

PUTTING COPD ON THE MAP - COLLABORATING TO FIGHT DISEASE

Dr Paul Whittaker, Director, Respiratory Diseases Area, Novartis Institutes for Biomedical Research

Professor Chris Brightling, Wellcome Senior Clinical Fellow, Honorary Consultant, Institute for Lung Health, Leicester

Chronic obstructive pulmonary disease (COPD) is a disease that slowly and insidiously destroys the lungs of sufferers and robs them of their ability to breathe. Every 15 seconds someone in the world dies of COPD. It will be the third commonest cause of death globally by 2020 (WHO) and the fifth commonest cause of disability. COPD is a bigger killer than bowel, breast or prostate cancer (British Lung Foundation). Indeed more women die of COPD in the UK than breast cancer. Yet despite decades of research by both academia and industry, the available treatments are very limited. The real impact of this disease can be felt by the social and economic wellbeing of those affected and the burden it places on the NHS and business. As well as being debilitating and unpleasant for patients, it can be socially isolating and reduce the earnings of individuals who should be at their peak, and who may even end up claiming benefits.

So why the lack of success? The main reason is the underlying complexity of the disease, which is the clinical manifestation of a subtle interplay between environmental factors (mainly cigarette smoking) and genetic susceptibility factors (the development of COPD among smokers is not uniform and a minority of smokers develops the disease). COPD is at best an umbrella term that describes a number of different disease subtypes, rather than a single

disease.¹ It is this complexity that has been a key barrier to the development of new therapies. The identification of groups of patients all with the same disease type would facilitate both research on COPD and the development of new drugs.

We need to understand more about the underlying biology and pathology of COPD, as effective future therapies will require defining each type first, then matching the relevant drug(s) to it. We also need to be better at selecting 'the right patient' for the 'right intervention' and measure 'the right outcome'. It can take decades to develop COPD, so using standard clinical tests it could take a very long time to prove the effectiveness of a new therapy. This is even more important when targeting aspects of the disease that cannot be measured by the available clinical tests. Trials need to be large and run over several years to see a statistically significant effect of a drug, which also makes them expensive.

The benefits to the UK of fostering good research are improved patient outcomes and commercial investment. A complex, costly and slow research environment, underpinned by a historic lack of inter-centre collaboration, often impedes investment, although the Government has made significant and welcome strides in addressing this.

It is clear that no single pharmaceutical company or academic group can provide all the resources, expertise and know-how needed to make the required progress to develop new therapies for COPD. It has been increasingly recognised on both sides of the Atlantic that in order to do this, there is a need for Government, academia and industry to work together to make progress in our understanding of COPD and kick-start the identification of new drug targets and biomarkers. In the UK, the leading academic experts in COPD and industry have joined forces to address this 'grand challenge' and formed the Medical Research Council (MRC) and the Association of the British Pharmaceutical Industry (ABPI) COPDMap consortium.

Following a workshop and grant, the COPDMap consortium looked at areas identified by industry as being key to target research. Crucially, representatives from four major pharmaceutical companies (Novartis, Pfizer, GlaxoSmith-Kline and AstraZeneca) are closely involved in managing and developing the strategic direction for the work, as well as

providing 'in kind' resources such as research tools to aid it.

The belief from industry is that a pre-competitive consortium such as this is the only way to make effective progress in the development of new therapies for COPD, and represents a unique opportunity to make a step change in our understanding of COPD and how to tackle it therapeutically. It will enable the faster development of better therapies to benefit patients, and open up more innovative and diverse avenues of research. Key to this whole approach is using groups of patients with the same type of disease to help us understand and tackle the disease complexity that has frustrated drug discovery research in the past.

The COPDMap consortium is an exemplar of how academic and industry partners can work together effectively, united in pursuing a common vision and goal – better treatments for COPD patients. It can also act as a catalyst for tapping into the potential research and development talent within the UK, and allow the UK to compete as an international research centre.

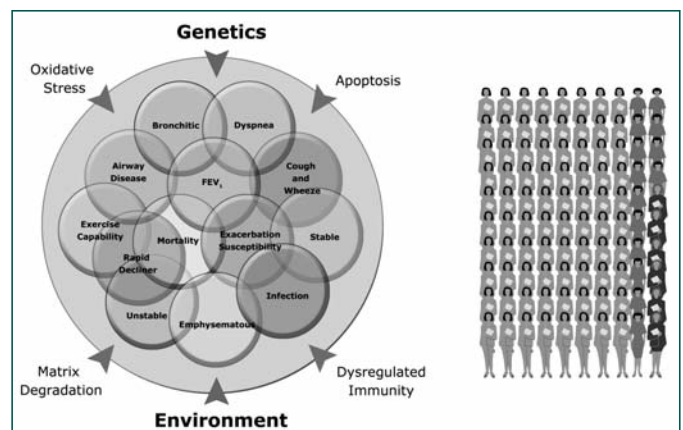


Figure: The clinical complexity of COPD means that effective therapies will have to be tailored to specific subgroups of patients (dark grey)

Footnote: 1 Chest 2008 Sep;134(3): 623-7