

# education

**FROM THE JOURNALS** Edited highlights of weekly research reviews on <https://bit.ly/2PLtl8>

## China's Fangcang shelter hospitals

Only a month ago, pop-ups were hipster cafes. Now the only pop-up anyone is interested in is the hospital variety. As a field hospital, Nightingale Hospital in London serves a very



different set of functions to the Fangcang shelter hospitals that were rapidly erected in China in response to covid-19. Chen and colleagues' letter presents the key features of these shelter hospitals developed in Wuhan: a) one to two days to build, b) thousands of beds, c) low cost achieved through low staff to patient ratios. They were intended for isolation of people with mild to moderate covid-19 from their families and communities, while providing medical care, disease monitoring, food, shelter, and social activities. When pre-existing hospitals filled up, these people were the ones who were not severe enough to warrant a hospital bed but also needed not to return to their communities yet. Can this model be widely implemented in the UK? I hope so.

• *Lancet* doi:10.1016/S0140-6736(20)30744-3

## Lots in Los Angeles

Mild flu-like symptoms are the talk of the town these days. Does everyone with mild flu-like symptoms have the SARS-CoV-2 virus? Without gigantic upscaling of testing, we cannot know and, therefore, cannot optimise transmission reduction. Various approaches have been taken to answer this question. A large US hospital, LA County and USC Medical Center, attempted to estimate community prevalence by testing everyone who presented to them with a mild flu-like illness between 12 and 16 March as a sample. This 131 person dataset did not include people with severe respiratory presentations or those with risk factors for the virus because the idea was to represent the people who are quietly wondering if they could be part of the spread. Seven people (5%) were positive for SARS-CoV-2. The authors describe this as "concerning." I agree, but I'm worried it is an underestimate. It would be useful to do sampling across more environments to try to estimate the true prevalence.

• *JAMA* doi:10.1001/jama.2020.4958

## SARS-CoV-2 testing of different body sites

I'm impressed that data relevant to the pandemic are being published quickly and clearly, but it's a shame so many studies are small and observational. This Chinese dataset looks at 22 people admitted to hospital with a diagnosis of covid-19 who had gone on to test negative (on real-time PCR) for the virus on a pharyngeal sample and had had sputum or faecal samples taken at any

point that were positive. The researchers then extensively tested these people by taking samples from different body sites. The aim was to investigate positivity of the test in samples from different sites once the pharyngeal sample had converted from positive to negative, because this could have implications for subsequent isolation. They found that sputum remained positive up to 39 days after the negative pharyngeal samples, whereas faeces stayed positive up to 13 days later. This suggests that pharyngeal sample negativity is insufficient to determine whether isolation needs to continue.

• *Ann Intern Med* doi:10.7326/M20-0991

## A case series from Seattle

Oh, to be pre-outbreak. Those were the days. Seattle was on the brink of its outbreak in March. Bhatraju and colleagues report the course of 24 patients treated across nine hospitals. They all had hypoxaemic respiratory failure, and none had had known exposure to a returning traveller. As previously reported for covid-19, cough and shortness of breath were common. Lymphopaenia was present in 75% of them. Interestingly, only 50% had fever on admission. Does this represent that temperature goes up and down over the course of the illness, that fever is a feature that develops earlier or later in the course, or simply that fever is not always a feature? Of the 24 patients, 12 died. Rather gloomy statistics, but it is important to remember that most cases are much milder. The gloomiest thing is that we don't have evidence for any prognosis-altering therapy yet.

• *N Engl J Med* doi:10.1056/NEJMoa2004500

## Vaginal delivery in mother with covid-19

Covid-19 case reports are receiving a lot more attention than they usually would. In this letter, a woman was admitted with covid-19 symptoms 39 weeks into her pregnancy. A day later she went into labour, a test came back confirming her covid-19 diagnosis, then she had an uncomplicated vaginal delivery. She breast fed, and she and her baby went home well six days after delivery. Telephone follow-up did not identify any signs of neonatal infection. We cannot draw conclusions about the risks of vertical covid-19 transmission with vaginal delivery nor safety of breastfeeding. The key element of interest is the approach taken to prevent staff infection, by minimising contact and using PPE. This is fundamental, as infected staff could put many other patients at risk.

• *N Engl J Med* doi:10.1056/NEJMc2007605



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# COVID-19 REVIEWS

Richard Lehman

## End-of-life care at home

*Let whoever is in charge keep this simple question in her head (not, how can I always do this right thing myself, but) how can I provide for this right thing to be always done?*

Florence Nightingale

How can we arrange for the right thing to be always done for people with covid-19 dying at home? A retired GP schoolfriend, Lyn Jenkins, posed this question two weeks ago and I have been unable to think of much else since. It is happening, and will happen over the next few weeks, to many thousands of people. And the first part of the Nightingale quotation points to a gap: "Let whoever is in charge..."—could she or he please step forward?

