



Tinnitus Priority Setting Partnership



Contents

2-3	Forewords
4	The top ten tinnitus uncertainties
5	How the tinnitus priority setting partnership started
5	Identifying potential partner organisations
6-7	The priority setting process
8-18	Uncertainties about tinnitus assessment, diagnosis and treatment
19	Acknowledgements

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Photographs on pages 5-7: Images from the JLA Tinnitus Priority Setting Partnership meetings

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Forewords



Professor Deborah Hall

**Director, National Institute for Health Research
Nottingham Hearing Biomedical Research Unit (NIHR
Nottingham Hearing BRU)**

Tinnitus is one of the most common chronic hearing-related conditions in the western world. There are over five million people in the UK with tinnitus and the condition affects about 14 percent of people aged over 50. These are truly startling statistics.

Tinnitus describes a symptom, not a disease, and its development can be associated with a wide variety of different risk factors, such as hearing loss, head or neck injury, general health problems and mental health disorders. This diversity makes it very difficult to know where to start in tinnitus research. The underpinning

mechanisms of tinnitus are poorly understood. There are many different management options, and even those interventions recommended for clinical practice might not be the best for all patients as there are currently too few studies to make informed decisions. Tinnitus care and research has long been, and continues to be, a challenge.

Given this context, establishing the Tinnitus Priority Setting Partnership is very timely. The amount of funding that is spent on hearing-related research compared to its burden on the healthcare system is disproportionately small when compared to that spent on research for other healthcare conditions. It is vital that we allocate funding wisely, if we are to succeed in improving the quality of life for the hundreds of thousands of people living with tinnitus in the UK.

As the Director of the NIHR Nottingham Hearing BRU, and as the head of the tinnitus research group, it has been both a pleasure and an honour to have taken a leading role in the Tinnitus Priority Setting Partnership with the British Tinnitus Association. It has been an extremely busy year for us.

There were times when we were sorting through the initial set of 2483 submitted questions that I doubted that we would complete the project on time! However, the support from the clinical profession and from members of the public has been amazing. Thank you to everyone who took part and for making this project such a great success.



Lester Firkins OBE
Chair, James Lind Alliance (JLA)
Strategy and Development Group

Monday 16 July 2012 saw the final meeting of the JLA Tinnitus Priority Setting Partnership (PSP). It was almost a year to the day since I met with David Stockdale of the British Tinnitus Association (BTA) in the coffee shop of John Lewis, Oxford Street to see if there was a way we could all work together to help the tinnitus community of patients and clinicians come up with a top ten list of treatment uncertainties.

In many respects that informality and “lets get on with it” attitude became a hallmark of the entire process. All the necessary ingredients were assembled (people and process) and against a very demanding timeline and tightly managed budget we were able to directly involve over 830 people and collect 2483 ‘raw’ questions from the entire tinnitus community. These were checked and refined – and then the leading 26 brought to that final meeting where clinicians and patients negotiated, debated, conceded, sweated and indeed laughed - as we achieved our stated aim of getting that “top ten”.

From the JLA perspective, where we are still learning from every PSP we undertake, I think the defining features of this programme where we concluded quicker and with less direct involvement from us than normal, was around very strong administration from the BTA, excellent technical support from the NIHR Nottingham Hearing BRU and generous contributions from certain charities and individuals. I do hope that the tinnitus community is now able to take these questions forward and influence funders to support precisely what the people who know best are asking for. Thank you for inviting the JLA to work with you – it was a wonderful experience.

David Stockdale
Chief Executive, British Tinnitus Association (BTA)

I was introduced to the James Lind Alliance Priority Setting Partnership by Amy Meadows, from the Judi Meadows Memorial Fund. Amy explained how this might be a strong way to support assessing future applications for funding and I was immediately struck by the democratic nature and the potential to really understand where patients and clinicians felt the major needs for future research lie.

Although the BTA will never lose focus on the search for a cure, there is a need to better understand existing treatments and their benefit to tinnitus patients. The top ten uncertainties (page 4), as well as the longer list (pages 8-18), offer clear questions for researchers to tackle and will hopefully lead to the better use of existing treatments. I would encourage those funders that currently support medical research – but may not currently support tinnitus research - to look through the list to assess the top ten in particular and consider supporting tinnitus research. It is an underfunded area that needs more investment to ensure it can answer those questions that are presented. The fact that so few questions were removed from the process as they had been answered by systematic review demonstrates the need for investment by the wider medical research community.

There is also a challenge for the research community to take on these uncertainties – that have been identified by patients and clinicians as important – and use the questions to design high quality research projects that can provide the answers the tinnitus community so desperately needs.



The top ten tinnitus uncertainties

Comment by David Stockdale, Chief Executive, BTA

Listed below are the top ten tinnitus uncertainties, as agreed at the final meeting of the Tinnitus Priority Setting Partnership, at the offices of Action on Hearing Loss on 16 July 2012. Nine patients and nine clinicians considered those questions that were put forward as the top research priorities by patients, clinicians and the Tinnitus PSP Steering Group. It was a long day as priorities were considered, arguments made and points deliberated as the final list was produced. The group were unable to rank them one to ten, instead the list below is in no particular order.

I personally think the list is a good one. It demonstrates the breadth of research required to develop a better understanding of tinnitus, the need for a cure as well as the requirement to better understand and demonstrate the efficacy of existing treatments. It is particularly reassuring to see questions focussing on paediatric tinnitus and Deaf people with tinnitus included, as these groups are under-represented in current research. I hope the list will motivate those involved in tinnitus research to forward our understanding of tinnitus and lead us towards to a cure.

