



ROSE LLOYD

WHAT YOUR PATIENT IS THINKING

Learning to live with hearing voices

Emily Knoll discusses the therapeutic interventions that have helped her come to terms with hearing voices

WHAT YOU NEED TO KNOW

- People might be too ashamed to admit to hearing voices, so it could be helpful to ask about them directly
- Antipsychotic medication is not always successful in eliminating voices, so it might help people to suggest they could live with their own voices too
- Consider telling people that voice hearers can have good recoveries, careers, and families—this helps to challenge stigma and shame

EDUCATION INTO PRACTICE

- Have you heard a patient describe hearing voices before? Does this article offer you new insights on how it might feel?
- What questions or observations do you use to identify patients who might be hearing voices? Does this article offer you ideas on how to better approach the topic?
- How might you reduce concern or stigma around talking about voices?
- Have you experience in talking with patients about how to manage voices? Does this article offer you ideas?

It was after undergoing spinal surgery, and when I felt that I was going down a black hole with my doctorate, that I began to hear distressing voices that seemed to come from outside my head. I was embarrassed by the things that the voices were saying to me, so I didn't tell anyone. I also thought that if I told a doctor, I would be sent to a psychiatric hospital. So, instead of seeking help, I dropped out of university.

Two years later I experienced what I now understand to have been a psychotic breakdown. Sometimes it felt as if two men and a spiteful woman were actually there, in my room. I held my breath and listened.

"Emily is waiting for us to disappear," said the woman cruelly.

"We're not going away," the man with the brittle voice replied.

I started to play with their words in my head, wondering what they meant by what they had said. *Would they really go?* I had no idea.

Medication was not the answer

It was still several months before I admitted myself to a psychiatric hospital, and there I received a diagnosis of "schizo-affective disorder." The diagnosis shattered my fragile confidence, as I began to see myself as a collection of symptoms.

I had three admissions on a busy psychiatric ward. Despite taking antipsychotic medication to suppress the voices, I was still hearing them. I didn't tell anyone as I felt shame. But hearing the voices made me very withdrawn and distracted. This behaviour could be a clue for clinicians that voice-hearing is continuing.

Changing my relationship with the voices

Some time later a GP asked me if I was still hearing voices, which I was. She then referred me to an understanding psychiatrist, who asked me what the voices said. I just told her they said cruel things to me and I explained that medication had previously failed to stop them. She told me it was possible to live with some level of hearing voices. This was the first time I'd been told this, and I found it helpful.

I went on to have therapy with a psychodynamic therapist who explained that even though the voices sounded separate, it was important to recognise that they were part of me—the critical part of myself. This also helped me to realise I could have some measure of control.

Learning strategies to cope

I went on to have therapy for seven years. I only wanted to take a low amount of medication and only during times of stress, partly because they did not eliminate my voices and also because I disliked the side effects, such as weight gain.

So I was keen to learn strategies for coping with the distressing voices. My therapist encouraged me to talk back to them. Sometimes I questioned them, other times I told them to “shut up.” I also learnt to set boundaries and would ignore the voices when I was studying. I found that when I stopped being frightened of the voices, they became less critical. Sometimes the voices stopped completely for several hours or days. Stress was often a trigger for hearing voices, so I learnt ways to reduce it, such as practising mindfulness.

I now finally have a doctorate from university, which investigates emotional aspects of the experience of hearing voices in the English adult population. I recently used my experience of psychosis to write a memoir called *Emily's Voices*.

Emily Knoll is a pseudonym.

Cite this as: *BMJ* 2018;361:k2018

doi: 10.1136/bmj.k2018

10-MINUTE CONSULTATION

Altitude sickness and acetazolamide

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A 25 year old man plans to trek to Everest Base Camp (5545 m) in Nepal for charity. He asks you for a prescription of acetazolamide to prevent mountain sickness.

