

## Main Article

Mr J Ng takes responsibility for the integrity of the content of the paper

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## Abstract

**Background.** This paper reports our experience in managing dizzy patients remotely during the coronavirus disease 2019 pandemic, and explored its safety as an alternative to face-to-face consultations.

**Methods.** Dizzy patients referred by their general practitioner were contacted to answer a validated questionnaire. Clinicians recorded the time needed for consultations, and the diagnosis at each of the following assessment stages: after review of the electronic general practitioner letter; following completion of the questionnaire; following the telephone consultation; and/or at follow up. Patients were telephoned no earlier than three months later to determine satisfaction with the service and symptom resolution. Electronic patient records were checked for presentation to hospital because of dizziness.

**Results.** Seventy patients had telephone consultations. None presented to the emergency department or were admitted. The majority of consultations took 15–30 minutes. The most diagnosed condition was benign positional paroxysmal vertigo. Seventy-nine per cent of patients were satisfied with the service. The questionnaire and telephone consultations demonstrated the greatest diagnosis agreement ( $\kappa = 0.40$ ).

**Conclusion.** Validated questionnaire and telephone consultations are a safe alternative to face-to-face consultations. Our patient referral pathway has now changed to include elements of the questionnaire.

## Introduction

Dizziness is one of the commonest presentations to the emergency department and clinic. The lifetime prevalence of vertigo has been reported as high as 7.9 per cent, with a one-year prevalence of 4.9 per cent and an increasing incidence in the older adult population.<sup>1</sup> Of the specialists, patients are most commonly referred to ENT surgeons.<sup>2</sup> The projected increase in the population of those aged 75 years and over in Lothian areas, Scotland, from mid-2018 to mid-2028, is up to 40.9 per cent.<sup>3</sup> Thus, the number of primary care referrals of dizzy patients at our centre can only be expected to increase. A similar trend is expected across the world.

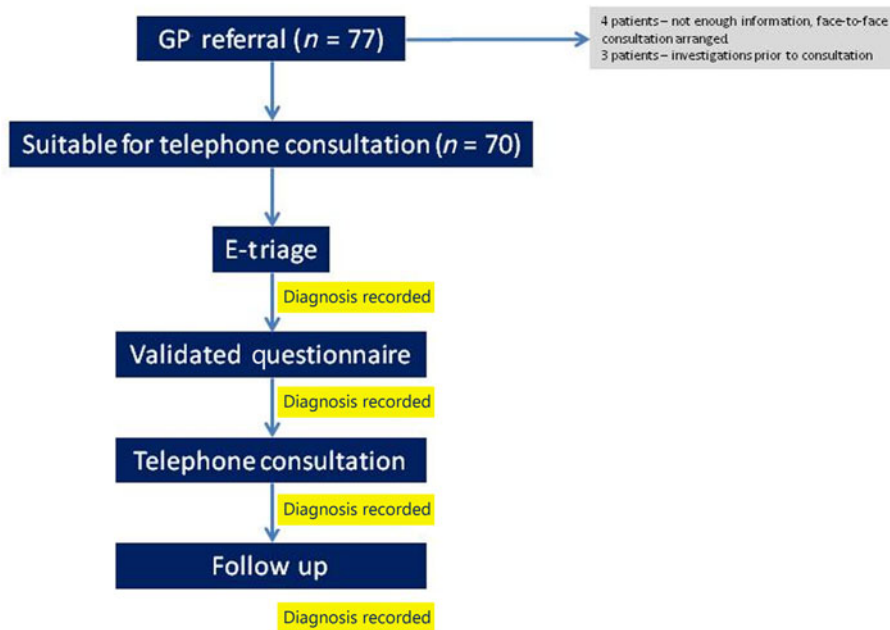
During coronavirus disease 2019 (Covid-19) pandemic lockdowns, face-to-face consultations were difficult or unavailable for a myriad of reasons, including shielding, the pausing of non-urgent or emergency clinical activities, and the re-deployment of clinical staff.<sup>4</sup> Out-patient services other than cancer appointments were cancelled or delayed.<sup>5</sup> Consequently, patients referred by primary care to the ENT department for dizziness could not be seen face-to-face.

Most patients seen by ENT specialists can be examined with a microscope or endoscope; however, the diagnosis of a balance disorder relies more on patients' history. In fact, information based on history obtained through questionnaires has been found to have an overall predictive capability of up to 75.5 per cent,<sup>6</sup> and a high predictive power, of over 80 per cent, for certain diagnoses such as benign positional paroxysmal vertigo (BPPV) and Ménière's disease.<sup>7</sup> This knowledge formed the basis for developing a new approach in managing dizzy patients during the pandemic.

