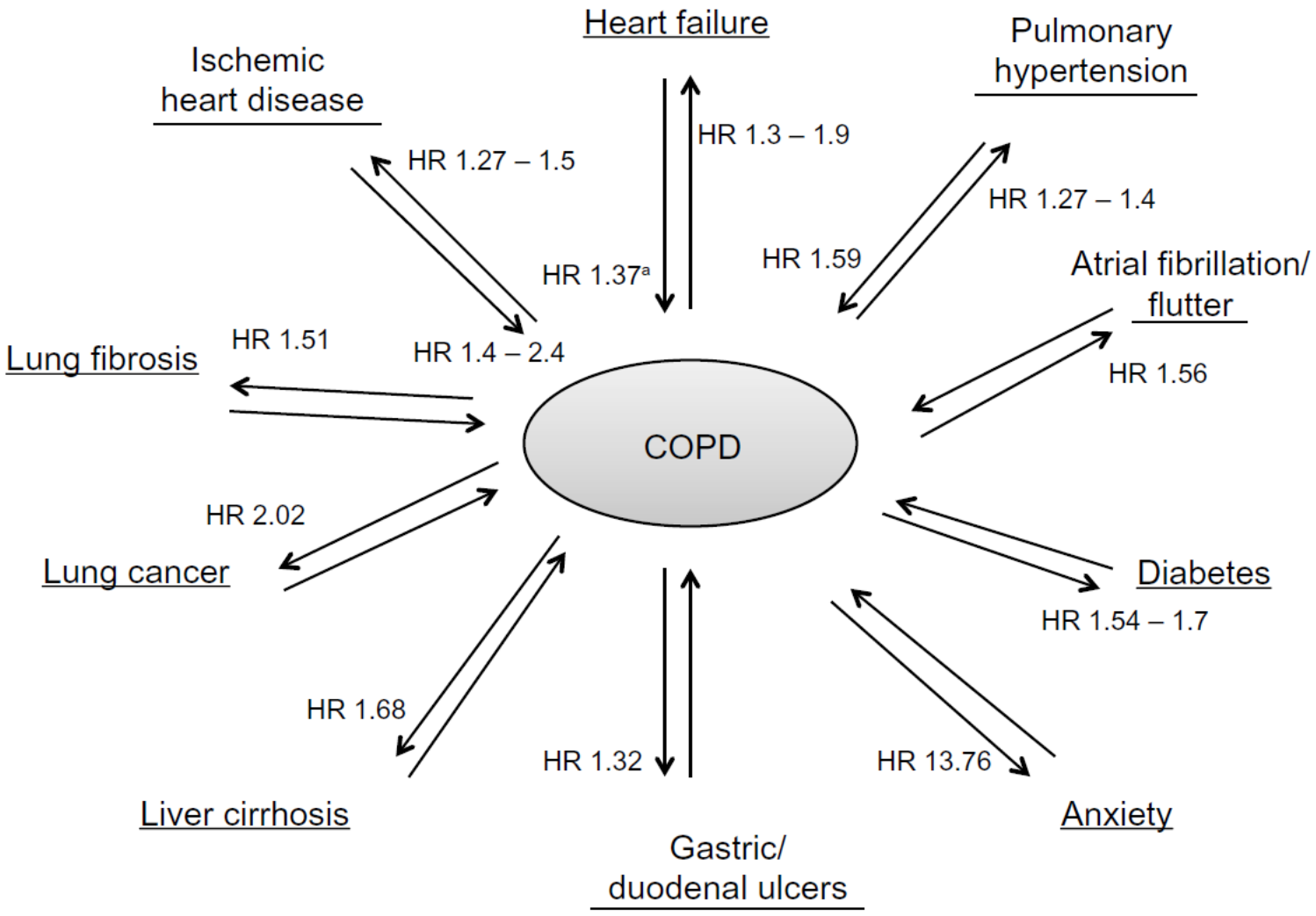
Ipossiemia
- Funzione dei miociti (contrazione-rilassamento)
- Flogosi vascolare o sistemica; PCR; Stress ossidativo; aterosclerosi
- Increzione simpatica, aumento FC, ipertrofia Vsn
- Rimodellamento vascolare polmonare; resistenze polmonari

Malattia coronarica
- Fumo
- Disfunzione endoteliale
- Ipercoagulabilità
- Stress Ossidativo

