

Remote assessment of hand arm vibration syndrome and carpal tunnel syndrome

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1. Introduction and Background

1. Restrictions on face-to-face consultations arising from the Covid-19 has potential to restrict statutory health surveillance.
2. Guidance was issued by HSE stating that “The usual tiered approach to health surveillance will apply. Questionnaires can be administered remotely. Where there is a problem, a review can be undertaken by telephone and then a judgement can be made on whether to see the worker face to face and, if so, how to do so safely.”
3. At the time of writing this paper, advice from NHS England and the BMA is that face to face consultations should be avoided unless absolutely necessary. In that context, it is our advice that during the period of restrictions associated with Covid-19, face-to-face consultations for tier 3 or tier 4 HAVS should only be undertaken following discussion with a senior OH colleague, and the reasons for that should be clearly recorded in the notes, along with a COSHH risk assessment relating to the consultation.
4. This paper is intended to assist those who are asked to undertake telephone assessments.
5. As with any health surveillance for HAVS, there are several important potential outcomes, being
 - a. Does the employee have a condition related to hand transmitted vibration exposure or use of vibratory tools – i.e. HAVS or CTS? and if yes
 - b. Is this a new diagnosis, and
 - c. What is the staging of the HAVS?
 - d. Consequent on the above, advice should be offered to employee and employer regarding risk assessment, further exposure and RIDDOR reporting where appropriate.
5. These principles are unchanged, and the need for remote consultations requires only minor amendments to the process used.
6. In general terms, a good history provides most information to allow clinical diagnosis in many medical conditions; this is particularly true in Hand Arm Vibration Syndrome (HAVS). Hence in many cases a remote consultation, which allows ample time for an adequate occupational and medical history to be taken, will allow a diagnosis and staging to be made. There may be a particular challenge in addressing the sensorineural damage due to vibration exposure, and suggestions are made as to how this may be addressed.

7. This document should be read in conjunction with that produced by the SOM HAVS Special Interest group available at https://www.som.org.uk/sites/som.org.uk/files/HAVS_November2019_draft.pdf

2. General principles of remote assessments.

- 2.1 The general principles of remote telephone assessment were addressed in a SOM Webinar presented by Dr Lucy Wright on 2nd April 2020. <https://som.adobeconnect.com/ploamuh9z7fg/?launcher=false&fcsContent=true&pbMode=normal>
- 2.2 It is recommended that those undertaking remote HAVS assessments review that presentation, or another similar one, to ensure that they are suitably prepared for the process.
- 2.3 When a remote assessment is undertaken, it is prudent to record in the notes and report (“health record”) the reasons why the assessment was undertaken in this way, referring to current HSE/ PHE/ NHSE Guidance at the time.
- 2.4 Where advice is given as a result of a telephone consultation, that should include comment as to whether the conclusions and advice are definitive or interim pending a face-to-face assessment. If advice is identified as interim, the employee and employer should be made aware that when a face-to-face assessment is undertaken, that advice may be amended as a result of the findings of that face-to-face assessment.

3. Health Surveillance for hand arm vibration exposure at work

3.1 Regulation 7 (2) of the Control of Vibration at Work regulations (2005) notes that health surveillance shall be intended to prevent or diagnose any health effect linked with exposure to vibration at work.

3.2 The latest HSE Guidance to the Control of Vibration at Work regulations – document L140 2nd edition (2019) – provides details of the tiered approach.

Tier 1 – The initial assessment is by a short questionnaire, which should be completed and sent in confidence to an occupational health professional. That process should remain unchanged, with the questionnaire being sent to and completed by the employee, who returns it to the OH provider. Alternatively an OH provider may administer the questionnaire, over the telephone, using the questions as suggested in Appendix 9 of the HSE Guidance.

Tier 2 - Annual screening is also by questionnaire, and the same approach can be used as for tier 1. For tier 2 screening a responsible person may administer the questionnaire, but the employee retains the option that it be done by an occupational health professional if there is concern about confidentiality relating to symptoms.

