

## Prof. Walter McNicholas: sleep apnea—a disease calling for attention



Submitted Nov 30, 2013. Accepted for publication Dec 18, 2013.

doi: 10.3978/j.issn.2072-1439.2014.01.11

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*Professor Walter McNicholas, MD, FRCPI, FRCPC, FCCP is Newman Clinical Research Professor at University College Dublin (UCD), Director of the Pulmonary and Sleep Disorders Unit and Consultant Respiratory Physician at St. Vincent's University Hospital, Dublin, Ireland. He is a medical graduate of UCD [1974] and has a long established track record in high level research and leadership (Figure 1). He is a leading international authority in translational research on the mechanisms and consequences of sleep-related breathing disorders particularly sleep apnoea, and has held competitive grants from agencies such as the Health Research Board (Ireland) on a continuous basis for close to 30 years. His research interests include the pathophysiology, treatment and outcomes of sleep apnoea syndrome, the cardiovascular and metabolic consequences of the disorder, basic cell and molecular mechanisms and consequences of intermittent hypoxia, in addition to sleep disturbances in COPD and other chronic respiratory disorders. He is also closely involved in the evaluation of novel ambulatory monitoring devices for sleep disorders. He is a past Associate Editor of the European Respiratory Journal, and has published over 170 papers in Pub-Med listed Journals (h-index in 2013 of 36), in addition to more than 30 book chapters, and has edited three textbooks on breathing disorders during sleep.*

*Prof. McNicholas has held many Leadership positions in National and International organisations, particularly the Presidency of the European Respiratory Society [2002–2005] and is current Vice President of the European Sleep Research Society and President of the European Board of Accreditation in Pneumology. He Chaired a COST Action (B26) on Obstructive Sleep Apnoea [2005–2010], and recently chaired a Working Group established by the European Commission on Sleep Apnoea and Driving [2012–2013], which is expected to lead to an official EU Directive on this topic.*

*In the Third International Conference on Respiratory Disease on October 11, 2013, we are honored to have an interview with Professor Walter McNicholas to provide further advice for management of sleep apnea.*

**JTD:** *What is the common cause of sleep apnea?*

**Prof. McNicholas:** Sleep apnea is a condition that occurs because of the narrowing of the upper airway and in



**Figure 1** Professor Walter McNicholas.

many cases narrowing is congenital. In addition to the congenital factors, other acquired factors may develop which particularly relates to issues like weight gain. So the combination of congenital factors with acquired factors, most notably the development of obesity, can cause the development of upper airway obstructions sufficient to lead to sleep apnea.

**JTD:** *Does the hereditary factor play a role as cause for sleep apnea?*

**Prof. McNicholas:** Yes, absolutely. As I have already indicated that hereditary factors are important in sleep apnea. Population studies looking at the contribution of genetic factors suggest that between 40 to 50 percent of the varied morbidity of sleep apnea can be accounted for genetic factors.

**JTD:** *What would be the consequences of sleep apnea?*

**Prof. McNicholas:** Untreated sleep apnea results in a number of consequences with the most obvious one as the disturbance and unrefreshing nature of sleep and also daytime sleepiness. There are other less obvious

complications particularly relating to comorbidities. The major comorbidity of sleep apnea relates to the cardiovascular system, principally systematic hypertension and moreover it can lead to some cardiac consequences, such as cardiac arrhythmia, myocardial infarction, and congestive heart failure.

*JTD: How to evaluate the progress of the disease? Is there any staging grade in classification?*

**Prof. McNicholas:** Sleep apnea could be categorized as mild, moderate and severe, which indeed could be the case for most medical disorders, and we have arbitrary definitions of the characteristics of mild and severe models based on the frequency of breathing disturbance, the so-called Apnea Hypopnea Index which is commonly abbreviated as AHI. There is evidence to show that the increasing severity of sleep apnea based on the AHI classification is associated with increasing risk of downstream comorbidities (particularly cardiovascular comorbidities). These are more prevalent in patients with severe sleep apnea compared to the patients with mild disease.

*JTD: People may be confused with snoring and sleep apnea as snoring is a common symptom for sleep apnea. How in your perspective does snoring relate to sleep apnea?*

**Prof. McNicholas:** It needs to be remembered that snoring is highly prevalent but snoring itself is not a medical disorder. Therefore, it is understandable that the physician's approach towards patients simply with snoring may be relaxed as there is no evident health consequence of simply snoring. But problems arise if the physicians' concern dismisses everybody because a proportion of patients who snore will also have sleep apnea. If you take a person who snores in isolation, he would have no complaint but the partner will be affected. Because the snoring person will sleep well and wake up fine in the morning without any complaint during the daytime and they are not sleepy or fatigued, and in addition, they have no significant risks of developing comorbidities such as hypertension or heart attack. The person with sleep apnea also snores, but with lower quality of sleep and waking up feeling not refreshed, sleepy and tired in the daytime and he is quite likely to have systemic hypertension. Therefore it is actually straightforward to distinguish the simple snorer and the snorer suspected of having associated sleep apnea.