For most people, mountain sickness is a self limiting illness, but it can become life threatening. It is estimated that more than 100 million people per year travel to the hypoxic environments found at altitudes above 2500 m,¹ and at least 10% to 20% of unacclimatised individuals develop acute mountain sickness at this height.² Acclimatisation to altitude involves multiple physiological changes, occurring over days to weeks, which enable individuals to function better in these hypoxic environments. If this natural adaptation is surpassed by the rate of exposure to altitude, acute mountain sickness can occur. Acetazolamide can help to prevent acute mountain sickness developing and has fewer side effects than alternative drugs such as dexamethasone, which can mask symptoms and therefore carries greater risks.²⁻⁵ Acetazolamide causes mild diuresis and increases renal excretion of bicarbonate, causing a mild metabolic acidosis which in turn increases respiratory rate (improving oxygenation).

In the UK, prescribing acetazolamide for travel is an optional service, not included in the general practitioner's contract. Some GPs may decide not to prescribe

acetazolamide on this basis, or because they feel it is outside the scope of their practice.

This article is an approach to discussing travel and activity at high altitude, prevention of sickness, and acetazolamide prescription for non-specialists.

What you should cover

History

What does the person know about acute mountain sickness?

Symptoms of acute mountain sickness commonly occur six to 12 hours after arrival at high altitude (>2500 m/8200 ft) and include headache with any of the following: nausea, dizziness, tiredness, loss of appetite, breathlessness, or insomnia.⁴ (The Lake Louise score can be used to diagnose and assess severity of acute mountain sickness—see resources.) Acute mountain sickness can progress to life threatening high altitude cerebral oedema, associated with severe headache and confusion, vomiting, or loss of balance and coordination.

Have they been diagnosed with altitude illness?

People with previous acute mountain sickness are at greater risk of developing subsequent episodes.⁶ Those with past complications of severe altitude illness such as cerebral or pulmonary oedema should exercise extreme caution returning to similar heights and are advised to seek specialist advice from a health practitioner with high altitude medicine experience (see resources).

HOW THIS ARTICLE WAS CREATED

We used the Wilderness Medical Society's consensus guidelines backed by recent meta-analyses, and the Oxford Handbook of Expedition and Wilderness Medicine.

WHAT YOU NEED TO KNOW

- Help prevent mountain sickness by slow ascents ≤ 500 m/day, rest days every third day, and avoid over-exertion
- The most important treatment for altitude sickness is descent to a lower, more oxygen-rich environment
- Acetazolamide 125 mg twice daily can be prescribed as prophylaxis for those at risk of developing acute mountain sickness

Box 1 | Categorising risk of acute mountain sickness and suggested prophylactic approaches (based on Wilderness Medical Society guidelines (2014)⁵

Low risk

People with no history of altitude illness who are ascending to less than 2800 m
Those taking ≥ 2 days to arrive at 2500-3000 m with subsequent increases in sleeping height of < 500 m/day and an extra day for acclimatisation every 1000 m
Suggested approach: prophylactic drugs are not usually necessary.

Moderate risk

People with a history of altitude illness who are ascending to 2500-2800 m in one day
Those with no history of acute mountain sickness but who are ascending above 2800 m in one day
All people ascending > 500 m/day (increase in sleeping height) at altitudes > 3000 m but with an extra day for acclimatisation every 1000 m
Suggested approach: consider acetazolamide 125 mg bd.

High risk

People with a history of acute mountain sickness who are ascending to above 2800 m in one day
Those with a history of high altitude cerebral oedema
Climbers ascending to > 3500 m in one day and those ascending > 500 m/day (increase in sleeping height) above 3000 m without extra days for acclimatisation
Very rapid ascents (eg, ascent of Mt Kilimanjaro in less than 7 days)
Suggested approach: strongly consider acetazolamide 125 mg bd.



Pre-existing health conditions which may worsen with altitude

Ask about high blood pressure, heart, kidney or lung problems, diabetes, anaemia, glaucoma, obstructive sleep apnoea, obesity, and any medications or allergies. Pre-existing health conditions can get worse at high altitude or increase the risk of acute mountain sickness. The Union Internationale des Associations d'Alpinisme provides some condition-specific advice (see resources).⁷ Depending on the medical condition, you might advise the person to undertake a more cautious ascent profile ("start low and go slow") or less strenuous activity. If in doubt, you could suggest the patient asks the specialist managing their condition, or seeks advice from a health practitioner with high altitude medicine experience. Those wishing to undertake activities such as trekking must be able to complete such activities at low altitude where altitude sickness is not possible (< 1500 m, eg, trekking in the Scottish Highlands).

