

## MEDICAL ASSESSMENT FOR PULHEEMS

### AIM

1. The aim of this chapter is to describe the requirements and processes of medical assessment for Armed Forces personnel. It applies to both regular and reserve forces.

### GENERAL

2. Medical assessment including both history and examination where appropriate must be systematic and thorough. The medical assessment should produce not only an accurate picture of the person's health, but also their functional capacity with regard to their current and likely future employment (including deployment). Careful assessment for age-related decrement of functional capacity or ill health is required. Any change in employment may require a further assessment. In all cases the medical assessment is to be carried out by medical personnel with sufficient training to recognise abnormal results in the screening tests used and to be able to deal with any health concerns raised, by onward referral if necessary. This chapter does not cover statutory health examinations (e.g. isocyanate workers) for which reference should be made to the appropriate policy, guidelines and single Service publications.

3. Medical assessments are to be conducted on the following occasions for the purposes stated. Guidelines on the conduct of each assessment are provided in the following paragraphs. At each assessment a PULHHEEMS grade<sup>1</sup> is to be recorded on the medical record and (with the individual's consent) the result passed to the appropriate administrative office<sup>2</sup>. Each quality and the factors that affect it are described in Chapter 1 and the functional interpretation of grades for each quality are summarised at Annex A. Further guidance for the allocation of a grading by medical condition is given in chapters 3 and 4.

a. **Pre-service.** The purpose of the pre-service medical examination is to determine medical fitness for employment (with respect to the period of engagement). Comprehensive guidelines are provided in paragraphs 5-7 and at Annex B.

b. **In service.** In service assessments may be routine, for a specific requirement<sup>3</sup> or on occasions when a medical board is required. Their purpose is to confirm continued fitness for present employment and they provide an opportunity for health promotion (activities in this latter respect are outwith the remit of this JSP). Further guidelines are provided in paragraphs 8-10.

(1) Routine medical assessments are conducted for employment purposes at 5-yearly intervals from age 30, more frequently for special employment groups (e.g. aircrew) and biennially after the age of 50 in line with single Service requirements.

(2) Service Medical Boards<sup>4</sup> are conducted to re-grade personnel following changes in their functional capacity and medical employability resulting from illness and/or injury, either on a temporary or permanent basis.

c. **Mobilisation and demobilisation (Reserve forces only).** The purpose of the mobilisation medical assessment is to confirm fitness for mobilisation and/or deployment. The aim of the demobilisation medical is to identify any changes in health status that have

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<sup>1</sup> Including suffixes to the grading in accordance with single Service guidelines.

<sup>2</sup> In accordance with single Service policy.

<sup>3</sup> e.g. change of commission or re-engagement.

<sup>4</sup> Refer to single Service guidelines for further instructions.

occurred during mobilisation and to confirm fitness for future reserve service. Further guidelines are provided in paragraphs 11-13.

d. **Discharge.** The discharge medical assessment is conducted at the termination of employment. Its purpose is to assess and record the medical status and functional capacity at the time of discharge including an appropriate PULHHEEMS grade. Further guidelines are provided in paragraph 14.

4. Annexes C-G are provided to assist the assessment of Body Mass Index and the **H, E, M, S** and **CP** qualities respectively.

## GUIDELINES FOR THE PRE-SERVICE MEDICAL ASSESSMENT

5. **General.** The aim of pre-service medical assessment is to determine fitness for employment for the terms of initial engagement and (implicitly) fitness to join the Armed Forces Pension Scheme. Because the pre-service medical assessment must be particularly thorough, comprehensive guidelines are provided at Annex B. Chapter 3 provides specific details of conditions of relevance for entry to service. The requirements for assessment for special employments (e.g. aircrew, divers) are not included in this Chapter and for which reference should be made to single Service guidelines.

6. **History.** Although a pre-employment health questionnaire may have been reviewed prior to personal assessment of the candidate, the guidelines are restricted to general principles and the verification of the history at the time of the examination. For guidelines on the evaluation of the **M** and **S** qualities, see Annex F.

7. **Physical Examination.** Functional fitness must be determined and therefore the physical examination must be comprehensive in all cases.

## GUIDELINES FOR IN SERVICE MEDICAL ASSESSMENTS

8. **General.** The aim of the in-service medical assessment is to confirm continued fitness for present employment. It may also provide an opportunity for health promotion although a full description of activities in this respect is outwith the remit of this JSP. Reference may be made to the guidelines for assessment at Annex B but the assessment need not in all cases be as comprehensive. Chapter 4 provides specific details of conditions of relevance during service.

9. **History.** There is more to be gained from a comprehensive review of medical history (since the last examination) than there is through physical examination. Episodes of ill health should be reviewed and in particular, an assessment made and recorded on whether there has been any interaction between health and work<sup>5</sup>. For guidelines on the evaluation of the **M** and **S** qualities, see Annex F.

10. **Physical Examination.** Any mandatory health surveillance examinations must be conducted (e.g. audiometry for those on Hearing Conservation programmes). The examination may be targeted but sufficient evidence is to be gained from the examination to enable an accurate assessment for each PULHHEEMS quality. If there has been a significant decrement of functional capacity, adjustment to the P quality may be required. Audiometry and measurement of distant visual acuity, height, weight, blood pressure and urinalysis are to be recorded at each assessment.

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<sup>5</sup> Elucidation of all biopsychosocial factors is recommended.

## GUIDELINES FOR THE ASSESSMENT AT MOBILISATION AND DE-MOBILISATION OF RESERVES

11. **Mobilisation.** The aim of the mobilisation medical assessment is to determine fitness for a reservist's mobilised and/or deployed role(s). Reservists will already have had a pre-service medical assessment and may have had in-service assessments. However, as primary health care records may not be readily available<sup>6</sup> the assessment must be thorough in order to detect conditions that may constrain performance of their role. Additionally, experience has shown that reservists tend to be older than regulars. It is therefore recommended that the assessment should be as comprehensive as that described at Annex B.

a. **History.** All aspects of the medical history since the last medical assessment should be explored and any intended deployed role<sup>7</sup> determined to inform the decision on fitness for mobilisation. For guidelines on the evaluation of the **M** and **S** qualities, see Annex F.

b. **Physical Examination.** Sufficient evidence is to be gained from the examination to enable an accurate assessment for each PULHHEEMS quality. Audiometry and measurement of distant visual acuity, height, weight, blood pressure and urinalysis are to be recorded.

12. **Demobilisation of Reservists.** The following procedures apply:

a. The purpose of the demobilisation medical is to identify any changes in health status that have occurred during mobilisation and to confirm fitness for future reserve service.

b. A Health Declaration by the individual is to be completed, indicating whether or not there has been any change in health status during the period of mobilised service. Where there has been a change, the declaration is to include any known causes for the change and action taken as a result. An example of such a health declaration is at Annex H.

c. All personnel are to be offered the opportunity for a consultation with a doctor.

d. Appropriate disposal of the F Med 965 theatre medical record is to be confirmed.

## GUIDELINES FOR THE DISCHARGE MEDICAL ASSESSMENT

13. **General.** The aim of the discharge medical assessment is to assess and record the medical status and functional capacity at the time of discharge including an appropriate PULHHEEMS profile. This assessment may be required as evidence of illness or injury attributed to service<sup>8</sup> and to inform any decision for re-enlistment. The results of the assessment must therefore be recorded meticulously. In particular, known exposures to hazards (physical, biological, chemical, psychological) that have potential adverse health effects (such as disease vectors or environmental and industrial hazards) must be listed. Reference may be made to the guidelines for assessment at Annex B but the assessment need not in all cases be as comprehensive. For discharges from Service for medical reasons, these instructions are complementary to published policy (e.g. SGPL 05/07: Harmonisation of Medical Boards Leading to Discharge). The FMed 133 is normally completed at this assessment.

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<sup>6</sup> Reservists normally receive primary health care from their civilian GP.

<sup>7</sup> Both geographic and activity aspects are to be determined.

<sup>8</sup> The examining medical officer is not required to determine attributability.

14. **History.** All episodes of ill health during service should be reviewed and in particular, an assessment made and recorded on whether there has been any interaction between health and work<sup>9</sup>. For guidelines on the evaluation of the **M** and **S** qualities, see Annex F.