- **What management strategies are more effective than a usual model of audiological care in improving outcomes for people with tinnitus?**
- **Is Cognitive Behaviour Therapy (CBT), delivered by audiology professionals, effective for people with tinnitus? Here comparisons might be with usual audiological care or CBT delivered by a psychologist.**
- **What management strategies are more effective for improving tinnitus-related insomnia than a usual model of care?**
- **Do any of the various available complementary therapies provide improved outcome for people with tinnitus compared with a usual model of care?**
- **What type of digital hearing aid or amplification strategy provides the most effective tinnitus relief?**
- **What is the optimal set of guidelines for assessing children with tinnitus?**
- **How can tinnitus be effectively managed in people who are Deaf or who have a profound hearing loss?**
- **Are there different types of tinnitus and can they be explained by different mechanisms in the ear or brain?**
- **What is the link between tinnitus and hyperacusis (over-sensitivity to sounds)?**
- **Which medications have proven to be effective in tinnitus management compared with placebo?**

The following question was carefully deliberated and just fell outside of the top ten, however participants in the final meeting felt it was worthy of a special mention:

- **Does stem cell technology (e.g. for hair cell regeneration) provide an effective pipeline to develop new medical interventions for treating tinnitus?**

How the tinnitus priority setting partnership started



The Judi
Meadows
Memorial
Fund

The James Lind Alliance (JLA) Tinnitus Priority Setting Partnership (PSP) began in 2011. The initial founders were the British Tinnitus Association (BTA), the NIHR Nottingham Hearing BRU and the Judi Meadows Memorial Fund. The Judi Meadows Memorial Fund contributed £6900 to the administration costs of the project, but had no active role in the Tinnitus PSP or Steering Group.

NHS
National Institute for
Health Research

JLA Tinnitus PSP Steering Group Members

The Steering Group was key to the success of the project. Its role was to oversee and drive the progress of categorising and prioritising identified tinnitus uncertainties. From initial conversations, David Stockdale (Chief Executive, BTA) and Deborah Hall (Director, NIHR Nottingham Hearing BRU) created a list of potential nominations for a Steering Group, which provided a broad representation of people from the field of tinnitus in the UK, including professional bodies and patient support groups.

The final Steering Group membership consisted of:

- **Lester Firkins OBE** - representing James Lind Alliance
- **David Stockdale and Emily Broomhead** - representing British Tinnitus Association
- **Professor Deborah Hall** - Director, NIHR Nottingham Hearing BRU
- **Tim Husband** - representing British Society of Audiology
- **Don McFerran** - representing ENT UK
- **Professor Christopher Dowrick** - general practitioner representative
- **Emma Harrison** - tinnitus patient
- **Philip Nash** - tinnitus patient

All Steering Group members were affiliated to the JLA and signed a protocol setting out their aims for the PSP and their agreed commitments. The Steering Group was also assisted by Mark Fenton, Editor of UK DUETs (Database of Uncertainties about the Effects of Treatments).

Identifying potential partner organisations



The first stage in the process was to identify potential partner organisations. This was done through peer knowledge, consultation and through the Steering Group members' network. Potential partners were contacted and informed of the establishment and aims of the JLA Tinnitus PSP. 56 partners were identified and they were invited to attend and participate in an initial awareness meeting held in London on 7 December 2011.

The agreed membership of the JLA Tinnitus PSP consisted of numerous stakeholders representing professional organisations, charities and patient support groups.

The priority setting process

Harvesting questionnaire - design

One of the initial tasks for the Steering Group was to design and approve a 'tinnitus harvesting questionnaire'. The design of the questionnaire was based on other JLA PSP topics and it was tailored to reach the Tinnitus PSP target audience. The design of questionnaire was led by Mrs Najibah Mohamad and Professor Deborah Hall.

Harvesting questionnaire - launch

The survey was launched on 7 December 2011 at the headquarters of Action on Hearing Loss in London.

The meeting was chaired by Lester Firkins OBE, Chair of the JLA and was attended by representatives from charities, private companies, hospitals, social service departments, tinnitus support groups and Steering Group members, including most of the JLA Tinnitus PSP members.

The harvesting questionnaire was disseminated to 56 partners via email, post and online. It was sent to others including all the Steering Group members, supporters of the JLA Tinnitus PSP, organisations and private companies, hospitals and individuals. To improve the return rate, people could complete either a paper version, or email or online versions. The online version used Survey Monkey. All completed postal surveys could be returned to the NIHR Nottingham Hearing BRU or by freepost to the BTA.



Harvesting questionnaire - response methods

By the closing date, 28 February 2012, a total of 835 people had responded to the survey. There were cases where people often submitted multiple questions, so overall there were a total of 2483 'raw' questions.

Harvesting questionnaire - classification and sorting

This process started with sorting the full set of 2483 'raw' submissions into broad categories. The purpose was to reduce the initial long list to a shorter list of uncertainties that could go forward for final prioritisation. To achieve this all questions were considered and sorted by the team at the NIHR Nottingham Hearing BRU. This was achieved by:

- **Removing those questions that were void or not within scope – e.g. weren't asking a question that fell within the parameters of the project**
- **Categorising questions into different headings e.g. 'Diagnosis'**
- **Merging and combining those submissions that asked the same question**
- **Removing questions that had been answered by a systematic review**

This reduced the number of 'valid' questions to 386 edited questions (see pages 8-18). This was considered too large for the next questionnaire stage, so a further weighting exercise took place and all those questions that were asked by two or less people were removed, leaving 170 questions across 36 themes.

Ranking questionnaire - launch

The ranking questionnaire asked people to rank their most important ten questions. Then a score of ten was assigned to the first ranked question and a score of one was assigned to the tenth ranked question on the list. The questionnaire was sent to patients, carers and health professionals through post and on-line using our network of JLA Tinnitus PSP supporters. The deadline for returning their choices was originally 25 May 2012. However at this point only approximately 400 responses had been received

The priority setting process

and submissions were still coming in, so a decision was taken to extend the deadline to 15 June 2012. A total of 630 completed and valid responses were received and all individual ranked scores were subsequently used to produce a sum score for each uncertainty.