We describe our experience in exploring a safe alternative to face-to-face consultations during the pandemic lockdown using a validated questionnaire and remote consultations, and discuss how the findings have now changed our referral pathway. We also describe a case to illustrate the inherent risk of our approach and how it was mitigated.

## Materials and methods

All patients referred by their general practitioner with a balance problem who were triaged for an ENT appointment were contacted by the ENT secretaries to complete a questionnaire. This questionnaire had been designed and validated by the Dizziness and Balance Centre at the Department of Otolaryngology, Head and Neck Surgery, University of Washington, USA. The questionnaire has an overall predictive accuracy of 77.8 per



**Fig. 1.** A flowchart illustrating the process from receipt of general practitioner (GP) referral letter to telephone consultation.

cent for the final diagnosis, and a predictive accuracy of 75.5 per cent for discriminating between peripheral and non-peripheral causes.<sup>6</sup> At our centre, this questionnaire has been found to have good predictive accuracies for common causes of dizziness and is considered a safe way of triaging patients.<sup>8</sup>

Based on the information provided within the general practitioner letter and the completed questionnaire, the senior author (an ENT consultant with an interest in balance) would assign the patient for either a telephone or a face-to-face appointment. Telephone consultations were then carried out by a consultant otologist or a registrar, with the outcomes being: the scheduling of a face-to-face review appointment, reassessment after investigation (i.e. imaging or audiological testing), or discharge (Figure 1).

The clinician performing the telephone consultation recorded their thoughts on the process, the time needed for consultations, and the diagnosis at the end of each of the following assessment stages: (1) after review of the electronic general practitioner letter (e-triage), but before reviewing the questionnaire or the telephone consultation; (2) after e-triage and review of the validated questionnaire, but before the telephone consultation; (3) after telephone consultation; (4) and/or at follow up (conducted face-to-face or via telephone) (Figure 1).

Results were analysed with simple representational analyses (e.g. percentages) and kappa-coefficient ( $\kappa$ ) for level of diagnosis agreement, using IBM® SPSS® Statistics software, version 26.

Two attempts were made to telephone all patients three months after the initial telephone consultation, to determine their satisfaction with the service and symptom resolution. Any change in clinical diagnosis at this point was recorded. The hospital records were also reviewed at this point to check for re-referral with worsening symptoms, presentation to the emergency department, or admission to the hospital with dizziness-related symptoms.

## Results

Between 1 June and 11 September 2020, 77 consecutive patients underwent this management process. The median

age of the patient cohort was 57 years, with a male to female ratio of 3:8 (median age of 58 years for males and 57.5 years for females).

Seventy patients were considered suitable for telephone consultation. Of the remaining patients, insufficient information was given in the general practitioner letter or questionnaire for three patients; therefore, a face-to-face consultation was arranged instead. Four other remaining patients were thought to require further investigation such as imaging or audiology before any benefit could be gained from a consultation.

A review of all 70 patient records at three months revealed that none of the patients had: been re-referred with worsening symptoms, presented to emergency department, or been admitted to hospital for dizziness-related symptoms.

Eighty-seven per cent of the consultations were conducted by a consultant otologist. All reading of the patient information and general practitioner referral letters took less than 10 minutes per patient; 82 per cent of telephone consultations, including dictation and administrative tasks, took 15–30 minutes. Following the 70 telephone consultations, 29 patients (38 per cent) were discharged and 15 (19 per cent) required face-to-face consultation (Figure 2).

Of those patients who were discharged and responded to the telephone survey, none were dissatisfied with the service, but two patients diagnosed with BPPV reported worse symptoms. Free text feedback from those performing the consultations indicated that, overall, patients were very grateful to receive a call. Patients were occasionally unavailable, despite lockdown, at the appointment time, but usually contactable by the end of the clinic session. A 'blurring of boundaries' was noted, with some patients calling back and expecting to speak directly to the clinician again (and again) about their condition.