15. **Physical Examination.** The examination may be targeted but sufficient evidence is to be gained from the examination to enable an accurate assessment for each PULHHEEMS quality. If there has been a significant age-related decrement of functional capacity, adjustment to the P grade may be required. Audiometry and measurement of distant visual acuity, height, weight, blood pressure and urinalysis are to be recorded.

#### LIST OF ANNEXES

- A. Functional Interpretation of Grades for each Quality.
- B. Guidelines for the Conduct of the Pre-Service Medical Assessment.
- C. Assessment of Body Mass Index.
- D. Assessment of hearing acuity (H).
- E. Assessment of distant visual acuity (E).
- F. Evaluation of Mental Capacity (M) and Emotional Stability (S).
- G. Assessment of Red/Green Colour Perception (CP).
- H. Health declaration - example for use at demobilisation.

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<sup>9</sup> Elucidation of all biopsychosocial factors is recommended.

FUNCTIONAL INTERPRETATION OF GRADES FOR EACH QUALITY								
Grade	P	U	L	HH		EE	M	S
<b>Factors to be considered</b>	Age, build strength and stamina	Strength, range of movement and general efficiency of upper arm, shoulder girdle and back	Strength, range of movement and efficiency of feet, legs pelvic girdle and lower back.	Audiometrically assessed acuity of hearing. The sum of the hearing loss at:  FREQUENCIES Lower   Upper		Visual acuity.	Mental capacity.	Emotional stability.
<b>1</b>				45dB or less	45 dB or less	Not less than 6/6.		
				Good hearing				
				*(RN only: Level not to be more than 30 dB at 6 kHz or 20 dB at any other frequency)				
<b>2</b>	Medically fit for unrestricted service worldwide.	Muscle power average. Able to handle arms and do heavy manual work.	Can run, jump, climb crawl and perform all kinds of manual labour.	84dB or less	123dB or less	Not less than 6/9.	Ability under service conditions to learn to perform successfully all Service duties. Includes capability to be trained as trades-person or specialist.	The absence of a medical condition affecting normal emotional stability.
				Acceptable practical hearing for service purposes.				
<b>3</b>	Medically fit for duty with minor	Must be able to use personal weapon	Capable of walking at least 5 miles and	150dB or less	210dB or less	Not less than 6/12.	Ability under Service	The presence of a minor limitation to emotional stability likely to affect

	employment limitations.	and be capable of wearing protective clothing.	able to stand for periods of at least 2 hours.	Impaired hearing. The hearing level at which most personnel are unfit for entry to the Service.			conditions to learn to perform simple unskilled duties.	the individual's ability to perform their normal military duty and general military skills. Limitations to employment are to be stated (e.g. working patterns) preferably following discussion between clinicians and the individual's line-manager (following consent). Fit to handle live arms and perform mandatory military training but must be reviewed by a service-appointed medical officer prior to deployment.
4	Medically fit for duty within the limitations of pregnancy.			More than 150DB	More than 210dB	Not less than 6/18.		
				Very poor hearing. Below entry standard for the Services.				
5						Not less than 6/24.		
6						Not less than 6/36.		
7	Medically fit for duty with major employment limitations.	Capable of sedentary and routine work of a lighter type.	Able to walk 2 miles at own pace. Can stand for a moderate period.			Not less than 6/60.	Capable of performing simple duties under supervision. Not able to bear arms. Fit for restricted service only.	The presence of a major limitation to emotional stability likely to significantly affect the individual's ability to perform their normal military duty and general military skills. Able to function within a military work environment. However, unfit to handle live arms or be deployed.
8	Medically unfit for service.	Medically unfit for service.	Medically unfit for service.	Medically unfit for service.		Less than 6/60.	Medically unfit for service.	Defect of emotional stability such that the individual is below P7 criteria.

## **GUIDELINES FOR THE CONDUCT OF THE PRE-SERVICE MEDICAL ASSESSMENT**

### **GENERAL**

1. **Introduction.** This Annex describes the pre-service medical assessment process. It includes an element of screening to assess an individual's fitness for service, including the likelihood of developing a condition during service.
2. **Documentation.** A pre-employment health questionnaire is to be completed in accordance with single-Service guidelines. The date and details of the pre-service medical assessment are to be recorded on the appropriate single Service form, whether paper<sup>10</sup> or electronic and, with the individual's consent, the result passed to the appropriate administrative office.

### **PRELIMINARY ASSESSMENTS**

3. Appropriately trained medical staff may conduct and record the following preliminary assessments before a medical officer conducts the examination.
  - a. The NHS Number is to be recorded (if not already recorded on the health questionnaire).
  - b. Height, weight, BMI<sup>11</sup> and, when applicable<sup>12</sup>, body fat percentage.
  - c. Blood pressure<sup>13</sup> (sitting). Two additional measurements are to be taken if the first recording is abnormal.
  - d. Urinalysis (blood, protein and glucose). Two additional samples are to be tested if the first recording is abnormal<sup>14</sup>.
  - e. Peak Expiratory Flow Rate (PEFR). The predicted PEFR is to be calculated and the actual PEFR measured. Two additional measurements are to be taken if the first recording is abnormal. Forced Expiratory Volume (FEV<sub>1</sub>) and Forced Vital capacity (FVC) are to be measured if indicated<sup>15</sup>.
  - f. Audiometry. See Annex D for further guidance on assessment and recording.
  - g. Distant Visual Acuity (**EE**) and Red/Green Colour Perception (**CP**). See Annexes E and G for further guidance on assessment and recording.
4. It is good practice for the examining medical officer to collect the individual from the waiting area and this is an ideal time for gait to be observed. Personal identity is to be verified, and completeness of medical documentation (health questionnaire and a record of preliminary assessments) confirmed.

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<sup>10</sup> The individual's name is to be recorded on each sheet of the paper record.

<sup>11</sup> See Annex C for Body Mass Index Guidelines.

<sup>12</sup> In accordance with single Service instructions.

<sup>13</sup> In accordance with British Hypertension Society guidelines. available at:  
[http://www.bhsoc.org/Latest\\_BHS\\_management\\_Guidelines.stm](http://www.bhsoc.org/Latest_BHS_management_Guidelines.stm)

<sup>14</sup> See Chapter 3, Leaflet 7, Paragraph 3.7.1.

<sup>15</sup> See Chapter 3, Leaflet 5, Paragraphs 3.5.2 – 3.5.6.

## HISTORY

5. Although the pre-employment health questionnaire will have been reviewed prior to personal assessment of the candidate, these guidelines are restricted to general principles and the verification of the history at the time of examination. It must be confirmed that there is no history of any conditions incompatible with service. Chapter 3 provides specific details of the influence of conditions on PULHHEEMS assessment at entry. At this stage of the assessment, an evaluation of both the **M** (intelligence or ability to learn) and **S** (emotional stability) qualities should commence in order for an appropriate grade to be allocated at the end of the assessment. Further guidance on assessment of these qualities is provided at Annex F.

6. The examining medical officer is to carefully review and verify the history. A summary of pertinent information e.g. significant illness/operations and dates is to be entered on the assessment record. In particular, the examining medical officer is to ensure that the individual is asked specifically, and expand where appropriate on a history of the following conditions:

- a. Asthma, wheezing, inhaler use.
- b. Mental ill-health issues, deliberate self-harm.
- c. Migraine.
- d. Skin conditions.
- e. Musculoskeletal conditions.
- f. A family history of disease, in particular if there is a history of sudden death particularly at an early age (<40 years) or lipid disorder.
- g. Use of tobacco, alcohol and any substance misuse.
- h. Specific dietary requirements/sensitivities.

7. The following details should also be recorded on the assessment record:

- a. Occupational history.
- b. Current sporting and physical activity levels.
- c. Current medical problems together with medication (including oral contraception).
- d. Women are to be asked for the date of their last menstrual period, the date and result of their last cervical smear and any abnormal cervical smear results.

8. Following a review of the history, the individual is to read, sign and date the verification declaration, and the examining medical officer is to countersign as a witness.

## EXAMINATION

9. **Introduction.** A comprehensive clinical examination as set out below is to be performed and all systems are to be assessed. Medical Officers should use their clinical judgement in interpreting these guidelines to determine the depth and detail of examination required in each case. If abnormalities are suspected, further information may be sought from the individual's normal providers of primary and secondary care. Any abnormality discovered by the examiner

should be pursued to a level sufficient to make a PULHHEEMS grading. The functional interpretation of grades for each quality is given at Annex A. Specific medical conditions which affect entry and employment when serving are detailed in Chapters 3 and 4 respectively.

