

# ***THE MISSING LINK BETWEEN CARDIOVASCULAR DISEASE AND COPD***

## **HIGHLIGHTS**



**Fondazione  
Internazionale  
Menarini**

***9-11 April 2015  
Santi di Preturo (AQ)***



# HIGHLIGHTS

## Lest we forget



**Claudio Ferri**  
L'Aquila, Italy

Prof. Ferri of the University of L'Aquila and Chairman of the Convention opened the congress by addressing the relationship between Chronic Obstructive Pulmonary Disease and Cardiovascular disease, with a word of remembrance for all those who perished in the earthquake that devastated L'Aquila on 6 April 2009, including some of his students. This convention, organised 6 years afterwards, takes on a special meaning - "Lest we forget".

## Nobody will forget



Il Prof. Parati di Milano, ha presentato dati estremamente



***Non omnis moriar***

(Quintus Horatius Flaccus, Odi, III, 30, 6)



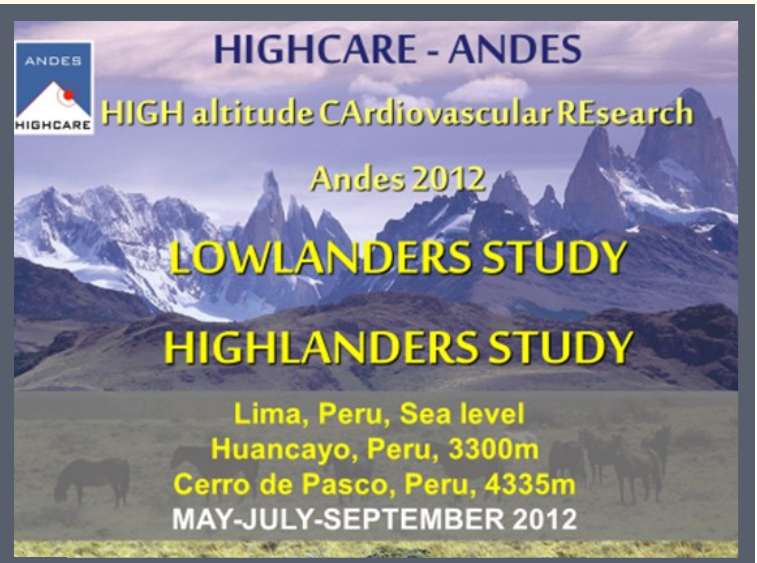
# HIGHLIGHTS



**Gianfranco Parati**  
Milano, Italy

**Are there any differences between Italy and Machu Picchu in cardiovascular physiology?**

Prof. Parati from Milan, presented extremely interesting data on acute and chronic cardiovascular effects from exposure to high altitudes. These data derive from studies conducted by Prof. Parati himself in some of the highest laboratories in Europe and in the world, such as those found in Capanna Regina Margherita on Mount Rosa at a height of 4500 metres, at the base camp on Mount Everest at a height of 5400 metres, and on the Andes in the town of Cerro de Pasco at a height of 4300 metres. What happens at these altitudes? Oxygen deficiency is the first problem, accompanied by a drop in barometric and alveolar pressure,



which all give rise to a series of phenomena like hyperventilation, interstitial lung oedema, a rise in heart rate and blood pressure, an increased affinity of the Hb for oxygen, sleep disorders, and metabolic and hormonal alterations. This series of problems has a social-health impact on all mountain-climbing enthusiasts: more than 100 million of whom climb the Alps each year, plus all the millions who travel by plane in pressurised cabins with a variable pressure between 1800 and 2600 m.

**What are the effects of altitude on cardiac patients? - - - What are the prevalent physiological mechanisms in bodies exposed to very high altitudes? - - - What are the adaption mechanisms?**



# HIGHLIGHTS

## The link between COPD and Cardiovascular disease



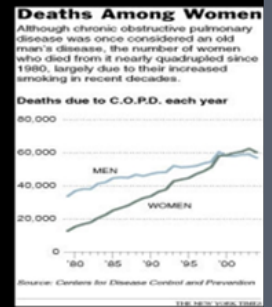
**Francesco  
Cipollone**  
Chieti, Italy

Prof. Cipollone from Chieti, addressed this topic starting off with epidemiological data. COPD, which is the fourth cause of death in the world, is constantly rising, especially in women. In addition, the link between COPD and heart failure is very clear: approximately 20% of patients with COPD also suffer from heart failure, initially linked in particular with the right cavity of the heart. The onset of heart failure also significantly worsens the prognosis of COPD. Early diagnosis is therefore essential in these patients, as it helps prevent approximately half of the hospital admissions due to the presence of heart failure.