Assess travel plans for risk (Box 1)

Being young and fit does not reduce the risk of developing mountain sickness,⁴ so travel

plans are a more reliable indicator of risk or whether to prescribe prophylaxis.⁵ Rate of exposure to hypoxia dictates risk: the faster and more energetic the ascent (above 2500 m), the greater the likelihood of developing altitude illnesses. Guidelines suggest ascending no more than 500 m/day, with a rest day (no increase in altitude) every third day.^{4,5} Starting at a lower altitude allows more time to adapt to gradual changes in hypoxia.

By contrast, physical exertion directly after being transported to high altitude increases the risk of mountain sickness. Two common examples where there is a high risk of developing mountain sickness are flying to Cusco (Machu Picchu) in Peru at 3400 m and taking a bus to Lake Titicaca at 3812 m, or flying directly to Colorado ski resorts at over 3000 m.

What you should do

Offer advice about health at altitude

Websites such as NHS Choices give good advice on altitude illness and general health at altitude. Examples include advice to drink adequate fluids (> 2 L, dependent on activity levels) and to avoid alcohol. It might be helpful to print this out to help

patients recognise the symptoms of acute mountain sickness and the need for rest and/or descent: just going as little as 300-500 m lower often makes a difference. Severe illness requires prompt descent and medical attention. Medex.org provides a greater depth of advice in a booklet that can be downloaded or printed (see link in resources).

Reiterate that although acetazolamide can be taken to help prevent acute mountain sickness, there is little evidence for its use as an acute treatment.

Who can take acetazolamide?

Box 1 outlines an approach to acetazolamide prescription dependent on risk. Acetazolamide should be avoided in people with glaucoma, hypokalaemia, hyponatraemia, renal or hepatic impairment, in pregnancy, and in those allergic to sulfonamides. Acetazolamide can interact with high dose aspirin (large doses of salicylates and oral carbonic anhydrase inhibitors can rarely result in severe metabolic acidosis and/or salicylate toxicity), cardiac glycosides, antihypertensive drugs, and lithium.

RESOURCES FOR CLINICIANS

West, Schoene, Luks and Milledge. High Altitude Medicine and Physiology. 5th Edition, 2012.

Imray C, Booth A, Wright A, Bradwell A. Acute altitude illnesses. *BMJ* 2011; 43:d4943.

UIAA Library of recommendations. (for travel to high altitude) <http://www.theuiaa.org/mountain-medicine/medical-advice/>
UIAA pre-existing medical conditions advice. http://www.theuiaa.org/documents/mountainmedicine/UIAA_MedCom_Rec_No_13_Preexisting_Conditions_2008_V1-1.pdf

Advice for health professionals based in the UK regarding travel health, including travel to high altitude. [https://travelhealthpro.org.uk/contact+44+\(0\)8456026712](https://travelhealthpro.org.uk/contact+44+(0)8456026712) (UK practitioners only)

Lake Louise scoring system for acute mountain sickness severity <http://thepeakinc.com/wp-content/uploads/2017/07/diagnosis-of-acute-mountain-sickness.pdf>

RESOURCES FOR PATIENTS

http://medex.org.uk/medex_book/about_book.php

<http://www.nhs.uk/Conditions/Altitude-sickness/Pages/Introduction.aspx>

<http://www.altitude.org/ams.php>

EDUCATION INTO PRACTICE

Have you discussed altitude illnesses with a patient? If so what did you say?

What symptoms of acute mountain sickness would you advise a patient to look out for?

Which other common travel illnesses might you discuss?

How might the information in this article be useful for the travel clinic at your practice?

How effective is acetazolamide?