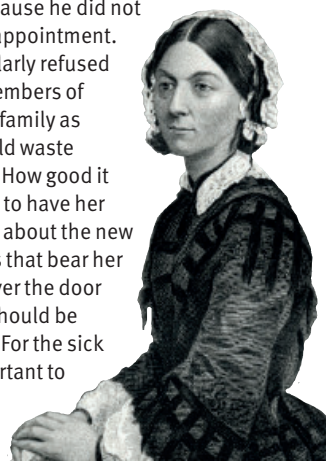
When people with severe covid-19 decline to go to hospital, or are refused intensive care on "robust" ethical grounds ([www.bma.org.uk/media/2226/bma-covid-19-ethics-guidance.pdf](http://www.bma.org.uk/media/2226/bma-covid-19-ethics-guidance.pdf)), what promise of care and comfort is to be made to them, and who will deliver it? I fear that instead of the central ethical overseer that Emanuel and others suggest for the US ([www.nejm.org/doi/full/10.1056/NEJMs2005114](http://www.nejm.org/doi/full/10.1056/NEJMs2005114)), a variety of people will instead decide on the admission rules in different areas of the UK and a variety of overstretched primary care services will have to pick up the pieces. Everyone will be distressed and exhausted. Palliative care physicians are producing



excellent guidance (<https://apmonline.org/wp-content/uploads/2020/03/COVID-19-and-Palliative-End-of-Life-and-Bereavement-Care-22-March-2020.pdf>). They and GPs are producing excellent consultation aids ([www.goodlivedeathgrief.org.uk](http://www.goodlivedeathgrief.org.uk)). Many areas are rushing to set up home services. But who is there to provide for these right things to be always done?

## Nightingale hospitals

Florence Nightingale (below) disliked hospitals. They created bad conditions for the sick: "Apprehension, uncertainty, waiting, expectation, fear of surprise, do a patient more harm than any exertion. Remember he is face to face with his enemy all the time." She regarded hospitals as "an intermediate form of life," a poor substitute for home nursing. After her work at Scutari hospital she had a chronic illness, possibly brucellosis, and stayed at home for 40 years, during which she designed better hospitals. Her self-isolation wasn't like ours: she was fed with a constant supply of viceroys, flowers, geese, architects, statisticians, fresh cheese, generals, and prime ministers. When Nightingale did a thing, she did it thoroughly, and social distancing was no exception. Prime minister William Gladstone once turned up on urgent business, but was turned away because he did not have an appointment. She regularly refused to see members of the royal family as they would waste her time. How good it would be to have her thoughts about the new hospitals that bear her name. Over the door of each should be written: "For the sick it is important to have the best"



## Relieving covid-19

*If you knew how unreasonably sick people suffer from reasonable causes of distress, you would take more pains about all these things.*

—Florence Nightingale

Between the asymptomatic cases and those in intensive care, there are hundreds of thousands of people experiencing covid-19. They have a constant painful cough, which prevents sleep. They cannot breathe properly and are intensely anxious. They lie totally exhausted, with myalgia and fever. Many are cut off from human comfort. You rarely read about these things in the academic literature, which spills out by the ton every day. There is some guidance from the National Institute for Health and Care Excellence (NICE) ([www.nice.org.uk/guidance/NG163](http://www.nice.org.uk/guidance/NG163)) giving generalised advice: but is there a forum of tips for GPs for covid-19 symptom relief that has escaped my notice?

## Coronavirus co-infection

Perhaps in retaliation for these reviews, the General Medical Council (GMC) has restored my licence to practise medicine. Even before that, I spent a lot of my would-be sleeping time thinking of how GPs could function during an epidemic of serious respiratory disease, when they can't even examine the patient. Most of the pneumonia is likely to be viral, either caused by SARS-CoV-2 or a combination, mostly with influenza viruses, present in about a fifth of patients (<http://med.stanford.edu/news/all-news/2020/03/covid-19-can-coexist-with-other-respiratory-viruses.html>). But what about bacteria? Ordinary or atypical bacterial pneumonia

will still occur, independent of covid-19, and it seems incredible that bacteria won't take advantage of lungs congested by covid-19: yet it is very hard to find anything in the literature about bacterial co-infection. Meanwhile, from a safe distance, NICE advises the avoidance of antibiotics except in "severe" pneumonia or if the patient is at special risk ([www.nice.org.uk/guidance/ng165/resources/covid19-rapid-guideline-managing-suspected-or-confirmed-pneumonia-in-adults-in-the-community-pdf-66141902429125](http://www.nice.org.uk/guidance/ng165/resources/covid19-rapid-guideline-managing-suspected-or-confirmed-pneumonia-in-adults-in-the-community-pdf-66141902429125)). The usual arguments about antibiotic stewardship appear. But it's a poor steward who keeps the armoury locked when the enemy is ringed around the moat.

## Hearsay based medicine

In time of war, rumours fly. Don't get too worried about ventilators, mate, they're going over to continuous positive airway pressure any day now. We'll know more this week from Italy. No pal, it's not Italy, it's Spain. I've heard this phenomenon named as "hearsay based medicine," or HBM. There is another kind of HBM that deals in bold assertions such as "Health staff are particularly likely to die from covid-19 due to viral load." But the Oxford Covid-19 Evidence Service Team cannot find any support for this concept in relation to coronaviruses ([www.cebm.net/covid-19/sars-cov-2-viral-load-and-the-severity-of-covid-19/](http://www.cebm.net/covid-19/sars-cov-2-viral-load-and-the-severity-of-covid-19/)). "If readers are confused by the mass of contradictory information, so are we. What can be desumed by this post is that no one really knows what is going on..." Desumed. Oxford, how I love you.