What are the gold-standard exams for making an early diagnosis? In other words are there any biological markers that are useful in making an early diagnosis? And is it just a problem of diagnosis or should the management of these patients be optimized? Yes, the problem is also linked to correct management of these

### COPD: epidemiology

- Fourth commonest cause of death
- By year 2020, will be ranked third and fifth of the worldwide burden of disease
- Rising prevalence among women



### Key message:

Early diagnosis and improved management can avoid as much as 50% of inpatient HF related admissions!

subjects, bearing in mind that in this way at least 50% of hospital admissions due to heart failure could be avoided. Early diagnosis and correct patient management therefore; Prof. Cipollone addressed these two issues and identified the biological markers and the most effective pharmacological treatments for best managing this disease. One essential aspect is the need to cure the underlying pulmonary disease in order to eliminate the physiopathological conditions that favour the onset of heart disease. It is equally important to encourage patients to implement correct lifestyles. Finally, another extremely important aspect is the management of heart failure in patients with recurrent COPD.

**What are the specific biohumoural parameters for early diagnosis of heart failure in patients suffering from COPD? - - - What are the most effective pharmacological treatments? - - - How many patients are treated in a year to save their lives?**



# HIGHLIGHTS



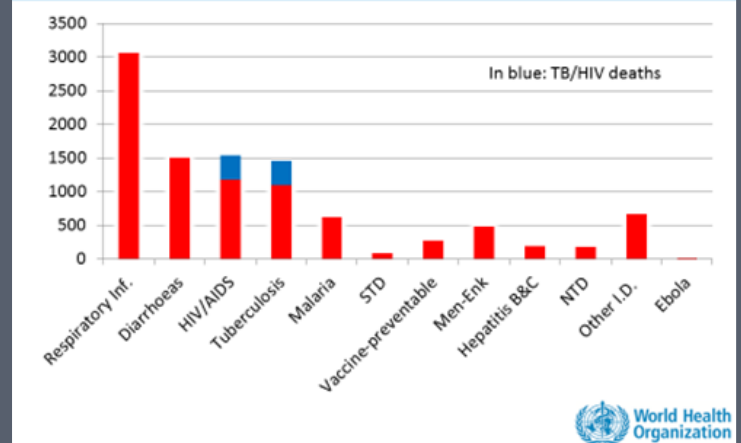
**Alberto Matteelli**  
Ginevra, Switzerland

**TB (tuberculosis) is an old disease that requires innovative intervention**

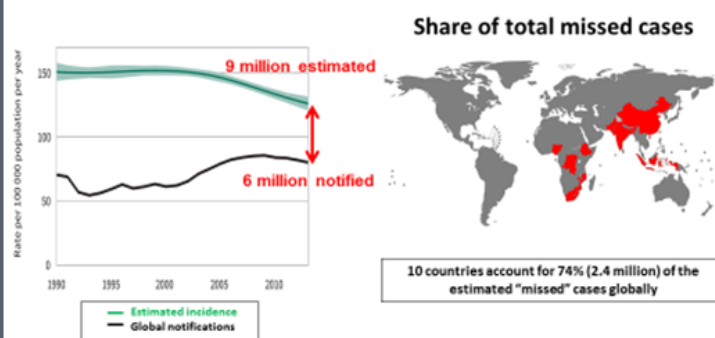
Prof. Matteelli from Geneva addressed this important issue. TB, a disease that is practically non-existent in our country still continues to affect 9,000,000 people throughout the world, 1,000,000 of whom with associated HIV, and approximately 480,000 of these are resistant to multi-therapy. About 1,500,000 of these people die each year. Despite these disturbing data, the disease

seems to be on a downward trend with regard both to morbidity and mortality, even though some forms are still on the rise, especially those linked to the concomitant presence of HIV. What can we do to further circumscribe this phenomenon? Five principal points should be

**Infectious Diseases**  
Global Deaths 2012 (N= 9.491 M)



**Reaching the "missed" cases early means cutting transmission** (nearly 3 million not diagnosed or reported)



developed: interception of the missed cases of the disease, at least 3 million cases are not registered in the system; an increased alert level regarding resistance to multi-therapy; the acceleration of the action on combined TB/HIV forms; the intensification of research and improvement of the financing channels. The World Health Association has established an intervention programme that aims at a 95% reduction in the incidence of deaths from TB by 2035. If we achieve these goals the world will finally be freed of TB.

