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Guidelines for Evaluation of Permanent Impairment

First Edition

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Foreword

The *Guidelines for Evaluation of Permanent Impairment* (the Guide) is issued for the purpose of assessing the degree of permanent impairment that arises from a compensable injury or disease. When a person sustains a permanent impairment the Guide is intended for use by trained medical assessors to ensure an objective, fair and consistent method for evaluating the degree of impairment.

The first edition of the Guide is based on the American Medical Association's *Guides to the Evaluation of Permanent Impairment, Fifth Edition* (AMA5 Guides). The American Medical Association's Guides are the most authoritative and widely used source for evaluating permanent impairment. However extensive work by eminent Australian medical specialists representing all Australian Medical Colleges has gone into reviewing the AMA Guides to ensure they are aligned with clinical practice in Australia.

The Introduction is divided into two parts. The first part is intended for the use of medical practitioners who are applying the Guide in their assessment of permanent impairment that results from an injury or disease.

The second part describes the legislative instrument that adopts the Guide as the formal methodology for the assessment of permanent impairment for injuries compensable in Queensland. This second part also outlines the legislative requirements relevant to the assessment of permanent impairment that needs to be understood and applied by assessing medical practitioners.

Publications such as this only remain useful to the extent that they meet the needs of users and those injured who sustain a permanent impairment. It is therefore important that the protocols set out in the Guide are applied consistently and methodically. Any difficulties or anomalies need to be addressed through modification of the publication and not by idiosyncratic reinterpretation of any part. All suggestions for improvement should be addressed to the workers' compensation regulator.

1 Introduction

Part 1

1.1 This Guide adopts the AMA5 Guides in most cases. Where there is any deviation, the difference is defined in this Guide and the procedures contained therein are to prevail if there is any inconsistency with AMA5 Guides.

1.1(a) Assessing permanent impairment involves clinical assessment on the day of assessment taking account of the injured person's relevant medical history and all available relevant medical information in order to determine, in accordance with diagnostic and other objective criteria as detailed in this Guide:

- whether the condition is stable and stationary
- whether the injured person's compensable injury/condition has resulted in impairment
- whether the resultant impairment is permanent
- the degree of permanent impairment that results from the injury, and
- the proportion of permanent impairment due to any previous injury, pre existing condition or abnormality.

1.1(b) The referral for an assessment of permanent impairment is to make clear to the assessor the injury or other medical condition for which an assessment is sought.

1.1(c) In calculating the final level of assessment, the assessor needs to clarify the degree of impairment that results from the compensable condition. Any deductions for pre-existing conditions are to be clearly identified in the report and calculated. If, in an unusual situation, a related condition has not been identified, an assessor should record the nature of any previously unidentified condition in their report and specify the causal connection to the relevant compensable injury or medical condition – see also paragraphs 1.51 and 1.52.

1.2 Medical assessors are expected to be familiar with Chapters 1 and 2 of the AMA5 Guides in addition to the information contained in this introduction.

1.3 In the case of a complex injury, where different medical assessors are required to assess different body systems, a 'lead assessor' should be nominated to coordinate and calculate the final level of permanent impairment as a percentage of whole person impairment (% WPI) resulting from the individual assessments.

1.4 This Guide may specify more than one method that assessors can use to establish the degree of an injured person's permanent impairment. In that case, assessors should use the method that produces the highest degree of permanent impairment. (This does not apply to gait derangement - see items 3.5 and 3.10).

Development of the Guide

1.5 This Guide was developed by groups of medical specialists brought together to review the AMA5 Guides.

1.6 This Guide is meant to assist suitably qualified and experienced medical practitioners to assess the degree of permanent impairment. Medical practitioners are required to exercise their clinical judgment in determining diagnosis, whether the original condition has resulted in impairment and whether the impairment is permanent.

Body systems covered by the Guide

- 1.7 AMA5 Guides are used for most body systems, with the exception of Vision where, on the medical specialists (ophthalmologists) advice, assessments are conducted according to *AMA Guides to the Evaluation of Permanent Impairment, 4th Edition* (AMA4 Guides). The Chapter Mental and Behavioural Disorders (Chapter 14 in AMA 5 Guides) is likewise omitted. This Guide contains a substitute Chapter on Psychiatric and Psychological Disorders (Chapter 11) which was written by a group of Australian Psychiatrists.
- 1.8 The Chapter on Pain (Chapter 18 in the AMA 5 Guides) is excluded entirely at the present time. Conditions associated with chronic pain should be assessed on the basis of the underlying diagnosed condition, and not on the basis of the chronic pain. Where pain is commonly associated with a condition, an allowance is made in the degree of impairment assigned in this Guide. Complex regional pain syndrome should be assessed in accordance with Chapter 16 p495-497 of the AMA 5 Guides.
- 1.9 Evaluation of Permanent Impairment due to Hearing Loss adopts the methodology indicated in these guides (Chapter 9) with some reference to AMA5 Guides, Chapter 11 (p245-251), but uses National Acoustic Laboratory (NAL) Tables from the NAL Report No 118, *Improved Procedure for Determining Percentage Loss of Hearing*, January 1988.

Multiple impairments

- 1.10 Impairments arising from the same injury are to be assessed together. Impairments from multiple injuries that arise out of the same event are to be assessed together to calculate the degree of permanent impairment of the injured person, except for psychiatric or psychological injuries. The degree of permanent impairment for psychiatric or psychological injuries must be assessed separately.
- 1.11 The Combined Values Chart (p604-606, AMA5 Guides) is used to derive a % WPI that arises from multiple impairments. An explanation of its use is found on p9-10 of AMA5 Guides. When combining more than two impairments, the Assessor should commence with the highest impairment and combine with the next highest and so on.

Permanent impairment

- 1.12 Assessments are only to be conducted when the medical assessor considers that the degree of permanent impairment of the injured person is unlikely to improve further and is stable and stationary – see paragraph 1.48 for definition of stable and stationary.
- 1.13 If the medical assessor considers that the injured person's treatment has been inadequate and the impairment is not stable and stationary, the assessment should be deferred and comment made on the value of additional/different treatment and/or rehabilitation – subject to paragraph 1.14.

Refusal of Treatment

- 1.14 If the injured person has been offered, but refused, additional or alternative medical treatment that the assessor considers is likely to improve the injured person's condition; the medical assessor should evaluate the current condition, without consideration of potential changes associated with the proposed treatment. The assessor may note the potential for improvement in the injured person's condition in the evaluation report, and the reasons for refusal by the injured person, but should not adjust the degree of impairment on the basis of the injured person's decision.

Future Deterioration of a Condition

- 1.15 Similarly, if a medical assessor forms the opinion that the injured person's condition is stable for the foreseeable future, but that it may deteriorate in the long term, the assessor should make no allowance for this deterioration, but note its likelihood in the evaluation report.

Information Required for Assessments

- 1.16 On referral, the medical assessor should be provided with all relevant medical and allied health information, including results of all clinical investigations related to the injury in question.
- 1.17 The degree of permanent impairment that results from the injury/condition must be determined using the tables, graphs and methodology given in this Guide and AMA5 Guides. Most importantly, assessors must have available to them all information about the onset, subsequent treatment, diagnostic tests, and functional assessments of the person claiming a permanent impairment. The absence of required information could result in an assessment being discontinued or deferred. Section 1.5 of Chapter 1 of AMA5 Guides (p10) applies to the conduct of assessments and expands on this concept.
- 1.18 AMA5 Guides and this Guide indicate the information and investigations that are required to arrive at a diagnosis and to measure permanent impairment. Assessors must apply the approach outlined in the Guides. Referrers must consult this publication in order to gain an understanding of the information that should be provided to the assessor in order to conduct a comprehensive evaluation.

Medical assessors

- 1.19 An assessor will be a medical practitioner with qualifications, training and experience relevant to the body system being assessed who has undertaken the requisite training in use of this Guide, or a medical practitioner elected by the referring insurer.
- 1.20 Assessors may be one of the injured person's treating practitioners or an assessor engaged to conduct an assessment for the purposes of determining the degree of permanent impairment, as arranged by the insurer.