10. **Caveats.** Chaperones are to be used in accordance with best practice<sup>16</sup> and the name of the chaperone should be recorded. If a chaperone is declined, this must also be recorded. The routine pre-service assessment does not require examination of the female breasts or genitalia. Inspection of the anus is not necessary in either male or female candidates.

11. **General considerations.** The nature of the medical examination should be explained to the candidate together with the reasons for examination of particular systems throughout the examination. At appropriate stages during the physical examination, individuals should be asked to undress down to their underwear to facilitate a full inspection and also to gain an overall impression of their physique<sup>17</sup>. The candidate's speech, general appearance and any external signs of systemic disease should be noted throughout the interview and examination. Similarly, the skin appearance can be assessed throughout the examination although the examining doctor should specifically examine the scalp. If necessary, confirmation of the nature and location of declared tattoos are to be recorded<sup>18</sup>. The recommended procedure for examination in a logical order is set out below. A record of the findings is to be made against each element.

12. **Head and Neck.** The inspection of the head and neck is to include:

- a. **General:** observation of facies and facial movements.
- b. **Visual examination and function:** external examination, pupil reaction to light and accommodation, ocular movements in all directions of gaze, visual fields by confrontation and fundoscopy<sup>19</sup>.
- c. **Ears:** Tympanic membranes, Valsalva manoeuvre.
- d. **Nose:** deformity, patency of nasal passages.
- e. **Mouth:** teeth, tongue, palate, speech.
- f. **Cervical lymph nodes.**
- g. **Thyroid.**
- h. **Scalp:** to exclude skin disease.
- i. **Other cranial nerves and special senses.** The sense of smell need not be tested.

13. **Chest.** Examination of the chest is to be performed with upper body clothing removed but there is no routine requirement for females to remove the bra. If it is necessary to move the bra in order to listen to heart sounds an explanation should be given to the patient. Examination should include:

- a. **Pulse (rate and rhythm).** Peripheral pulses and radiofemoral delay if indicated.

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<sup>16</sup> [http://www.gmc-uk.org/guidance/current/library/maintaining\\_boundaries.asp#9](http://www.gmc-uk.org/guidance/current/library/maintaining_boundaries.asp#9)

<sup>17</sup> Physically immature candidates may not be acceptable.

<sup>18</sup> In accordance with single Service procedures.

<sup>19</sup> With the examination room darkened.

- b. Confirmation of blood pressure recording (by reference to previous clinical measurement). Repeat if indicated.
  - c. Location of apex beat, cardiac thrills and auscultation of the heart sounds. Carotid auscultation.
  - d. Respiratory rate, symmetry of chest, expansion, percussion and auscultation of breath sounds.
  - e. Axillary lymph nodes.
14. **Abdomen.** Upper body clothing may now be replaced. The candidate should be asked to lie on their back on the couch to facilitate examination of the abdomen. Formal examination of the liver, spleen, kidneys, inguinal lymph nodes and testes is to be performed, and the absence of any herniae confirmed. *Examination of female genitalia is not to be undertaken.*
15. **Examination of the musculoskeletal system.** A formal and comprehensive clinical and functional examination<sup>20</sup> of the musculoskeletal system is essential. Where relevant, movements should be conducted against resistance to determine muscle strength and neurological examination performed if indicated. For convenience, the assessment is described below by region.
16. **Upper Limbs.** The upper limbs may be examined with the candidate standing, or sitting on the edge of the examination couch:
- a. **Shoulder.** Confirm symmetry, normal power, full active and passive movement (abduction, adduction, internal and external rotation).
  - b. **Elbow.** Confirm symmetry, normal power, full active and passive movement (flexion, extension, pronation and supination). Tendon reflexes.
  - c. **Wrist.** Confirm symmetry, normal power, and full active and passive movement (flexion and extension). Tendon reflexes.
  - d. **Hands.** Confirm full function of fingers and thumb, dexterity and grip strength.
  - e. **Coordination.** Confirm normal upper limb coordination.
17. **Lower Limbs.** Examination of the lower limbs should be performed with the candidate lying or reclined on the examination couch for hips and knees, and with the legs hanging over the couch for ankles and feet.
- a. **General.** Confirm equal length of the legs.
  - b. **Hips.** Confirm normal power, normal and symmetrical flexion, extension, adduction and straight leg raise, and with the knee and hip flexed at 90<sup>0</sup>, normal internal & external rotation.
  - c. **Knees.**
    - (1) **Inspection.** Confirm symmetrical quadriceps muscle mass.

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<sup>20</sup> A DVD titled: The Functional Orthopaedic Examination of the Potential Recruit is available from BDFL (Catalogue Number C52127/07).

(2) **Palpation.** Confirm the absence of effusion and joint line and tibial tubercle tenderness.

(3) **Movement.** Confirm normal power, symmetrical and normal flexion and extension and absence of crepitus. With the leg in extension confirm the integrity of the medial and lateral collateral ligaments. Confirm the integrity of the anterior and posterior cruciate ligaments (posterior sag, anterior drawer test, Lachman's test), and of the menisci by McMurray's test. Finally, patellar apprehension testing should be performed.

(4) **Tendon reflexes.**

d. **Ankle.** Confirm the absence of Achilles tendon tenderness or thickening. Confirm normal power, full and symmetrical movement: dorsiflexion, plantar flexion, inversion and eversion (both passively and actively). Perform the ankle anterior drawer test to demonstrate integrity of the anterior talo-fibular ligament. Tendon reflexes.

e. **Feet and toes.** Confirm normal power, normal and symmetrical movement of the mid-foot and fore-foot joints. Confirm normal movement of all toes and exclude the presence of deformities (club feet, flat feet, claw toes, scars and hard corns).

18. **Spine.** The spine is best examined with the candidate standing.

a. **Cervical spine.** Confirm normal and symmetrical flexion, extension, lateral flexion and rotation.

b. **Thoracic spine.** Exclude kyphosis and scoliosis and confirm full thoracic rotation.

c. **Lumbo-sacral spine.** Confirm flexion and a smooth spinal curve without bending the knees<sup>21</sup>, extension, lateral flexion and rotation.

d. **Coordination.** Confirm normal spinal and lower limb coordination.

19. **Dynamic functional assessment.** Performance of the following exercises will further inform the assessment of the **U** and **L** qualities:

a. **Press-ups.** The candidates should be asked to perform 3 or 4 press-ups: males – knees off floor, straight back, at shoulder width with the palms flat on the floor. The rise must be from nose-on-floor to elbows fully extended. Observation must ensure that the elbows are at the same level on each side and that there is no asymmetry of the upper limbs or thorax. If necessary, females may perform the exercise using the knees as the fulcrum point.

b. **Normal gait.** Gait will already have been observed as the candidate enters the examination room but should be confirmed by taking normal steps across the room.

c. **Toe walking.** The candidate should walk across the room on the tips of their toes with the feet fully extended.

d. **Heel walking.** The candidate should walk across the room on the heels of their feet.

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<sup>21</sup> Ideal: touch the floor. Minimum acceptable: reach the level of the ankle.

- e. **Walking on the outer border of the feet.** The candidate should walk across the room on the outer borders of the feet.
  - f. **Duck walking.** The candidate takes 5-6 steps whilst squatting with the knees and hips flexed and the ankles fully dorsiflexed.
  - g. **Heel raises.** 5 single heel raises should be performed with both arms outstretched and fingertips only in contact with the wall. The other leg is held with the knee flexed to 90°.
  - h. **Further dynamic functional assessment.** Medical officers may request physical selection staff to further assess dynamic qualities during physical selection tests (e.g. gait during running tests, shoulder performance during chin-ups).
20. **Summary.** The examining medical officer is to ensure that a record of findings against each element has been made, provide a summary of the medical examination, provide the candidate with a PULHHEEMS grading together with a Pass / Fail / Deferral statement and then sign and date the record, with a note of their name in block capitals. If appropriate, the medical officer must also indicate if the candidate may undertake physical selection tests. Any attachments to the examination record must be indicated.