The recommended dose is 125 mg twice a day with a number needed to treat (NNT) of 6,^{2,3} based on one episode of acute mountain sickness, eg, a Lake Louise score of 3 or more. In those with higher risk ascent profiles (>500 m/day) the NNT is 4.²

What are the side effects of acetazolamide?

Common dose-dependent side effects include altered taste, paraesthesia, and polyuria. It is important to stay well hydrated. If these side effects are not tolerated, the dose can be reduced or discontinued. Parasthesia can be particularly uncomfortable at night. Symptoms may be improved by moving the evening dose to several hours before bed. If reducing the dose, we recommend 125 mg at night. This may also help altitude related sleep disturbance.

Less common side effects of nausea, headache, and dizziness have an overlap with symptoms of acute mountain sickness. Unless medical help is available, moderate to severe symptoms should be assumed to be due to mountain sickness, and anyone with these symptoms needs to act accordingly (see Lake Louise score and information in resources). Offer people written advice on taking the medication. Consider documenting that you discussed with the patient that it is their responsibility to: decide whether to take the risk of travelling to high altitude; be aware of the risks and symptoms of acute mountain sickness; and understand the risks/benefits of taking acetazolamide.

When should patients start and stop taking acetazolamide?

Most experts recommend starting acetazolamide 1-2 days before ascending above 3000 m and stopping on descent or below 2500 m.⁸ People staying at stable altitudes for >3 days who are asymptomatic can discontinue use. In practice, acetazolamide is rarely taken for more than a couple of weeks and the effects of taking it for a longer period have not been extensively researched.

Acetazolamide should be written on a private prescription, as it is for a condition which may develop outside the UK.

Patient involvement: Patients were not involved in the creation of this article.

We have read and understood the BMJ policy on declaration of interests and declare no competing interests.

Provenance and peer review: not commissioned; externally peer reviewed.

Accepted: 09 05 2018

Cite this as: *BMJ* 2018;361:k2153

doi: 10.1136/bmj.k2153

RAPID RECOMMENDATIONS

Atraumatic (pencil-point) versus conventional needles for lumbar puncture: a clinical practice guideline

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Is the needle tip configuration important when performing a lumbar puncture for any indication? A systematic review published in the *Lancet* in December 2017 suggests that it is. The review found that using atraumatic (pencil-point) lumbar puncture needles instead of conventional lumbar puncture needles reduced the risk of post-dural-puncture headache and of return to hospital for additional pain control.¹ This guideline recommendation aims to promptly and transparently translate this evidence to a clinical recommendation, following standards for GRADE methodology and trustworthy guidelines.² The BMJ Rapid Recommendations panel makes a strong recommendation for the use of atraumatic needles for lumbar puncture in all patients regardless of age (adults and children) or indication instead of conventional needles.^{3,4}

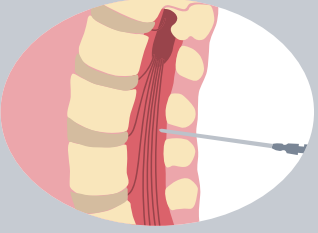
HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE


Two people with lived experience of lumbar punctures, and one person with experience as a patient and a carer, were members of the guidance panel and authors. They identified and rated outcomes, and led the discussion on values and preferences. The patient partners rated all included outcomes as important to them.

WHAT YOU NEED TO KNOW


- Post-dural-puncture headache is a common complication after lumbar puncture, affecting up to 35% of patients
- This headache results from sustained leakage of cerebrospinal fluid from a dural tear; it can be debilitating and require return to hospital for narcotics or invasive therapy
- We issue a strong recommendation for use of atraumatic needles in all patients (adults and children) undergoing lumbar puncture because they decrease complications and are no less likely to work than conventional needles
- Atraumatic needles are more expensive, but evidence suggests that they reduce costs overall compared with conventional needles

Population



 Patients with any indication for lumbar puncture

- Diagnosis
- Anaesthesia
- Myelography


 Not applicable to:

Patients only undergoing epidural puncture

Comparison 1

Conventional needle


Lumbar puncture with any conventional needle



or

Atraumatic needle

Lumbar puncture with any atraumatic (pencil point) needle



Strong

Weak

Weak

Strong

We recommend the use of atraumatic over conventional needles

Comparison of benefits and harms

	Favours conventional needle	No important difference	Favours atraumatic needle	
	Events per 1000 people			Evidence quality
Postdural puncture headache	98	59 fewer	39	★★★★ High
Need for epidural blood patch	24	12 fewer	12	★★★★ High
Backache	166	No important difference	159	★★★★ High
Hearing disturbance	53	40 fewer	13	★★★★ High
Nerve root irritation	126	37 fewer	89	★★★★ Moderate
Hospital for fluids or analgesia	39	22 fewer	17	★★★★ High
Failed lumbar puncture	38	No important difference	33	★★★★ High

Key practical issues

Atraumatic needles do not eliminate the risk of complications entirely and clinicians should continue to discuss potential adverse consequences of the lumbar puncture with their patients

Preferences and values

The panel believes patients will put a high value attributed to the large reduction in symptoms that they may suffer following the procedure. Given the lack of harms from atraumatic needles, most patients are likely to choose this option

Training and use

While atraumatic and conventional needles are reported to be similar to use, some learning may be required for clinicians to use the new types of needle

- ### Subgroups
- There are no differences in the effects of atraumatic versus conventional needles between subgroups defined by:
- Patient age Patient sex Needle gauge
 - Prescription or use of prophylactic measures
 - Position of the patient during the lumbar puncture
 - Clinical specialty of the individual performing procedure
 - The indication for the procedure
 - Use of bed rest after the procedure

Current practice

Physicians perform lumbar punctures for diagnostic or therapeutic purposes. Among the complications associated with this procedure, post-dural-puncture headache is the most common, affecting up to 35% of patients.⁵ This complication can be debilitating, requiring return visits to the hospital for controlled analgesia, invasive therapy, or increased hospital duration of stay.^{5,6}

Post-dural-puncture headache, among other adverse effects of lumbar punctures, is attributed to the leakage of cerebrospinal fluid from the dural defect into the epidural space that is created by the spinal needle during puncture.

The evidence

The systematic review summarised the results of 110 randomised clinical trials (RCTs) conducted between 1989 and 2017 in 29 countries (including both high and middle/low income): it suggests that atraumatic needles consistently reduce the risk of major adverse effects associated with lumbar puncture done for any indication compared with conventional needles. More specifically, the risk of post-dural-puncture headache was significantly reduced when atraumatic needles were used for lumbar puncture (relative risk 0.40 (95% confidence interval 0.34 to 0.47)). The figure presents an overview of the number and types of patients, as well as a summary of the benefits and harms (although none were present here) of atraumatic needles for lumbar punctures.

Individuals who were included in the eligible studies underwent lumbar punctures for any diagnostic or therapeutic indication. Baseline characteristics were similar between atraumatic and conventional needle groups, with the exception of needle gauge, which was larger in the conventional needle group (larger gauge equals smaller needle diameter).

Only 1065 of the 31 412 participants were children (3%). The proportion of elderly participants was unknown. The results were consistent across the pre-defined subgroups including:

- Age <18 v ≥18 years old
- Males v females,
- Bed rest after lumbar puncture v no bed rest
- Prophylactic intravenous fluids v no prophylactic intravenous fluids
- Needle gauge (small v large)