Most diagnoses at e-triage are unknown (41 per cent); this reduced to 30 per cent after questionnaire completion and decreased to 11 per cent after the telephone consultation (Figure 3). The second most common diagnosis following e-triage was BPPV (29 per cent); this became the most common diagnosis after both questionnaire completion (33 per cent) and telephone consultation (42 per cent). No diagnosis

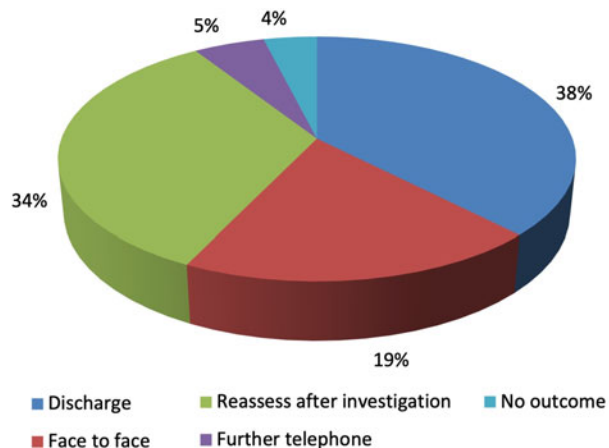


Fig. 2. Outcome of patients following telephone consultations.

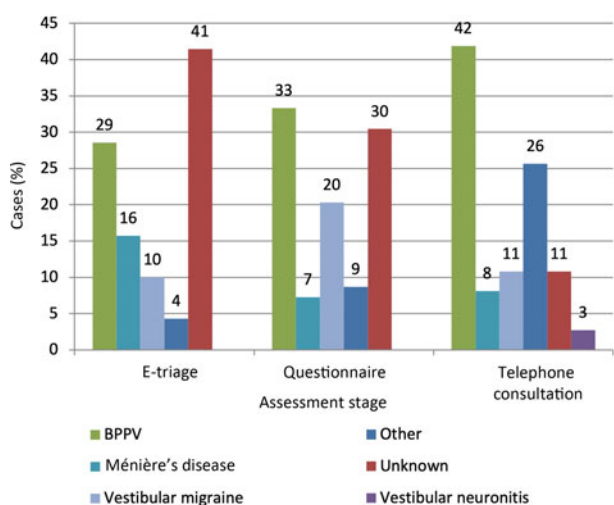


Fig. 3. Diagnoses recorded at each assessment stage. BPPV = benign positional paroxysmal vertigo.

of vestibular neuronitis was made following e-triage or questionnaire completion, but 3 per cent of patients were diagnosed with this condition after telephone consultation. The proportion of patients diagnosed with probable Ménière's disease was halved following e-triage (16 per cent) to after telephone consultation (8 per cent).

Figure 4 shows the outcome of the telephone survey conducted no earlier than three months following the initial telephone consultation. Thirty-eight out of 70 patients responded. Thirty patients (79 per cent) were satisfied with the telephone consultation. Of those who were satisfied, 26 patients (87 per cent) felt that their symptoms had not changed, were better or resolved. Of those whose symptoms were worse, four were satisfied with the telephone consultation and two were not. Of those who reported worse symptoms after telephone consultation, five out of six were diagnosed with BPPV after the telephone consultation.

The reasons for not being satisfied with the telephone consultation were: (1) 'appointments were messed up'; (2) 'exercises did not help'; (3) 'it was giving it time that helped rather than anything else'; or (4) patients 'still experienced the same problems'.

The level of diagnosis agreement was lowest between e-triage and after telephone consultation, and was highest between questionnaire completion and after telephone consultation,  $\kappa = 0.06$  and  $0.40$  respectively (Figure 5).

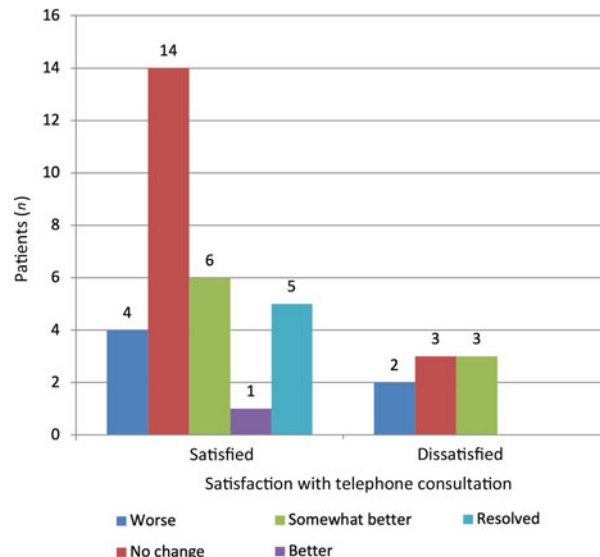


Fig. 4. Outcome of telephone survey.