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## PRACTICE POINTER

# An approach to excessive daytime sleepiness in adults

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**Excessive daytime sleepiness (EDS) is best described as an urge to sleep during daytime hours. It is a common problem, occurring at least three days a week in 4-20% of the population,<sup>1</sup> and affects quality of life, workplace performance, and has safety implications, for example, when driving. Sleep disorders that cause excessive daytime sleepiness remain underdiagnosed and are easy to miss in clinical practice.<sup>2</sup> Insomnia is a common cause of daytime sleepiness, but other disorders are important to consider. This review discusses the different potential causes of excessive daytime sleepiness in adults and proposes an approach to management and referral in non-specialist settings, in particular how to identify disorders that require referral to secondary care.**



### HOW PATIENTS AND THE PUBLIC WERE INVOLVED IN THE CREATION OF THIS ARTICLE

Patients with conditions discussed in this article provided feedback on the paper during the writing process. One patient described his experience of falling asleep while driving as a result of undiagnosed obstructive sleep apnoea, and being involved in a road traffic incident. The patient expressed hope that this article would help raise awareness of obstructive sleep apnoea in the population.

### WHAT YOU NEED TO KNOW

- Differentiating excessive daytime sleepiness (EDS) from symptoms of fatigue or being “tired all the time” is key to accurate diagnosis
- The Epworth Sleepiness Scale (ESS) score is a useful way to assess and classify EDS. An ESS >10 indicates EDS and >17 indicates severe EDS
- Obstructive sleep apnoea, periodic limb movement syndrome, narcolepsy, and circadian rhythms are some of the commonest causes of EDS
- Treating obstructive sleep apnoea reduces excessive daytime sleepiness, improves neuropsychological function, and reduces blood pressure
- Refer patients with EDS for assessment, including overnight sleep study



## What is excessive daytime sleepiness and how is it different from fatigue?

It is important to distinguish EDS from fatigue. EDS is defined as the inability to maintain wakefulness and alertness during the major waking episodes of the day, with sleep occurring unintentionally or at inappropriate times almost daily for at least three months.<sup>3</sup> It is used interchangeably with hypersomnia and hypersomnolence, although according to ICD-4, hypersomnolence is excessive sleepiness when wakefulness is expected, and hypersomnia is a disorder characterised by hypersomnolence.

Patients may report sleepiness as a vague symptom of fatigue or feeling “tired all the time.” When assessing a patient, it is useful to differentiate between fatigue and excessive sleepiness: fatigue is lack of physical or mental energy and desire to rest and can be due to diverse causes such as anaemia or depression.

## How common is excessive daytime sleepiness?

EDS is highly prevalent: studies have produced different estimates depending on the population studied and definitions used, with 4-20% of the population reporting EDS that occurs at least three days a week.<sup>1</sup> A large population based study in the US using a structured telephone interview suggested that 27.8% of the adult population suffered from excessive sleepiness.<sup>4</sup> This not only impairs quality of life but affects performance at the workplace and safe driving: excessive sleepiness may account for 20% of road traffic incidents.<sup>5</sup> However, sleep disorders causing EDS remain underdiagnosed and undertreated.<sup>2,6</sup>





*The Rose Bower* Edward Burne Jones, 1885, Buscot Park

## How do you measure excessive daytime sleepiness?

Several questionnaires have been developed to measure and quantify EDS. The Epworth sleepiness scale (ESS) is a measure of daytime sleepiness that is developed for and used in a range of sleep disorders.<sup>7</sup> It has been validated against objective measures of sleepiness using the electroencephalogram based multiple sleep latency test (MSLT). For the ESS assessment, the patient is asked to rate their likelihood of dozing or falling asleep in response to eight common situations on a scale of 0 to 3: 0 being no chance of dozing off and 3 high chance. Overall scores above 10 are generally accepted to represent EDS. The ESS questionnaire is easy and quick to use and available in different languages and in pictorial form. It can help establish the severity of sleepiness, but is not a screening questionnaire for sleep disorders such as obstructive sleep apnoea. The gold standard physiological evaluation is the MSLT (used in a specialist sleep setting), which provides objective measurement of rapidity of sleep onset.<sup>8</sup> MSLT measures an individual's physiologic sleep tendency when potential alerting environmental or circadian cues are controlled. One of the main advantages of this test is that the degree of sleepiness cannot be exaggerated by the patient. Sleep latency is assessed over five daytime nap trials of 20 minutes each, at two hour intervals. It is mainly used for diagnosing narcolepsy or idiopathic hypersomnia. Overall mean sleep latency <10 minutes is considered clinically significant and patients with narcolepsy have a mean sleep latency <8 minutes.

**Patients often report feeling tired, or tired all the time, and use the terms “sleepiness” and “fatigue” interchangeably**

## What to ask and what to do in an assessment

*“Do you feel sleepy or fall asleep when you are tired?”*

The first step is to establish that the tiredness or sleepiness reported by patients is not fatigue. Patients often report feeling tired or tired all the time (TATT) and use the terms “sleepiness” and “fatigue” interchangeably. Sleepiness is the inability to stay awake, feeling sleepy, or falling asleep when they should be awake, while fatigue is lack of energy and feeling run down often associated with apathy.

Having established that tiredness reported by a patient is sleepiness rather than fatigue, the next step is to establish if sleepiness is excessive. Some degree of daytime sleepiness is physiological (normal), such as feeling sleepy in the afternoon or after a meal. However, feeling sleepy or falling asleep when they expected to be awake, for example, while working or driving is excessive sleepiness. This can be established by asking *Do you feel sleepy or fall asleep during the daytime when you should be awake, particularly while performing an important task* or using a self-administered ESS questionnaire to define the severity of their sleepiness (EDS=ESS score >10; severe EDS=ESS score >17).