Tier 3 – This is more detailed assessment by an appropriately qualified and trained OH professional. A good history can be elicited over the telephone – using HSE Guidance and the suggestions in Section 5 of the SOM document on HAVS. Again this part is unchanged from a face-to-face consultation, except that

- a. Particular care may be required to confirm the nature, and extent of colour changes of any suspected vasospasm. Where possible, if an individual has declared colour changes at tier 1 or tier 2 they should be asked to complete a Katz diagram prior to the tier 3 assessment. Similar diagrams may also be used to define the distribution of tingling or numbness. Suitably identifiable photographs of colour changes may be available and sent by SMS or email.
- b. While clinical examination is not possible, the availability of video conference facilities may make it possible to look at the hands and ask the employee to demonstrate the areas affected by colour changes or sensory symptoms. It may be possible to see severe degrees of thenar muscle wasting with the hands placed in the 'prayer' position close to a webcam.

The potential outcomes of a remote tier 3 assessment are

1. Symptoms are not suggestive of HAVS or CTS. These should then be addressed as any occupational health assessment, and advice offered in line with the nature of the condition and any functional impairment relating specifically to the individual's work.
2. Symptoms are suggestive of HAVS but are unchanged from previous assessments. Review needs for restrictions. Arrange further telephone review in 3 months unless COVID restrictions have been lifted, in which case arrange face-to-face assessment as soon as possible.
3. Symptoms are suggestive of HAVS that has progressed since the last assessment. Refer for tier 4 assessment.
4. Symptoms suggestive of carpal tunnel syndrome (on basis of confirmed diagnosis from a doctor or using Primary care Rheumatology Society criteria - see below - or those at Appendix 8 - paragraph 21 of HSE L140) – refer for tier 4 assessment.
5. Where referral for tier 4 assessment is recommended, consideration is required of the need to restrict exposure to hand transmitted vibration until the results of the tier 4 assessment are available. Rapid escalation is appropriate if presumptive staging suggests severe or rapidly progressing HAVS or CTS.

Tier 4 assessment is undertaken by a suitably qualified and experienced doctor.

As noted above, a diagnosis of Raynaud's phenomenon is based on a detailed history with additional support from suitably validated photographs, and Katz diagrams.

Additional history should be taken as with a face-to-face examination – in order to elicit whether or not an alternative cause of the RP is likely. Actions consequent on a diagnosis or grading made in this way should not differ from those made in a face-to-face consultation.

Sensorineural assessment may be more challenging.

A diagnosis of stage 1sn may be made on the basis the history alone, but diagnosis of stage 2sn or 3sn requires clinical assessment.

Stage 2sn is likely to be difficult to assess remotely since it relies on evidence of reduction of sensory perception. In the current circumstances, it is suggested that the following distinctions are made -

1sn and early 2sn – on basis of a history of intermittent tingling and/or numbness – i.e. lasting less than 2 hours

late 2sn – on basis of persistent tingling or numbness lasting more than 2 hours

Stage 3sn with constant numbness and/ or tingling a history suggesting loss of dexterity and evidence of reduced manipulative function.

A modified Moberg pick up test may be helpful if videoconferencing is available – see Appendix 3. This is not validated and can only be used as a guide for clinical interpretation. If this suggests poor manipulative dexterity/ function, due to HAVS rather than any other condition that may be present – e.g. arthritis, this should be regarded as possibly indicating late stage sensorineural HAVS.

Remote **Phalen’s test** may be required to assist with diagnosis of carpal tunnel syndrome – see Appendix 4

A fixed flexion test at the elbow could also be performed if cubital tunnel syndrome is suspected from the history.

4. Advice to employers

Reports should be offered to employers in the same way as with face-to-face assessments, although those reports should make it clear that the findings and recommendations reflect a remote assessment with/ without telephone video conferencing.

In this context it is appropriate to indicate that the diagnosis and staging may alter once a face-to-face examination is undertaken. Where practicable the advice should be identified as interim or temporary; this is likely to be particularly important in respect of the longer-term position on vibration exposure that could potentially affect a worker’s employment. A reported history of functional problems resulting from reduced grip strength, or that otherwise impact on an ability to work safely should be addressed irrespective of the presumptive nature of the remote assessment.