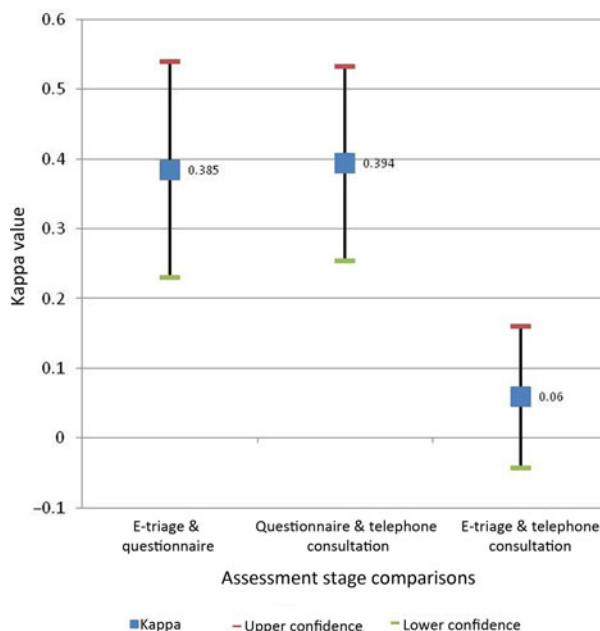


Fig. 5. Kappa level of diagnosis agreement between each assessment stage. Kappa values: less than 0 = no agreement; 0.00–0.20 = slight agreement; 0.21–0.40 = fair agreement; 0.41–0.60 = moderate agreement; 0.61–0.80 = substantial agreement; and 0.81–1.00 = almost perfect agreement.

Following telephone consultation, 45 per cent of patients were considered to require audiological testing, and 20 per cent required imaging. Only 6 out of 77 patients (8 per cent) were considered to require imaging from the outset of e-triage, where the possible diagnoses were: 'unknown' (1 patient), 'Ménière's disease' (2 patients) and 'BPPV and unexplained hearing loss' (1 patient).

Discussion

Given that none of the patients were re-referred with worsening symptoms, presented to emergency department, or were admitted to hospital for dizziness-related symptoms within three months suggests that this is a relatively safe short-term approach. The number of patients in this cohort was small,

owing to the number of general practitioner referrals, as well as the practice at our department at the time whereby the only 'dizzy' clinic was once a week, comprising six 30-minute appointments per patient, which allowed a possible total of not more than 78 patient appointments. In alignment with National Institute for Health and Care Excellence guidance,<sup>9</sup> this approach mitigated the Covid-19 infection risks to patients, and we were still able to manage patients' dizziness symptoms without causing harm. Nevertheless, it is difficult to determine the 'true' safety of this approach given the small number of patients and the short study period of three months.

Following telephone consultation, the ratio of diagnoses was similar to a previous study conducted on general practitioner referrals for the same geographical area.<sup>8</sup> For example, 42 per cent of our patients were diagnosed with BPPV, compared with 44 per cent in the previous study (Fisher's exact test,  $p = 0.85$ ). In addition, 11 per cent of our patients had vestibular migraine versus 10 per cent in the previous study ( $p = 1.00$ ). This demonstrates a correlation between our telephone consultations with questionnaires and the previous face-to-face consultation study in the same population. As this was the first study of its kind in our department, we did not collect data specific to telephone consultations that could help identify what information would be useful to improve diagnostic accuracy. However, it was felt that telephone conversations allowed clinicians to hear the patient's history in their own words and context. Moreover, certain aspects in the questionnaire could be scrutinised or clarified instantaneously through telephone conversations. A qualitative inquiry might therefore provide insight into the additional defining information that can be found in telephone and face-to-face consultations compared to general practitioner referral letters and completed questionnaires (apart from outcomes of physical examination or manoeuvres).

Our study showed that 38 per cent of patients were discharged and 19 per cent required face-to-face consultations as the next step. In contrast, a study by Murdin *et al.* reported that 18 per cent of patients were discharged and 44 per cent attended for face-to-face consultations after telephone consultation, based on quantitative data from 100 remote consultations.<sup>10</sup> We believe that the discrepancy is associated with the use of a validated questionnaire in our study, as this added other discriminatory information for aiding diagnosis.

Despite the different rates of discharge, our proportion of diagnoses were comparable: probable Ménière's was 8 per cent in our study versus 8 per cent in Murdin and colleagues' study, with vestibular migraine diagnosed in 11 per cent of our patients versus 10 per cent in Murdin and colleagues' study.<sup>10</sup> However, for BPPV, our rate of diagnosis was higher (at 42 per cent), but consistent with a previous study in the same population (44 per cent),<sup>8</sup> as mentioned previously.