### *Sleep history*

Take a brief sleep history to help to exclude excessive daytime sleepiness caused by lifestyle or social factors (for example, work pressure, stress, or having a baby in the household) or general medical disorders (nocturnal pain, headache, cough, breathlessness, or nocturia) as a cause of insufficient or poor sleep. You could ask *At what time do you go to bed? How long does it take you to fall asleep? Do you sleep well or is it disturbed? If it is disturbed, why? At what time do you wake up? Do you wake up feeling refreshed?*

Take a history of drug treatment to identify sleepiness as a side effect of commonly used drugs such as antidepressants, antihistamines, antiemetics, or  $\beta$  blockers. Similarly, consider blood tests to exclude tiredness due to anaemia, electrolyte imbalance, and hypothyroidism.

In the absence of any of these causes of EDS, refer a patient with sleepiness to a local sleep service. Advise patients with severe EDS not to undertake any risky activity such as driving or working with machinery while awaiting further investigations.<sup>9</sup>

What are the common causes of excessive daytime sleepiness?

Conceptually, EDS can be considered as a manifestation of insufficient sleep (sleep duration), poor or disturbed sleep (sleep quality), or a condition or disorder affecting the sleep-wakefulness centre in the brain (table).

*Insufficient sleep* (duration) is probably the most common cause of EDS.<sup>10</sup> A common extrinsic cause of insufficient sleep is lack of time because of work or social pressures. However, most people make up for insufficient sleep during weekends or holidays. Insomnia, owing to an intrinsic hyperarousal state that affects sleep onset and maintenance, is the commonest cause of insufficient sleep.

*Poor sleep* (quality) can be classified as caused by extrinsic or intrinsic factors. Sleep disturbance caused by extrinsic environmental noise, light, or medical disorders causing pain and discomfort is usually obvious. Intrinsic sleep disorders—obstructive sleep apnoea and periodic limb movement syndrome—are common causes of disturbed sleep. These patients typically report sleeping for enough duration (eight hours or more) but their sleep is disturbed by recurrent arousals from obstructed breathing and leg kicking, respectively.

*Disorders affecting the sleep wakefulness centre in brain* include chronic neurological disorders or generalised side effects of medications such as antidepressants. However, narcolepsy, idiopathic hypersomnia, and circadian rhythm disorders are the main intrinsic neurological disorders affecting the sleep wakefulness centre in the hypothalamus.

Conceptual approach to patient with excessive sleepiness		
EDS	Sleep disorders	Non-sleep disorder
Insufficient (quantity) sleep	Insomnia	Lifestyle
Disturbed (quality) sleep	Obstructive sleep apnoea	Light and noise; medical disorder
Intrinsic (neurological) sleep	Narcolepsy; periodic limb movement syndrome; idiopathic hypersomnia	Chronic neurological disorders central nervous system depressant side effect of medication

Sleepiness is the inability to stay awake, while fatigue is lack of energy and feeling run down

What are the common sleep disorders causing excessive daytime sleepiness?

**Insomnia**  
Insomnia is a common cause of daytime sleepiness and is typically managed in primary care. It is characterised by difficulty in falling asleep or maintaining sleep (in contrast to sleep disordered breathing problems where sleep onset is rapid). Depending on definitions used, approximately 10-15% of the population may have insomnia severe enough to cause daytime symptoms<sup>11-13</sup> and insomnia is the reason for more than 5 million consultations in the US.<sup>14</sup> Cognitive behavioural therapy for insomnia (CBT-i) is the preferred treatment where symptoms are not self-limiting.<sup>15 16</sup> Online app-based delivery of CBT has been shown to be a feasible and effective way of delivering this.

**Obstructive sleep apnoea syndrome**  
Obstructive sleep apnoea syndrome is the most common sleep related breathing disorder that causes excessive daytime sleepiness. Prevalence (defined by excessive sleepiness plus evidence of obstructive sleep apnoea syndrome on sleep study) varies from 4% in men aged 30-60 in one US study to 43% in morbidly obese middle aged men.<sup>17 18</sup>

Upper airway obstruction during sleep causes loud snoring, an increase in upper airway resistance, hypopnoea, and apnoea, which lead to sleep fragmentation and reduction in sleep quality. In addition, chronic intermittent hypoxia is associated with impaired neuropsychological function and an increased risk of cardiometabolic conditions.

The STOP-BANG questionnaire is a validated screening tool for obstructive sleep apnoea syndrome<sup>20</sup> (see bmj.com). Confirmation of the diagnosis is made by respiratory polysomnography, or sleep study, which measures respiratory effort, airflow, oxygen saturation, pulse, body position, and snoring (figure).

Continuous positive airway pressure (CPAP) is the most effective treatment for obstructive sleep apnoea syndrome, with a strong evidence base confirming improvement in excessive daytime sleepiness,<sup>21-23</sup> improved neuropsychological function, and reduced blood pressure.<sup>24</sup> In obese patients who are intolerant of CPAP, a 10% reduction in body mass can lead to a 33% reduction in apnoeas.<sup>25</sup> Other treatment options in selected patients include mandibular advancement splints, upper airway surgery, and hypoglossal nerve stimulation.

