

Expansion of Bristol Airport to 12mppa

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Proof of Evidence for PCCA

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Statement

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In 1905, the Nobel Prize-winning bacteriologist Robert Koch wrote “The day will come when man will have to fight noise as inexorably as cholera and the plague.”

I propose that day has come

Personal Statement

I have lived in Dundry since 1990 and experienced the huge growth in airport activity during that time. As a doctor I am fully aware of the increasing research and evidence indicating that high levels of noise exposure have negative health and well being impacts and are not just an annoyance to locals under the flight paths. As flight paths have become more consistent with high performing radar use the patterns of landing and take-offs create a constant highway generating engine and fuselage noise. This has a constant impact on those living underneath who seek their right to a quiet home environment.

I know from noise measurements I had taken professionally in my garden in the late 1990s (to assess greater insulation needs to my home roof) and subsequently when hosting a noise monitor at the request of Bristol Airport, that planes are now quieter. A landing Easyjet Airbus 320-214 returning today from Tenerife has a maximum noise of 61-63dB not the mid 70Db of older 757s. However, this is the noise over 20-30 seconds as the plane approaches and passes overhead, this is the noise inside when a window is open. A blackbird overhead has a momentary maximum noise of 57dB. Blackbirds don't sign all night and a momentary noise is far less likely to initiate the physiological changes described in the scientific review below. The planes may be quieter but this is more than made up for by their increased number of movements. Overall,

there is a far high noise burden on us below; measured by intensity, frequency and total time of exposure.

Having had a year with few planes at all and a few weeks with far more since travel was permitted in April 2021. I know that today inside my home, 3.5 miles from the runway with windows shut the take-off from Bristol airport of an Airbus 320 generates 20-30 seconds of noise in the range 53-55 dB. This is above the WHO recommended limit for health and well-being. Increasing this burden has and will have health impacts day and night for those living in the flight paths. I know that night flights are particularly intrusive on my sleep patterns and those I speak to locally. We have had a controlled trial during the last year when 7-8 hours uninterrupted by night flights or 6am take offs has meant by WHO standards a proper night's sleep. Something that eludes us under normal flight activity.

Background noise in a rural garden is 25-30dB, the increase to 55-60dB represents more than 100 times more noise (10 to the power of 2) and it is this that disturbs sleep, creates stress, increases blood pressure, leads to reduced response to inflammation and vulnerability to viral illness. The 2018 WHO guidelines clearly state there must be a balance between the health and well-being of communities and the economic benefit of aviation expansion. Further expansion swings this benefit in favour of the airport owners and further and further away from the well-being of communities within **10** miles of the runway

Summary of Medical Evidence on the Impact of Noise, aviation noise in particular

Sleep disturbance and in particular sleep deprivation has short, medium- and longer-term negative consequences. Harvard University summarise this on their web site <http://healthysleep.med.harvard.edu/healthy/matters/consequences>

'In the short term, a lack of adequate sleep can affect judgment, mood, ability to learn and retain information, and may increase the risk of serious accidents and injury. In the long term, chronic sleep deprivation may lead to a host of health problems including obesity, diabetes, cardiovascular disease, and even early mortality'.

Statement

Airport noise is one of the most serious offenders, creating not just the noise from plane movements (landing and taking off) but the runway noise of maintenance and the traffic noise that is associated with passengers traveling to and from the airport.

Sleep deprivation studies (where people are deprived of sleep while measurement of heart, respiratory rate, and in some cases blood samples are taken) show evidence of increased stress, increased blood pressure, impaired blood glucose control and increased inflammation.

Studies of groups of people who either are or are not subjected to sleep disturbance and deprivation to see if certain diseases are more common show residents near airports may not self-report disturbed sleep but physiology measurements made at the same time, show altered heart rate, blood pressure and increased alertness.

Long term studies of sleep habits and health/ disease what diseases develop show significant health issues where regular sleep disturbance has occurred. That living near an airport with regular elevated noise day and night time is causing long term ill health for adults. Children show consistent reduction in their learning ability and cognitive function at school. This occurs if they live near an airport and attend school elsewhere (evening and night time impact) or if they are schooled near an airport and live elsewhere (day time impact). Thankfully this seems to be reversible but only if the noise is removed. (references 2, 3, 4, 5, 19,20,21,22,23,24,25)

The World Health Organisation, National, European and International organisations have created an evidence-based framework for those running airports, airlines and aircraft designers and producers (26). In addition, there are things one can do to insulate homes better against external noise. These however are ineffective when a window is open, something we might expect people to be able to do without risking their health.

Planes have become a little quieter, many airports have a curfew at night to limit movements. However, it is the case that demand, up till the current pandemic, has been rising, scheduling has overflowed into curfew times by design or due to delays. The state of the aviation industry and health impacts is well summarised (reference 1)

We now know

1. That having less than six hours of good sleep each night meant you are likely to have a higher-than-average Body Mass Index because sleep deprivation effects appetite regulating mechanism.
2. Poor sleep is associated with increased secretion of insulin which leads to more fat storage. It is associated with lower levels of *leptin* that alerts the brain it has had enough food and *ghrelin* that stimulates appetite. This means poor sleep can result in food craving even when we have had enough to eat (references 27,28)
3. That poor quality sleep leads to excretion of cortisol the 'stress hormone' and this has impacts on heart rate and blood pressure. (references 41,42,43,45,46)
4. Being sick with a virus often makes us sleepy, this is an immune response and evidence shows that those who slept during an infection were better able to fight that infection. Sleep deprivation or disturbance reduces than ability to fight an infection.
5. Data from three large cross-sectional epidemiological studies reveal that sleeping five hours or less per night increased mortality risk from all causes by roughly 15 percent.
(references 27,28,29,

The WHO reports declare that aviation noise is not just a nuisance and disturbing to those living under a flight path but it has medical and psychological impacts. WHO

recommends inside noise levels at 45 dBA or less in the day and 40dBA at night. (562).

Measurements during 2020 3.5 miles from the airport in my newly built well insulated and double-glazed property were consistently over 48dBA when a plane was landing and 55dBA on take-off. All windows were shut.

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