Code of conduct

- 1.21 Assessors are referred to the Medical Board of Australia's *Good Medical Practice: A Code of Conduct for Doctors in Australia*, 8.7 Medico-legal, insurance and other assessments.
- 1.22 Assessors are reminded that they have an obligation to act in an ethical, professional and considerate manner when examining an injured person for the determination of permanent impairment.
- 1.23 Effective communication is vital to ensure that the injured person is well-informed and able to maximally cooperate in the process. Assessors should:
 - ensure that the injured person understands who the assessor is and the assessor's role in the evaluation
 - ensure that the injured person understands how the evaluation will proceed
 - take reasonable steps to preserve the privacy and modesty of the injured person during the evaluation, and

- 1.32 The assessed degree of permanent impairment is to be expressed as a % WPI.
- 1.33 The report should include a conclusion of the assessor, including the final % WPI. This is to be included as the final paragraph in the body of the report, and not as a separate report - see paragraph 1.54 to 1.58 for specific provisions regarding the delivery of the report.

Ordering of additional investigations

- 1.34 As a general principle, the assessing medical practitioner should not order additional radiographic or other investigations purely for the purpose of conducting an assessment of permanent impairment; however this does not apply to a Medical Assessment Tribunal.
- 1.35 If, however, the investigations previously undertaken are not as required by this Guide or are inadequate for a proper assessment to be made, the medical assessor should consider the value of proceeding with the evaluation of permanent impairment without adequate investigations.
- 1.36 In circumstances where the assessor considers that further investigation is essential for a comprehensive evaluation to be undertaken and deferral of the evaluation would considerably inconvenience the injured person (e.g. when the injured person has travelled from a country region specifically for the assessment), the assessing medical specialist may proceed to order the appropriate investigations provided that there is no undue risk to the injured person. The approval of the referring body for the additional investigation will be required to ensure that the costs of the test are met.

Conditions which are not covered by the Guide - Equivalent or Analogous Conditions

- 1.37 AMA5 Guides (p11) states: "Given the range, evolution and discovery of new medical conditions, the Guides cannot provide an impairment rating for all impairments... In situations where impairment ratings are not provided, the Guides suggest that medical practitioners use clinical judgment, comparing measurable impairment resulting from the unlisted condition to measurable impairment resulting from similar conditions with similar impairment of function in performing activities of daily living. The assessor must stay within the body part/region when using analogy for musculoskeletal injuries."
- 1.38 The physician's judgment, based upon experience, training, skill, thoroughness in clinical evaluation, and ability to apply the Guides criteria as intended, will enable an appropriate and reproducible assessment to be made of clinical impairment."

Inconsistent Presentation

- 1.39 AMA5 Guides, p19, states: "Consistency tests are designed to ensure reproducibility and greater accuracy. These measurements, such as one that checks the individual's range of motion are good but imperfect indicators of people's efforts. The physician must use the entire range of clinical skill and judgment when assessing whether or not the measurements or test results are plausible and consistent with the impairment being evaluated. If, in spite of an observation or test result, the medical evidence appears insufficient to verify that an impairment of a certain magnitude exists, the physician may modify the impairment rating accordingly and then describe and explain the reason for the modification in writing." This paragraph applies to inconsistent presentation only.

Activities of Daily Living

- not provide any opinion to the injured person about their claim.
- 1.24 Information produced for injured persons regarding independent medical examinations and assessments of permanent impairment should be supplied by insurers when advising the appointment details.
- 1.25 Complaints received in relation to the behaviour of an assessor during an evaluation will be initially handled by the insurer that made the referral. If complaints recur or the initial review reveals that a problem potentially exists, the complaint will be referred to the Australian Health Practitioner Regulation Agency for investigation and appropriate action.

Adjustment for the effects of orthoses and prostheses

- 1.26 Assessments of permanent impairment are to be conducted without assistive devices, except where these cannot be removed. The assessor will need to make an estimate as to what is the degree of impairment, without such a device, if it cannot be removed for examination purposes. Further details may be obtained in the relevant Chapters in this Guide.
- 1.27 Impairment of vision should be measured with the injured person wearing their prescribed corrective spectacles and/or contact lenses, if this was usual for them before the injury. If, as a result of the injury, the injured person has been prescribed corrective spectacles and/or contact lenses for the first time, or different spectacles and/or contact lenses than those prescribed pre-injury, the difference should be accounted for in the assessment of permanent impairment.

Adjustment for the effects of treatment

- 1.28 As previously indicated, where an injured person has declined treatment which the assessor believes would be beneficial, the impairment rating should be neither increased nor decreased – see paragraphs 1.49 and 1.50 for more information.

Reports

- 1.29 A report of the evaluation of permanent impairment should be accurate, comprehensive and fair. It should clearly address the question being asked of the assessing medical practitioner. In general, the assessor will be requested to address issues of:
- current clinical status, including the basis for determining whether the injury is stable and stationary,
 - the degree of permanent impairment that results from the injury, and
 - the proportion of permanent impairment due to any previous injury, pre-existing condition or abnormality, if any.
- 1.30 The report should contain factual information based on all available medical information and results of investigations, the assessor's own history taking and clinical examination. The other reports or investigations that are relied upon in arriving at an opinion should be appropriately referenced in the assessor's report.
- 1.31 This Guide is to be used in assessing permanent impairment and the report of the evaluation should provide a rationale consistent with the methodology and content of this Guide. It should include a comparison of the key findings of the evaluation with the impairment criteria in this Guide. If the evaluation was conducted in the absence of any pertinent data or information, the assessor should indicate how the impairment rating was determined with limited data.

Stable and stationary

- 1.48 This is considered to occur when the worker's condition has been medically stable for the previous three months and is unlikely to change by more than 3%WPI in the next 12 months with or without further medical or surgical treatment.

Adjustment for the effects of treatment

- 1.49 In circumstances where the treatment of a condition leads to a further, secondary impairment, other than a secondary psychological impairment, the assessor should use the appropriate parts of this Guide to evaluate the effects of treatment, and use the Combined Values Chart (p604-606 AMA5 Guides) to arrive at a final Whole Person Impairment.
- 1.50 Where the effective long term treatment of an illness or injury results in apparent substantial or total elimination of the injured person's permanent impairment, but the injured person is likely to revert to the original degree of impairment if treatment is withdrawn, the assessor may increase the percentage of whole person impairment by 1, 2 or 3% WPI. This percentage should be combined with any other impairment percentage, using the Combined Values Chart. This paragraph does not apply to the use of analgesics or anti-inflammatory medication for pain relief.

Deductions for Pre-existing Condition or Injury

- 1.51 The degree of permanent impairment resulting from pre-existing impairments should not be included in the final calculation of permanent impairment if those impairments are not related to the compensable injury. The assessor needs to take account of all available evidence to calculate the degree of impairment that pre-existed the injury.
- 1.52 In assessing the degree of permanent impairment resulting from the compensable injury, the assessor is to indicate the degree of impairment due to any previous injury, pre-existing condition or abnormality. This proportion is known as "the deductible proportion" and should be deducted from the degree of permanent impairment determined by the assessor.

Disputes over Assessed Degree of Impairment

- 1.53 If a worker disagrees with their assessed degree of impairment, the worker must advise the insurer within 20 business days after the insurer issues the notice of assessment that the worker does not agree.

Reports

- 1.54 Reports are to be provided within ten working days of the assessment being completed, or as agreed between the referrer and the assessor.
- 1.55 Reports that comply with the requirements below are paid at a higher level than other medical reports. If the assessment report does not comply, the insurer may request further details before payment is processed.
- 1.56 The report must state the matters taken into account, and the weight given to the matters, in deciding the degree of permanent impairment.
- 1.57 It is recommended that the final report contains:
- a medical history
 - clinical evaluation details such as the range of movement, neurological findings and any relevant investigations

- 1.40 Many tables in AMA5 Guides give class values for particular impairments, with a range of possible impairment values within each class. Commonly, the tables require the medical practitioners to consider the impact of the injury/illness on activities of daily living in determining the precise impairment value. The activities of daily living which should be considered, if relevant, are listed in Table 1-2, p4, AMA5 Guides. The impact of the injury on activities of daily living is not considered in assessments of the upper or lower extremities.