**ASSESSMENT OF BODY MASS INDEX**

1. **Introduction.** The height – weight tables published in previous versions of JSP 346 Chapter 2 are no longer relevant. It is recommended that the relationship between height and weight should be assessed with reference to Body Mass Index (BMI). Although BMI does not measure body fat directly, research has shown that BMI correlates well with direct measures of body fat. It is an inexpensive and easy-to-perform method of assessment of weight categories that correlate with health problems and is accepted by health authorities (including WHO) as a valid indicator of obesity for health risk assessment. Of particular importance are the relationships between BMI and (a) the risk of injury during military training and (b) cardiovascular risk. Body Mass Index is measured as follows: mass in kilograms divided by height in metres, squared, and therefore has the units kg/m<sup>2</sup>.

2. A classification of cardiovascular disease risk based on both BMI and waist circumference has been adopted by the National Institute for Health and Clinical Effectiveness (NICE). The NICE classification of BMI and waist circumference is shown in tables below. A recent INM report<sup>22</sup> has recommended that the latest guidance from NICE<sup>23</sup>, that BMI and waist circumference should be recorded. In addition the INM report recommends that the disease risk criteria within the NICE guidelines be modified to provide statements on suitability for entry to the Armed Forces.

Classification	BMI (kg/m <sup>2</sup> )
Underweight	≤18.5
Healthy weight	18.5-24.9
Overweight	25.0-29.9
Obesity Class 1	30.0-34.9
Obesity Class 2	35.0-39.9
Obesity Class 3	≥40

Table C1: NICE classification of BMI.

Waist circumference risk	Men	Women
Low	<94	<80
High	94-102	80-88
Very High	>102	>88

Table C2: NICE Classification of risk for waist circumference (cm).

3. **Pre-service assessment.** Although single Services may have their own policies for entry for absolute height and weight<sup>24</sup>, the recommended BMI guidelines for entry into service are as follows:

Age ( years)	Male and female minimum	Male and female maximum	Male maximum with additional assessment	Female maximum with additional assessment
18+	<b>18</b>	<b>28</b>	<b>32</b>	<b>30</b>
16 to <18	<b>17</b>	<b>27</b>	<b>27</b>	<b>27</b>

Table C3: Upper and lower BMI limits for entry.

<sup>22</sup> INM Report No. 2007.026 dated Jun 07.

<sup>23</sup> <http://www.nice.org.uk/CG43>

<sup>24</sup> Based on anthropometric and other considerations.

4. The additional assessments required are measurement of waist circumference *and* satisfactory aerobic fitness<sup>25</sup>. For males waist circumference must be less than 94cm; for females waist circumference must be less than 80cm.
5. These requirements are based upon both research into risk of and type of training injuries and the health effects of the extremes of BMI. It is generally considered that health becomes an issue when the BMI is outside of a range of 18-30 and the health effects of being underweight or overweight are well known. However, the overall fitness and functional capacity of the individual should also be considered. For example some individuals, such as body builders, who are lean but have a high BMI due to a high lean body mass, may be suitable for service. However, there is clear evidence that there is a significantly increased risk of musculoskeletal injury (particularly during military training and in females) in those with a low BMI<sup>26</sup>. Similarly, there is evidence that in individuals with a high BMI there is decreased muscle endurance and an associated increase in fatigue<sup>27</sup>.
6. **In-service, mobilisation and discharge assessments.** BMI should not be used alone as a reason to change the **P** quality but should be used as part of a comprehensive functional assessment to determine suitability for employment.
7. **Specialist Employment Groups.** Single-Service height and weight standards will apply for entry into specialist employment groups, such as aircrew, parachutists, Royal Marines and submariners. These standards can be found in the relevant single Service publications.
8. **Protocol for the assessment of waist circumference.** The following protocol should be followed to ensure consistency in the assessment of waist circumference<sup>28, 29</sup>:
  - a. The candidate's waist should be exposed, sufficient for the relevant bony landmarks to be identified.
  - b. The candidate should be standing with the feet together, weight evenly distributed and with a relaxed arm position.
  - c. The candidate should breathe normally and the waist measurement is to be taken at the end of normal expiration.
  - d. The correct position is midway between the bottom of the ribcage and the uppermost border of the iliac crest.
  - e. The tape should be snug but not compress the skin.
  - f. If there is difficulty locating the bony landmarks the tape is to be placed at the level of the umbilicus.

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<sup>25</sup> As assessed by pre-employment physical selection tests and subject to single Service requirements.

<sup>26</sup> Identifying Risk Factors for the Development of Training Injuries among Female Army Recruits. Greeves J, Leamon S, Bunting A, Panchel R, Mansfield H. QinetiQ Report 05/01990. Jul 2006.

<sup>27</sup> Fitness, performance and anthropometric characteristics of 19,195 Canadian Forces personnel, classified according to body mass index. Jette M, Sidney K, Lewis W. *Mill Med.* 1990;155:120-6.

<sup>28</sup> <http://hcna.radcliffe-oxford.com/obesity.html>

<sup>29</sup> World Health Organization. *Measuring obesity—classification and description of anthropometric data.* Report on a WHO consultation on the epidemiology of obesity. Geneva: World Health Organization, 1987.

**ASSESSMENT OF HEARING ACUITY (H)**

1. Personnel working in noisy working environments are at risk of hearing damage, which may result in deafness and/or tinnitus. Audiometry is the standard health surveillance tool for the assessment of noise-induced hearing loss and all new entrants must have their hearing acuity assessed by pure tone audiometry. This requirement will provide a baseline against which future audiometry can be compared and will also highlight any disorder of hearing at recruitment. The standards of hearing acuity required by individual trade groups are a single Service issue and the relevant single Service publications contain detailed information on these standards. For detailed information on health surveillance once in service see the Surgeon General's Policy Letter 12/06<sup>30</sup>.

2. **Audiometric basis of assessment.** The basis of audiometric assessment is the summing of high and low frequency levels in decibels (dB) over six frequencies. The frequencies used are 0.5, 1, 2, 3, 4 and 6 kilohertz (kHz); the low frequencies being 0.5, 1 and 2 kHz and the high frequencies 3, 4 and 6 kHz. The hearing in each ear is assessed and recorded separately. The assessment is recorded under the first H for the right ear, and under the second H for the left ear. The higher value digit, representing the worst frequency group, determines the individual's overall hearing category for each ear.

3. **Audiometric standards.** There are five grades of hearing acuity: 1, 2, 3, 4 and 8, described in the following table:

Grade s	Sum of hearing level at low frequencies in dB	Sum of hearing level at high frequencies in dB	General description
1	Not more than 45. (RN only: No single level to be more than 20dB)	Not more than 45. (RN only: Level not to be more than 30 dB at 6 kHz or 20 dB at any other frequency)	Good hearing
2	Not more than 84	Not more than 123	Acceptable hearing
3	Not more than 150	Not more than 210	Impaired hearing.
4	More than 150	More than 210	Poor hearing where continuing employment is subject to specialist assessment.
8	More than 150	More than 210	Poor hearing that has been assessed as being incompatible with continued service.

Table D1: Grades of hearing acuity.

4. During service any change in the H degree, other than a fall from H1 to H2, must be referred for an ENT opinion. Unilateral hearing loss also required specialist assessment, with investigation as necessary. Those with unilateral or bilateral hearing loss who are considered suitable for continued employment in the Services must be subject to appropriate controls and education (both of the individual and their managers) to ensure appropriate protection from exposure to noise and to reduce the risk of any further deterioration in hearing.

5. It is important to remember that hearing acuity does not necessarily correlate closely with hearing function or ability to undertake effectively and safely any particular employment

<sup>30</sup> SGPL 12/06: Noise at work health surveillance.

role. Any functional impairment that is found to be due to impaired hearing should be reflected in the P quality. Restrictions on employment that are as a direct result of impaired hearing should also be reflected in the P quality. In both these cases the impaired hearing acuity will be reflected in the H quality for each ear.

## **ASSESSMENT OF DISTANT VISUAL ACUITY (E)**

1. This Annex provides details of distant visual acuity (VA) assessment only. Other ophthalmological examination requirements are detailed in Annex B and Annex G (red/green colour vision perception).

### **PRE-SERVICE ASSESSMENT**

2. Accurate assessment of distant visual acuity (VA) is essential, as specified visual standards are critical in many Service trades. Failure to meet the standards is a cause of premature discharge and examiners must be wary of potential pit-falls in testing. Examining medical officers are to be aware of the potential for long term wear contact lens users to forget to declare their use of visual correction.