Ranking questionnaire - classification and sorting

Votes from medical professionals (71) and non-medical professionals (559) were then assessed to give equal weighting to each group. These were ranked and a list of the top 40 questions from each group plus a combined list were considered by JLA Tinnitus PSP members to produce a final list to go to the prioritisation meeting. The top 25 were chosen and two additional questions from the top 40 were added to this, which steering group members felt were important and should be considered at the meeting. Finally two questions were merged together and this produced a list of 26 that were to be considered at the meeting.

Prioritisation meeting

The final prioritisation meeting for the Tinnitus PSP took place in London on 16 July 2012. This was the most important part of the project and the culmination of months of hard work. A group of patients, clinicians and observers had been invited and attendance was excellent with nine clinicians, nine patients and six observers. The observers attended the meeting in order to help ensure proceedings ran smoothly and in order that they learn from the process, however, they had no input in the choices that were made. The top 26 questions were taken to this final meeting. The questions had already been sent to the delegates prior to the meeting so that they could have some time to familiarise themselves with the list. The top ten uncertainties would be chosen from these 26.

The meeting started with a brief update on the Tinnitus PSP by Lester Firkins and Mark Fenton. The delegates were then split into two groups made from equal numbers of clinicians, patients and observers and both groups went off to discuss their choices.



People interacted, getting up, moving cards around, making their opinions heard and making their choices. Each group set out the 26, ranked in order and their top tens were chosen.

We knew the process would be tough as of course each clinician and patient in the room had their favourite questions and personal reasons for wanting them to make the final list. Votes were taken and decisions made and the final ten tinnitus treatment uncertainties were chosen.

The final list (page 4) have now been rephrased in order fit into the PICO format:

- **P**opulation or patient (or disease)
- **I**ntervention/indicator (such as a drug or test)
- **C**omparator or control (another drug or placebo or test)
- **O**utcome



Uncertainties about tinnitus assessment, diagnosis and treatment

Key	10 – in final ten 26 – in final 26 170 - in final 170
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Ref	Key	Question
Balance problems		
1		Is there a link between tinnitus and vestibular hydrops (ie vertigo with no hearing loss)?
2	26	What is the link between tinnitus and balance problems (including Meniere's disease, benign paroxysmal positional vertigo)
Brain mechanisms		
3		Are the patterns of nerve or brain activity different for temporary and long-term tinnitus?
4	170	Are there different types of tinnitus and can they be explained by different mechanisms in the ear or brain?
5		Are there any characteristic patterns of nerve or brain activity for tinnitus and how could these serve to inform future treatment strategies?
6		Can tinnitus be associated to damage of the sympathetic nerve in the thoracic area of the spine or rib cage?
7		Do increased levels of glutamate cause tinnitus?
8		Is noise-induced tinnitus different from other forms of the condition?
9		What is the link between tinnitus and Alzheimer's disease?
10		What are the mechanisms of tinnitus (structural, biochemical, endocrinological, neurophysiological)?
11		What is the difference between temporary tinnitus and the more long-term form of the condition? What are the mechanisms of these different forms?
12		What is the mechanism of tinnitus where there has been a longer-term degeneration as a result of normal ageing?
13	170	What are the mechanisms of tinnitus?
14		What are the mechanisms of tinnitus? Does efferent feedback play a role?
15		What are the mechanisms of tinnitus? Does hyperactivity play a role?
16		What are the mechanisms of tinnitus? What are the parallels with the phantom limb pain?
17		What is the role of glial cells in tinnitus and how could these biochemical mechanisms inform future treatment strategies?
18	170	Which area of the brain is responsible for tinnitus?
19		Which area of the brain is responsible for tinnitus? How could this knowledge inform future treatment strategies?
Brain training		
20	26	Acoustic CR Neuromodulation is a commercial device for 'brain training'. Is it effective for people with tinnitus?
21	170	Animal research suggests that auditory 'brain training' combined with vagus nerve stimulation might influence tinnitus. Is this treatment effective for people with tinnitus?
22	26	Can auditory 'brain training' improve tinnitus?
23		Can cognitive 'brain training' improve tinnitus?
24	40	Experimental devices can provide electrical stimulation to potentially suppress tinnitus. Is this treatment effective?
25	170	Neuromonics is a commercial package that combines a sound device with counselling. Is it effective for people with tinnitus?