- 1.41 The assessment of the impact of the injury on activities of daily living should be verified wherever possible by reference to objective assessments, for example, physiotherapist or occupational therapist functional assessments and other medical reports.

Rounding

- 1.42 Occasionally the methods of this Guide will result in an impairment value which is not a whole number (e.g. an assessment of peripheral nerve impairment in the upper extremity). All such values must be rounded to the nearest whole number before moving from one degree of impairment to the next (e.g. from finger impairment to hand impairment, or from hand impairment to upper extremity impairment) or from a regional impairment to a whole person impairment. Figures should also be rounded before using the combination tables. This will ensure that the final whole person impairment will always be a whole number. The usual mathematical convention is followed where rounding occurs - values of 0.4 or less are rounded down to the nearest whole number and values of 0.5 and above are rounded up to the next whole number. The method of calculating further hearing loss is shown in Chapter 9, paragraph 9.15, p46.

Quality Assurance

- 1.43 The degree of permanent impairment that results from the injury must be determined using the tables, graphs and methodology given in this Guide, and the applicable legislation. If it is not clear that a report has been completed in accord with this Guide, clarification may be sought from the trained medical assessor who prepared the report.

Part 2 – Specific requirements

- 1.44 For the purposes of the Queensland workers' compensation scheme, this Guide is made under section 183 of the *Workers' Compensation and Rehabilitation Act 2003* and is to be used in the evaluation of permanent impairment arising from work injuries in accordance with section 179 of the *Workers' Compensation and Rehabilitation Act 2003*.

Date of Effect

- 1.45 This Guide is to be used in the assessment of impairment from the date of effect of the Guide as published in the gazette.

Use of this Guide

- 1.46 Assessors of levels of permanent impairment for injuries that occur after 15 October 2013 are required to use the Guide current at the time of the assessment.

Psychological Injury

- 1.47 Where applicable, impairments arising from psychological and psychiatric injuries are to be assessed separately from the degree of impairment that results from physical injuries arising out of the same event.

2 Upper Extremity

AMA5 Chapter 16 applies to the assessment of permanent impairment of the upper extremities, subject to the modifications set out below.

Introduction

- 2.1 The upper extremities are discussed in AMA 5 Chapter 16 (pp 433-521). This chapter provides guidelines on methods of assessing permanent impairment involving these structures. It is a complex chapter that requires an organised approach with careful documentation of findings.
- 2.2 Evaluation of anatomical impairment forms the basis for upper extremity impairment assessment. The ratings reflect the degree of impairment and its impact on the ability of the person to perform activities of daily living. There can be clinical conditions where evaluation of impairment may be difficult, for example, lateral epicondylitis of the elbow. Such conditions are evaluated by their effect on function of the upper extremity, or if all else fail, by analogy with other impairments that have similar effects on upper limb function.

The Approach to Assessment of the Upper Extremity and Hand

- 2.3 Assessment of the upper extremity mainly involves clinical evaluation. Cosmetic and functional evaluations are performed in some situations. The impairment must be permanent and stable. The injured person will have a defined diagnosis that can be confirmed by examination.
- 2.4 The assessed impairment of a part or region can never exceed the impairment due to amputation of that part or region. For an upper limb, therefore, the maximum evaluation is 60% WPI, the value for amputation through the shoulder.
- 2.5 Active range of motion should be measured with several repetitions to establish reliable results. Only active motion is measured, not passive motion.
- 2.6 To achieve an accurate and comprehensive assessment of the upper extremity, findings should be documented on a standard form: AMA 5 Figures 16-1a and 16-1b (pp 436-437) are extremely useful, both to document findings and to guide the assessment process.
- 2.7 The hand and upper extremity are divided into regions: thumb, fingers, wrist, elbow, and shoulder. Close attention needs to be paid to the instructions in Figures 16-1a and 16-1b (pp 436-437, AMA5) regarding adding or combining impairments.
- 2.8 Table 16-3 (pp 439, AMA5) is used to convert upper extremity impairment to whole person impairment.

Specific Interpretation of the AMA 5 Guides – The Hand and Upper Extremity

Impairment of the Upper Extremity due to Peripheral Nerve Disorders

- 2.9 If an upper extremity impairment results solely from a peripheral nerve injury the assessor should not also evaluate impairment(s) from Section 16.4, abnormal motion (pp 450-479, AMA5) for that upper extremity. Section 16.5 should be used for evaluation of such impairments. For peripheral nerve lesions use Table 16-15 (p 492, AMA5) together with Tables 16-10 and 16-11 (pp 482 and 484, AMA5) for evaluation.

- whether the injury is stable and stationary, that is, has been medically stable for the previous three months and is unlikely to change by more than 3% WPI in the next 12 months with or without further medical or surgical treatment
- methodology used (with reference to AMA Guides chapter, section and table)
- conclusions with reasons
- the nature of the permanent impairment (description of work related medical injury/illness) and calculated applicable % WPI
- any other issues which are relevant to the impairment assessment. For example, this may include whether the clinical findings and/or degree of impairment is medically consistent with the injury's stated mechanism. Do not comment on whether the claim should have been accepted or not. This is not in the scope of the impairment assessment. Once the insurer has accepted the claim, the decision cannot be reversed even with medical evidence to the contrary
- any pre-existing impairment considerations (apportionment for prior injuries/illness).

- 1.58 For those medical practitioners unfamiliar with the permanent impairment assessment structure according to the AMA Guides and/or the Queensland workers' compensation reporting format, refer to the sample report format on the Regulator's website.

Fractures Involving Joints

- 2.17 Displaced fractures involving joint surfaces are generally to be rated by range of motion. If, however, this loss of range is not sufficient to give an impairment rating and movement is accompanied by pain and there is 2mm or more of displacement, allow 2% UEI (1% WPI).

- 2.10 When applying Tables 16-10 (pp 482, AMA5) and Table 16-11 (p 484, AMA5) the examiner must use clinical judgement to estimate the appropriate percentage within the range of values shown for each severity grade. The maximum value is NOT applied automatically.

Impairment Due to Other Disorders of the Upper Extremity

- 2.11 The section "Impairment of the Upper Extremity Due to Other Disorders" (AMA5 Section 16.7 pp 498-507) should be used only when other criteria (as presented in Sections 16.2 - 16.6 (pp 441-498 of AMA 5)) have not adequately encompassed the extent of the impairments. Impairments from the disorders considered in Section 16.7 are usually estimated using other criteria. The assessor must take care to avoid duplication of impairments.
- 2.12 Relevant imaging studies for carpal instability (AMA5 Table 16-25, p 503) should only be considered, if available, along with the clinical signs. X-ray examination should not be performed solely for this evaluation.
- 2.13 Strength evaluation, as a method of upper extremity impairment assessment should only be used in rare cases and its use justified when loss of strength represents an impairing factor not adequately considered by more objective rating methods. If chosen as a method, the caveats detailed on AMA5 p 508, under the heading "16.8a Principles" need to be observed, i.e. decreased strength cannot be rated in the presence of decreased motion, painful conditions, deformities and absence of parts (e.g. thumb amputation).

Conditions affecting the shoulder region

- 2.14 All shoulder assessments must have the following 'inclusion criteria':
1. A clear history of a shoulder injury
 2. Symptoms consistent with a shoulder disorder (to be distinguished from symptoms due to referred pain from the neck).
- (i) Most shoulder disorders with an abnormal range of movement are assessed according to AMA5 Section 16.4 - Evaluating Abnormal Motion.
- (ii) Rare cases of rotator cuff injury, where the loss of shoulder motion does not reflect the severity of the tear, and there is no associated pain, may be assessed according to AMA5 Section 16.8c - Strength Evaluation.
- (iii) Other specific shoulder disorders, where the loss of shoulder motion does not reflect the severity of the disorder, associated with pain, should be assessed by comparison with other impairments that have similar effect(s) on upper limb function.

