

Editorial

It's all Smoke and Mirrors

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An article that appeared last year in *Clinical Medicine* - the journal of the Royal College of Physicians, London - caught my eye as it raised the issues surrounding climate change and its influence on the health of the people¹. The focus, as expected, was on CO₂ emission levels. The author goes on to talk about doctors' responsibilities in controlling CO₂ emissions and says all of us should decrease our own *carbon footprint*. This article had been preceded by another one on the *Biotic Effects* of climate change in an earlier issue² as well as a series on the topic in *The Lancet* at the end of last year³. These articles got me thinking about what we really know about potential climate change effects may have on the future health of people.

I started off by going onto the internet and looked for a site where I could calculate my own *carbon footprint* as recommended by Montgomery¹. The first site I used came up with a value of 5.0 tonnes/yr⁴. I then duly looked for two more online CO₂ calculators to cross check this value and came up with values of 8.45 and 15.36 tonnes/yr respectively^{5,6}. The range of different values for the same input data is quite astounding - and all the sites belong to reputable organisations. Of note also is that on none of these sites or the *Clinical Medicine* article¹ is there any reference as to what data and calculations should go into a carbon footprint calculation, nor do any refer to a globally accepted standard reference formula. These are basic items that all scientific journals demand be in the methods chapter of any paper, even before it goes for editorial review. Yet these carbon footprint numbers are used left, right and centre to determine governmental policy, CO₂ taxes and also by NGOs to predict future health disasters.

I find it difficult to understand how one can extrapolate these very variable data to prognosticate about further health problems of the world. If one stops for a moment and thinks about weather prediction and how 'wrong' that often is; for example, the weatherman had predicted mild weather for the past winter, yet look at the severe weather we had and the associated chaos. But perhaps we should not expect better weather predictions as after all it is based on "Chaos Theory"? Looking back at the work by Edward Lorenz^{7,8} - he of the famous *butterfly effect* - they all struggled, and still do, to come up with a reliable mathematical model for weather prediction. So until the climatologists have solved these modelling dilemmas can we really accept their predictions about global warming based on ocean temperatures and bits of CO₂ at different levels of ice? Further doubt has been thrown on these issues by reports that some of the data have been wrongly interpreted⁹. There is now a group of climatologists who seem to think that a lot of the polar ice melting and the attendant global warming may not be due to CO₂ levels but may be due to the changing winds caused by the persistent *El Niño* and *La Niña* effects in equatorial Pacific¹⁰. These new data go to show that the problem is a lot more complicated than we were first led to believe.

This situation is mirrored in the current problems around increasing COPD levels and the costs to the health service. In the severer forms of COPD, *viz* type II respiratory failure, CO₂ levels are of prime importance. Here the problem is more one of CO₂ retention than CO₂ emission, that is until they get into a Respiratory Unit where the CO₂ is enthusiastically blown off, once more into the atmosphere. Thank goodness these units are not taxed on CO₂ emissions.

On a more serious note we know, or think we know, what causes this COPD problem - smoking. There are national guidelines that describe the problem in detail¹¹ and exhort clinicians to get people to stop smoking. The government also supports this at great expense in its *Stop Smoking Campaign*¹². This has led to a situation where people are diagnosed with COPD because they have decreased lung functions and have smoked. Due to pressures on Primary Care to diagnose COPD early, in the hope that it will arrest a more serious form with CO₂ retention and all its attendant costs of treatment, patients that have conditions such as asthma and happened to have smoked, are often wrongly labelled as having COPD. The problem

with this is that whereas with COPD patients it is recommended they only require medication when their FEV1 values are below 50% predicted normal¹¹, but if you are diagnosed with asthma you would be put onto treatment immediately, no matter what your lung functions showed¹³.

What also seems to have been forgotten in all of the enthusiasm to stop people smoking, and thereby, one hopes prevent COPD and lung cancer, is that a large percentage of COPD sufferers have never smoked. The current estimates range from 25% in the UK to as high as 45% in Third World countries¹⁴. If we add the “missing millions” as predicted by the BLF¹⁵ that is a lot of patients who will be requiring health services. Costs of treatment for these omissions will be prohibitive. Advance information of the soon-to-be-released *National Strategy for COPD* indicates that the strategy focuses on the smokers yet ignores the non-smokers who have or will still develop COPD¹⁶. There is a chapter in the draft strategy on asthma but it does not address the non-smoking COPD sufferer.

It is therefore important to realise that all who smoke do not necessarily develop COPD and that all COPD sufferers are not smokers or ex-smokers. Also that an asthmatic who smokes probably has asthma at the beginning of their respiratory illness, but if neglected will develop COPD with its consequent poorer prognosis. The two conditions could be said to mirror one another.

One could therefore say that smoking by individuals or by factories and vehicles mirror one another as both situations have complex scientific expectations and lead to increased CO₂ production. So despite a lack of agreement on the interpretation of the data, CO₂ appears to be important, in both climate change and in health and hence its production needs to be reduced to avoid too many errors in the management of the health of both the individual and the planet.

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