**Periodic limb movement syndrome**  
Periodic limb movements during sleep are repetitive, involuntary limb movements (nocturnal myoclonus) that cause sleep fragmentation. Overall prevalence is about 6% but increases with age and the condition may occur in up to 30% of people over 50.<sup>28</sup>

Periodic limb movement syndrome can be associated with iron or folate deficiency,

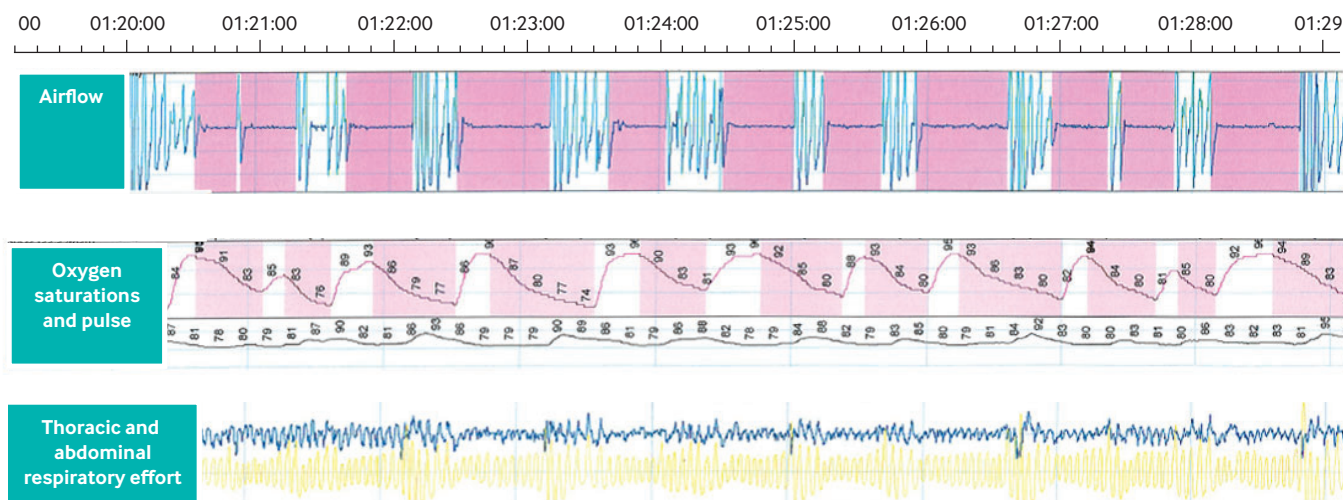


BSIP/SPL



GAROFANIE/SPL





Section of sleep study recording illustrating intermittent cessation of airflow, with ongoing respiratory effort (suggestive of obstructive event) with consequent oxygen desaturation and increase in pulse rate

renal disease, peripheral neuropathy, Parkinsonism, or spinal disorders, and may be exacerbated by caffeine, antidepressants, or neuroleptic medications. Symptoms may respond to increased exercise or reduced caffeine intake, but some individuals with excessive daytime sleepiness benefit from drug treatment such as dopamine agonists (eg, pramipexole), gabapentin, or pregabalin.

### Narcolepsy

Narcolepsy is a rare but important cause of marked daytime sleepiness that is estimated to affect around one in 2000 people. It is a primary neurological condition affecting hypocretin producing neurones in the hypothalamus. Narcolepsy is characterised by excessive daytime sleepiness, and individuals may also have symptoms of cataplexy, in which there is sudden transient loss of muscle tone, typically in response to emotional stimulus. Diagnosis of narcolepsy requires assessment in a specialist centre with facilities for MSLT and polysomnography and treatment is based on lifestyle modification and the use of wakefulness promoting medications such as modafinil and sodium oxybate.



ELISABETH SCHNEIDER/LOOK AT SCIENCES/PL

### Idiopathic hypersomnia

Idiopathic hypersomnia is a poorly understood syndrome in which excessive daytime sleepiness occurs despite adequate time asleep and after exclusion of other causes of excessive sleepiness such as hypothalamic disorders. The diagnosis therefore requires thorough assessment in a specialist centre, including use of polysomnography and assessment of sleep latency.<sup>33</sup> In the absence of a clear understanding of the pathogenesis of idiopathic hypersomnia, treatment is based on stimulant medications used in narcolepsy. Pitolisant may in the future become a management option for some patients.<sup>34</sup>

### Who should be referred for further evaluation?

Refer patients for further assessment by sleep specialists in secondary care where the cause of excessive daytime sleepiness is unclear, or where specific treatments (such as CPAP therapy) are required.

Specific advice on referral criteria to secondary care in the UK is provided by the National Institute for Health and Care Excellence (NICE).<sup>35</sup> Urgent referral to a sleep centre is recommended if a patient has sleepiness while driving, working with machinery, is employed in an occupation of particular risk such as a pilot, bus or lorry driver, or if they have signs of respiratory or heart failure, or coexistent chronic obstructive pulmonary disease. Other patients can be referred routinely if they have excessive sleepiness as defined by the ESS, or where there are concerns about employment.

Competing interests: None declared.

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Find the full version with references at <http://dx.doi.org/10.1136/bmj.m1047>

### HOW THIS ARTICLE WAS MADE

This article was based on the experience and practice of the authors, supported by Medline searches of the published literature, including search terms “daytime sleepiness,” “obstructive sleep apnoea,” “narcolepsy,” “pitolisant,” and “idiopathic hypersomnolence.”

### EDUCATION INTO PRACTICE

- How do you identify patients at risk of obstructive sleep apnoea?
- How do you counsel patients with excessive daytime sleepiness regarding the risks of driving and obligations regarding informing the DVLA?
- How do you discuss treatment options for obstructive sleep apnoea other than CPAP?