Ref	Key	Question
26	26	To what degree could a treatment harness the auditory brain's natural ability to reorganise itself to suppress the tinnitus sound?
Complementary therapies		
27	10	Do any of the various available complementary therapies provide improved outcome for people with tinnitus compared with a usual model of care?
28	170	Are Hopi candles an effective tinnitus management strategy?
29	170	Can massage therapies (e.g. head and neck massage) effectively alleviate tinnitus symptoms?
30	170	Do homeopathic remedies provide an effective approach to tinnitus management strategy?
31		Is a combination of neuro-linguistic programming (NLP) and hypnosis an effective tinnitus management strategy?
32	170	Is acupuncture an effective tinnitus management strategy?
33	170	Is hypnosis an effective tinnitus management strategy?
34		Is self-hypnosis an effective tinnitus management strategy?
35		Is steam inhalation with essential oils an effective tinnitus management strategy?
Devices		
36		Can implanted devices be effective in reducing the tinnitus sound?
37	170	Are cochlear implants an effective tinnitus management strategy?
38	170	Can magnetic therapy alleviate tinnitus?
39	170	Can laser therapy alleviate tinnitus?
40	170	Is noise cancellation technology an effective treatment for tinnitus?
41		People with tinnitus would like to know about the effectiveness of devices in reducing tinnitus
42		What are the most effective commercially-available device interventions for tinnitus?
43		What benefit could be provided by a placebo device for tinnitus?
Diagnosis		
44		Are there any effective diagnostic tests to categorise different types of tinnitus?
45		Are there any effective diagnostic tests to categorise tinnitus severity?
46		Are there specific guidelines for assessing and treating tinnitus in children with autism?
47		Are there specific guidelines for assessing children with pulsatile tinnitus?
48	10	What is the optimal set of guidelines for assessing children with tinnitus?
49		Are there specific guidelines for assessing pre-lingually deaf children with tinnitus?
50		Do patients who have more frequent MR scans have better outcomes?
51		Is there a diagnostic test for the early stages of tinnitus?
52	170	Is there a validated scale of tinnitus severity?
53	170	Is there an objective diagnostic measure for tinnitus?
54	26	Should the effect of tinnitus on a person's mental health and well-being be assessed by a healthcare professional?
55	40	What is the most sensitive and valid measure of patient benefit from treatment?
56	40	Which questionnaires are the best way to assess the impact of tinnitus on quality of life?
57		Would patients with pulsatile tinnitus benefit from a comprehensive and standardised set of diagnostic tests?
58	26	Would patients with tinnitus benefit from a comprehensive and standardised set of diagnostic tests?
Dietary factors		
59		Has alcohol been proven to make tinnitus symptoms worse?
60		Has cheese been proven to make tinnitus symptoms worse?
61		Has red meat been proven to make tinnitus symptoms worse?
62		Have artificial sweeteners (e.g. aspartame) been proven to cause or make tinnitus worse?
63		Is caffeine proven to make the symptoms of tinnitus worse?
64		Is dehydration proven to make the symptoms of tinnitus worse?
65		Is pulsatile tinnitus linked with any specific mineral and vitamin deficiencies ?

Ref	Key	Question
66		Is there a causal link between tinnitus and a vegetarian diet?
67		Is there a link between tinnitus and nutrient deficiencies?
68	170	Is tinnitus linked with any specific mineral and vitamin deficiencies ?
69	170	What is the link between tinnitus and alcohol?
70	170	What is the link between tinnitus and caffeine?
71	170	What is the link between tinnitus and diet?
72	170	What specific types of food have been proven to make tinnitus symptoms worse?
73	170	Is a reduced salt intake proven to alleviate the symptoms of tinnitus?
74	170	Would increased alcohol consumption lessen the tinnitus symptoms?
75		Is reduced alcohol consumption proven to alleviate the tinnitus symptoms?
76	170	Is reduced caffeine proven to alleviate the symptoms of tinnitus?
77		Is reduced consumption of chocolate proven to alleviate the symptoms of tinnitus?
78		Is reduced smoking proven to alleviate the tinnitus symptoms?
79		What foods alleviate the symptoms of pulsatile tinnitus?
80	26	What specific type of diet is effective in reducing tinnitus symptoms?
Drug side effects		
81	170	Are any blood pressure medications (e.g. losartan) proven to cause or make the tinnitus symptoms worse?
82		What dose of anti-malarial medications (containing quinine) is sufficient to cause or make the tinnitus symptoms worse?
83	170	What dose of quinine carbonate tablets (prescribed for 'Restless Leg Syndrome') is sufficient to cause or make the tinnitus symptoms worse?
84		Does the flu jab increase the risk of developing tinnitus?
85	170	What dose of aspirin has been proven to cause or make the tinnitus symptoms worse?
86		Has chemotherapy been proven to cause or make the tinnitus symptoms worse?
87	170	Has lbruprofen been proven to cause or make the tinnitus symptoms worse?
88	170	Has long-term use of eye drops been proven to cause or make the tinnitus symptoms worse?
89		Has long-term use of nasal spray been proven to cause or make the tinnitus symptoms worse?
90	170	Have antibiotics for ear conditions, administered as ear drops, been proven to cause or make the tinnitus symptoms worse?
91	170	Have antibiotics prescribed for ear conditions been proven to cause or make the tinnitus symptoms worse?
92	170	Have any anti-depressant medications (e.g. amitriptyline, selective serotonin re-uptake inhibitors) been proven to cause or make the tinnitus symptoms worse?
93	170	Have certain anaesthetics been proven to cause or make the tinnitus symptoms worse?
94	170	Have certain antibiotics been proven to cause or make the tinnitus symptoms worse?
95		Have cold relief medicines been proven to cause or make the tinnitus symptoms worse?
96	26	Would people with tinnitus benefit from having a definitive list of medicines that are proven to either to cause or make pulsatile tinnitus symptoms worse?
Drug treatments		
97		Are anti-inflammatory cortico-steroids (e.g. Prednisolone) effective in tinnitus management?
98	170	Are anti-anxiety drugs (e.g. benzodiazepines) effective in tinnitus management?
99	170	Are anti-depressant drugs (e.g. mirtazepine, amitriptyline, prozac) effective in tinnitus management?
100		Are GABA receptor antagonists effective in tinnitus management?
101	170	Is betahistine an effective tinnitus treatment?
102		Is there any evidence for the effectiveness of cannabis in tinnitus treatment?
103		Is there any evidence for the effectiveness of Caroverine in tinnitus treatment?
104		How does lidocaine exert its effect in alleviating tinnitus?
105		Is there any evidence for the effectiveness of melatonin in reducing tinnitus?
106	170	Is there any evidence for the effectiveness of paracetamol in reducing tinnitus?