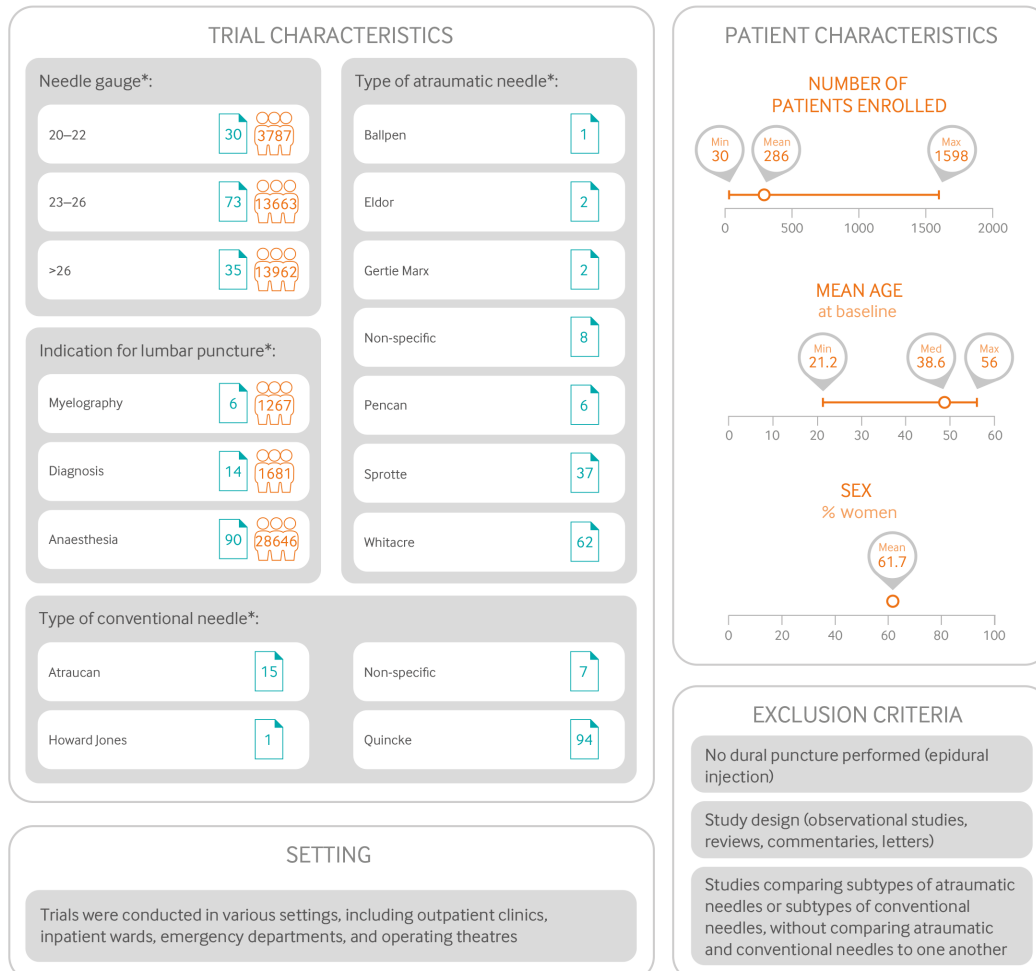
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DATA SOURCES

Use this information to gauge how similar your patients' conditions are to those of people studied in the trials

NUMBER OF TRIALS 110

NUMBER OF PATIENTS 31 412



*Note number of trials do not add to 110 trial and percentages do not add to 100% as some trials examined more than one needle type, subtype, gauge, and indication.

Characteristics of patients and trials included in systematic review of the effects of needle type on the risk of major adverse effects associated with lumbar puncture

- Lateral v sitting position during lumbar puncture
- Indication for lumbar puncture (anaesthesia v diagnosis v myelography)
- Clinical specialty of person doing the lumbar puncture (radiologist v neurologist v anaesthesiologist).

Understanding the recommendation

The guideline panel makes a strong recommendation for the use of atraumatic over conventional needles in lumbar puncture for any indication because the benefits are perceived to be large with no associated harm.

Absolute benefits and harms

The main infographic explains the recommendation and provides an overview (GRADE summary of findings) of the absolute benefits of atraumatic needles. Estimates of baseline risk for effects are generated from the control arms of the included trials.^{1 14}

The panel was confident that:

- Use of atraumatic needles meaningfully decreases the risk of postdural puncture headache, hearing disturbance, nerve root irritation, return to hospital for intravenous fluids and controlled analgesia or need for epidural blood

patch (GRADE high to moderate quality evidence)

- Use of atraumatic needles has little or no effect on the risk of backache (GRADE high quality evidence)
- Use of atraumatic needles has little or no effect on the incidence of traumatic tap, failed lumbar puncture, and probability of success on first attempt (GRADE high to moderate quality evidence)
- It is unlikely that new information will change interpretation for outcomes for which the evidence is of high to moderate quality.

