

### Appendix – Modified mini mental state examination (MMSE) for deaf people<sup>5</sup>

This modified form of the MMSE is under development and should not be used with any confidence. It is presented with its development notes (below) in order to illustrate certain specific difficulties of interpreting and adapting standard hearing measures for deaf people. Upper case is used to reflect a written English form of British Sign Language (BSL) signed commands as a guide to the assessor. Clinically all items are to be signed in BSL.

#### Orientation

1. Ask the patient:
  - YEAR, WHAT? (1 mark)
  - AUTUMN, WINTER, SUMMER, SPRING, WHICH? (1 mark)
  - DATE TODAY, WHAT? (1 mark)
  - TODAY, MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, WHICH? (1 mark)
  - MONTH TODAY, WHAT? JANUARY, FEBRUARY, MARCH, ETC, WHAT? (1 mark)
2. Ask the patient:
  - WHAT COUNTRY, THIS (FRANCE, SCOTLAND, AMERICA...)? (1 mark)
  - WHAT TOWN, THIS? (1 mark)
  - (Accept London or Balham, then ask for the other, eg YES, LONDON – BIG – HERE, LOCAL AREA NAME, WHAT?) (1 mark)
  - THIS BUILDING NAME (or number if client's home), WHAT? (1 mark)
  - THIS FLOOR GROUND, FIRST, SECOND, WHICH? (1 mark)

#### Memory registration

3. Tell the patient that you want him/her to remember something for you, then name three unrelated objects – BOOK, ORANGE, SHEEP (sign clearly and slowly). Ask the patient to repeat the three objects (score 3 points if correct first time, 2 if correct second time, 1 if correct third time). Ask patient to keep the three things in mind. (3 marks)

#### Attention and concentration

4. Ask the patient to spell their first name or surname backwards, and score 1 point for each correct letter. Use first or second name according to which one contains five or more letters. (5 marks). Record which name was used, for the purposes of future retesting. You may demonstrate with your own name or a familiar person's name, so long as it is at least five letters long.

#### Memory recall

5. Ask the patient to recall the three objects from test 3. (3 marks)

#### Language

6. Show the patient two familiar objects, eg a shirt (do not indicate the collar) and a piece of paper, and ask him/her to name them. (2 marks)
7. Ask the patient to repeat a sentence after you: 'CAR, MINE, YESTERDAY, SOMEBODY STOLE.' (1 mark)
8. Ask the patient to follow a three-stage command: 'THIS PAPER. TAKE USE LEFT HAND, FOLD-IT-IN-HALF. PUT-PAPER-ON-FLOOR.' (3 marks)
9. Ask the patient to read and follow a written instruction, eg 'Touch your nose.' (1 mark)
10. Ask the patient to write a simple sentence. The sentence should contain a subject and a verb and should make sense or  
Ask the patient to sign a simple sentence. The sentence should contain a subject and a verb and should make sense. (1 mark)
11. Ask the patient to copy a picture of intersecting pentagons. (1 mark)

**Total score: /30**

#### Notes

This test can only be used to test for variation over time of one person's mental state. It cannot be used to compare one person with another, or to compare one person with a normative sample. A score above 24 strongly suggests no, or highly unlikely, cognitive impairment. A score below 24 is inconclusive and nothing can be inferred.

Q1. The order of the seasons is important so that people with primacy or recency problems are not disadvantaged by the ambiguity of season/weather for winter and summer signs.

Q3. Items are unrelated both semantically, and also in terms of handshape and location. They are signs that require little in the way of context for the meaning to be clear.

Q4. Client's name is used, as fingerspelling the name is far more common (forwards) than spelling the English form of common English words. May result in a score greater than five. Only score the first five letter-responses, eg for Johnson: N, O, S, N, H, J would score five, as would N, O, S, N, H, O, J.

Q6. Be certain that responses are commonly accepted BSL signs and not a mime of the use of the object. Similarly, do not use items for which the BSL sign can be understood as a mime of use, eg 'pen'

Q8. This does not solve the visual mime of the action element, which would make it easier to more or less copy. Right left orientation, which this partially tests, is very difficult unless right and left is fingerspelt, which has its own difficulties for those with difficulty fingerspelling. Also, consider that signing this action makes a verbal test of working memory into one that is much more procedural.

Q9. This is different from the normal 'close your eyes' as some deaf subjects are reluctant to do this as it cuts off communication. Carrying out the command is difficult to distinguish from reading the command 'aloud' in BSL.

Q10. It is important to recognise that word order is of little relevance in a short BSL sentence, eg 'dog bit leg' would be acceptable in any order of the three words. Most grammatical inconsistencies should not count against the patient, in particular missing articles (an, the...). Score 1 if the sentence contains a subject, a verb, and you understand it, eg 'dog bit leg'. It does not need to be clear who did what to whom as this is a subtlety of sign language that is not always present. The context is usually the best indicator, emphasis is another.