*JTD: How do you see that relation between obesity and sleep apnea?*

**Prof. McNicholas:** Obesity is an important factor in the development of the sleep apnea. But it is not the only factor. In reality what leads to the development of the overall picture of sleep apnea is a combination of genetic factors together with acquired factors, the most important of which, is the development of obesity. The relationship between obesity and sleep apnea could be considered as the analogue to relationship of the obesity and the development of type II Diabetes. If one looks at type II Diabetes, obesity is an important factor but not the only one. In sleep apnea, obesity is just one of the factors, although clearly important. Besides, when we look at the population cohorts with sleep apnea attending our own sleep apnea clinics, we found that the average Body Mass Index (BMI) of them is in the region between 30 to 31, which means they are obese but only in mild degree. We should take the cut-off between obesity and overweight as a BMI of 30. This is particularly evident in the European network study that I referred to in my presentation in this conference which is the European sleep apnea data base, and where the average BMI among the 15,000 patients in the data base is actually under 30.

*JTD: Is COPD or asthma highly associated with sleep apnea?*

**Prof. McNicholas:** The relationship of sleep apnea with COPD and asthma is not clear cut. There is evidence that COPD is a little more prevalent in the patients with sleep apnea than in the general population and the other side of the equation also holds true. However, if we look at for example the prevalence of systemic hypertension in sleep apnea, we would find systematic hypertension is very common in patients with sleep apnea. The excessive prevalence of COPD in sleep apnea is nothing like that of hypertension. It is common but not that much.

*JTD: You have introduced the risk of drivers with sleep apnea. To help these patients, we have come to a very common question: how to identify the early stage of sleep apnea?*

**Prof. McNicholas:** The importance of sleep apnea related to the driving risk is an increasing concern for

national regulative authorities, which brings into focus the recognition and diagnosis of these patients. If we look at the private drivers, we will see a huge burden identifying them. It is likely to be difficult to screen every driver, and thus for private drivers, we have to rely on the recognition of patients' complaints presented to Sleep clinics and those who we identify as having sleep apnea should do the appropriate test and treatment. In terms of screening of the general population for potential sleep apnea, it would be more important for commercial drivers, particularly drivers that operate trucks on the highways. It is likely to be a development towards screening procedures for the so-called group II drivers (drivers operating trucks). I expect that in the coming years there will be a move towards active screening of that type of drivers for possible sleep apnea.

*JTD: We understand that you have recently chaired a working group established by the European Commission on sleep apnea and driving (which is expected to lead to an EU Directive). Could you share with us more information about the Directive?*

**Prof. McNicholas:** Firstly the EU directive is not issued and it needs to be finalized. There is an agreement on the part of the Transport Commission that the directive needs to be implemented. But the EU is a conversing democracy where each of the member states have to be given the opportunity to comment before it is issued as a directive. But almost certainly there will be an EU directive in 2014 because the Transport Commission is quite keen that sleep apnea will be specified. It is awaiting formal approval in the individual governments (the consensus has been reached). As regards what this is going to result in, an approach will likely be taken whereby patients with moderate or severe sleep apnea, particularly associated with significant sleepiness, will be prevented from driving, or at least will be prevented from holding a driver's license, until the condition is successfully treated. The overall emphasis of our working group has been put on motivating patients with symptoms of sleep apnea to seek medical attention. The important reason for that is the very clear demonstration that where patients with untreated sleep apnea run a risk on the highway when driving. Patients with treated sleep apnea are at no risk, at least no greater risks than the general population. So patients should be strongly encouraged to seek treatment rather than to avoid the doctors because of the concern that their driver license would be removed.

*JTD: In the treatment of sleep apnea, CPAP is currently the most widely used therapeutic method. What do you think of the future development of this therapy?*

**Prof. McNicholas:** I think the traditional CPAP is likely to remain the mainstay of treatment for the average patients with sleep apnea. More sophisticated forms of CPAP are other modalities of pressure support largely confined to patients with complex disorders. For example, the patients with overlap syndromes of COPD and sleep apnea where there is a prominent component of chronic hypoventilation may be better managed by other forms of pressure supports such as Bi-level. Patients with complex sleep apnea or central sleep apnea are possibly suitable for other forms of pressure supports such as adaptive servo ventilation (ASV). In a sense, the ordinary form of CPAP remains the primary modality of therapy and there are other more sophisticated and complex pressure supports modalities restricted to small sub-populations of patients with complex disorders.

*JTD: What are the challenges and opportunity in the future research on sleep apnea?*

**Prof. McNicholas:** I think there are developments in the broad ranges of areas, for example in the diagnosis. My presentation in the conference showed some of novel approaches that are either already developed or evaluated, and there are some very novel devices such as devices we are working on in our own university relating to a campus company, which is becoming commercialized and they involve the use of completely non contact device. It is potentially an exciting development maybe leading towards the ability to do widespread screening of sleep apnea, as a preliminary move before the determination and the assessment of sleep apnea.

*JTD: Currently it seems hard to cure the disease. What are your advices for patients with sleep apnea to improve their life quality?*

**Prof. McNicholas:** The approach to the management of sleep apnea should not be simply focused on the CPAP machine. There are life style measures that would be helpful—the potential role of exercise as I referred in my presentation which is likely to do some benefit. Clearly, obese patients with sleep apnea should be strongly encouraged to lose weight, and also overall measures to improve sleep quality, sleep hygiene measures can also be

beneficial. CPAP will eliminate sleep apnea, but the other measures can help to further improve the overall life quality of the patients.

*JTD: Thank you very much for your time!*

**Cite this article as:** Li G. Prof. Walter McNicholas: sleep apnea—a disease calling for attention. *J Thorac Dis* 2014;6(2):170-173. doi: 10.3978/j.issn.2072-1439.2014.01.11

### **Acknowledgements**

*Disclosure:* The author declares no conflict of interest.

(Science Editor: Grace Li, JTD, jtd@thebpc.org)