Once discharged, direct correspondence containing a summary of the telephone consultations and advice was given to the general practitioners; these detailed the reason for discharge and any further actions that may be required by the general practitioners, such as the identification of non-vestibular causes and referral to other specialties.

The proportion of 'unknown' diagnoses decreased from the point of e-triage to the telephone consultation. This was not surprising, as telephone consultations provided clinicians with more time (30-minute appointments) than general practitioners (10-minute appointments) to explore a patient's history and to clarify aspects of the completed questionnaire; this

allowed clearer information to be obtained, thereby increasing diagnostic confidence.

The questionnaire utilised in a study by Roland *et al.* could direct specialty referrals; it had good discriminatory power for peripheral, central and other causes of vertigo in more than three-quarters of cases.<sup>6</sup> Our study found diagnosis agreement between questionnaire and telephone consultation to be far greater than between e-triage and telephone consultation ( $\kappa = 0.40$  vs 0.06, respectively). This increased our confidence in changing our existing electronic referral system for all referrals, including those from general practitioners, to mandate the completion of elements from the questionnaire by all general practitioners before a referral to ENT is made. We will soon expect patients to complete the questionnaire and general practitioners to collect their answers prior to a referral being made. This aids triage and provides general practitioners with a preliminary diagnosis; patients can then commence treatment whilst waiting for an appointment. The same questionnaire can also be used to assess symptom resolution. We look forward to auditing the change in practice.

Of patients who were either dissatisfied with the service (8 out of 38) or felt worse after telephone consultation (6 out of 38), a higher proportion were diagnosed with BPPV than expected. The reasons for dissatisfaction given during the telephone survey included that they: 'were not given the correct instruction', or were 'unable to perform' the Brandt-Daroff exercises, despite having been sent patient information leaflets with links to online videos. The low rate of symptom resolution is not surprising given that the 'gold standard' treatment is a particle-repositioning manoeuvre, such as the Epley manoeuvre or Lempert roll,<sup>11</sup> rather than habituation exercises. Brandt-Daroff exercises were chosen because it was felt that patients could follow these exercises easily at home and they required no additional help. In the Semont manoeuvre,<sup>11</sup> for instance, patients might find it difficult to move quickly on their own.

We would ideally have invited patients with BPPV to attend face-to-face consultations with ENT clinicians or vestibular audiologists for instruction on particle-repositioning manoeuvres, but this was judged to be in contravention of restrictions at the time, especially given the availability of habituation exercises as an alternative. Some way of performing these manoeuvres amid a pandemic should be sought for the future: for example, we could arrange for suitable patients who have able adult family members around to be taught how to do the Epley manoeuvre or Brandt-Daroff exercises at home, or arrange access to a video or virtual demonstration. In addition, perhaps those patients with frailty issues or co-morbidities could be invited to attend face-to-face appointments for instruction on the Epley manoeuvre, but this would require discussion with the nursing staff, service managers and the vestibular rehabilitation team, to ensure the safety of patients and staff members.

Although our study found remote telephone consultations to be safe, we still prefer face-to-face over remote consultations, as we recognise the limitations in remote consultations. This is especially true when considering the effectiveness of time usage, and given that the dizziness patient population is likely to be frailer, and physical support is needed in specific manoeuvres. In our study, most of the telephone consultations took 15–30 minutes, but in face-to-face appointments, clinicians would be able to perform the relevant physical examination and treatment where appropriate within 30 minutes. Murdin *et al.* found physical examination and sometimes

particle re-positioning manoeuvres to be feasible via video consultations.<sup>10</sup> However, they conceded that some parts of the examination cannot be performed remotely, such as fundoscopy, head impulse testing, accurate assessment of smooth pursuit, saccades, and complete neurological examination of the extremities.

There was an interesting case of a patient referred by the general practitioner who experienced short episodes of vertigo on turning, with normal ear examination findings but with unilateral pulsatile tinnitus. Following telephone consultation, a provisional diagnosis of BPPV was made. However, as pulsatile tinnitus is not characteristic of BPPV, magnetic resonance imaging was conducted to rule out other pathologies, followed by face-to-face review. On examination, there were bilateral tympanic retractions. The audiogram showed right-sided mild conductive loss at high frequencies. Imaging showed right-sided cholesteatoma eroding the lateral semicircular canal (SCC). The patient underwent combined approach tympanoplasty. The vertigo improved following surgery and vestibular rehabilitation.