Ref	Key	Question
107		Is there any evidence for the effectiveness of using a nasal spray on tinnitus?
108		What area of the brain that can be targeted by drugs to improve tinnitus?
109	170	Which medications have proven to be effective in pulsatile tinnitus management?
110	10	Which medications have proven to be effective in tinnitus management compared with placebo?
Ear wax		
111		Can a build up of ear wax worsen tinnitus?
112	170	Can ear wax removal (through syringing or suction) alleviate tinnitus symptoms?
113		Can tinnitus increase the build up of ear wax?
114		What is the effect of sound reduction (e.g. ear plugs) on tinnitus?
115	170	What is the link between tinnitus and ear wax?
Exercise		
116	170	Can breathing exercises be effective in alleviating tinnitus symptoms?
117		Can physiotherapy help in tinnitus management?
118	170	Can tinnitus be caused or made worse by physical exercise?
119		Is swimming underwater effective in alleviating tinnitus symptoms?
120	170	Is Tai Chi an effective tinnitus management strategy?
121	170	Is yoga an effective tinnitus management strategy?
122	170	What physical exercises are effective in alleviating tinnitus symptoms?
External / middle ear problems		
123	170	Can recurrent ear infections play a causal role in developing tinnitus?
124	170	Can sinus problems make tinnitus worse?
125		Can tinnitus be caused by acquired or congenital childhood illnesses?
126		What is the link between labyrinthitis and tinnitus?
127		What is the link between tinnitus and otitis media with effusion (OME, a middle ear condition)?
128	170	What is the link between tinnitus and perforated ear drum (a middle ear condition)?
129	40	What is the link between tinnitus and the feeling of pressure in the ears or head?
130	170	What other ear, nose and throat conditions contribute to tinnitus?
131		What other ear, nose and throat conditions increase the risk of developing tinnitus?
Habituation (getting used to the tinnitus sound)		
132		Do children habituate to (i.e. 'adjust to') the tinnitus sound more easily than adults?
133	10	What management strategies are more effective than a usual model of audiological care in improving outcomes for people with tinnitus?
134		To what degree do people with pulsatile tinnitus tend to habituate to (i.e. 'adjust to') the sound so that it is no longer distressing and what mechanism underpins this process?
135	170	Why the symptoms are less noticeable when you are engaged in another activity (such as reading or watching TV)?
136		Why the symptoms are more noticeable when you focus on the condition?
Head / neck / jaw		
137	170	What is the link between tinnitus and head and neck injury?
138		What is the link between tinnitus and head injury (e.g. stroke)?
139		What is the link between tinnitus and neck pain?
140	170	What is the most effective treatment strategy for tinnitus caused by head and neck injury?
141		What is the link between tinnitus and dental treatments for mechanical problems?
142		What is the link between tinnitus and dental treatments such as amalgam fillings?
143		What is the link between tinnitus and dental treatments such as teeth straightening?
144	170	What is the link between tinnitus and dental treatments?
145		What is the link between tinnitus and jaw and dental problems (teeth grinding)?

Ref	Key	Question
146		What is the link between tinnitus and jaw and dental problems?
147	170	What is the link between tinnitus and jaw problems (e.g. temporo-mandibular joint disorder)?
148		What is the link between tinnitus and earache?
149	170	What is the link between tinnitus and facial pain?
150		What is the link between tinnitus and head pain?
151	170	What is the link between tinnitus and headache or migraine?
152	170	Why is tinnitus associated with specific facial sensations (facial 'tingling' or numbness)?
153		Are medications to treat an underlying headache effective in reducing tinnitus symptoms?
154	170	Why can the tinnitus sound be altered by jaw movements or movements of the head?
155		Why can the tinnitus sound be altered by touching your ears underwater?
Hearing aids		
156		Are hearing aids an effective management strategy for pulsatile tinnitus?
157	170	Are hearing aids an effective tinnitus management strategy for people with a high-frequency hearing loss?
158	170	Are hearing aids an effective tinnitus management strategy for people with a mild hearing loss?
159	170	Are hearing aids an effective tinnitus management strategy?
160		How can compliance in hearing aid usage be improved?
161	170	How effective are digital devices that combine a sound generator with a hearing aid for tinnitus management?
162		What is the additional benefit of blue tooth technology in hearing aids for alleviating tinnitus symptoms?
163	170	What strategies are effective in reducing the impact of tinnitus when hearing aids are removed?
164	10	What type of digital hearing aid or amplification strategy provides the most effective tinnitus relief?
Hearing loss		
165		Does noise-induced hearing loss give rise to a specific form of tinnitus?
166		What is the frequency relationship between hearing ability and the tinnitus sound?
167	26	What is the relationship between tinnitus and hearing loss?
168	40	Why do some people experience tinnitus when they have 'normal' hearing or hearing loss that is outside the standard range that is measured in the audiology clinic (i.e. 8 kHz)?
Hyperacusis (over-sensitivity to sounds)		
169	10	What is the link between tinnitus and hyperacusis (over-sensitivity to sounds)?
Insomnia		
170	170	Are sleeping tablets an effective management strategy for tinnitus-related insomnia?
171	170	Can treatment of insomnia related to tinnitus reduce tinnitus distress independently?
172		Does air-conditioning help to overcome tinnitus-related insomnia?
173	170	How does tinnitus interfere with normal sleep patterns?
174	10	What management strategies are more effective for improving tinnitus-related insomnia than a usual model of care?
Meditation		
175		Does meditation decrease the risk of developing tinnitus?
176		Is meditation an effective tinnitus management strategy for people with tinnitus?
177		Is mindfulness meditation an effective tinnitus management strategy?
Mental health		
178	170	Can a sudden shocking life event trigger tinnitus?
179		Does anxiety interfere with the process of habituation to (ie 'adjusting to') tinnitus?
180		Does depression interfere with the process of habituation to (ie 'adjusting to') tinnitus?
181		Is there a link between tinnitus and obsessive compulsive disorder?
182		Is tinnitus linked to psychological issues arising in childhood and adolescence?