**But where are we now? Which countries are currently affected by TB? - - - Which is more valid, pharmacological treatment or vaccination? - - - And what new drugs are currently being approved for treating TB?**



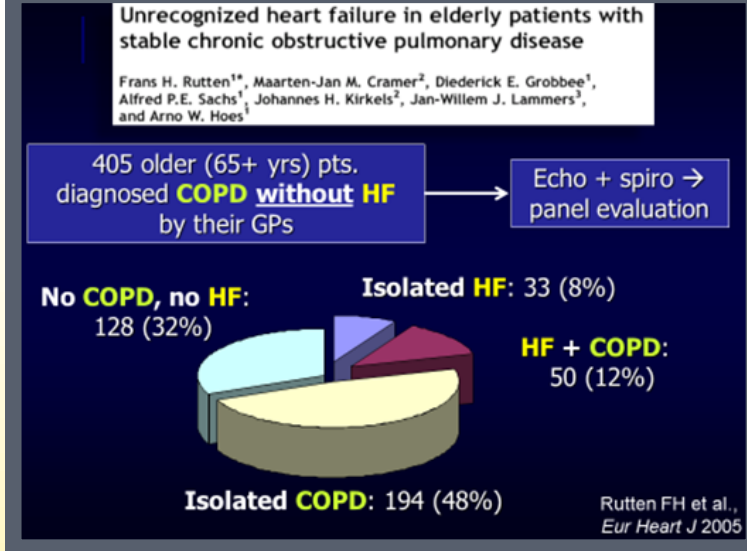
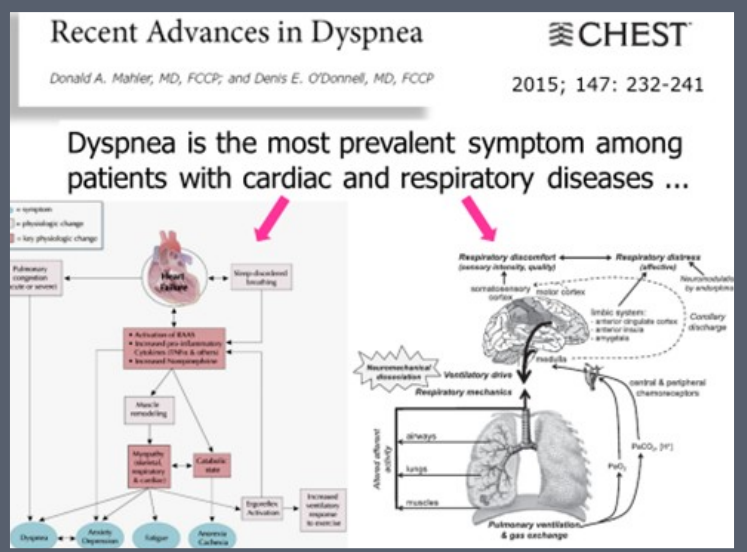
# HIGHLIGHTS



**Niccolò Marchionni**  
 Florence, Italy

## Dyspnoea in the elderly, a sign of COPD, heart failure, or both?

Prof. Marchionni from Florence addressed this important topic. The presence of dyspnoea in the elderly, a common symptom in geriatric patients, is a clear predictor of death in the long run and at the same time a strong indicator of COPD and heart failure. However, in geriatric patients it is precisely the differential diagnosis between the two forms that is less complex. In other words, with an increase in age, the symptom of dyspnoea becomes increasingly less sensitive and specific. With what results? An error margin which is definitely too high. The data presented by Prof. Marchionni in this regard leave no doubts whatsoever: of the 116 patients



discharged with a diagnosis of heart failure, on recovery only 28% of these presented symptoms compatible with the final diagnosis. Indeed, there are numerous confusing factors: the presence of concomitant and overlapping diseases, complex pharmacological treatments characterised by the administration of various drugs, evident diagnostic difficulties in part due to the excessive number of biomarkers proposed for the diagnosis of heart failure that in any case fail to offer sufficient specificity and sensitivity precisely in the geriatric population.