3. Before being given an appointment for a pre-Service medical examination, the candidate is to be questioned as to whether he or she wears spectacles or contact lenses and one of the following procedures applied. All candidates who wear spectacles or contact lenses are to provide a contemporaneous visual correction prescription which may be requested prior to the pre-service assessment. However, if there is a discrepancy between VA measured at an optician and that recorded at the pre-service assessment, the latter should take precedence.

- a. New entrants who wear spectacles only are to be instructed to bring their spectacles with them when attending the medical examination.
- b. Contact lenses alter the curvature of the cornea and VA assessment immediately following their removal functionally improves VA. New entrants who wear contact lenses (hard or soft) and already have spectacles are therefore:
  - (1) To be instructed not to wear their soft contact lenses for at least a period of 48 hours prior to their medical examination, or 10 days in the case of hard contact lenses.
  - (2) To be instructed to bring their spectacles with them when attending the medical examination.
  - (3) To be given an appointment at a date which will allow (1) above.
- c. New entrants who wear contact lenses but do not have spectacles are:
  - (1) To be instructed not to wear their soft contact lenses for at least a period of 48 hours prior to their medical examination, or 10 days in the case of hard contact lenses. They must however, bring them to the examination.
  - (2) To be given an appointment at a date which will allow (1) above.
  - (3) To have their VA assessed and recorded **unaided** first, and then to fit their contact lenses and have their **aided** VA assessed and recorded.
  - (4) At the pre-service medical examination, to be warned that if in all other respects their selection is successful, they will be required to be in possession of spectacles and an appropriate prescription at their initial medical examination.

- (5) To have the medical examination record<sup>31</sup> annotated “corrected VA assessed with contact lenses only.”

## IN SERVICE ASSESSMENT

4. Distant visual acuity (both uncorrected and corrected) is to be measured and recorded at each assessment.

## DISTANT VISUAL ACUITY TESTING AND RECORDING

5. **Snellen Chart.** The following instructions should be observed to ensure accuracy in the use of distant vision test charts. A standard 6 metre Snellen chart is to be used, adequately illuminated, and set at exactly six metres<sup>32</sup> from the candidate.

- a. Commencing with the right eye, each eye is tested separately. The eye not under examination is to be properly occluded, be directed towards the chart and the candidate must not be allowed to turn their head.
- b. The candidate may not screw up the eyes during testing; this includes the eye under cover.
- c. Since it is easy to memorise the top three letters of the chart, a prior view of the chart invalidates the test. The chart must be changed and the examination repeated.

6. **Near visual acuity testing.** Near visual acuity testing is required for certain branches and trades. Single Service guidance provides details of the testing procedures required and standards to be achieved.

7. **PULHHEEMS equivalents for visual acuity.** The PULHHEEMS equivalents for corrected and uncorrected visual acuity are as follows:

Visual acuity	PULHHEEMS ‘E’ grade
Not less than 6/6	1
Not less than 6/9	2
Not less than 6/12	3
Not less than 6/18	4
Not less than 6/24	5
Not less than 6/36	6
Not less than 6/60	7
Less than 6/60	8

8. **Recording.** The recording of visual acuity under EE shows the uncorrected and corrected vision in each eye separately, the first E representing the RIGHT eye, the second the LEFT eye. Under EE the upper numbers denote the uncorrected visual acuity and the lower numbers the corrected visual acuity. For example, a person with uncorrected vision R = 6/12, L = 6/18, corrected vision R = 6/6, L = 6/9 is recorded as:

<sup>31</sup> For example, serial 89 of F Med 1.

<sup>32</sup> If space is limited, an optician’s mirror may be used to double the distance of a 3m test lane, but the 6m chart must be used in all cases (i.e. the 3m unreflected version is not to be used).

P	U	L	H	H	E	E	M	S
					3	4		
					1	2		
Period of validity of MES								

A person whose unaided vision is R = 6/6, L = 6/6 is recorded as:

P	U	L	H	H	E	E	M	S
					1	1		
Period of validity of MES								

## **EVALUATION OF MENTAL CAPACITY (M) AND EMOTIONAL STABILITY (S)**

### **GENERAL**

1. The physician is not expected to perform an exhaustive psychiatric examination; however, a limited enquiry should always be made. The most effective method is one of professional interest coupled with a respect for the candidate's personality and feelings. Questioning should begin with points relevant to the situation but of low emotional content. This can lead onto a more general discussion of social background, work history and emotional relationships.

### **PRE-SERVICE ASSESSMENT**

2. **M quality.** The **M** quality is assessed in the recruit selection process by intelligence testing.

3. **S quality.** Emotional stability (**S**) must be assessed by the examining medical officer. There is no adequate group test for temperament or personality and reliance must be placed on history. Contact with psychiatric services, substance abuse, eating disorders and contact with police and social services should all be elicited. Any history of self-harm or post-traumatic stress must be sought.

4. **Further Guidance.** The medical examiner should follow the specific psychiatric guidance for entry as detailed in Chapter 3.

### **IN SERVICE ASSESSMENT**

5. **M quality.** The **M** quality for serving personnel is not equivalent to that applied in the pre-service assessment. It is a clinical classification distinguishing those whose mental capacity makes them suitable for normal employment or deployment from those whose limited capacity may affect employability. Although the examining medical officer may make a recommendation, permanent re-grading of the **M** quality must always be made following assessment by a Service neurologist or clinical psychologist.

6. **S quality.** Although the examining medical officer may make a recommendation, permanent re-grading of the **S** quality must always be made following assessment from Service mental health specialists<sup>33</sup>.

7. **Further Guidance.** The medical examiner should follow the specific psychiatric guidelines for serving personnel as detailed in Chapter 4. Those who are below M2 and S2 will exhibit a reduction in their overall functional capacity, and this should be reflected in a reduced P quality

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<sup>33</sup> Normally a psychiatrist but on occasions a community psychiatric nurse or clinical psychologist.

## **ASSESSMENT OF RED/GREEN COLOUR PERCEPTION (CP)**

1. Testing of colour perception is conducted using the standard Ishihara plates and, when necessary, the Holmes-Wright colour vision testing lantern. The detailed procedures for both tests are at Appendix 3. Lantern testing is to be done by medical officers or opticians trained in its use. Apart from certain uncommon cases of injury or disease, colour perception alters little during Service life. The test on entry is regarded as final and re-testing is only done for strong executive or medical reasons.
2. **Standards of colour perception.** Standards are as follows:
  - a. Standard 1 (CP 1) The correct recognition of coloured lights shown through the paired apertures of the Holmes-Wright lantern at LOW brightness at 6m distance in complete darkness.
  - b. Standard 2 (CP 2) The correct recognition of the first 17 plates of the Ishihara test (24 plates abridged edition 1969) shown at a distance of 50 – 100cm.
  - c. Standard 3 (CP 3) The correct recognition of the coloured lights shown through the paired apertures on the Holmes-Wright lantern at HIGH brightness at 6m distance in complete darkness.
  - d. Standard 4 (CP4) Army and RAF. Unable to pass standard 3.  
RN. The correct recognition of colours used in relevant trade situations and assessed by simple tests with coloured wires.
  - e. Standard 5 (CP 5) RN only. Unable to pass any of the above tests.

## **PROCEDURES FOR COLOUR PERCEPTION TESTING**

3. **Ishihara book test:**
  - a. **Examination method.** The test is conducted using only good diffused daylight direct onto the test plates or the alternative illuminant (fluorescent daylight lamp to BS 950 Part 1; 1967 (1980), all other light being excluded.
  - b. The test plates are presented to the examinee at a distance of 50 – 100 cm (20-40 inches) for not more than 5 seconds. The examinee may wear spectacles if appropriate. The winding line plates for illiterates normally need not be presented.
  - c. Each number is read aloud by the examinee. They are not allowed to trace or handle the plates.
  - d. The number of plates miscalled is recorded in the box on the examination form (not applicable to the RAF).
  - e. **Assessment.** If no error is made the examinee is graded CP2, but it should be noted that certain number might be miscalled by colour normals, particularly when under stress. If not more than 3 plates are miscalled, the miscalled plates are shown again. If no errors are made on the second presentation a grading of CP2 may be given. Those failing the test are made CP4 pending lantern testing. RAF candidates failing the test are graded CP4 unless they are designated to trades requiring CP3 or are required to drive on an airfield; in these cases a lantern test is arranged.
4. **Lantern test:**

a. **Description.** This test is usually performed by Service ophthalmologists or other trained persons. The lantern is regarded as a form of *trade test* displaying pairs of vertically arranged lights in combination of red, green and white. These are viewed at a distance of 6 m (20 ft), either by direct vision or mirror reversal, in light surroundings or in total darkness as laid down in current instructions. The colour pairs can be changed by rotating the colour setting flange at the rear of the lantern, the colour pairs presented being indicated by the code number visible in windows on each side and at the rear of the lantern. The code numbers represent:

1	R2	2	G2	3	W	4	G2		
	W		R1		W		R2		
5	R1	6	R1	7	W	8	G1	9	G1
	R2		G1		G2		R2		G2

The intensity of the lights presented can be varied by the filter change at the rear of the lantern, the settings being:

DEM: for demonstration only.