Ref	Key	Question
183		What are the long-term effects of tinnitus on general health and well being?
184	170	What is an effective treatment strategy for tinnitus associated with anxiety (stress)?
185		What is an effective treatment strategy for tinnitus associated with depression?
186		What is the impact of tinnitus-related anxiety on ability to work?
187		What is the link between tinnitus and anxiety attacks?
188	170	What is the link between tinnitus and depression?
189		What is the link between tinnitus and irritability?
190	26	What is the link between tinnitus and mood disorders (anxiety and depression)?
Noise exposure		
191		Are there different ways of measuring susceptibility to noise exposure?
192	170	Can listening to a personal music player make the tinnitus worse?
193		Does acoustic reflex testing (above 95 dB SPL) increase the risk of developing tinnitus?
194	40	Does noise exposure make tinnitus worse?
195	170	Does noise exposure increase the risk of developing tinnitus?
196	170	Does noise exposure increase the risk of developing tinnitus? How can this information inform prevention strategies.
197		Does noise exposure increase the risk of developing tinnitus? How can this information inform urban planning?
198		Does noise exposure increase the risk of developing tinnitus? What are the important characteristics of the noise?
199		Does sensitivity to low frequency noise increase the risk of developing tinnitus? How can this information inform urban planning?
200		What is the mechanism by which environmental noise can cause tinnitus?
201		What level of noise exposure is sufficient to affect tinnitus?
Personal factors		
202		Does tinnitus have a psychological or a psychosomatic (mind and body) component?
203	170	How important is the relationship between patient and clinician in determining the success in reducing tinnitus distress?
204		How much does a personal knowledge about tinnitus influence the level of distress that is experienced?
205		What can employers do to improve working conditions for people with tinnitus?
206	40	Why are some people better able to cope with their tinnitus, and conversely why are some people more susceptible to tinnitus distress?
207		Why are some people better able to cope with their tinnitus, and conversely why are some people more susceptible to tinnitus distress? Does personality influence treatment outcome?
208		Why are some people better able to cope with their tinnitus, and conversely why are some people more susceptible to tinnitus distress? What is the evidence that emotional factors affect tinnitus?
Population statistics		
209	170	Are people who use drive regularly for work (lorry drivers) at greater risk for developing tinnitus?
210	170	Are people who use headsets regularly at work (call centre workers, audio typists) at greater risk for developing tinnitus?
211		Are people with mood disorders (anxiety and depression) at greater risk for developing tinnitus?
212		Are service men and women at greater risk for developing tinnitus?
213		Do other health-related problems and/or poor fitness levels increase the risk of developing tinnitus?
214	170	Does exposure to occupational noise (including musicians) increase the risk of developing tinnitus?

Ref	Key	Question
215		Does the prevalence of tinnitus differ across developed versus developing countries?
216		Does tinnitus impair people's employability?
217		Does tinnitus increase the risk of developing dementia?
218		Does tinnitus increase the risk of suicide?
219	170	How has the prevalence of tinnitus changed over time?
220		Is ethnicity a risk factor for developing tinnitus?
221		Is gender a risk factor for developing pulsatile tinnitus?
222	170	Is gender a risk factor for developing tinnitus?
223		Is gender a risk factor for poor ability to cope with tinnitus?
224		Is low socio-economic status a risk factor for developing tinnitus?
225		What is the economic impact of tinnitus (e.g. in terms of days lost at work)?
226		What is the prevalence of the different causes of tinnitus?
227		What is the prevalence of tinnitus and hyperacusis in children with autism?
228	170	Is the prevalence of tinnitus greater in subsections of the population?
229		What is the prevalence of tinnitus in children with a hearing loss?
230	170	What is the prevalence of tinnitus in children?
231	170	What is the prevalence of tinnitus?
232		What is the prevalence of tinnitus that is experienced across the lifespan compared to tinnitus that is experienced in later adulthood?
233		What is the prevalence of tinnitus that is severe enough to impair quality of life?
234	170	What personal factors decrease the risk of developing tinnitus?
235		What personal factors increase the risk of developing pulsatile tinnitus?
Pressure changes		
236	170	Can pressure changes (especially flying and diving) cause or make the tinnitus symptoms worse?
Prevention		
237		Can early sound enrichment as an intervention after hearing trauma prevent tinnitus from developing?
238	170	What is the most effective prevention campaign strategy to raise awareness of the risks to hearing and tinnitus, especially for young people?
239		What is the most effective prevention campaign strategy to raise awareness of the risks to hearing and tinnitus?
240	170	What preventative measures can reduce the risk of developing tinnitus?
241		What preventative (noise protection) measures can effectively reduce the risk of developing tinnitus or making it worse?
242	170	What sort of ear plugs effectively reduce the risk of making tinnitus worse in a noisy environment?
243		Do custom ear plugs effectively reduce the risk of making tinnitus worse in a noisy environment?
Psychological therapy		
244		A parent of a child with tinnitus wonders why do children seem to handle tinnitus so much better than adults.
245		How can the patient's personal account of tinnitus distress be used to construct an effective counselling strategy?
246		How many sessions of Cognitive Behaviour Therapy are needed to provide a lasting benefit to people with tinnitus?
247		How many sessions of combined audiological management and psychological therapy are needed to provide a lasting benefit to people with tinnitus?
248	10	Is Cognitive Behaviour Therapy (CBT), delivered by audiology professionals, effective for people with tinnitus? Here comparisons might be with usual audiological care or CBT delivered by a psychologist.