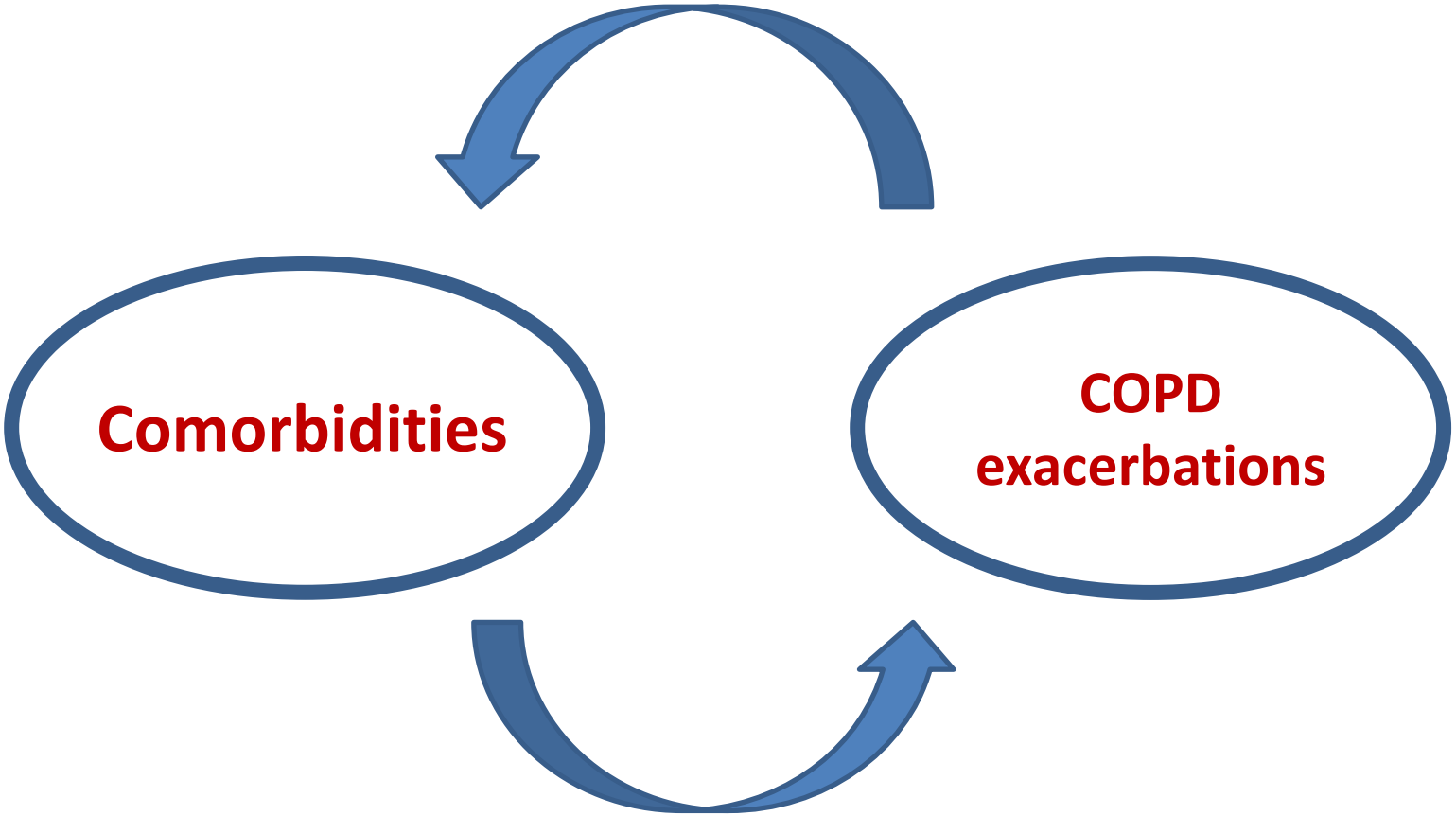
Impegno del Vdx
- Shift del setto interventricolare
- Riduzione del riempimento ventricolare sin
- Effetto costrittivo del pericardio

Iperinflazione
- PEEPi; riduzione volume ematico intratoracico
- Riduzione VTSVsin e VTDVsin; Riduzione CI


Prevalence of comorbidities
Prevalence %
50
45
40
35
30
25
20
15
10
5
0
Hyperlipidemia
Hypertension[b]
Anxiety[a,b]
BPH
Ischemic heart disease[a,b]
Sarcopenia
Obesity[b]
PHT[a,b]
Heart failure[a,b]
Osteoporosis[b]
Diabetes[b]
Cataract
Underweight
Substance abuse
Atrial fibrillation/flutter[a]
Erectile dysfunction
Arrhythmia[b]
GERD[b]
Degenerative joint disease
Gastric/duodenal ulcer[a,b]
Prostate cancer
Depression[b]
Lung cancer[a,b]
CVA[b]
Psychiatric disorders not described elsewhere
Hypothyroidism
Breast cancer[a]
AAA[a]
Pulmonary fibrosis[a]
Chronic kidney disease
DVT