- 2.15 **Ruptured long head of biceps** shall be assessed as an upper extremity impairment (UEI) of 3% UEI or 2% WPI where it exists in isolation from other rotator cuff pathology. Impairment for ruptured long head of biceps cannot be combined with any other rotator cuff impairment.

Impingement

- 2.16 Diagnosis of impingement is made on the basis of positive findings on appropriate provocative testing and is only to apply where there is no loss of range of motion. Symptoms must have been present for at least 12 months. An impairment rating of 3% UEI or 2% WPI shall apply.

3 Lower Extremity

AMA5 Chapter 17 applies to the assessment of permanent impairment of the lower extremities, subject to the modifications set out below.

Introduction

3.1 The lower extremities are discussed in AMA5 Chapter 17 (pp 523–564). This section is complex and provides a number of alternative methods of assessing permanent impairment involving the lower extremity. An organised approach is essential and findings should be carefully documented on a worksheet.

The approach to assessment of the lower extremity

3.2 Assessment of the lower extremity involves physical evaluation, which can use a variety of methods. In general, the method should be used that most specifically addresses the impairment present. For example, impairment due to a peripheral nerve injury in the lower extremity should be assessed with reference to that nerve rather than by its effect on gait.

3.3 There are several different forms of evaluation that can be used, as indicated in Sections 17.2b to 17.2h (pp 528–554 AMA5). Table 17–2 (p 526 AMA5) indicates which evaluation methods can be combined and which cannot. It may be possible to perform several different evaluations as long as they are reproducible and meet the conditions specified below and in AMA5. The most specific method of impairment assessment should be used.

3.4 It is possible to use an algorithm to aid in the assessment of lower extremity impairment. Use of a worksheet is essential. Table 3.3 on page 22 is such a worksheet and may be used in assessment of permanent impairment of the lower extremity.

3.5 In the assessment process, the evaluation giving the highest impairment rating is selected. That may be a combined impairment in some cases, in accordance with the Guide to the Appropriate Combination of Evaluation Methods Table (Table 17–2, p 526 AMA5), using the Combined Values Chart (pp 604–606, AMA5).

3.6 When the Combined Values Chart is used, the assessor must ensure that all values combined are in the same category of impairment rating (i.e. % WPI, Lower extremity impairment percentage, Foot impairment percentage, and so on). Regional impairments of the same limb (e.g. several lower extremity impairments) should be combined before converting to % WPI.

3.7 Table 17–2 (p 526, AMA5) needs to be referred to frequently to determine which impairments can be combined and which cannot.

Specific interpretation of AMA5 — the lower extremity

Leg length discrepancy

3.8 When true leg length discrepancy is determined clinically (AMA5 Section 17.2b, p 528), the method used must be indicated (for example, tape measure from anterior superior iliac spine to the medial malleolus). Clinical assessment of leg length discrepancy is an acceptable method but if full length computerised tomography films are available they should be used in preference. Such an examination should not be ordered solely for determining leg lengths.

3.9 When applying Table 17–4 (p 528, AMA5), the element of choice should be removed and impairments for leg length discrepancy should be read as the higher figure of the range quoted (i.e., 0, 3, 5, 7, or 8 for whole person impairment, or 0, 8, 13, 18 or 19 for lower limb impairment).

Note that the figures for lower limb impairment in table 17–4 (p 528, AMA5) are incorrect and the correct figures are shown below.

Discrepancy (cm)	Whole person (Lower Extremity) impairment (%)
0 - 1.9	0
2 - 2.9	2 - 3 (4 - 8)
3 - 3.9	4 - 5 (9 - 13)
4 - 4.9	6 - 7 (14 - 18)
5+	8 (19)

Gait derangement

3.10 Assessment of gait derangement is only to be used as a method of last resort. Methods of impairment assessment most fitting the nature of the disorder should always be used in preference. If gait derangement (AMA5 Section 17.2c, p 529) is used it cannot be combined with any other evaluation in the lower extremity section of AMA5.

3.11 Any walking aid used by the subject must be a permanent requirement and not temporary.

3.12 In the application of Table 17–5 (p 529, AMA5), delete item b, as the Trendelenburg sign is not sufficiently reliable.

Muscle atrophy (unilateral)

3.13 This section (AMA5 Section 17.2d, p 530) is not applicable if the limb other than that being assessed is abnormal (for example, if varicose veins cause swelling, or if there is another injury or condition which has contributed to the disparity in size).

3.14 In the use of Table 17–6 (p 530, AMA5) the element of choice should be removed in the impairment rating and only the higher figure used. Therefore, for the thigh, the whole person impairment should be assessed as 0, 2, 4, or 5 %, or lower limb impairment as 0, 6, 11 or 12 % respectively. For the calf the equivalent figures have the same numerical values.

Note that the figures for lower limb impairment in Table 17–6 (p 530, AMA5) are incorrect and the correct figures are shown in the following version of Table 17–6.

Table 3.1 Impairment for ankylosis in the optimum position

Joint	Whole person	Lower extremity	Ankle or foot
Hip	20%	50%	—
Knee	27%	67%	—
Ankle	15%	37%	53%
Foot	4%	10%	14%

Note that the figures in Table 3.1 suggested for ankle impairment are greater than those suggested in AMA5.

Ankylosis of the ankle in the neutral/optimal position equates with 15 (37) [53] % impairment as per Table 3.1. Table 3.1(a) is provided below as guidance to evaluate additional impairment owing to variation from the neutral position. The additional amounts at the top of each column are added to the figure for impairment in the neutral position. In keeping with AMA5, p.541, the maximum impairment for ankylosis of the ankle remains at 25 (62) [88] % impairment.

Table 3.1(a) Impairment for ankylosis in variation from the optimum position
Whole person (lower extremity) [foot] impairment (%)

Position	2 (5) [7]	4 (10) [14]	7 (17) [24]	10 (25) [35]
1. Dorsiflexion	5 - 9 °	10 - 19 °	20 - 29 °	30 ° +
2. Plantar flexion		10 - 19 °	20 - 29 °	30 ° +
3. Varus	5 - 9 °	10 - 19 °	20 - 29 °	30 ° +
4. Valgus		10 - 19 °	20 - 29 °	30 ° +
5. Internal rotation	0 - 9 °	10 - 19 °	20 - 29 °	30 ° +
6. External rotation	15 - 19 °	20 - 29 °	30 - 39 °	40 ° +

Also note that the whole person impairment from ankylosis of a joint, or joints, in a lower limb cannot exceed 40% WPI or 100% lower limb impairment. If this figure is exceeded when the combination of lower limb impairments is made then only 40% can be accepted as the maximum WPI for a lower limb.