Ref	Key	Question
249		Is psychological therapy (Cognitive Behaviour Therapy/Mindfulness Meditation) effective for people with tinnitus?
250		Is psychological therapy effective for children with tinnitus?
251		Is psychological therapy effective for people with tinnitus? Which type of patients might benefit most and what technique is best?
252	170	Is Tinnitus Retraining Therapy effective for people with tinnitus?
253		Is Tinnitus Retraining Therapy effective for people with tinnitus? Is it most effective when delivered by an ENT specialist, audiological professional or psychologist?
254		Is Tinnitus Retraining Therapy, delivered by non-specialist, effective for people with tinnitus?
255	170	What guidance on coping strategies is most effective for managing tinnitus?
256		What psychological interventions are most effective for tinnitus in people who have a mood disorder (anxiety or depression)?
257		What psychological interventions are most effective for tinnitus?
Pulsatile tinnitus		
258		Do the causes of pulsatile and non-pulsatile tinnitus differ?
259		Is pulsatile tinnitus linked to any adverse physical health conditions?
260	170	What are the causes of pulsatile tinnitus?
261	26	What effective treatments are there for pulsatile tinnitus?
262		What is the link between pulsatile tinnitus and auto-immune disease?
263	170	What is the link between pulsatile tinnitus and high blood pressure?
264		What is the link between pulsatile tinnitus and blood vessel abnormalities?
Self help		
265		Does the lack of knowledge about tinnitus make it more difficult for families to understand the condition?
266		Is educational information, based on research, beneficial to people with tinnitus and their families?
267		Is self-directed psychological counselling (via the internet) an effective strategy for the self-management of tinnitus?
268	40	What sort of self-help strategies are beneficial for patients with tinnitus?
269		How is the benefit of relaxation dependent on the skills of the professional who delivers the therapy?
270		Is relaxation an effective tinnitus management strategy for people with pulsatile tinnitus?
271	170	Is relaxation an effective tinnitus management strategy for people with tinnitus?
272		Is relaxation an effective tinnitus management strategy for people with tinnitus? What are the most effective techniques?
Sound maskers		
273		Can presenting the same sound as your tinnitus provide an effective tinnitus management strategy?
274		Do sound generators provide an effective management strategy for pulsatile tinnitus?
275		Do sound generators provide an effective tinnitus management strategy for children?
276	170	Do sound generators provide an effective tinnitus management strategy when used as part of a wider therapeutic approach or as a stand alone treatment?
277	170	Do sound generators provide an effective tinnitus management strategy? Which type of patients might benefit most and what is an effective prescription for usage?
278		Do sound generators provide an effective tinnitus management strategy? Which type of patients might benefit most and what is an effective prescription for usage? Here a comparison might be with Cognitive Behaviour Therapy.
279		How does sound therapy treatments compare in effectiveness to general stress management therapy?
280	170	What management strategy provides the most effective tinnitus masking?

Ref	Key	Question
281	170	What sort of background sounds provide the most effective tinnitus masking (e.g. frequency, dynamic over time etc)?
Specific causes		
282	170	Can some forms of tinnitus be hereditary?
283		Is pulsatile tinnitus hereditary?
284		Is there any effective genetic therapy for inherited forms of deafness (and associated tinnitus)?
285		Can bacteria in the ear play a causal role in developing tinnitus?
286		Can individual responses to lignocaine give a clue to the different brain pathways that are responsible for tinnitus?
287	170	Can long-term exposure to electronic equipment and/or electromagnetic energy waves cause tinnitus?
288		Can removal of a parotid tumour play a causal role in developing tinnitus?
289		Do early childhood illnesses such as German Measles increase the risk of developing tinnitus?
290		Do the different causes of tinnitus affect the long-term prognosis of the condition?
291		Does the long-term use of earplugs play a causal role in developing tinnitus?
292		How is tinnitus affected by adrenaline level?
293		How is tinnitus affected by insulin (blood sugar) levels?
294		Is the onset of tinnitus usually sudden?
295		Is there a link between tinnitus and asthma?
296		Is there a link between tinnitus and cholesterol levels?
297		Is there a link between tinnitus and hormone levels?
298		Is there a link between tinnitus and steroids delivered through the eardrum?
299	170	Is there a link between tinnitus and levels of the different female sex hormones (including pregnancy and the menopause)?
300		Is there a link between tinnitus and levels of the different sex hormones?
301		Is there a link between tinnitus and serotonin hormone levels?
302		Is there a link between tinnitus and stress hormone (cortisol) levels?
303		Is there a link between tinnitus and Type 2 Diabetes?
304		Is tinnitus linked to snoring?
305		What are the links between tinnitus and environmental factors?
306		What is the link between tinnitus and acromegaly (caused by excess levels of growth hormone)?
307	170	What is the link between tinnitus and allergies?
308		What is the link between tinnitus and anaemia?
309		What is the link between tinnitus and other eye or ear problems?
310		What is the link between tinnitus and tonsil removal?
311	170	Why are the symptoms of tinnitus made worse by tiredness?
312		Why does mental activity (such as watching the TV or reading) make tinnitus worse?
313	170	Can damage to inner and/or outer hair cells in the cochlea (leading to sensorineural hearing loss) be sufficient to cause tinnitus?
Supplements		
314		Do herbal remedies (such as St John's Wort) make the tinnitus symptoms worse?
315	170	Do herbal remedies (such as St John's Wort, Chinese medicine) provide an effective approach to tinnitus management ?
316		Does magnesium supplement provide an effective way to reduce tinnitus?
317		Does sodium supplement provide an effective way to reduce tinnitus?
318		Does zinc supplement provide an effective way to reduce tinnitus?
319	170	What is the evidence to support the effectiveness of ginkgo biloba for tinnitus?
320		Is there a link between tinnitus and nutrient (e.g. magnesium) deficiencies?
321		Is there a link between tinnitus and vitamin B levels?
322		What is the evidence to support the effectiveness of 'natural' medications for tinnitus?