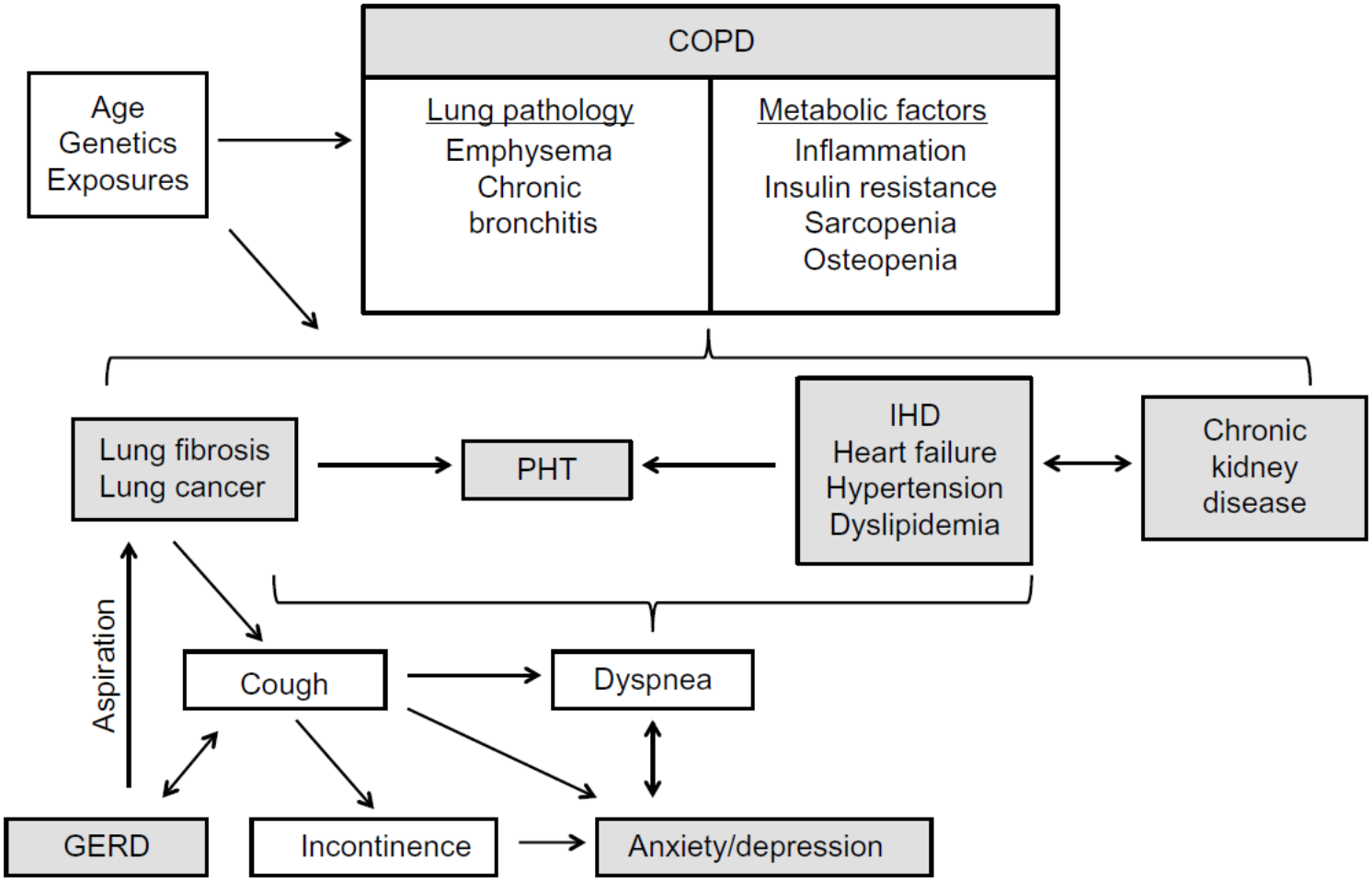

Heart failure
Ischemic heart disease
Pulmonary hypertension
HR 1.3 – 1.9
HR 1.27 – 1.5
HR 1.27 – 1.4
HR 1.37[a]
HR 1.59
Atrial fibrillation/ flutter
Lung fibrosis
HR 1.51
HR 1.4 – 2.4
HR 1.56
COPD
HR 2.02
Lung cancer
Diabetes
HR 1.54 – 1.7
HR 1.68
HR 1.32
HR 13.76
Liver cirrhosis
Gastric/ duodenal ulcers
Anxiety