So what solutions are proposed by Prof. Marchionni for overcoming these difficulties? - - - Are there any tests that are more indicative and offer real support for the diagnosis?



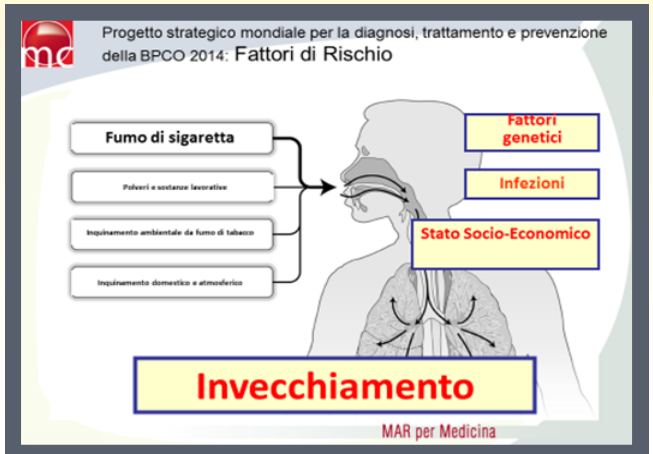
# HIGHLIGHTS

## Focus on COPD

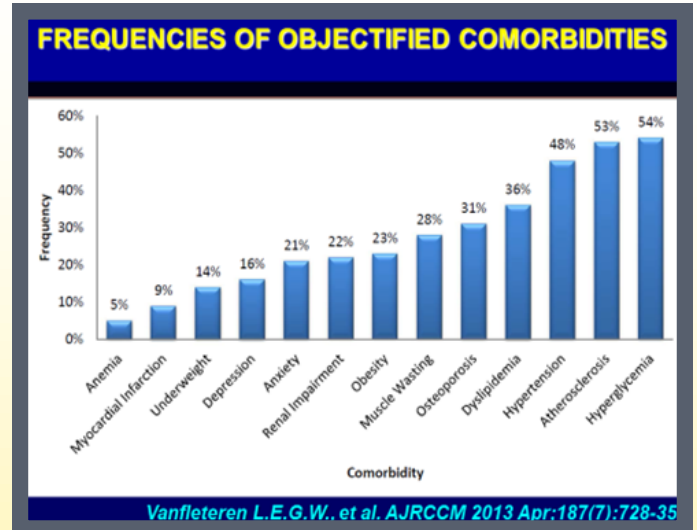


**Leonardo Fabbri**  
Modena, Italy

Prof. Fabbri from Modena addressed this topic by explaining the current knowledge of COPD and attempting to go beyond the classical scheme that sees COPD as a disease of smokers only. Despite being a factor of primary importance, cigarette smoke is not the only cause of COPD. There other genetic, socio-economic, infective factors involved, including aging. Combined together they can cause the onset and progression of COPD. For Prof. Fabbri therefore, COPD is nothing more than one of the pathological phenomena linked to the presence of inflammatory factors associated with aging.



When seen in this light the link between COPD and cardiovascular disease is evident, likewise the presence of an innumerable series of concomitant and highly invalidating diseases. It is consequently as though these diseases competed to see which one could manifest first, just like a foot race. As a result, the concomitant disease must be treated independently from the presence of COPD. In this perspective it is necessary to pay great attention to the treatment of any exacerbations, which will most certainly be an expression of inflammatory respiratory phenomena, but not necessarily an exacerbation of COPD itself.



**What are the objectives of modern treatment of COPD? - - - Which are the main therapeutic options? - - - What actions should be implemented in the presence of concomitant diseases?**



**Fondazione Internazionale Menarini**

To find the answers to these and other extremely interesting issues and for further information click on the following link: [www.en.fondazione-menarini.it/...](http://www.en.fondazione-menarini.it/) and after having logged in, access the multimedia material.