Ref	Key	Question
323	170	What specific mineral and vitamin supplements provide an effective way to reduce tinnitus?
Supportive care		
324		Do internet-based approaches (such as Facebook) provide an effective self-management strategy for young people with tinnitus?
325	170	Do internet-based approaches (such as online forums) deliver an effective self-management strategy for people with tinnitus?
326	170	Is group therapy (led by a healthcare professional) an effective tinnitus management strategy? Here the comparisons might be with a patient-led support group or with one-to-one therapy.
327		Is group therapy a more effective tinnitus management strategy than one-to-one therapy?
328	170	Is self-help group therapy an effective tinnitus management strategy?
329		What is the most effective management strategy for children with tinnitus and with Autistic Spectrum Disorder?
Surgical treatments		
330		Can surgical procedures on the balance system (semi-circular canals) alleviate pulsatile tinnitus?
331	26	Does stem cell technology (e.g. for hair cell regeneration) provide an effective pipeline to develop new medical interventions for treating tinnitus?
332		What are the most effective surgical interventions for reducing the tinnitus sound in pulsatile tinnitus?
333	170	What are the most effective surgical interventions for reducing the tinnitus sound?
Tinnitus characteristics		
334	170	What are the mechanisms responsible for switching tinnitus on and off in patients who experience intermittent tinnitus?
335	170	Why do aspects of the tinnitus sound change across the day (or from day to day) and what are the causes of this phenomenon?
336		Can someone with tinnitus experience different subtypes of the condition at the same time?
337		Can tinnitus ever spontaneously disappear and what factors underpin such improvement?
338		Do the symptoms of pulsatile tinnitus become more severe with age?
339		Do the symptoms of tinnitus become more severe with age?
340		Does tinnitus experience at a young age increase the risk of developing tinnitus later in life?
341		Is it possible to be born with tinnitus?
342		Is the onset of tinnitus usually sudden?
343		Personal concerns for tinnitus patients are how aspects of their tinnitus percept might change over the years and what are the predictors and the cause of this phenomenon.
344		To what degree do people with tinnitus tend to habituate to the sound so that it is no longer distressing and what mechanism underpins this process?
345		What are the different subtypes of tinnitus?
346		What is the causal association between age-related sensorineural hearing loss and tinnitus?
347		What is the impact of general physical and mental health on tinnitus symptoms and their severity? For example, can good health protect against distressing tinnitus?
348		What personal factors are important in determining the individual response to tinnitus in terms of the impact of the condition on emotional well-being and quality of life?
349		Why can the tinnitus sound be different across the two ears, or only perceived in one ear?
350		Why can the tinnitus sound be perceived in both ears?
351	40	Why do tinnitus characteristics (i.e. frequency and timing attributes, loudness) vary so much from person to person?
352		Why do aspects of the tinnitus percept change over the years and how any worsening of symptoms can be avoided?
353		Why does tinnitus seem to be perceived at its loudest first thing in the morning?

Ref	Key	Question
Treatment efficacy		
354		Can softening ear wax (using olive oil) alleviate tinnitus symptoms?
355	10	How can tinnitus be effectively managed in people who are Deaf or who have a profound hearing loss?
356		Is it possible to manipulate changes in air pressure to alleviate tinnitus?
357		Is there a relationship between consultation time and effective management of tinnitus?
358		Is there an effective way to audit the tinnitus care pathway?
359		What are the most cost-effective interventions for learning to live with tinnitus?
360	40	What are the most effective interventions for alleviating the loudness of the tinnitus sound?
361		What are the most effective interventions for alleviating the tinnitus sound?
362		What are the most effective interventions for children with tinnitus?
363		What are the most effective interventions for learning to live with mild tinnitus?
364		What are the most effective interventions for learning to live with tinnitus associated with Meniere's disease?
365	170	What are the most effective interventions for learning to live with tinnitus at work?
366		What are the most effective interventions for learning to live with tinnitus? Here a comparison might be between devices and psychological therapies.
367		What are the most effective interventions for learning to live with tinnitus? How might different approaches be combined to optimise patient benefit?
368		What are the most effective interventions for tinnitus that are delivered within primary care?
369		What effective treatments are there for tinnitus that is associated with a feeling of pressure in the ears or head?
370	170	What effective treatments are there for tinnitus that is due to an ear infection?
371		What is the most sensitive and specific tinnitus-related outcome measure for quality of life?
Treatment guidelines		
372		How do other conditions (such as hearing loss and hyperacusis) impact on treatment choice?
373		How does the degree of hearing loss impact on treatment choice?
374		How many sessions of treatment are most effective for long-lasting tinnitus relief?
375	170	Is an individualised treatment approach that addresses the different components of the condition more effective than standard (audiological) care?
376	170	Is direct access audiology service beneficial for patients with tinnitus?
377	40	Is early intervention more effective in managing tinnitus distress?
378		Is tinnitus pitch matching informative for guiding treatment strategy?
379	40	What is the most effective tinnitus-specific training route for health professionals that improves outcomes for patients?
380	170	Which medical specialties should be involved in the diagnosis and treatment of pulsatile tinnitus?
381	170	Which medical specialties should be involved in the diagnosis and treatment of pulsatile tinnitus? What is the assessment protocol?
382		Would GPs and ENTs benefit from knowing about the latest advances in device technology for tinnitus?
383	26	Would GPs benefit from a comprehensive and standardised guideline for tinnitus assessment, management and onwards referral?
384	40	Would healthcare professionals benefit from a comprehensive and standardised guideline for tinnitus assessment?
385		Would patients presenting from tinnitus and echophonia benefit from a comprehensive and standardised guideline for tinnitus treatment?
386	170	Would patients presenting from tinnitus benefit from a comprehensive and standardised guideline for tinnitus treatment?

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For more information on the JLA Tinnitus Priority Setting Partnership and to be kept up to date with onward progress, please visit **www.tinnitus.org.uk/JLA**

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