Arthritis

- 3.19 Impairment due to arthritis (AMA5 section 17.2n, pp544–545) following a work-related injury is uncommon, but may occur in isolated cases. The presence of arthritis may indicate a pre-existing condition and this should be assessed and an appropriate deduction made (see Chapter 1).
- 3.20 The presence of osteoarthritis is defined as cartilage loss. Cartilage loss can be assessed by plain radiography, computed tomography (CT), magnetic resonance imaging (MRI) or by direct vision (arthroscopy).
- 3.21 Detecting the subtle changes of cartilage loss on plain radiography requires comparison with the normal side. All joints should be imaged directly through the joint space, with no overlapping of bones. If comparison views are not available, AMA5 Table 17–31 (p 544) is used as a guide to assess joint space narrowing.
- 3.22 One should be cautious in making a diagnosis of cartilage loss on plain radiography if secondary features of osteoarthritis, such as osteophytes, subarticular cysts or

Table 17-6 Impairment Due to Unilateral Leg Muscle Atrophy

Difference in circumference (cm)	Impairment degree	Whole person (Lower Extremity) impairment (%)
a. Thigh: The circumference is measured 10cm above the patella with the knee fully extended and the muscles relaxed.		
0 - 0.9	None	0
1 - 1.9	Mild	1 - 2 (2 - 6)
2 - 2.9	Moderate	3 - 4 (7 - 11)
3+	Severe	5 (12)

Difference in circumference (cm)	Impairment degree	Whole person (Lower Extremity) impairment (%)
b. Calf: The maximum circumference on the normal side is compared with the circumference at the same level on the affected side.		
0 - 0.9	None	0
1 - 1.9	Mild	1 - 2 (2 - 6)
2 - 2.9	Moderate	3 - 4 (7 - 11)
3+	Severe	5 (12)

Manual muscle strength testing

3.15 The Medical Research Council (MRC) gradings for muscle strength are universally accepted. They are not linear in their application, but ordinal. Only the six grades (0-5) should be used, as they are reproducible among experienced assessors. The descriptions in Table 17-7 (p 531, AMA5) are correct. The results of electrodiagnostic methods and tests are not to be considered in the evaluation of muscle testing which can be performed manually. Table 17-8 (p 532, AMA5) is to be used for this method of evaluation.

Range of motion

3.16 Although range of motion (ROM) (AMA5 Section 17.2f, pp 533-538) appears to be a suitable method for evaluating impairment, it may be subject to variation because of pain during motion at different times of examination, possible lack of cooperation by the person being assessed and inconsistency. If there is such inconsistency then ROM cannot be used as a valid parameter of impairment evaluation.

3.17 If range of motion is used as an assessment measure, then Tables 17-9 to 17-14 (p 537, AMA5) are selected for the joint or joints being tested. If a joint has more than one plane of motion, the impairment assessments for the different planes should be added. For example, any impairments of the six principal directions of motion of the hip joint are added (p 533, AMA5).

Ankylosis

3.18 Ankylosis is to be regarded as the equivalent to arthrodesis in impairment terms only. For the assessment of impairment when a joint is ankylosed (AMA5, Section 17.2g, pp 538-543) the calculation to be applied is to select the impairment if the joint is ankylosed in optimum position (See Table 3.1 below), and then if not ankylosed in the optimum position by adding (not combining) the values of %WPI using Tables 17-15 to 17-30 (pp 538-543, AMA5).

subchondral sclerosis are lacking, unless the other side is available for comparison. The presence of an intra-articular fracture with a step in the articular margin in the weight bearing area implies cartilage loss.

3.23 The accurate radiographic assessment of joints always requires at least two views. In some cases, further supplementary views will optimise the detection of joint space narrowing or the secondary signs of osteoarthritis.

Sacro-iliac joints: Being a complex joint, modest alterations are not detected on radiographs, and cross-sectional imaging may be required. Radiographic manifestations accompany pathological alterations. The joint space measures between 2 mm and 5 mm. Osteophyte formation is a prominent characteristic of osteoarthritis of the sacro-iliac joint.

Hip: An anteroposterior view of the pelvis and a lateral view of the affected hip are ideal. If the affected hip joint space is narrower than the asymptomatic side, cartilage loss is regarded as being present. If the anteroposterior view of pelvis has been obtained with the patient supine, it is important to compare the medial joint space of each hip as well as superior joint space, as this may be the only site of apparent change. If both sides are symmetrical, then other features, such as osteophytes, subarticular cyst formation, and calcar thickening should be taken into account to make a diagnosis of osteoarthritis.

Knee:

- **Tibio-femoral joint:** The best view for assessment of cartilage loss in the knee is usually the erect intercondylar projection, as this profiles and stresses the major weight bearing area of the joint which lies posterior to the centre of the long axis. The ideal x-ray is a posteroanterior view with the patient standing, knees slightly flexed, and the x-ray beam angled parallel to the tibial plateau. Both knees can readily be assessed with the one exposure. In the knee it should be recognised that joint space narrowing does not necessarily equate with articular cartilage loss, as deficiency or displacement of the menisci can also have this effect. Secondary features, such as subchondral bone change and the past surgical history, must also be taken into account.

- **Patello-femoral joint:** Should be assessed in the "skyline" view, again preferably with the other side for comparison. The x-ray should be taken with 30 degrees of knee flexion to ensure that the patella is load-bearing and has engaged the articular surface femoral groove.

Footnote to Table 17-31 (p544 AMA5) regarding patello-femoral pain and crepitation: This item is only to be used if there is a history of direct injury to the front of the knee. This item cannot be used as an additional impairment when assessing arthritis of the knee joint itself, of which it forms a component. If patello-femoral crepitus occurs in isolation (ie no other signs of arthritis) following direct trauma, then it can be combined with other diagnosis based estimates (Table 17-33). Signs of crepitus need to be present at least one year post injury.

Ankle: The ankle should be assessed in the mortice view, (preferably weight-bearing) with comparison views of the other side, although this is not as necessary as with the hip and knee.

Subtalar: This joint is better assessed by CT (in the coronal plane) than by plain radiography. The complex nature of the joint does not lend itself to accurate and easy plain x-ray assessment of osteoarthritis.

Talonavicular and calcaneocuboid: Anteroposterior and lateral views are necessary. Osteophytes may assist in making the diagnosis.

Intercuneiform and other intertarsal joints: Joint space narrowing may be difficult to assess on plain radiography. CT (in the axial plane) may be required. Associated osteophytes and subarticular cysts are useful adjuncts to making the diagnosis of osteoarthritis in these small joints.

Great toe metatarsophalangeal: Anteroposterior and lateral views are required. Comparison with the other side may be necessary. Secondary signs may be useful.

Interphalangeal: It is difficult to assess small joints without taking secondary signs into account. The plantar-dorsal view may be required to get through the joints, in a foot with flexed toes.

3.24 If arthritis is used as the basis for assessing impairment assessment, then the rating cannot be combined with gait disturbance, muscle atrophy, muscle strength or range of movement assessments. It can be combined with a diagnosis-based estimate. (Table 17-2, AMA5, p 526.)

Amputation

3.25 Where there has been amputation of part of a lower extremity Table 17-32 (p 545, AMA5) applies. In that table the references to 3 inches for below-the-knee amputation should be converted to 7.5 cm.

Diagnosis-based estimates (lower extremity)

3.26 Section 17.2j (pp 545-549, AMA5) lists a number of conditions that fit a category of Diagnosis-Based Estimates. They are listed in Tables 17-33, 17-34 and 17-35 (pp 546-549, AMA5). When using this table it is essential to read the footnotes carefully. The category of mild cruciate and collateral ligament laxity has inadvertently been omitted in table 17-33 of AMA 5. The appropriate rating is 5% WPI (12% LEI).

3.27 It is possible to combine impairments from Tables 17-33, 17-34 and 17-35 for diagnosis-related estimates with other components (e.g. nerve injury) using the Combined Values Chart (pp 604-606, AMA5) after first referring to the Guide to the Appropriate Combination of Evaluation Methods (see 3.5 above).

3.28 In the interpretation of Table 17-33 (p 547, AMA5), reference to the hindfoot, intra-articular fractures, the words subtalar bone, talonavicular bone, and calcaneocuboid bone imply that the bone is displaced on one or both sides of the joint mentioned. To avoid the risk of double assessment, if avascular necrosis with collapse is used as the basis of impairment assessment, it cannot be combined with the relevant intra-articular fracture in Table 17-33 column 2. In Table 17-33 column 2, metatarsal fracture with loss of weight transfer means dorsal displacement of the metatarsal head.

3.29 Table 3.2 given on the following page for the impairment of loss of the Tibia-Os Calcis Angle is to replace Table 17-29 (p 542, AMA5) and the section in Table 17-33 dealing with loss of Tibia-Os Calcis Angle. These two sections are contradictory, and neither gives a full range of loss of angle.