HIGH brightness for testing in light surroundings.

LOW brightness for testing in total darkness.

b. **Examination method.** In order to reduce errors the examination method and instructions to the examinee should be followed exactly in each case.

- (1) Seat the examinee, wearing spectacles as appropriate, at the correct viewing and in the prescribed testing surroundings with the lantern aperture at eye level.
- (2) Connect the lantern to a 220/240 volt supply and switch on the rotary switch at the rear of the lantern. No warming up period is necessary.
- (3) Turn the filter change level to DEM and the colour flange setting to Code 1.
- (4) Say to the examinee: 'This is a test to find out whether you can readily recognise red, green, or white signal lights. The colours are shown in pairs one above the other in any combination of red, green or white. Name both colours calling the one on top first. The top colour you see now is red'.
- (5) Turn the colour setting flange to Code 2. Say to the examinee: 'The top colour you see now is green'.
- (6) Turn the colour setting flange to Code 3. Say to the examinee: 'The top colour you see now is white'.
- (7) Turn the filter lever to HIGH or LOW brightness depending on the testing surroundings. Turn the colour setting flange to Code 4, 6, 8 or 2 (that is any red/green combination). Say to the examinee: 'Start now, naming first the top then the bottom colour. Do not use any words other than red or green or white. You will be given five seconds to name the colours'. If the examinee uses any colour name other than red, green or white remind him that only these words should be used. Make no other comments to the examinee.

(8) Show each colour pair to the examinee in consecutive order, the responses being recorded on the examination form. Each response must be given within five seconds.

**5. Assessment of CP3 and CP4:**

- a. The lantern test is carried out in a dark room using a HIGH brightness setting.
- b. If no error is made with one complete run of all colour pairs, the examinee is graded CP3 (Colour defective Safe).
- c. If any error naming green as red or red as green is made the Army and RAF examinee is graded CP4 (Colour defective Unsafe) without further testing.
- d. If any other error is made two further runs at HIGH brightness are carried out.
  - (1) If no error in either run is made, the examinee is graded CP3. If one or more errors are made the examinee is dark adapted for 15 minutes and one final run at HIGH brightness carried out.
  - (2) If no error is made the examinee is graded CP3 If one error is made the Army and RAF examinee are graded CP4.
- e. RN examinees failing CP3 require further trade testing to enable grading as CP4 or CP5.
- f. If the Holmes-Wright lantern is not available, candidates may be tested using the Fletcher CAM lantern<sup>34</sup>.

6. The lantern is not to be opened except for routine annual servicing, at which the lamp is changed.

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<sup>34</sup> [http://www.optometry.co.uk/articles/docs/b3110a3aec7eb305936a597d0bab856e\\_Fletcher.pdf](http://www.optometry.co.uk/articles/docs/b3110a3aec7eb305936a597d0bab856e_Fletcher.pdf)



Investigations

Urine	Peak flow	BP	Pulse	Hearing	Eyesight
Protein:				R	R
Blood:				L	R corrected
Glucose:					L
					L corrected

**Signature of medical staff:****Date:**

NB patient will need to see a medical officer if there has been any substantial change in condition during deployment.

6. Summary of medical examination.

7. Disposal.

Fit

Referred to GP

Referred to NHS specialist

Referred to other hospital specialist

**Signature of medical officer:****Date:**

## **GUIDELINES FOR UNDERTAKING SCREENING PURE TONE AUDIOMETRY**

1. Pure tone audiometry is the standard health surveillance tool for hearing loss, including Noise Induced Hearing Loss (NIHL). Audiometry is undertaken in medical centres using automated pure tone audiometry. In this form it is equivalent to industrial screening audiometry. More accurate clinical audiometry is available in Service approved audiology departments, such as the Defence Audiology Service (DAS) based at Institute of Naval Medicine.

2. This leaflet deals with screening audiometry. It should be carried out in accordance with the guidelines below and at a frequency determined by appropriate risk assessment in line with JSP 950 Lft 6-4-4, and as directed by single Service and other relevant hearing conservation policy, eg operational mounting orders.

### **Environment**

3. For screening audiometry to be as accurate as possible, it is necessary to minimise extraneous noise, in case this masks the test tones and gives a false result. Criteria are laid down for test rooms and should be adhered to<sup>36</sup>. The frequencies most sensitive to environmental interference are the low frequencies of 1 kHz and below. These frequencies may result from people walking through or past a testing area – this should be taken into consideration when siting the test room. The requirements for audiometry should be considered during all new building work or contracts for facilities where audiometry will take place.

4. In all but exceptional circumstances, it is necessary to use an audiometric soundproof booth to achieve acceptable testing conditions. Testing within MoD should be undertaken in an appropriate booth, which must be serviced and maintained to the correct standard<sup>37</sup>. A minority of people find audiometric booths claustrophobic and need to be tested outside the booth. Noise excluding headsets are not deemed suitable for MoD purposes, and so personnel should be referred for clinical audiometry in this scenario.

### **Equipment**

5. Screening audiograms may be performed using an automatic screening audiometer. The audiometer is to be set to record in 5 dB increments, and not used in Bekesy mode. The currently approved audiometer is the Amplivox CA850 4A, although units with previous models<sup>38</sup> which comply with requirements may continue to use them. The CA850 is available from MG&S Abbey Wood (NSN 6515-99-773-4626 Audiometer Screening CA850-4A Automatic Screening Incorporating Internal Database & Integrated Graphics c/w Audiocups+Designated Printer).

6. Each audiometer should only be used with the earphones supplied with it. Earphones are calibrated to a particular audiometer, and it is not acceptable to swap earphones between audiometers. If earphones need to be changed, the audiometer must be sent for recalibration with the new earphones as laid out in Paras 8-10 below.

7. Manual pure tone audiometry is the gold-standard of hearing threshold measurement. Manual audiograms are only to be conducted by personnel trained, as a minimum, to current British Society of Audiology Education Committee Guideline on The

<sup>36</sup> BS EN ISO 8253-1:2010 Acoustics. Audiometric test methods Pure-tone air and bone conduction audiometry Jan 11.

<sup>37</sup> BS EN 60645-1 (IEC 60645-1) and the relevant BS EN ISO 389 (ISO 389) series standards.

<sup>38</sup> e.g. Microlab series.

Training of Industrial Audiometricians standard. This is to ensure that manual audiometry is carried out in a repeatable and accurate manner. Where manual audiometry is required a request for testing should be sent to an appropriate clinical audiology department such as DAS.

### **Equipment Maintenance, Calibration and Daily Checks<sup>39</sup>.**

8. Screening audiometers should comply with BS EN IEC 60645-1:2001, and are to be calibrated in accordance with BS EN ISO 389-1:2000.

9. All equipment should be maintained, calibrated and used according to the recommendations of BS 6655:1986 EN 26189:1991 ISO 6189:1983 Specification for pure tone air conduction threshold audiometry for hearing conservation purposes. A basic calibration of each audiometer is to be performed by a competent laboratory annually. It is acceptable to use the manufacturer for this check.

10. The annual check must incorporate calibration of the earphones used with the audiometer. This is important, as the earphones are often the weakest link in the calibration chain, being easily damaged in use.

11. A listening check should be undertaken daily before use. An experienced and trained individual with good hearing<sup>40</sup> should listen at each frequency and at 3 sound intensities to ensure that no extraneous noise is generated by the apparatus.