# Assessment and management of tinnitus: summary of NICE guidance

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Further information about the guidance, a list of members of the guideline development group, and the supporting evidence statements are in the full version on [bmj.com](https://www.bmj.com)

**Tinnitus is a common condition in children, young people, and adults. It is the perception of sounds in the ears or head that do not come from an outside source.<sup>1</sup> Ten per cent of the population will have tinnitus at some point.<sup>2</sup> It can be associated with difficulty in concentrating and listening, and for some people it can be extremely distressing and have a substantial impact on their mental wellbeing, family, work, and social life.<sup>2</sup>**

This article summarises the most recent recommendations from the National Institute for Health and Care Excellence (NICE) guideline on tinnitus: assessment and management (<https://www.nice.org.uk/guidance/ng155>). The guideline does not cover the full clinical pathway but focuses on areas raised at the stakeholder consultations.



0.5 HOURS

## Recommendations

NICE recommendations are based on systematic reviews of best available evidence and explicit consideration of cost effectiveness. When minimal evidence is available, recommendations are based on the guideline development committee's experience and opinion of what constitutes good practice. Evidence levels for the recommendations are in the full version of this article on [bmj.com](https://www.bmj.com).

### Tinnitus support

Tinnitus support (sometimes known as tinnitus counselling) should provide people with tinnitus and their family members or carers with the opportunity to discuss their experience of tinnitus with a healthcare professional (including their GP), its impact, and any information provided by healthcare professionals. Early support may help an individual cope more effectively with tinnitus. As the perception and impact of tinnitus can change over time, tinnitus support should be offered to patients at all stages of the clinical pathway.

- Discuss with the person with tinnitus, and their family members or carers if appropriate, their experience of tinnitus, including its impact and any concerns.
- Based on any identified needs, agree a management plan with the person, taking into account their preferences. The plan should include information about tinnitus and opportunities for discussion about different management options.
- Discuss with the person the results of any recent assessments and their impact on the management plan.
- With consent from the person or their parent or carer, as appropriate, share the management plan with relevant health, education, and social care professionals.

### Referring people with tinnitus to specialist services

The consequences of not appropriately referring people presenting with tinnitus in a timely fashion can be catastrophic, affecting physical and mental wellbeing.<sup>3,4</sup> Meanwhile, there is inconsistency in how referrals are made in the UK, whereby people with tinnitus are referred from general practice to ear, nose, and throat services, audiovestibular medicine services, or audiology services. Referral guidance is summarised in the box.

## WHAT YOU NEED TO KNOW

- Healthcare professionals need to be alert to the impact of tinnitus on wellbeing and quality of life and provide reassurance at the first point of contact
- Tinnitus support and information should be provided to patients with tinnitus at all stages of care, and to family members or carers if appropriate
- Offer an audiological assessment to people with tinnitus
- Consider psychological therapies for adults with significant tinnitus related distress
- Offer magnetic resonance imaging (MRI) of internal auditory meatuses (IAM) to people with non-pulsatile tinnitus who have associated neurological, ontological, or head and neck signs and symptoms



## REFERRAL TO SPECIALIST SERVICES

- Refer immediately to a crisis mental health management team for assessment people who have tinnitus associated with a high risk of suicide. If needed, provide a safe place while waiting for the assessment
- Refer immediately, in line with the NICE guideline on suspected neurological conditions,<sup>5</sup> people with tinnitus associated with
  - sudden onset of significant neurological symptoms or signs (for example, facial weakness), or
  - acute uncontrolled vestibular symptoms (for example, vertigo), or
  - suspected stroke (follow a local referral pathway for stroke). For information about diagnosis and initial management of stroke, see the NICE guideline on stroke and transient ischaemic attack in over 16s
- Refer people to be seen within 24 hours, in line with the NICE guideline on hearing loss in adults,<sup>6</sup> if they have tinnitus and have hearing loss that has developed suddenly (over a period of three days or less) in the past 30 days
- Recognise that assessment and management of the person's tinnitus may still need to continue following an immediate referral
- Refer people to be seen within two weeks for assessment and management if they have tinnitus associated with either of the following
  - Distress affecting mental wellbeing (for example, distress that prevents them carrying out their daily activities) even after receiving tinnitus support at first point of contact with a healthcare professional. Refer in line with local pathways
  - Hearing loss that developed suddenly more than 30 days ago or rapidly worsening hearing loss (over a period of 4 to 90 days). Refer in line with the NICE guideline on hearing loss in adults<sup>6</sup>
- Refer people for tinnitus assessment and management in line with local pathways if they have any of the following
  - Tinnitus that bothers them despite having received tinnitus support at first point of contact with a healthcare professional
  - Persistent objective tinnitus (that which occurs as a result of noise generated in the ear that can be detected by the examiner)
  - Tinnitus associated with unilateral or asymmetric hearing loss
- Consider referral for tinnitus assessment and management in line with local pathways if the person has any of the following, in line with the NICE guideline on hearing loss in adults:
  - persistent pulsatile tinnitus
  - persistent unilateral tinnitus

## Investigating tinnitus

### Audiological assessment

Tinnitus may coexist with hearing loss, and some people with tinnitus may not be aware that they also have hearing loss. For adults with tinnitus and hearing loss this guideline should be read together with the NICE guideline on hearing loss in adults.<sup>6</sup>

- Offer an audiological assessment to people with tinnitus
- Consider tympanometry when middle ear or eustachian tube dysfunction, or other causes of conductive hearing loss contributing to tinnitus, are suspected.