Table 17-35 Rating Knee replacement Results

Deductions (minus) d, e, f	Number of points
d. Flexion contracture	
5-9°	2
10-15°	5
16-20°	10
> 20°	20
e. Extension Lag	
< 10°	5
10-20°	10
> 20°	15
f. Alignment – valgus	
5-10°	0
0-4°	3 points per degree
11-15°	3 points per degree
> 15°	20
Deductions subtotal	

Skin loss (lower extremity)

3.32 Skin loss (p 550, AMA5) can only be included in the calculation of impairment if it is in certain sites and meets the criteria listed in Table 17-36 (p 550, AMA5).

Peripheral nerve injuries (lower extremity)

3.33 When assessing the impairment due to peripheral nerve injury (pp 550-552, AMA5) assessors should read the text in this section. Note that the separate impairments for the motor, sensory and dysaesthetic components of nerve dysfunction in Table 17-37 (p 552, AMA5) are to be *combined*.

3.33 Note that the (posterior) tibial nerve is not included in Table 17-37, but its contribution can be calculated by subtracting ratings of common peroneal nerves from sciatic nerve ratings.

3.34 Peripheral nerve injury impairments can be *combined* with other impairments, but not those for gait derangement, muscle atrophy, muscle strength or complex regional pain syndrome, as shown in Table 17-2 (p 526, AMA5).

Complex regional pain syndrome (lower extremity)

3.35 The Section 17.2m, "Causalgia and Complex Regional Pain Syndrome (Reflex Sympathetic Dystrophy)" (p 553, AMA5) should not be used. Complex Regional Pain Syndrome involving the lower extremity should be evaluated in the same way as the upper limb using the method described in Section 16.5e (pp 495-497, AMA5). This section provides a detailed method that is in keeping with current terminology and understanding of the condition. Use of the same methods of impairment assessment for Complex Regional Pain Syndrome involving either the upper or lower extremity also will improve the consistency of this Guide.

Peripheral vascular disease (lower extremity)

3.36 Lower extremity impairment due to vascular disorders (pp 553-554, AMA5) is evaluated using Table 17-38 (p 554, AMA5). Note that Table 17-38 gives values for lower extremity not whole person impairment. In that table there is a range of lower extremity impairments within each of the classes 1 to 5. As there is a clinical

Table 3.2 Impairment for loss of the Tibia-Os Calcis Angle

Angle (degree)	Whole Person (Lower Extremity) [Foot] Impairment (%)
110 – 100	5 (12) [17]
99 – 90	8 (20) [28]
Less than 90	+1 (2) [3] per ° up to 15 (37) [54]

3.30 Table 17-34 and Table 17-35 (pp 548-549, AMA5) use a different concept of evaluation. A point score system is applied, and then the total of points calculated for the hip (or knee) joint is converted to an impairment rating from Table 17-33. Tables 17-34 and 17-35 refer to the hip and knee joint replacement respectively. Note that, while all the points are *added* in Table 17-34, some points are *deducted* when Table 17-35 is used.

3.31 In respect of "distance walked" under "b. Function" in Table 17-34 (p 548, AMA5), the distance of six blocks should be construed as 600 m, and three blocks as 300 m. Note that Table 17-35 (p 549 AMA5) is incorrect. The correct table is shown below.

Table 17-35 Rating Knee replacement Results

	Number of Points
a. Pain	
None	50
Mild or occasional	45
Stairs only	40
Walking and stairs	30
Moderate	20
Occasional	10
Continual	0
Severe	0
b. Range of Motion	
Add 1 point per 5° up to 125°	25 (maximum)
c. Stability	
(maximum movement in any position)	
Anteroposterior	
< 5 mm	10
5-9 mm	5
> 9 mm	0
Mediolateral	
5°	15
6-9°	10
10-14°	5
> 14°	0
Subtotal	

Table 3.3: Lower extremity worksheet

Item	Impairment	AMA5 Table	AMA5 page	Potential impairment	Selected impairment
1	Limb length discrepancy	17-4	528		
2	Gait derangement	17-5	529		
3	Unilateral muscle atrophy	17-6	530		
4	Muscle weakness	17-8	532		
5	Range of motion	17-9 to 17-14	537		
6	Joint ankylosis	17-15 to 17-30	538-543		
7	Arthritis	17-31	544		
8	Amputation	17-32	545		
9	Diagnosis-based estimates	17-33 to 17-35	546-549		
10	Skin loss	17-36	550		
11	Peripheral nerve deficit	17-37	552		
12	Complex regional pain syndrome	Section 16.5e	495-497		
13	Vascular disorders	17-38	554		
Combined impairment rating (refer to Table 17-2, p 526 AMA5 for permissible combinations)					

Potential impairment is the impairment percentage for that method of assessment. Selected impairment is the impairment, or impairments selected that can be legitimately combined with other lower extremity impairments to give a final lower extremity impairment rating.

description of which conditions place a person's lower extremity in a particular class, the assessor has a choice of impairment rating within a class, the value of which is left to the clinical judgement of the assessor.

Measurement of selected joint motion

- 3.37 Valgus and varus knee angulation are to be measured in a weight-bearing position using a goniometer.
- 3.38 When measuring dorsiflexion at the ankle, the test is carried out initially with the knee in extension and then repeated with the knee flexed to 45°. The average of the maximum angles represents the dorsiflexion range of motion (figure 17-5, p335, AMA5).

4.10 Section 15.1a (pp 374–377, AMA5) is a valuable summary of history and physical examination, and should be thoroughly familiar to all assessors.

4.11 The assessor should include in the report a description of how the impairment rating was calculated, with reference to the relevant tables and/or figures used.

4.12 The optimal method to measure the percentage compression of a vertebral body is a well centred plain x-ray. Assessors should state the method they have used. The loss of vertebral height should be measured at the most compressed part and must be documented in the impairment evaluation report. The estimated normal height of the compressed vertebra should be determined where possible by averaging the heights of the two adjacent (unaffected and normal) vertebrae.

Specific interpretation of AMA5

4.13 The range-of-motion (ROM) method is *not* used, hence any reference to this is omitted (including Table 15-7, p 404, AMA5).

4.14 Motion segment integrity alteration can be either *increased* translational or angular motion, or *decreased* motion resulting from developmental changes, fusion, fracture healing, healed infection or surgical arthrodesis. Motion of the individual spine segments cannot be determined by a physical examination, but is evaluated with flexion and extension radiography.

4.15 The assessment of altered motion segment integrity is to be based upon a report of trauma resulting in an injury, and not on developmental or degenerative changes.

4.16 When routine imaging is normal and severe trauma is absent, motion segment disturbance is rare. Thus, flexion and extension imaging is indicated only when a history of trauma or other imaging leads the physician to suspect alteration of motion segment integrity.

DRE definitions of clinical findings

4.17 DRE II is a clinical diagnosis based upon the features of the history of the injury and clinical features. Clinical features which are consistent with DRE II and which are present at the time of assessment include muscle guarding or spasm, asymmetric loss of range of movement or radicular symptoms not objectively present. Localised (not generalised) tenderness may be present. In the lumbar spine additional features include a reversal of the lumbosacral rhythm when straightening from the flexed position and compensatory movement for an immobile spine such as all flexion from the hips. In assigning category DRE II, the assessor must provide detailed reasons why the category was chosen.

While imaging and other studies may assist medical assessors in making a diagnosis, the presence of a morphological variation from 'normal' in an imaging study does not make the diagnosis. Approximately 30% of people who have never had back pain will have an imaging study that can be interpreted as 'positive' for a herniated disc, and 50% or more will have bulging discs. The prevalence of degenerative changes, bulges and herniations increases with advancing age. To be of diagnostic value, imaging findings must be concordant with clinical symptoms and signs. In other words, an imaging test is useful to confirm a diagnosis, but an imaging result alone is insufficient to qualify for a DRE category.

4.18 The clinical findings used to place an individual in a DRE category are described in Box 15-1 (pp 382–383, AMA5).

4 The Spine (excluding spinal cord injury)

AMA5 Chapter 15 applies to the assessment of permanent impairment of the spine, subject to the modifications set out below.