### **Training For Those Carrying Out Audiometry**

12. In order to ensure that screening audiometry is as accurate as possible, and does not miss early changes in hearing acuity, the test must be performed in a consistent manner with care. Personnel undertaking screening automatic audiometry should be trained in the procedure. Some training in audiometry is currently provided in Phase 2 at DMSTC and this will be expanded in early 2014. In addition an e-learning package is being developed for use for update and refresher training in medical centres. Personnel newly arrived on a unit are to be supervised until they have demonstrated a satisfactory standard. All personnel undertaking audiometry are to be checked annually to ensure understanding of the procedure by a senior member of staff nominated by the senior MO - this check is to include independent validation of an entire audiometric screening test. This check may be undertaken locally, but should be recorded in local training documentation in a manner that is available to Healthcare Governance Assurance Visit teams. Any individual who has not performed audiometry within the past year is to undergo the local refresher training before performing unsupervised audiometric testing.

### **Quality Control**

13. It is important that audiometry is undertaken under standardised test conditions with close attention to quality control procedures. Quality control is important to improve the repeatability and reliability of the data produced. Comparisons between audiometric results taken over a period of time on one individual are an important part of interpretation in an ongoing and effective audiometric programme. To ensure that results are comparable it is essential that standardised method of testing is used. Careful explanation to the subject of the procedure and familiarisation with the test tones before the test begins are also essential

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<sup>39</sup> To be conducted in accordance with sS policy (AP 1269 11-04, APHCS Infrastructure and Equipment Policy) until replaced by DPHC Instructions.

<sup>40</sup> Preferably a Senior NCO or Practice Nurse with hearing no worse than H2 H2.

for the collection of reliable data. The criteria used to determine the accuracy with which results are obtained include:

- a. Whether repeat audiometry on the same individual and same day is consistent<sup>41</sup>;
- b. Appropriate and timely equipment calibration; and
- c. The presence of background noise in the test environment.

## Procedure

14. An aide memoire for the procedure below is at Appendix 1.

15. It is civilian best practice that before undertaking an audiogram the identity of the individual should be checked against a photographic identity document (e.g. MoD 90, a photographic driving licence, or passport) to confirm their identity; this should be followed in DMS facilities<sup>42</sup>. If they had not had an audiogram before, the initial noise and health questionnaire at Appendix 2 should be completed. For subsequent audiograms, the previous medical records including last audiogram(s) should be available. Any significant changes to personal details, job or noise exposure should be noted, and if necessary the questionnaire at Appendix 2 should be completed again.

16. Specific enquiry should be made about current problems, to include subjective hearing loss, Upper Respiratory Tract Infection (URTI) symptoms, earache, discharge from the ear, tinnitus or balance problems. With the exception of subjective hearing loss, individuals with any problems should be referred to an appropriate clinician<sup>43</sup> before the test proceeds. The clinician should decide if audiometry can be performed same day or deferred.

17. The ear should be examined using an otoscope. If significant amounts of wax are present (here defined as obscuring more than 80% of the view of the tympanic membrane), the wax should be removed by somebody trained in the procedure. If ear drops or ear syringing are used, at least 48 hours should be allowed post treatment before audiometry. If otoscopy reveals abnormalities, such as inflammation, fluid behind the tympanic membrane, perforation, blood or discharge) the individual should be referred to an appropriate clinician before the test proceeds. The clinician should decide if audiometry can be performed same day or deferred.

18. An explanation of the test procedure should be provided to the individual. They should be seated in the booth, and the tester should fit the earphones in the correct orientation (red right ear, blue left ear), ensuring they are properly seated and positioned over each ear, lining the speaker up with the ear canal. The individual should be observed throughout the test to ensure that they do not attempt to falsify the test (e.g. swapping headphones over halfway through, watching the light on the audiometer or rhythmically pressing the response button). The test should be completed using automatic computer mode, not Bekesy or manual mode. The frequencies 500 Hz, 1 kHz, 2 kHz, 3 kHz, 4 kHz, 6 kHz and 8 kHz are to be recorded on every occasion for both ears. If automatic mode fails to record a valid result at any frequency, these should be repeated and added using manual mode.

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<sup>41</sup> Only required if there are clinical concerns over an audiometric result, or more general concerns about the quality of audiometry at a unit.

<sup>42</sup> Any attempt at impersonation should be dealt with as a disciplinary matter.

<sup>43</sup> This will normally be a medical officer, but could include an appropriately trained nurse or audiologist.

19. When the audiogram is complete the tester should remove the headphones for the patient to reduce the likelihood of damage to the headphones. On completion of the test, results should be compared with the most recent previous audiogram (unless this is the initial test). If there is a difference of 15 dB or more<sup>44</sup> at any frequency from the previous result, the test should be repeated on the following day<sup>45</sup>. Until the test has been repeated, the individual should be protected from further noise exposure. If a change of 15dB or more is confirmed on repeat testing, this may be regarded as reliable. Further action is detailed in the following paragraphs.

20. Inspect the audiogram for any obvious problems. See JSP 950 Lft 6-4-2 for guidance on inspection of audiometry. If urgent concerns are identified, the individual should be referred to an appropriate clinician immediately. A DMICP algorithm is being developed to aid this decision-making process.

21. If no urgent concerns are identified, the audiogram should be referred for routine review by an appropriate clinician. The individual should be booked for repeat audiometry at the appropriate frequency, and a diary entry made on DMICP

### Documentation

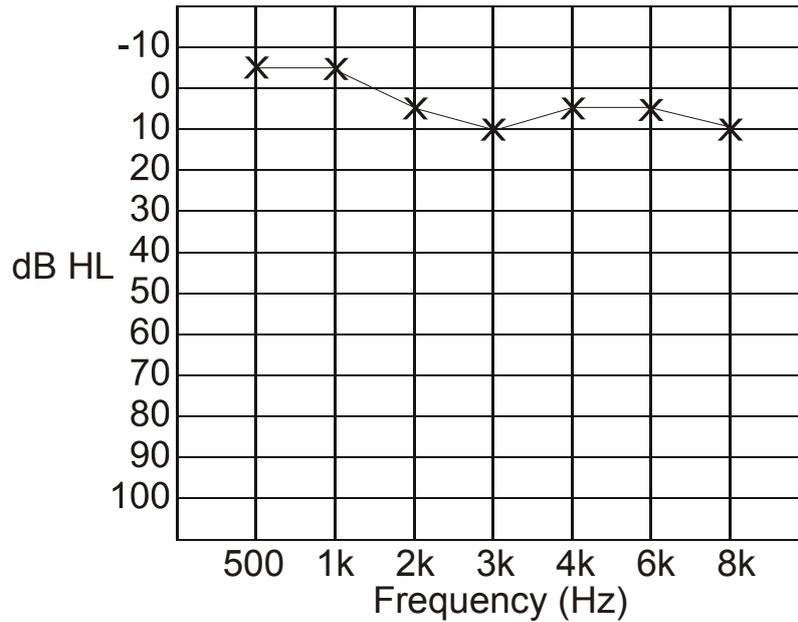
22. The audiogram is to be handled under a "Protect – Medical" caveat. The result is to be entered onto DMICP via the audiometry template, and the audiogram itself scanned onto DMICP as part of the patient record for medico-legal reasons. Once the audiogram has been successfully scanned into the patient record, the original audiogram can be shredded under normal arrangements for clinical records. Where there is no DMICP record (eg Civil Servants), the audiogram is to be stored in the individuals Medical File for a minimum of forty years.

23. When recording audiograms on DMICP, negative values are to be recorded as negative values, and not set to 0. Similarly, negative values are to be summed as negative, and not rounded up to 0. This is to ensure that the audiogram permits subsequent changes to be detected. For example look at the following audiogram:

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<sup>44</sup> Changes up to and including 10dB at a single frequency between screening audiograms may not be reliable, and may occur without ear disease being present.

<sup>45</sup> A minimum of 16 hours should be allowed between tests, ideally 24 hours. If there are no appointments available in an appropriate timescale, the test should be repeated within a maximum of 2 weeks.