In line with HSE advice, those who are assessed remotely should be offered further remote assessment in 3 months time, or face to face assessment as soon as possible after the COVID restrictions are lifted, whichever is earlier.

5. RIDDOR

A clinical diagnosis by a registered medical practitioner of HAVS or CTS meets the criteria for reporting under RIDDOR s2. Face-to-face consultation may not be required to diagnose either condition, so, if/ when the telephone consultation is sufficient to yield a confident diagnosis, RIDDOR advice should be offered accordingly.

However, where a diagnosis is in doubt, it is appropriate to regard that as un-confirmed, and delay reporting a formal diagnosis (and therefore not trigger RIDDOR reporting) until a face-to-face examination can take place. This will be a matter for

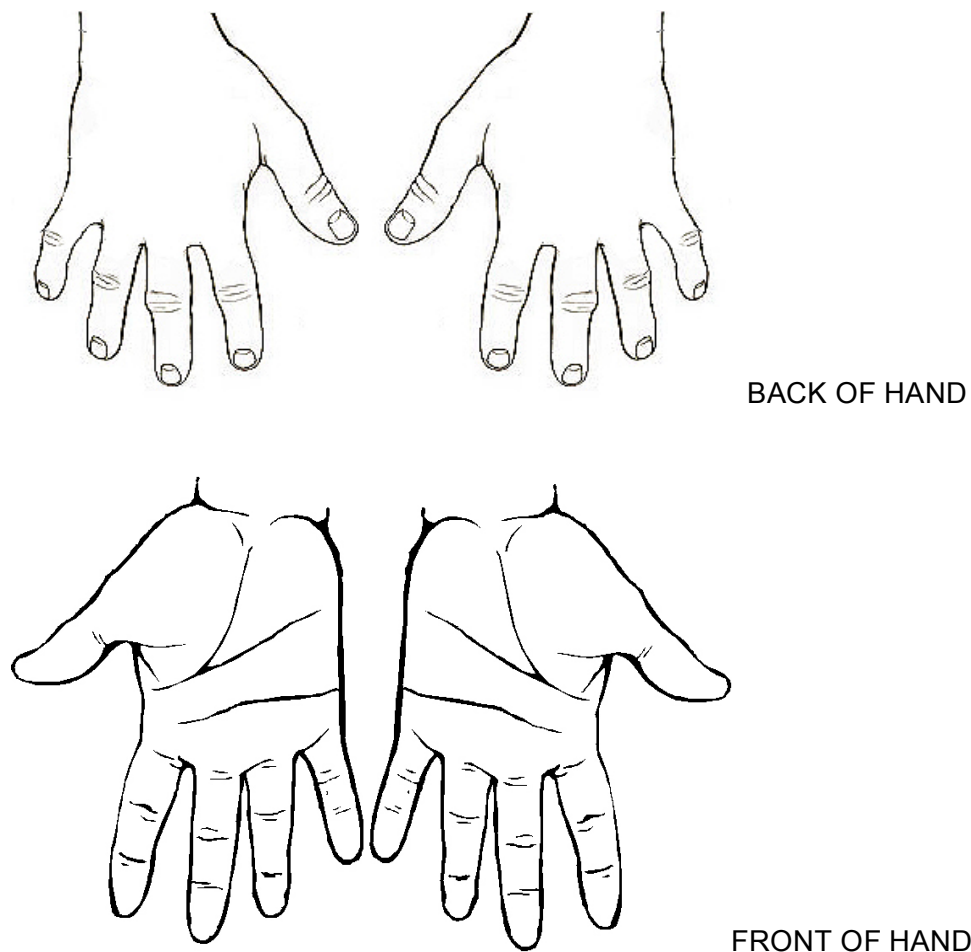
clinical judgment in each individual case and should be clearly documented in the clinical records.

6. Audit

Those who undertake telephone assessments in this way are asked to co-operate in an audit of the process. This is not regarded as research but is a potential clinical improvement activity, designed to address short term constraints on our practice. However it is possible that learning from this will allow us to review our practice in respect of health screening, which requires us to audit and review the results of the amended process. A form for completion by those participating in this audit is attached at Appendix 5.

