

Health and Aircraft Noise

The Noise Board needs to consider all aspects of the impact of noise. One area that is of increasing importance and is becoming critical is the impact on health. EANAB members are aware through feedback from their local communities that aircraft noise does impact the health and quality of life of those living under the flight paths of aircraft from Edinburgh Airport.

The impact that aviation noise has on people has been looked at and results published for a number of years. These vary from sleep disturbance to critical impacts on for example the cardiovascular system.

It has become very clear that noise disturbance at night causes physiological effects. The loss of sleep damages more than just concentration. Sleep deprivation is a recognised tool in interrogation and while aircraft noise is not in this class it does produce damage.

There are reports of the type of damage, but there are issues with determining the critical levels and duration. The Board does not have the expertise required to analyse the data from such reports and publications and therefore defers to other organisations that might provide professional analysis/conclusions and which might have or gain statutory or legislative authority.

In its role as an independent and impartial voice on civil aviation noise and how it impacts communities, the Independent Commission on Civil Aviation Noise (ICCAN) commissioned an expert study report which is attached (published July 2020). It is labelled as a rapid evidence assessment* (REA) and has been carried out by qualified professionals. The report provides details of the methodology used to generate the findings and recognises the problems, including both under and overstatement of the problem and the risks and expresses caution when drawing conclusions from preliminary studies. It looks at where there are evidence gaps and the potential ways forward for future research on the links between aviation noise and health.

The key findings from the ICCAN assessment report are listed below:

- *The new evidence primarily focuses on health outcomes for sleep, quality of life, mental health and wellbeing, and cardiovascular and metabolic disorders. Several recent studies had small sample sizes – some were feasibility studies – and therefore can only give indicative findings.*
- *We made and collated ratings of the quality of evidence as 'high', 'moderate', 'low' or 'very low' for given health outcomes, using the GRADE approach (described in Appendix A). For a small number of outcomes, primarily in the areas of sleep and cognition, there is moderate quality evidence on the links between aviation noise and public health. Typically, it is difficult to achieve high quality evidence in environmental studies, and moderate quality evidence is therefore considered sufficiently robust to support strong policy recommendations.*
- *For most health outcomes, the evidence on the effects of aviation noise is low or very low quality. This low quality is primarily driven by the fact that most studies use a cross-sectional design and many have small sample sizes which limits their power.*

- *For some areas of health, including dementia and other neurodegenerative outcomes, cancer, and birth and reproductive outcomes, there is little or no evidence at all relating to aviation noise.*
- *There are therefore evidence gaps for the areas with limited or no evidence and those with low or very low-quality evidence. These areas present ICCAN and other stakeholders with opportunities for further research.*
- *Where evidence is of moderate quality, there is a need to quantify how interventions or operational changes impact health outcomes.*
- *ICCAN has a range of stakeholders, who are likely to have different priorities regarding areas for future aviation noise research. There has been relatively little data from the UK, despite having a large noise-exposed population including the busiest airport in Europe. It is welcome that two large research projects (ANCO and RISTANCO) are currently ongoing.*
- *In weighing up the areas for further research, ICCAN may take into account current priority areas in wider public health, including air pollution, mental health, and reducing health inequalities, as well as longer term ambitions.*
- *There are also opportunities for ICCAN to investigate the potential of retrospective cohorts combining noise maps with the wealth of data available in various UK cohort studies, as a means of obtaining high quality evidence without the costs and delay inherent in prospective longitudinal research.*
- *Collaboration among academic and other interested parties could support wider use of consistent research methods, such that even studies of lower individual quality could be combined robustly in support of stronger evidence.*
- *High quality evidence requires investment in longitudinal research. Whilst this is expensive, it would be an opportunity to gain insight into exposures beyond aviation noise, such as air pollution, that will be of interest to a broad range of public bodies.*

It is important that any information and advice the board may promote is soundly based and will withstand scrutiny. Therefore, EANAB will monitor any further reviews issued by ICCAN and endeavour to update advice as new validated information becomes available.

*The ICCAN review took the form of a REA – a tool for systematically finding and synthesising available research as comprehensively as possible within a reduced timeframe. This REA was designed to build on existing systematic reviews conducted for the World Health Organisation (WHO) and the UK Department for Environment, Food and Rural Affairs (Defra). ICCAN searched academic databases and conference proceedings for findings published in the year since those reviews were conducted, in addition to the websites of relevant organisations. The findings of 12 new studies were combined with those of the WHO and Defra reviews, and the quality of evidence summarised across 58 health outcomes using a systematic approach.