### Imaging

For a minority of patients with tinnitus, there may be an identifiable cause that is detectable on imaging. The decision to image and choice of imaging should be based on clinical history and examination findings, for example the presence of pulsatile tinnitus, unilateral auditory or neurological signs, suspicion of a glomus tumour on otoscopy, or suspicion of intracranial hypertension on fundoscopy.

#### Non-pulsatile tinnitus

Imaging in patients with non-pulsatile tinnitus is not recommended unless clinical history and examination elicits symptoms suggestive of pathology (neurological, audiological, ontological, or head and neck signs and symptoms). Where imaging is indicated, magnetic resonance scans are recommended in the first instance as most underlying pathology is of soft tissue origin, and computed tomography (CT) scans have a radiation risk.

- Offer magnetic resonance imaging (MRI) of internal auditory meatuses (IAM) to people with non-pulsatile tinnitus who have associated neurological, ontological, or head and neck signs and symptoms. If they are unable to have MRI (IAM), offer contrast enhanced CT (IAM).
- Consider MRI (IAM) for people with unilateral or asymmetrical non-pulsatile tinnitus who have no associated neurological, audiological, ontological, or head and neck signs and symptoms. If they are unable to have MRI (IAM), consider contrast-enhanced CT (IAM).



ALPHOTO/SPL

#### Pulsatile tinnitus

Pulsatile tinnitus can be synchronous (in time with heart beat) or non-synchronous. The decision to image and selection of imaging is, again, determined by a thorough clinical history and examination. Synchronous tinnitus suggests a vascular cause, for example, alteration in blood flow or increased vasculature resulting from middle ear congestion, raised blood pressure, vascular anomalies, or malformations, or glomus tumour. Non-synchronous pulsatile tinnitus is often due to myoclonous of middle ear or palatal muscles, the latter being evident on clinical examination.

- Offer imaging to people with pulsatile tinnitus.
- For people with synchronous pulsatile tinnitus, consider
  - Magnetic resonance angiography (MRA) or MRI of head, neck, temporal bone, and IAM if clinical examination and audiological assessment are normal, or contrast enhanced CT of head, neck, temporal bone, and IAM if they cannot have MRA or MRI.
  - Contrast enhanced CT of temporal bone if an osseous or middle ear abnormality is suspected (for example, glomus tumour), followed by MRI if further investigation of soft tissue is required.
- For people with non-synchronous pulsatile tinnitus (for example caused by palatal myoclonus) consider MRI of the head or if they cannot have MRI, contrast enhanced CT of the head.



## Assessing the impact of tinnitus on quality of life and sleep

The negative impact that tinnitus can have on wellbeing and quality of life, including psychological and social wellbeing, is widely acknowledged.<sup>7,8</sup> Tinnitus can be associated with psychological disorders such as depression and anxiety.

- Discuss with the person with tinnitus, and their family members or carers if appropriate, how the condition affects their quality of life (home, social, leisure, work, and school).
- Ask people with tinnitus if they have problems sleeping because of tinnitus. If they do, consider screening with a questionnaire (such as the insomnia severity index). Discuss the results with them and how this might inform their management plan.

## Management of tinnitus

### Amplification devices

Amplification devices can be beneficial for people with tinnitus who also have a hearing loss. This guideline introduces a change in clinical practice, whereby amplification devices should be considered for people with tinnitus who have a hearing loss but do not have difficulties communicating. Use of amplification devices when a hearing loss is not present is however unlikely to cause an improvement in the impact of the tinnitus and the amplification of sound where it is not required can also be harmful and induce hearing loss.

- Offer amplification devices to people with tinnitus who have a hearing loss that affects their ability to communicate. For adults, follow the recommendations on hearing aids in the NICE guideline on hearing loss in adults.
- Consider amplification devices for people with tinnitus who have a hearing loss but do not have difficulties communicating.

### Psychological therapies for people with tinnitus related distress

For a small number of individuals with tinnitus, psychological support should be considered, and psychologist delivered therapy has been shown to be beneficial. The committee reviewed data from randomised controlled trials which showed that cognitive behavioural therapy (CBT), acceptance and commitment therapy (ACT), and mindfulness based therapies are clinically effective in terms of reducing tinnitus distress and tinnitus severity. The committee also reviewed results of an economic costing analysis, which suggested that it would be less costly to use digital or group therapy first line, and individual therapy for people who are still distressed after their first line psychological intervention.

- Consider a stepped approach to treat tinnitus related distress in adults whose tinnitus is still causing an impact on their emotional and social wellbeing, and day-to-day activities, despite having received tinnitus support. If a person does not benefit from the first psychological intervention they try or declines an intervention, offer an intervention from the next step in the following order:
  - Digital or internet tinnitus related CBT provided by psychologists.
  - Group based tinnitus related psychological interventions including mindfulness based cognitive therapy (delivered by appropriately trained and supervised practitioners), acceptance and commitment therapy (ACT), or CBT (delivered by psychologists).
  - Individual tinnitus related CBT (delivered by psychologists).



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## Future research

- What is the optimal method for assessing tinnitus in general practice (including consultation questions, physical examinations, and questionnaires)?
- What is the clinical and cost effectiveness of CBT for adults with tinnitus delivered by appropriately trained healthcare professionals other than psychologists (for example, audiologists)?
- What is the clinical and cost effectiveness of psychological therapies for children and young people who have tinnitus related distress?