# HIGHLIGHTS

## COPD and Cardiovascular disease: a dangerous liaison



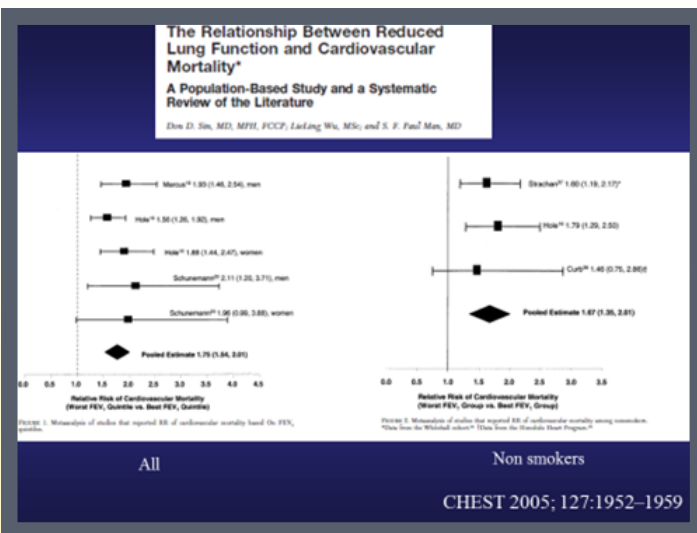
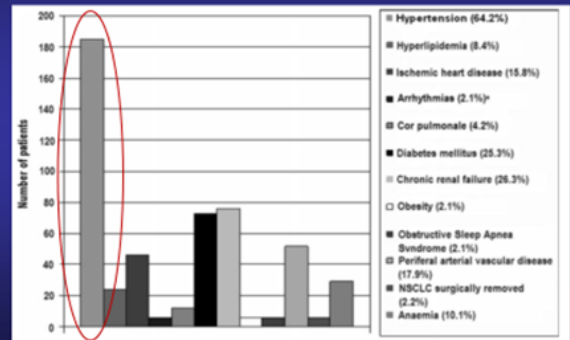
**Enrico Agabiti Rosei**  
Brescia, Italy

Prof. Agabiti Rosei from Brescia addressed the relationship between COPD and cardiovascular disease from a clinical point of view, or rather how COPD influences cardiac haemodynamics. The simultaneous presence of the two diseases significantly worsens the prognosis of these patients and unfortunately this association is very frequent: the main concomitant disease in patients suffering from COPD is high blood pressure. Moreover, the presence of a reduced respiratory function is linked to the increase in cardiovascular mortality. If we focus our attention on the heart, patients suffering from COPD tend to have a global ventricular dysfunction on both the right and left sides, that manifests early at a sub-clinical level, irrespective of the presence or not of high blood pressure; this phenomenon seems to be far more frequent in women than in men. Therefore, in case of exacerbation of COPD, the cardiovascular risk also increases, in turn linked to an increase in pulse pressure, a sign of arterial vessel rigidity. In these patients there is often also a condition of progressively deteriorating kidney dysfunction that in time leads to renal failure.

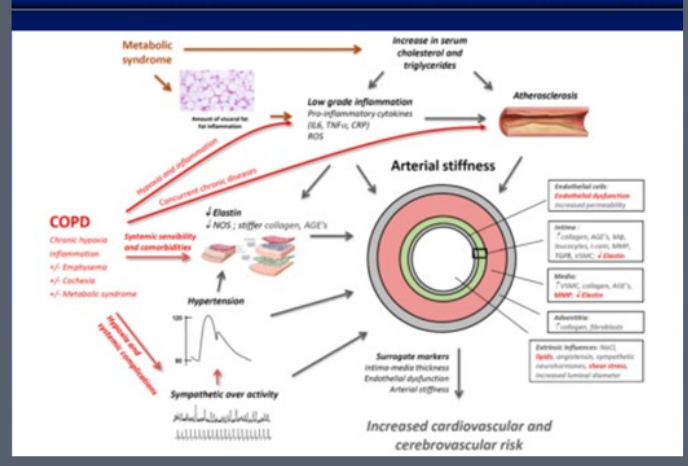
### Comorbidity, Hospitalization, and Mortality in COPD: Results from a Longitudinal Study

Claudio Tezzano · Vittoria Conti · Fabio Di Stefano · Angelo Petrolanni · Daniela Ceccarelli · Elda Graziani · Salvatore Mariotta · Alberto Ricci · Antonio Vitarelli · Giovanni Puglisi · Corrado De Vito · Paolo Villari · Luigi Allegra

Lung 2010



### Mechanisms by which arterial stiffness is increased in COPD



What are the physiopathological mechanisms underlying these phenomena? - - - Why does arterial rigidity increase in patients suffering from COPD? - - - Why do these patients have a reduced tolerance to effort despite the presence of a fraction of normal ejection?