- Diagnosing dizzy patients relies more on patients' history, unlike other ENT conditions
- Remote consultation using a validated questionnaire and telephone consultation was a relatively safe alternative to face-to-face appointments during the pandemic
- A safe means of carrying out particle re-positioning manoeuvres could be sought
- Face-to-face consultation allows physical examination and potential treatment within 30 minutes; therefore, this method is still preferred
- This study found a low level of agreement between general practitioner referral information and final specialist diagnosis, which prompted a change to our referral pathway

The case illustrates the inherent risk in situations where face-to-face consultation is not possible, and it further reinforces the value of face-to-face consultations, which remain our preference. Without a face-to-face appointment and formal audiometric testing, early retraction pockets and asymmetrical sensorineural hearing loss would have gone unnoticed, thereby missing middle-ear pathology or retrocochlear pathology. We do emphasise that all remote encounters sacrifice patient safety to a certain extent, hence our approach in using a validated questionnaire and telephone consultations, to minimise the risk to patient safety whilst complying with pandemic restrictions at the time. The symptom of pulsatile tinnitus detected on e-triage, the questionnaire and at the telephone consultation did not fit with a diagnosis of BPPV. This prompted further assessment, which revealed bilateral tympanic retractions, conductive hearing loss and erosion of the lateral SCC on imaging. This highlights that although our approach is a feasible and safe alternative, and in keeping with lockdown restrictions at the time, an accurate description

of symptomology and a degree of clinical acumen are necessary to maintain safety and to identify cases where face-to-face consultations are required.

## Conclusion

Our approach appears to be diagnostically accurate and safe in the short term when face-to-face consultations are not possible. Benign positional paroxysmal vertigo, the most common diagnosis, is associated with the lowest rate of service satisfaction and successful treatment when using our approach. In the future, we will use questionnaires for all our balance disorder patients, to aid triage, diagnosis and to commence treatment prior to the clinic appointment. We still favour face-to-face over telephone appointments whenever possible, as examination can be performed within the same time frame.

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**Competing interests.** None declared

## References

- 1 Neuhauser HK. Epidemiology of vertigo. *Curr Opin Neurol* 2007;**20**:40–6
- 2 Bird JC, Beynon GJ, Prevost AT, Baguley DM. An analysis of referral patterns for dizziness in the primary care setting. *Br J Gen Pract* 1998;**48**:1828–32
- 3 National Records of Scotland. Population Projections for Scottish Areas 2018-based. In: <https://www.nrscotland.gov.uk/files/statistics/population-projections/sub-national-pp-18/pop-proj-principal-2018-report.pdf> [8 July 2022]
- 4 ENT UK. ENTUK Guidelines for changes in ENT during COVID-19 pandemic. In: <https://www.entuk.org/entuk-guidelines-changes-ent-during-covid-19-pandemic> [22 May 2021]
- 5 BMA. The hidden impact of COVID-19 on patient care in the NHS in England. In: [https://www.bma.org.uk/media/2840/the-hidden-impact-of-covid\\_web-pdf.pdf](https://www.bma.org.uk/media/2840/the-hidden-impact-of-covid_web-pdf.pdf) [8 July 2022]
- 6 Roland L, Kallogjeri D, Sinks B, Rauch S, Shepard N, White J *et al.* Utility of an abbreviated dizziness questionnaire to differentiate between causes of vertigo and guide appropriate referral: a multicenter prospective blinded study. *Otol Neurotol* 2015;**36**:1684–94
- 7 Zhao JG, Piccirillo JF, Spitznagel EL, Kallogjeri D, Goebel JA. Predictive capability of historical data for diagnosis of dizziness. *Otol Neurotol* 2011;**32**:284–90
- 8 Bennett A, Yeo J-L, Rao A. The effectiveness of a questionnaire in the triage and diagnosis of balance disorders. *The Otorhinolaryngologist* 2015;**8**:130–3
- 9 National Institute for Health and Care Excellence. *Clinical Guide for the Management of Remote Consultations and Remote Working in Secondary Care During the Coronavirus Pandemic*. London: NICE, 2020
- 10 Murdin L, Saman Y, Rea P. The remote neuro-otology assessment – managing dizziness in the coronavirus disease 2019 era. *J Laryngol Otol* 2020;**134**:1120–2
- 11 Nguyen-Huynh AT. Evidence-based practice. Management of vertigo. *Otolaryngol Clin North Am* 2012;**45**:925–40