Introduction

4.1 The spine is discussed in AMA5 Chapter 15 (pp 373–431). That chapter presents two methods of assessment, the diagnosis-related estimates method and the range of motion method. Evaluation of impairment of the spine for workers' compensation is only to be done using diagnosis-related estimates (DREs).

4.2 The method relies especially on evidence of neurological deficits and less common, adverse structural changes, such as fractures and dislocations. Using this method, DREs are differentiated according to clinical findings that can be verified by standard medical procedures.

4.3 The assessment of spinal impairment is made when the person's condition is stable and stationary. If surgery has been performed, the outcome of the surgery as well as structural inclusions must be taken into consideration when making the assessment.

Assessment of the spine

4.4 The assessment should include a comprehensive, accurate history; a review of all pertinent records available at the assessment; a comprehensive description of the individual's current symptoms and their relationship to daily activities; a careful and thorough physical examination, and all findings of relevant laboratory, imaging, diagnostic and ancillary tests available at the assessment. Imaging findings that are used to support the impairment rating should be concordant with symptoms and findings on examination. The assessor should record whether diagnostic tests and radiographs were seen or whether they relied solely on reports.

4.5 The DRE model for assessment of spinal impairment should be used. The Range of Motion model (Sections 15.8-15.13 inclusive, pp 398-427, AMA5) should not be used.

4.6 If a person has spinal cord or cauda equina damage, including bowel, bladder and/or sexual dysfunction, he or she is assessed according to the method described in Section 15.7 and Table 15.6 (a) to (g), pp 395-398, AMA5.

4.7 If an assessor is unable to distinguish between two DRE categories, then the higher of those two categories should apply. The reasons for the inability to differentiate should be noted in the assessor's report.

4.8 Possible influence of future treatment should not form part of the impairment assessment. The assessment should be made on the basis of the person's status at the time of interview and examination, if the assessor is convinced that the condition is stable and permanent. Likewise, the possibility of subsequent deterioration, as a consequence of the underlying condition, should not be factored into the impairment evaluation. Commentary can be made regarding the possible influence, potential or requirements for further treatment, but this does not affect the assessment of the individual at the time of impairment evaluation.

4.9 All spinal impairments are to be expressed as a percentage of whole person impairment (%WPI).

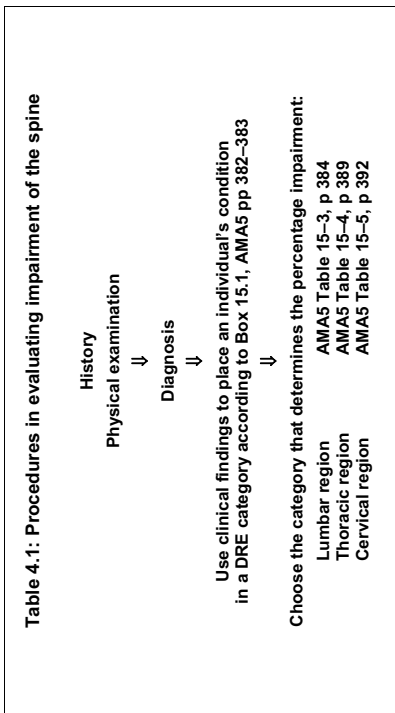
The reference to 'Electrodiagnostic Verification of Radiculopathy' should be disregarded.

(The use of electrodiagnostic procedures such as electromyography is proscribed as an assessment aid for decisions about the category of impairment into which a person should be placed. It is considered that competent assessors can make decisions about which DRE category a person should be placed in from the clinical features alone. The use of electrodiagnostic differentiators is generally unnecessary).

4.19 Cauda equina syndrome and neurogenic bladder disorder are to be assessed by the method prescribed in the spine chapter of AMA5, Section 15.7, pp 395-398. For an assessment of neurological impairment of bowel or bladder, there must be objective evidence of spinal cord, or cauda equina injury.

Applying the DRE method

4.20 The specific procedures and directions section of AMA5 (Section 15.2a, pp 380–381) indicates the steps that should be followed to evaluate impairment of the spine (excluding references to the ROM method). Table 4.1 is a simplified version of that section, incorporating the amendments listed above.



4.21 Common developmental findings, spondylosis, spondylolisthesis and disc protrusions without radiculopathy occur in 7%, 3 %, and up to 30% respectively in individuals up to the age of 40 (p383, AMA5). Their presence does not of itself mean that the individual has an impairment due to injury.

4.21 Common developmental findings, spondylosis, spondylolisthesis and disc protrusions without radiculopathy occur in 7%, 3 %, and up to 30% respectively in individuals up to the age of 40 (p383, AMA5). Their presence does not of itself mean that the individual has an impairment due to injury.

4.22 **Loss of sexual function** should only be assessed where there is other objective evidence of spinal cord, cauda equina or bilateral nerve root dysfunction. The ratings are described in Table 15-6 (pp 396-397, AMA5). There is no additional impairment rating system for loss of sexual function in the absence of objective neurological findings. Loss of sexual function is **not** assessed as an activity of daily living.

4.23 **Radiculopathy** is the impairment caused by malfunction of a spinal nerve root or nerve roots. In general, in order to conclude that radiculopathy is present, 2 or more of the following criteria should be found, one of which must be major (major criteria in bold):

- **Loss or asymmetry of reflexes**
- **Muscle weakness that is anatomically localised to an appropriate spinal nerve root distribution**
- **Reproducible impairment of sensation that is anatomically localised to an appropriate spinal nerve root distribution**
- Positive nerve root tension (Box 15-1, p382 AMA5)
- Muscle wasting – atrophy (Box 15-1, p382 AMA5)
- Findings on an imaging study consistent with the clinical signs (p382 AMA5)

4.24 Note that radicular complaints of pain or sensory features that follow anatomical pathways but cannot be verified by neurological findings (somatic pain, non-verifiable radicular pain) do *not* alone constitute radiculopathy.

4.25 Global weakness of a limb related to pain or inhibition or other factors does not constitute weakness due to spinal nerve malfunction.

4.26 Vertebral body fractures and/or dislocations at more than one vertebral level are to be assessed as follows:

- Measure the percentage loss of vertebral height at the most compressed part for each vertebra, and
- Add the percentage loss at each level:
 - Total loss of more than 50% = DRE IV
 - Total loss of 25% to 50% = DRE III
 - Total loss of less than 25% = DRE II
- If radiculopathy is present then the person is assigned one DRE category higher

One or more end plate fractures in a single spinal region without measurable compression of the vertebral body are assessed as DRE category II.

Posterior element fractures (excludes fractures of transverse processes and spinous processes) at multiple levels are assessed as DRE III.

4.27 Displaced fractures of transverse or spinous processes at one or more levels are assessed as DRE Category II because the fracture does not disrupt the spinal canal (p 385, AMA5) and does not cause multilevel structural compromise.

4.28 Within a spinal region separate spinal impairments are not combined. The highest value impairment within the region is chosen. Impairments in different spinal regions are combined using the combination tables.

If both C7 and T1 are fractured only one region of the spine (the cervical) is assessed for whole person impairment. If both T12 and L1 are fractured, then only one region of the spine (the thoracic) is assessed.

4.29 Impact of ADL. Tables 15-3, 15-4 and 15-5 of AMA5 give an impairment range for DREs II to V. The bottom of the range is chosen initially, and a percentage of from 0-3% WPI may be added for the impact of the injury on the worker's ADL. Hence, for example, for an injury which is rated DRE Category II, the impairment is 5%, to which may be added an amount of up to 3% for the effect of the injury on the worker's ADL's. The determination of the impact on ADLs is not solely dependent on self reporting, but is an assessment based on all clinical findings and other reports.

method where an operation for an intervertebral disc prolapse or spinal canal stenosis has been performed and where there is a residual radiculopathy following surgery.
 Example 15-4 (p 386, AMA5) should therefore be ignored.