**Fondazione Internazionale Menarini**

To find the answers to these and other extremely interesting issues and for further information click on the following link: [www.en.fondazione-menarini.it/...](http://www.en.fondazione-menarini.it/...) and after having logged in, access the multimedia material.



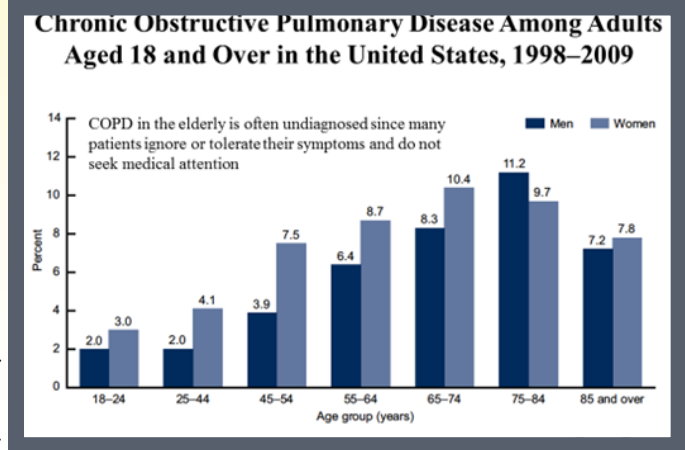
# HIGHLIGHTS

## COPD and aging: another dangerous liaison

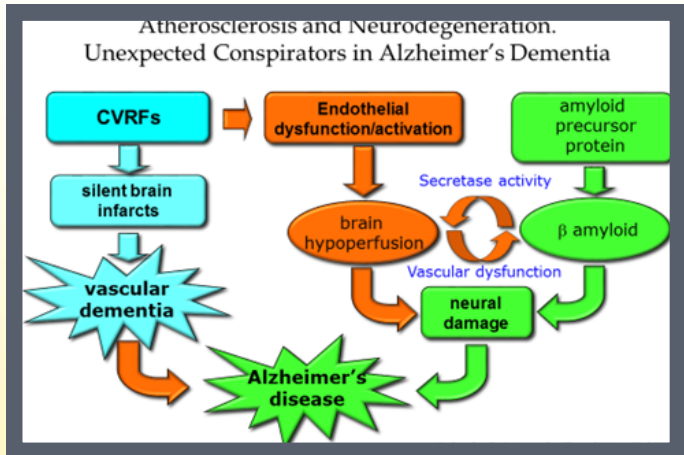
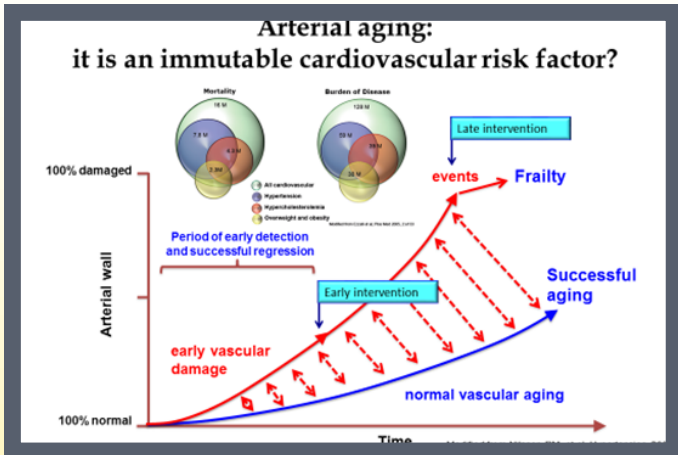


