## Respiratory disease

# Weight gain associated with accelerated lung function decline

Adults who put on weight over a 20-year period had a more rapid decline in FVC and $FEV_1$, a large international population-based study has shown. However, weight loss was found to attenuate the decline.

The researchers used data from the multicentre European community respiratory health survey (ECRHS) which covers 12 European countries and Australia.

A total of 3,673 individuals (53% women), recruited aged 20-44 years, were followed up for 20 years. Their mean age was 34.3 years at baseline and 54.3 years at the last follow-up.

Measures of weight, height and lung function (FVC and $FEV_1$) were noted at three time points over the 20-year period. At the start of the study, 12% of the sample were underweight, 57% normal weight, 24% overweight and 6% obese. At each review weight change was noted and averaged over the preceding years.

Weight loss was considered to be losing more than 0.25 kg/year, stable weight ± 0.25 kg/year, moderate weight gain putting on > 0.25 to 1 kg/year and high weight gain increasing weight by more than 1 kg/year.

Baseline BMI categories were combined with weight change categories to classify participants into weight change profiles.

During follow-up almost 4% of the sample lost weight, 34% had stable weight, 53% had moderate weight gain and 9% had high weight gain.

Population-averaged generalised estimating equations were used to estimate lung function trajectories from age 20 to 67 years (the full age range of the study sample) as a function of weight change profiles. An interaction term between smoking status and age (to account for a faster decline over time in smokers) was also included.

Among adults with baseline normal BMI, overweight and obesity, those with moderate and high weight gain during follow-up exhibited significantly steeper FVC decline than those with stable weight.

At 65 years of age, compared with those with normal baseline BMI and stable weight those who were overweight or obese at baseline and had high weight gain had lower estimated FVC: - 677 ml (95% CI: -841 to -512; $P < 0.001$ and -1,011 ml (95% CI: - 1,259 to -763; $P < 0.001$) respectively, despite similar estimated FVC levels at age 25.

In contrast, individuals who were obese at the onset of the study who subsequently lost weight had an attenuation in FVC decline reaching levels similar to those with initially normal BMI and stable weight by age 65.

Decline in $FEV_1$ and FVC was greater in men who gained weight than women especially in those initially obese.

Two possible explanations are proposed for these findings. The first is that accelerated decline occurs as a result of mechanical effects, typically abdominal and thoracic fat deposition. The fact that men tend to put on more abdominal fat than women may help explain the sex difference. The second is that obesity is associated with increased inflammatory mediators from fatty tissue, these will have an effect on airways and lung tissue.

The investigators conclude: 'This prospective population-based study shows that moderate and high weight gain over a 20-year period was associated with accelerated lung function decline in adulthood, while weight loss was related to its attenuation. The negative effects of overweight and obesity on lung function can be reversed by weight loss even later in adult life.

'Public health measures that promote healthy lifestyles and body weight may be important for maintaining good lung function in adult life.'

This research is very useful in helping us advise those patients with, or at risk of, chronic lung conditions. As well as stopping smoking, increasing exercise and taking medication when prescribed, weight maintenance in those with a healthy BMI or weight loss in those with a raised BMI are important measures to maintain good lung function.

**DR PETER SAUL**

**Peralta GP, Marcon A, Carsin A-E et al. Body mass index and weight change are associated with adult lung function trajectories: the prospective ECRHS study. *Thorax* 2020;0:1-8. doi:10.1136/thoraxjnl-2019-213880. Epub ahead of print**

## Sexual health

# LARC uptake increases in young women

There has been a significant increase in the use of long-acting reversible contraception (LARC) in women under 25 over the past decade, a national survey has found. However, condoms and the oral contraceptive pill are still the most commonly used methods.

The National Surveys of Sexual Attitudes and Lifestyles (Natsal-2 in 1999/2000 and Natsal-3 in 2010/12) are stratified probability surveys on the sexual behaviour and attitudes of men and women in Britain.

Natsal-2 included 11,161 participants (6,399 women) aged 16-44 years and Natsal-3 covered 15,162 participants (8,869 women) aged 16-74 years.

In both surveys, women under 45 years who were not currently pregnant and reported having had vaginal sex in the past year were asked about contraceptive method used. Methods were classed as: 'most effective' (sterilisation, intrauterine device [IUD], intrauterine system [IUS] and contraceptive implant), 'effective' (oral contraceptive pill, injection, transdermal patch), and 'less effective' (condoms, caps, spermicides, the