EDUCATION INTO PRACTICE

- When performing a lumbar puncture, which needles do you use? Why?
- Based on this article how do you think your personal practice might change? Is there anything that you would say to a patient or do differently?
- How might you share this information with your organisation or review local policies on needle choice?



The panel was less confident about whether:

- Use of atraumatic needles affects the efficiency of cerebrospinal fluid drainage (that is, the time required to draw the necessary amount of cerebrospinal fluid) regardless of the indication. It is likely there are other more important factors that influence drainage efficiency than just needle type. Also, this outcome is of varying importance depending on the context and indication for lumbar puncture.
- The panel believed that the recommendation is generalisable even to patients who are unconscious, such as those who are mechanically ventilated and sedated in the intensive care unit as

data suggests that post-dural-puncture headache can persist for several days and can be felt even under sedation.

• Values and preferences

The panel placed high value on the large reduction in symptoms. The panel believes that values and preferences regarding all important outcomes are unlikely to vary greatly across patients, particularly given the lack of detectable harm from atraumatic needles. Most clinicians found atraumatic and conventional needles similar to use. Some clinicians expressed potential concern regarding puncturing of the skin with the blunter atraumatic needle; however, this can be overcome by inserting the lumbar puncture needle through the

same skin hole used for local anaesthesia, by using an introducer needle, or by spinning the atraumatic needle around its axis while advancing the needle.¹

Practical issues and other considerations

Atraumatic needles do not eliminate the risk of complications entirely, and clinicians should continue to discuss potential adverse consequences of the lumbar puncture with their patients.

Costs and resources

The panel reviewed three published cost-effectiveness studies.¹⁵⁻¹⁷ In those studies, the per-unit cost of atraumatic needles was greater than the cost of conventional needles, but atraumatic needles were ultimately cost-reducing because of the decreased need for additional care (perspective of the third-party payer) and lost working hours for patients (perspective of the patients and society). Moreover, as with conventional needles, the per-unit cost varies with the specific needle subtype and manufacturer.

Competing interests: All authors have completed the *BMJ* Rapid Recommendations interests disclosure form, and a detailed description of all disclosures is reported in appendix 2 on bmj.com. As with all *BMJ* Rapid Recommendations, the executive team and *The BMJ* judged that no panel member had any financial conflict of interest. Professional and academic interests are minimised as much as possible, while maintaining necessary expertise on the panel to make fully informed decisions. Three authors of the systematic review were on the guideline panel (WA, SAA, JB).

Cite this as: *BMJ* 2018;361:k1920

doi: 10.1136/bmj.k1920

Find the full version with references at <http://dx.doi.org/10.1136/bmj.k1920>

Linked resources for this BMJ Rapid Recommendations cluster

- Nath S, Koziarz A, Badhiwala JH, et al. Atraumatic versus conventional lumbar puncture needles: a systematic review and meta-analysis. *Lancet* 2018;391:1197-204
 - Review of all available randomised trials comparing the use of atraumatic needles and conventional needles for any lumbar puncture indication
- MAGICapp (www.magicapp.org/public/guideline/j7A5Gn)
 - Expanded version of the results from the Rapid Recommendation process with multilayered recommendations, evidence summaries, and decision aids for use on all devices

HOW THIS RECOMMENDATION WAS CREATED

Our international panel—including intensivists, neuro-intensivists, internists, anaesthesiologists, neurologists, neurosurgeons, emergency physicians, paediatricians, methodologists, and people with lived experience of lumbar puncture and caring for those with lumbar puncture—decided on the scope of the recommendation and the outcomes most important to patients (see appendix 1 on bmj.com). The panel met to discuss the evidence and formulate a recommendation. No panel member had financial conflicts of interest; intellectual and professional conflicts were minimised and transparently described (appendix 2 on bmj.com).

The panel followed the *BMJ* Rapid Recommendations procedures for creating a trustworthy recommendation,^{2,11} including using the GRADE approach to critically appraise the evidence and create recommendations (see appendix 3 on bmj.com).³