Note – The authors of this paper are members of a working group set up by the Society of Occupational Medicine. While the paper is intended to assist colleagues and represent good practice to address issues arising at the time of publication, and has been considered by the working group, it does not necessarily represent the views of any other individual members of that group.

Appendix 1 – Katz diagram



Appendix 2 - Diagnosis of CTS

Primary Care Rheumatology Society Criteria for the diagnosis of Carpal Tunnel Syndrome

(ref: Burton C, Chesterton L, Davenport G Diagnosing and Managing carpal tunnel syndrome in primary care British Journal of General Practice 2014. 64: 262–263)

Ask employee “Do you have numbness or tingling in your wrist, hand, or fingers?”

If answers “no” – not carpal tunnel syndrome (CTS)

If answers “yes” proceed to following questions –

1. Do your symptoms spare your little finger?
2. Are the symptoms worse at night?
3. Do the symptoms wake you up at night?
4. Have you noticed your hand is weak; for example, have you found yourself dropping things?
5. Do you find shaking your hand, holding your hand, or running it under warm water improves your symptoms?
6. Are the symptoms made worse by activities such as driving, holding a telephone, using vibrating tools, or typing?
7. Have splints or injections helped with your pain if you have had it in the past?

If 3 or more of these are answered “yes” diagnose CTS

If 2 of these are answered “yes” proceed to Phalen’s test – if positive diagnose CTS; if negative, consider other causes.

Appendix 3 – Modified Moberg pick-up test

The Moberg test can be used to assess functional effect of altered sensation. The following is a suggested method of undertaking this test when videoconferencing is available.

Prior to the telephone consultation, the employee should be asked to obtain 10 objects and place them on a table next to a biscuit tin or similar sized container. Suitable objects include wing nut, screw, key, large nut, large coin, small coin, safety pin, paper clip, square nut, hexagonal nut, and a washer.

- The objects should be placed alongside the container on the side being tested first.
- The subject is asked to pick up a specified object one at a time from the tabletop and place them in the tin as quickly as possible. They should not slide the objects off the table.
- The time and manner of prehension is recorded. Discontinue if the test takes longer than 5 minutes making a note of how many objects have been correctly placed.
- Repeat the test with the opposite hand and then repeat this sequence 3 times on each hand.
- The same task is then repeated for each hand with the employee looking away.

This is a subjective test intended to assist the examiner assess whether there is evidence of impaired manipulative dexterity attributable to HAVS. If there is such evidence, the employee should be provisionally graded at stage 3sn

Appendix 4 – Remote consultation Phalen’s test.

The classical Phalen’s test is undertaken by asking the individual to sit at a table and rest their elbows on the table with forearms pointing upwards and palms away from them. They are then asked to let their palms drop forwards – i.e. away from them as far as they can. A positive result is elicited by the subject noting the onset of sensory changes in the area of the median nerve or reproduction of the symptoms of which they complain. The test can be stopped when the subject makes such a complaint or after 60 seconds, whichever is longer.

Done remotely this can be explained to the employee, and the feedback noted. Teleconferencing allows visual confirmation that the employee is undertaking the test appropriately.

However, on the assumption that there is good understanding by the employee, a positive result should be accepted for use in the Primary care Rheumatology process described above.

Appendix 5 – HAVS remote assessment audit form

This form should be completed by the clinician undertaking the telephone and face-to-face assessment. The purpose is to undertake a comparative review the outcome of the telephone assessment and face-to-face approach.

Those participating in this audit are asked to complete the forms and submit after the face-to-face assessment has been completed. This is an Excel spreadsheet that can be downloaded and completed at the time of each surveillance. No patient/ employee names should be included but each OH Practitioner using the form should assign a patient/ employee identifier for their own reference.

Participants in this audit are asked to register their interest by contacting

Sam.Butter at sam.butter@som.org.uk. Please send Sam your name, organisation and contact email address, at this stage.