Increased oxydative stress, fibirnogen, IL6…



Increased WOB, worsening of pulmonary function, PE…

Interplay between COPD, major comorbidities and symptoms



Special Article

Clinical Phenotypes of COPD: Identification, Definition and Implications for Guidelines☆

Marc Miravitlles,[a,*] Myriam Calle,[b] Juan José Soler-Cataluña[c]

Arch Bronconeumol. 2012;48(3):86–98

1) **Mixed COPD-Asthma Phenotype**
2) **Exacerbator Phenotype:**

- Chronic bronchial-bronchitis hypersecretion
- Inflammation, chronic bronchial infection, bronchiectasis
- Cardiovascular disease and repeated exacerbations
- Greater risk for morbidity and mortality

3) **Emphysema-Hyperinflation Phenotype**

Special Article

Clinical Phenotypes of COPD: Identification, Definition and Implications for Guidelines☆

Marc Miravitlles,[a,*] Myriam Calle,[b] Juan José Soler-Cataluña[c]

Arch Bronconeumol. 2012;48(3):86–98

While some studies suggest that the exacerbations cause or trigger the cardiovascular manifestations through different mechanisms such as systemic inflammation, hypoxemia or endothelial dysfunction, it is not clear if it is the cardiovascular events themselves, such as some rhythm disorders (auricular fibrillation, flutter, etc.), episodes of myocardial ischemia or ventricular failure, those that could mimic an exacerbation with difficult differential diagnosis, due to, among other reasons, the non-specificity of the clinical symptoms. In fact, almost 30% of severe exacerbations present symptoms suggestive of heart failure,[71] and we frequently observe higher levels of troponin, a marker of myocardial injury, during COPD exacerbations.[72] Be they either a cause or consequence, the truth is that these cardiovascular episodes are especially relevant in severe exacerbations.

Diagnosis, assessment, and phenotyping of COPD: beyond FEV_1

International Journal of COPD 2016:11

Peter Lange[1,2]
David M Halpin[3]
Denis E O'Donnell[4]
William MacNee[5]

1) Alpha-1 antitrypsin deficiency
2) Emphysema/Hypeinflation
3) Frequent ecacerbators
4) Mild airway obstruction but disproportionally severe dyspnea
5) Rapid lung function decline
6) **Comorbidities linked to poor outcome**
7) Persistent inflammation
8) Chronic bronchitis phenotype
9) Chronic bacterial airway colonization
10) COPD/Lung cancer phenotype
11) Severe pulmonary hypertension
12) Non-smokers

M%	Età	DISP (%)	TOSSE (%)	ESP. (%)	Febbre (%)	BPCOan (%)	FUMO (%)	SPIROan (%)	Tp. (%)
66,6	73,4 (9)	100	48,1	30	48,1	81,5	74	37	48,1

CAD an	SCOMP an	FA	Obesità	Diabete	Ipert.	IRC	Anemia	Polm.
25.9%	29.6%	14.8%	18.5%	40,7%	70.3%	25.9%	22.2%	22.2%

PaO2	P/F	PaCO2	HCO3-	pH	GB	PCR	NT-proBNP
54.03 (13.2)	< 200: 29.6%	53.11 (10.3)	30.9 (6)	7.37 (0.06)	>9000 40.7%	>1 74.07%	>1500 48.13%

Rx/TC : Cong.	ECG anormale	FE<55%	PAPs>35	Disf. Diast.	Disc.	OST.	Non Ost.
62.9%	74.07%	44.4%	74.07%	40.7%	22.2%	70.3%	29.6%

Conclusioni

- E’ possibile che la BPCO non sia altro che la manifestazione di una sindrome infiammatoria sistemica
- Le linee guida disponibili accennano al problema delle comorbidità, ma non le affrontano sul piano pratico
- I trials clinici sul trattamento della BPCO escludono di routine i pazienti con comorbidità o età avanzata
- L’approccio in urgenza ad un paziente con IRA ipossiemico-ipercapnica (polmone nero?, COPD riacutizzata?) deve prevedere un complesso di patologie
- L’approccio in urgenza al paziente con «BPCO riacutizzata» deve, quindi prevedere una visone allargata, che tenga conto del profilo individuale del paziente, le sue caratteristiche fisiologiche, l’impatto delle comorbidità e il loro ruolo nel determinare l’attuale episodio di riacutizzazione.

Grazie.

Paolo Groff
Groff.paolo64gmail.com