**Giovanbattista Desideri**  
 Avezzano, Italy

Prof. Desideri from L'Aquila addressed this very current subject in view of the aging of the population, a particularly relevant phenomenon in this country. Why is COPD so common in elderly subjects? Could the problem possibly be linked to aging per se, in the form of a pathological condition? The answer is no: aging per se is not a disease in subjects who show signs of physiological aging, for example no severe vascular alterations are observed that are linked to the presence of atherosclerosis. There are a series of concomitant diseases that make aging a pathological phenomenon, and which, if



treated early, do not in fact give rise to the onset of a condition of fragility in elderly subjects". It is this condition of fragility that predisposes elderly subjects to a high risk of comorbidities and mortality from cardiovascular and other causes. In this perspective therefore, prevention plays a role of primary importance. Advice for everyone: stopping smoking cigarettes not only helps maintain a sufficiently conserved expiratory volume over the years, but also enormously reduces the risk of developing COPD, which in turn is a determining factor for accelerated aging of the lungs. Consequently, it is the association between fragility and chronic diseases that has a negative impact on life expectancy in elderly subjects. Lastly, COPD is also significantly linked to brain degeneration that leads to dementia, which is so widespread among the elderly today.



**What are the mechanisms that link COPD, Fragility and Dementia? - - - What is the impact of COPD on the prognosis of elderly subjects? - - - How should we treat cardiopulmonary disease in these patients?**



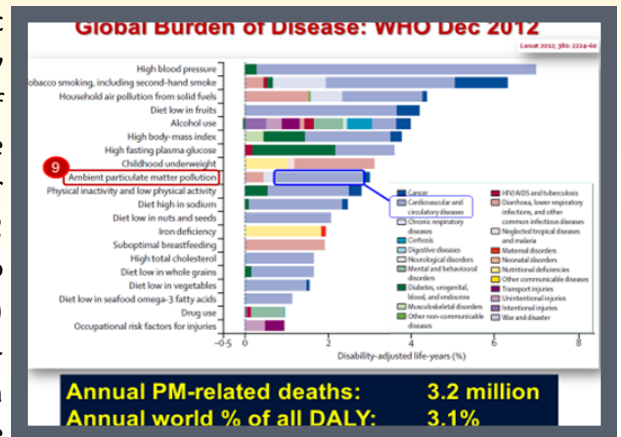
# HIGHLIGHTS



**Robert D. Brook**  
Ann Harbor, USA

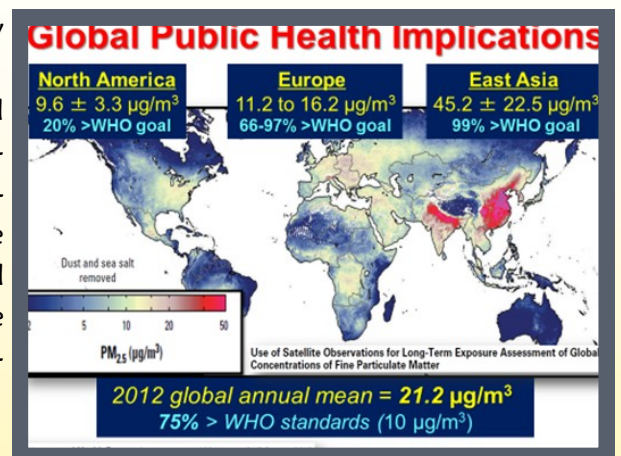
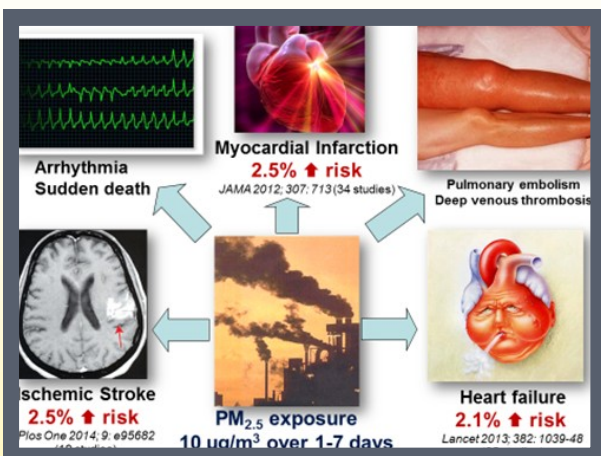
## Metabolic syndrome and atmospheric pollution: are they correlated?