This should be recorded as:

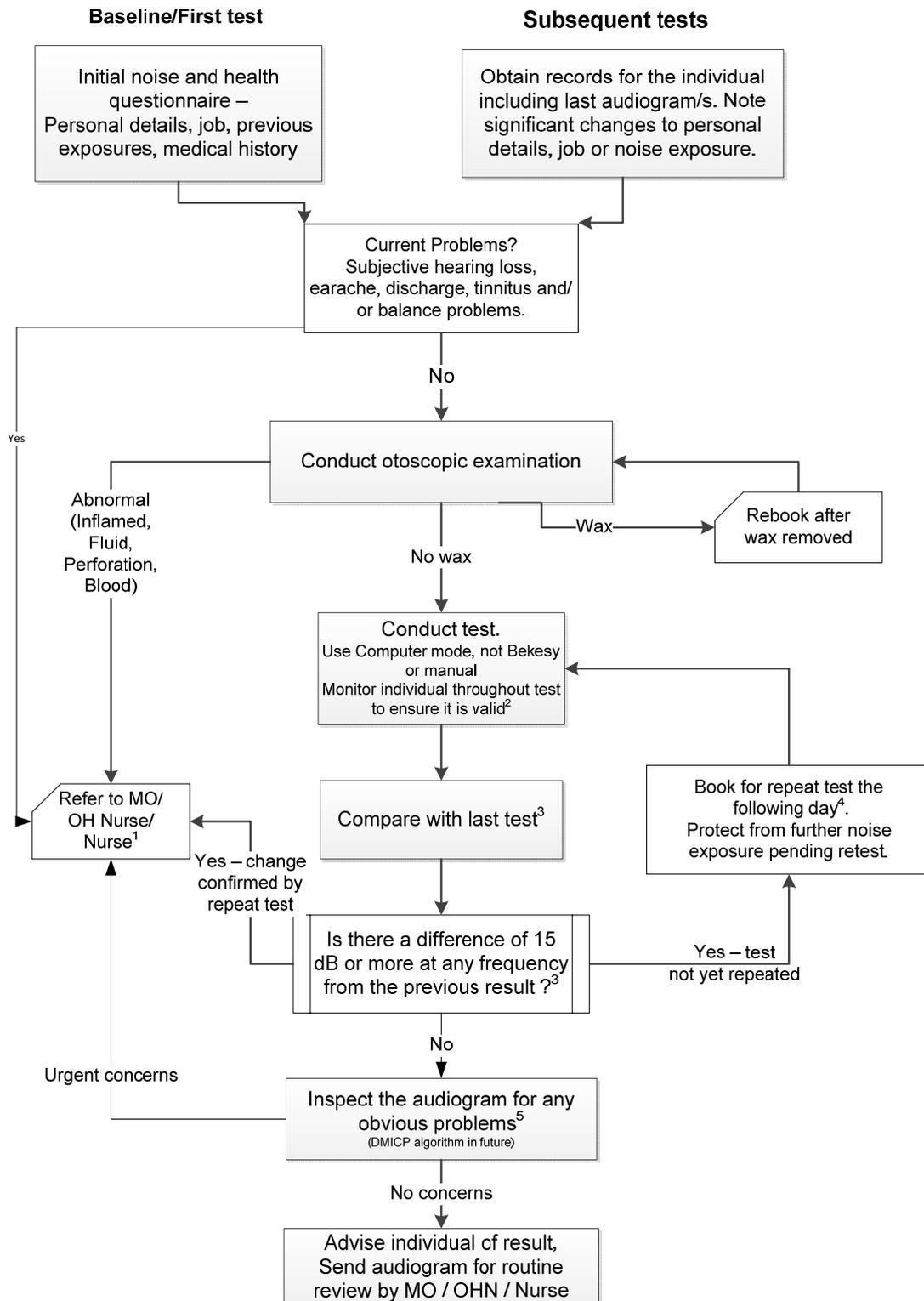
Frequency	dB
500 Hz	-5
1kHz	-5
2 kHz	5
3 kHz	10
4 kHz	5
6 kHz	5
8 kHz	10
Sum Low tones	-5
Sum High tones	20

24. Policy on interpretation of audiograms can be found in JSP 950 Lft 6-4-2 'Guidance on the assessment of audiograms'.

**Management Instructions**

25. Further advice concerning this leaflet can be obtained from the Civilian Consultant in Occupational Medicine or SO1 Occupational Medicine at HQ SG. Unless cancelled or otherwise revised, this leaflet will automatically be reviewed after 5 years. SG will make this policy leaflet publicly available in accordance with freedom of information legislation. However, this policy leaflet is not to be published on the Internet without the express permission of the author. Where elements of this leaflet become further incorporated into single Service policies and procedures that might affect individuals from minority groups, action addressees are to ensure that the information is made available in a culturally appropriate manner - this includes providing translation where required. An Equality Analysis has been undertaken in the production of this policy and no impact is anticipated in terms of the Equality Act 2010.

## Protocol for Performing Screening Audiometry



1. Clinician should decide if audiometry can be performed same day (eg subjective hearing loss, tinnitus) or deferred (eg otitis media)
2. Eg swapping headphones over during the test
3. Unless this is base line entry audiometry
4. Audiometry should be repeated once to confirm the result. If a difference of 15 dB or more at any frequency is confirmed, refer to MO/OH Nurse/Nurse
5. See JSP 950 Lft 6-4-2 for guidance on inspection of audiometry

**AUDIOMETRY HEALTH QUESTIONNAIRE**

<b>Service: (circle)</b> RN/RM/Army/RAF	<b>Surname:</b>	<b>Forenames:</b>	
<b>Date of birth:</b>	<b>Rank:</b>	<b>Service Number:</b>	
Initial /Entry	<input type="checkbox"/>	Repeat Initial /Entry	<input type="checkbox"/>
Periodic / Routine	<input type="checkbox"/>	Repeat Periodic / Routine	<input type="checkbox"/>
Special	<input type="checkbox"/>	Repeat Special	<input type="checkbox"/>
Pre-Deployment	<input type="checkbox"/>	Repeat Pre-Deployment	<input type="checkbox"/>
Post-Deployment	<input type="checkbox"/>	Repeat Post-Deployment	<input type="checkbox"/>
Clinical	<input type="checkbox"/>	Repeat Clinical	<input type="checkbox"/>
<b>Date of audiogram</b>			

This questionnaire refers to the time since your last hearing test. Continue answers overleaf if necessary

<b>ENT</b>	1	Have you noticed any change in your hearing?	Yes	No
	2	Do you have trouble hearing or understanding normal conversation?	Yes	No
	3	Do other people complain about your hearing and/or the loudness at which you listen to radio/TV?	Yes	No
	4	Have any of your immediate blood relatives (mother, father, sister(s) & brother(s) only) had hearing loss prior to the age of 50?	Yes	No
	5	Do you experience frequent earaches, ear infections, excessive earwax or discharge from the ear?	Yes	No
	6	Do you experience ringing or buzzing in the ear?	Yes	No
	7	Have you ever had a perforated/burst ear drum? If yes, when? Reason (please give details)?	Yes	No
	8	Have you consulted an Ear Nose & Throat specialist in the last year? If yes, when?	Yes	No
	9	Have you had ear surgery recommended or performed?	Yes	No
	10	Do you use a hearing aid, or have you ever been fitted for one?	Yes	No
<b>PMH</b>	11	Have you had a cold, 'flu or sinus problem in the past 7 days?	Yes	No
	12	Have you suffered any head injuries or loss of consciousness? If yes, when? Reason (please give details)?	Yes	No
<b>OM</b>	13	What is your present occupation? <b>Reserves only:</b> What is your civilian occupation?		
	14	Does your current role (including civilian occupation for reserves) involve regular exposure to any loud noise? (e.g. firearms, artillery fire, power tools, aircraft, motor boats, heavy machinery) If yes, please give details.	Yes	No
	15	Do you regularly use an i-Pod, MP3 player or equivalent device?	Yes	No
	16	Do you have any noisy hobbies eg shooting?	Yes	No
	17	Have you had a past exposure to explosion or blast?	Yes	No
	18	In the past 48-hours have you been exposed to loud noise?	Yes	No

<b>Post - Deployment Testing only</b>				
1		Have you noticed any change e.g. loss of sensitivity or ringing in the ears, in your hearing since your last test?	Yes	No
2		Were you exposed to any explosions or blasts when on operations?	Yes	No
3		Did you wear hearing protection when exposed to noise? What did you use?	Yes	No
4		Were the potential noise hazards that may be encountered in the operational theatre and their control measures covered during your PDT and RSOI training?	Yes	No

