

lymphoma. Novel prospective trials should be focused on pretransplant cytoreduction and timing of transplantation because they represent key factors for a successful outcome.

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## Is noise bad for your health?

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Noise is a physical hazard so ubiquitous that its sudden absence can be unsettling. Our hearing perception evolved in a quieter era when a soft rustling in a forest could signal danger or potential game. Today, our sensitive cochleae experience sounds at levels many times greater from amplified music, lawn machinery, highway traffic, and many other sources. But whilst noise might be annoying, is it bad for our health? Clearly, prolonged exposure to excessive noise levels in

the workplace can cause permanent high-frequency hearing loss.<sup>1</sup> But less is known about the health risks of exposure to lower levels of noise in the environment.

Communities living near airports are increasingly concerned about the psychological and physical effects of aircraft noise.<sup>2</sup> In today's *Lancet*, Stephen Stansfeld and co-workers report a cross-sectional study of over 2800 children aged 9-10 years, attending schools located near three major airports in Spain, the Netherlands, and the UK. The investigators assessed noise levels around the school from aircraft and traffic, and compared these levels to the results of cognitive-performance testing and health questionnaires. They found chronic exposure to aircraft noise had deleterious effects on reading comprehension and reported annoyance, even after adjusting for socioeconomic differences between high-noise and low-noise schools.

Stansfeld and co-workers' study adds to a developing literature about the negative effect of noise on learning. Schools located near airports have come under particular scrutiny. In one study, 326 German schoolchildren matched for socioeconomic status were followed up prospectively as the old Munich airport was replaced by a new international facility. Children attending schools near the old airport improved their reading scores and cognitive-memory performance

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when the airport shut down, while children going to school near the new airport experienced a decrease in testing scores.<sup>3</sup>

How could environmental noise from aircraft be interfering with children's acquisition of reading skills? Stansfeld and co-workers postulate that children react to noise stress by "tuning out" unwanted noise stimuli, in the process also paying less attention to other inputs, such as a teacher's speech. There are also basic acoustic issues to consider. For children to adequately hear a teacher, the background noise in a classroom should be at least 10 dB below the level of the teacher's voice.<sup>4</sup> Children with hearing loss (a condition more common in lower socioeconomic groups<sup>5</sup>) require an even greater signal-to-noise ratio. Schools themselves might be poorly designed for hearing, with noise from ventilation and air-conditioning units or students themselves causing more interference than outdoor noise.<sup>6</sup>

Noise could also have an impact on reading performance by negatively affecting health status. Children attending schools near airports may also return to homes located in aircraft flight-paths of noise, which might interfere with sleep patterns and consequently impair learning. Surveys of populations living near airports report an association between exposure to aircraft noise and self-rated sleep disturbance, and use of over-the-counter sleep medication.<sup>7</sup> Noise may act in concert with other environmental factors, such as crowding and housing quality, to increase catecholamine and cortisol markers of physiological stress.<sup>8</sup>

Stansfeld and co-workers' findings might have important implications for health-care professionals. Is the rising incidence of attention-deficit disorders related to environmental noise stress? Could environmental noise be contributing to the disease burden of sleep disorders and cardiovascular disease in the general population? In the health-care setting, is excessive noise on hospital wards interfering with communication between staff and patients, and disrupting patients'

sleep patterns?<sup>9</sup> These are rich and relatively unexplored areas for further inquiry.

Whilst Stansfeld and co-workers theorise that living in a noisy environment leads to "learned helplessness", there are encouraging signs that noise can be reduced and its ill-effects prevented. Switzerland has placed a night-time curfew on aircraft departures, except for unusual circumstances.<sup>10</sup> The American National Standards Institute has published a standard for classroom acoustics, stipulating that noise levels in an empty classroom should be less than 35 dB(A), and that reverberation or echoes should be controlled.<sup>11</sup> In the future, such efforts to identify and reduce sources of potentially harmful environmental noise might become a routine part of preventive medicine.

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## Palliative care in Africa: an appraisal

The paper in today's *Lancet* by Richard Harding and Irene Higginson is timely and useful. They are reporting on palliative care in sub-Saharan Africa. We on the ground have little time for reviewing current literature, and they

report on strengths and weaknesses of palliative care. Palliative care services in Africa mainly sprang from the identification of suffering and an urgent need to meet the needs of, initially, cancer patients and in more recent

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