Prof. Brook from Ann Arbor addressed this extremely relevant topic. Atmospheric pollution is a risk factor that the entire world population is facing, though to different degrees, depending on the geographic area. First and foremost, there are now numerous tests on the hazard levels of particulate matter in the air that we breathe, everything depends on their concentrations. Every year just on 3.2 million people in the world die due to so-called “particulate matter” (pm)



meaning particles with a diameter  $< 2.5 \mu\text{m}$ . An initial disturbing fact is that relating to the pm concentration in people in contact with passive smoke:  $300\text{-}500 \mu\text{g}/\text{m}^3$ , while smokers are exposed to a concentration 1000 times higher! It is as though these subject were subjected on a daily basis to a series of aerosols of fine particulate matter equal to the number of cigarettes smoked: what impact does this phenomenon have on health? Myocardial infarction, pulmonary embolism, strokes, heart failure, just to name a few of the most important! What are the physiopathological mechanisms at the basis of these phenomena? Mainly a precocious inflammatory condition that stabilises over time and in turn determines endothelial dysfunction, atherosclerosis, coagulation alterations, myocardial ischaemia, cardiac arrhythmias and so

on. The problem is undoubtedly worldwide, since only global policies that involve all countries will be able to contain and overcome the problem of pollution.



What are the epidemiological data that link atmospheric pollution to cardiovascular diseases? - - - If we reduce the level of pm in the air we breathe, what advantages could be obtained in terms of lives saved? - - - Which are the most polluted areas in the world?



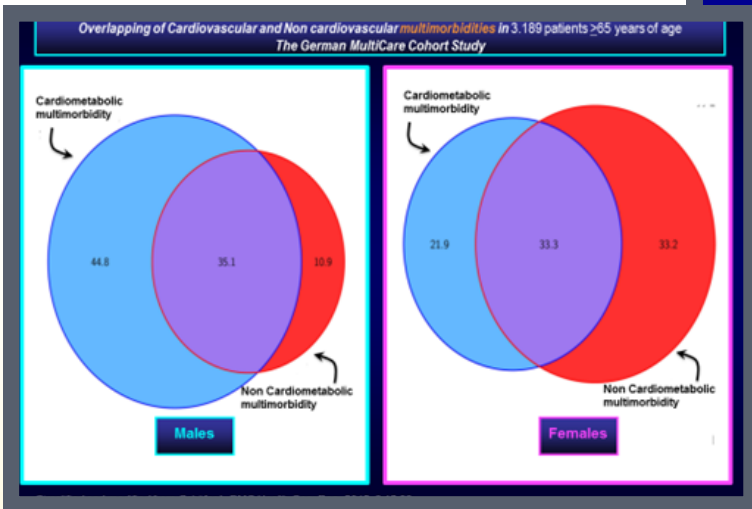
# HIGHLIGHTS



**Claudio Ferri**  
L'Aquila, Italy

## This is Complexity

Prof. Ferri from L'Aquila and Chairman, closed the Convention by asking the following question: what is "Complexity" in Medicine? Complexity is a factor that tends to increase over time, for example, the percentage of the elderly population is rising in Italy and this gives rise to an increase in the "complexity" at a social level inasmuch as there is an increase in number of elderly people who in order to survive require concrete help from



their family members. Complexity is also the interaction between genetic factors and environmental factors, where the environment significantly influences people's genetic profiles. One example is this slide that shows monozygotic twins exposed to completely different environmental factors over the years. Do they look like sisters? One question arises: can this complexity be measured? The answer is

**What are the instruments that doctors should implement in order to cope with this new dimension in medicine? - - - An approach that targets the individual? - - - An approach based on the interaction among the various disciplines? - - - Could complexity boil down to a simplicity of physiopathological mechanisms underlying the most diverse range of pathological symptoms?**

These are but a few of the topics addressed during the congress. For more in-depth information, please visit the website of the Fondazione Internazionale Menarini which contains the full version of the congress talks. Just click on the following link: [www.en.fondazione-menarini.it/...](http://www.en.fondazione-menarini.it/...) and after having logged in, access the multimedia material.



**Fondazione Internazionale Menarini**  
Edificio L - Strada 6 Centro Direzionale Milanofiori 20089 Rozzano (MI)  
Tel. +39 02 55308110 Fax +39 02 55305739 Email: [milan@fondazione-menarini.it](mailto:milan@fondazione-menarini.it)  
[www.fondazione-menarini.it](http://www.fondazione-menarini.it) - [www.facebook.com/fondazionemenarini](https://www.facebook.com/fondazionemenarini)