**Competing interests:** based on NICE's policy on conflicts of interests (available at <https://www.nice.org.uk/Media/Default/About/Who-we-are/Policies-and-procedures/code-of-practice-for-declaring-and-managing-conflicts-of-interest.pdf>): The authors' full statements can be viewed at <https://www.nice.org.uk/guidance/ng155/documents/register-of-interests>.

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### HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE

Committee members involved in this guideline included lay members who contributed to the formulation of the recommendations summarised here. One of these lay members also contributed to the development of this summary by reviewing drafts of the summary.

### GUIDELINES INTO PRACTICE

- Do you ask people with tinnitus about their concerns about the condition?
- Do you ask about the impact of tinnitus, eg, on home, work/school, and social activities?
- Do you ask those with tinnitus about their mental wellbeing, and whether they are depressed or anxious because of their symptoms?

## MINERVA

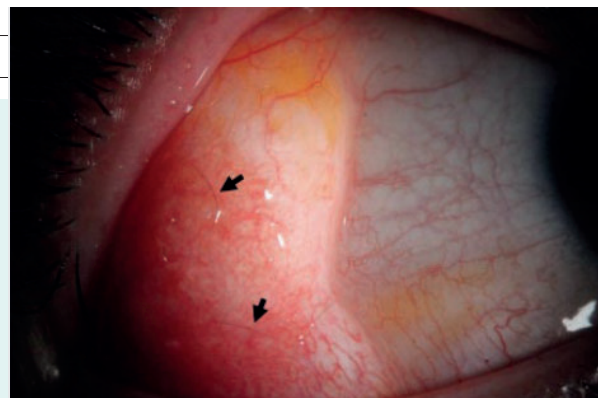
### A rare birth defect

A 14 year old girl with facial asymmetry presented with increasing irritation of a right eye mass. The mass had been present since birth, but it was never treated because symptoms were stable. Slit-lamp imaging showed a raised soft yellowish mass at the temporal aspect of the right eye, with fine hairs on the surface (figure), which confirmed ocular dermoids.

The girl had a mild buffalo hump and uneven shoulder lengths. Radiography showed scoliosis (fig 2, see [bmj.com](#)).

Goldenhar syndrome was diagnosed on the basis of the classic triad of facial asymmetry, dermolipoma, and spinal deformity. The syndrome is a developmental abnormality of the first and second brachial arches. Each case is unique, and patients have a wide spectrum of congenital abnormalities.

Ocular dermoids are the most common manifestation of Goldenhar syndrome and occur in about 35% of cases.



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Parental consent obtained.

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If you would like to write a Minerva picture case, please see our author guidelines at <http://bit.ly/29HCBAL> and submit online at <http://bit.ly/29yyGSx>

### Spontaneous pneumothorax

A bayesian network meta-analysis tries to identify the safest and most effective treatment to offer someone who presents with a symptomatic non-tension spontaneous pneumothorax. It compared narrow



and wide bore chest tubes against each other and both types of tube against needle aspiration. In terms of efficacy there was little to choose between them. Fine bore tube had the highest ranking for immediate success. Needle aspiration scored top for safety. Complications were more frequent with large-bore chest tubes (*Ann Emerg Med* doi:10.1016/j.annemergmed.2020.01.009). Unfortunately, no one thought to ask patients which they preferred.

### Systemic lupus erythematosus

Few diseases are more heterogeneous in their manifestations and severity than SLE. But a follow-up study from the US which tracked 15 000 patients with incident SLE over a decade finds that the disease usually runs true to type. People with severe disease at the time of diagnosis are likely to continue to show high levels of disease activity. By contrast, in people with mild disease at baseline it will probably stay that way (*Rheumatology* doi:10.1093/rheumatology/kez288).

### Sleep in infancy

Around 20% of babies sleep poorly. They are either slow to settle or they wake frequently during the night. Obviously, this can have a deleterious effect on parental wellbeing and family functioning in the short term. However, a longitudinal study from Australia finds little convincing evidence that there are any long term implications for mental health (*Arch Dis Child* doi:10.1136/archdischild-2019-318014). At the age of 10, children who had persisting severe sleep problems in their first year were no more likely to meet diagnostic criteria for a psychiatric disorder than a comparison group of children who slept well as infants.

### Strep throat

Sore throat is common in children and, although it usually has a viral cause, it can be hard to rule out the possibility of infection with group A streptococcus. A retrospective analysis of electronic health records from the US identified several features of viral pharyngitis, which the investigators believe are reliable enough to identify children in whom testing for streptococcal infection can be avoided (*J Pediatr* doi:10.1016/j.jpeds.2020.01.030). Children without tonsillar exudate, who are 11 years or older and lack cervical adenopathy or who have cervical adenopathy but no fever come into this low risk

group. Whether these findings can reduce testing and unnecessary prescription of antibiotics in clinical practice is a different matter.

### Viral dose

For some infectious diseases, measles for example, it's known that the initial intensity of exposure influences the severity of disease. A child who acquires measles by fleeting contact in the playground is less likely to develop severe illness than one who acquires the disease by sharing a bed with an infected sibling. Something similar might well be true for SARS-CoV-2. If so, it could explain why front line healthcare workers are at high risk for serious illness, despite their younger age ([www.newyorker.com/magazine/2020/04/06/how-does-the-coronavirus-behave-inside-a-patient](http://www.newyorker.com/magazine/2020/04/06/how-does-the-coronavirus-behave-inside-a-patient)).

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