Table 4.2: Modifiers for DRE categories where radiculopathy persists after surgery

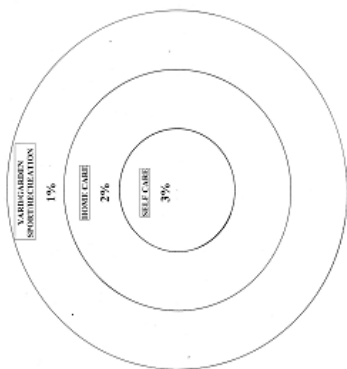
Procedures	Cervical	Thoracic	Lumbar
Discotomy, or single-level decompression with residual signs and symptoms	3%	2%	3%
2 nd and further levels, operated on, with medically documented pain and rigidity	1% each additional level	1% each additional level	1% each additional level
Second operation	2%	2%	2%
Third and subsequent operations	1% each	1% each	1% each

In summary, to calculate whole person impairment (WPI) for persisting radiculopathy (as per definition) following surgery:

1. Select the appropriate DRE category from Table 15-3, 15-4, or 15-5;
2. Determine a WPI value within the allowed range in Table 15-3, 15-4 or 15-5 according to the impact on the worker's activities of daily living;
3. Combine this value with the appropriate additional amount from Table 4.2 to determine the final WPI.

- 4.34 **Disc Replacement Surgery.** The impairment resulting from this procedure is to be equated to that from a spinal fusion.
- 4.35 Impairment due to **pelvic fractures** should be evaluated with reference to table 4.3 on the following page which replaces Table 15-19 in AMA 5.

4.30 The following diagram should be used as a **guide** to determine whether 0, 1, 2, or 3% WPI should be added to the bottom of the appropriate impairment range. This is only to be added if there is a difference in activity level as recorded and compared to the worker's status prior to the injury.



4.31 The diagram is to be interpreted as follows:

- Increase base impairment by:
- 3% WPI if worker's capacity to undertake personal care activities such as dressing, washing, toileting and shaving has been affected;
 - 2% WPI if the worker can manage personal care, but is restricted with usual household tasks such as cooking, vacuuming, making beds or tasks of equal magnitude such as shopping, climbing stairs or walking reasonable distances;
 - 1% WPI for those able to cope with the above, but unable to get back to previous sporting or recreational activities such as gardening, running and active hobbies etc.

4.32 The maximum amount that the base impairment due to spinal injury can be increased due to impact on ADL is 3% WPI. An additional amount for ADL can only be assessed for one spinal region, irrespective of the number of spinal regions injured.

- 4.33 **Effect of surgery:** Tables 15-3, 15-4 and 15-5 (pp 384, 389 and 392, AMA5), do not adequately account for the effect of surgery upon the impairment rating for certain disorders of the spine.
- Surgical decompression for spinal stenosis is DRE III
 - Operations where the radiculopathy has resolved are considered under the DRE category III (AMA5, Tables 15-3, 15-4, 15-5);
 - Operations with surgical ankylosis (fusion) are considered under DRE category IV (AMA5, Tables 15-3, 15-4, 15-5).
 - Radiculopathy persisting after surgery is not accounted for by AMA5 Table 15-3, and incompletely by Tables 15-4 and 15-5, which only refer to radiculopathy which has improved after surgery.

Therefore Table 4.2 was developed to rectify this anomaly. Table 4.2 indicates the additional ratings which should be combined with the rating determined using the DRE

Table 4.3: Pelvic Fractures

Disorder	%WPI
1. Non-displaced, healed fractures	0
2. Fractures of the pelvic bones (including sacrum) (i) maximum residual displacement <1cm (ii) maximum residual displacement 1 to 2 cm (iii) maximum residual displacement >2cm (iv) bilateral pubic rami fractures, as determined by the most displaced fragment a. maximum residual displacement ≤2cm b. maximum residual displacement >2cm	2 5 8 5 8
3. Traumatic separation of the pubic symphysis (i) <1cm (ii) 1 to 2 cm (iii) >2cm	5 8 12
4. Sacro-iliac Joint dislocations or fracture dislocations (i) maximum residual displacement ≤1cm (ii) maximum residual displacement >1cm	8 12
5. Fractures of the coccyx (i) Healed, (and truly) displaced fracture (ii) Excision of the coccyx	1 5
Fractures of the acetabulum: Evaluate based on restricted range of hip motion	

The rating of WPI is evaluated based on radiological appearance when the injury is stable and stationary, whether or not surgery has been performed. Multiple disorders of the pelvis are not combined. The maximum WPI for pelvic fractures is 12%.

Very severe injuries, which have been treated by open reduction and internal fixation but are associated with residual symptoms, should be given an assessment commensurate with the severity of their original injuries at the discretion of the assessor with reasons provided.

4.36 **Arthritis:** See sections 3.20–3.23 of Chapter 3 of this guide (p 16).

4.37 **Posterior Spacing or Stabilisation Devices:** The insertion of such devices does not warrant any addition to WPI.

5 Nervous System

AMA5 Chapter 13 applies to the assessment of permanent impairment of the nervous system, subject to the modifications set out below.

Introduction

5.1 AMA5 Chapter 13, The Central and Peripheral Nervous System (pp 305–356), provides guidelines on methods of assessing permanent impairment involving the central nervous system. It is logically structured and consistent with the usual sequence of examination of the nervous system. Cerebral functions are discussed first, followed by the cranial nerves, station, gait and movement disorders, the upper extremities related to central impairment, the brain stem, the spinal cord and the peripheral nervous system, including neuromuscular junction and muscular system. A summary concludes the Chapter.

5.2 Spinal cord injuries are to be assessed using AMA5 Chapter 13.

5.3 The relevant parts of the upper extremity, lower extremity and spine sections of AMA5 Chapter 13 should be used to evaluate impairments of the peripheral nervous system.

The approach to assessment of permanent neurological impairment

5.4 AMA5 Chapter 13 should be used to assess cerebral impairments.

These impairments are to be combined using the Combined Values Chart (pp 604–606, AMA5). These impairments should then be combined with other neurological impairments indicated in AMA5 Table 13–1 (p 308).

5.5 It should be noted that AMA5 Sections 13.5 and 13.6 (pp 336–340) should be used for cortical motor or sensory impairments and therefore this section covers hemiplegia due to cortical injury. However, if a person has a spinal injury with spinal cord or cauda equina damage, including bowel, bladder and/or sexual dysfunction, he or she is assessed according to the method described in Section 15.7 and Table 15.6 (a) to (g), pp 395-398 AMA5 (see section 4.19 of this Guide).

5.6 Complex regional pain syndrome is to be assessed using the method indicated in AMA5 Chapter 16, The Upper Extremities (pp 495–497).

5.7 The nervous system Chapter of AMA5 (Chapter 13) lists many impairments where the range for the associated whole person impairment is 0–9% or 0–14%. Where there is a range of impairment percentages listed, the assessor should nominate an impairment percentage based on the complete clinical circumstances revealed during the consultation and in relation to all other available information.

Specific interpretation of AMA5

5.8 In assessing disturbances of mental status and integrative functioning, and emotional or behavioural disturbances (Sections 13.3d and 13.3f, pp 319–322, 325–327, AMA5), the assessor should make ratings of mental status impairments and emotional and behavioural impairments based on clinical assessment and the results of neuropsychometric testing. Clinical assessment should indicate at least one of the following:

- significant medically verified abnormalities in initial post injury Glasgow Coma Scale score; or

Table 5.1 Criteria for Rating Miscellaneous Peripheral Nerves

Peripheral Nerve	Whole Person Impairment Rating			
	0%	1%	2% - 3%	4% - 5%
Greater Occipital Nerve	No neuralgia	Sensory loss only in an anatomic distribution	Mild to moderate neurogenic pain in an anatomic distribution	Severe neurogenic pain in an anatomic distribution
Lesser Occipital Nerve				
Greater Auricular Nerve				
Intercostal Nerve				
Genitofemoral Iliioinguinal				
Iliohypogastric				
Pudendal				

Note: Table found on p 344, AMA6.

- significant duration of post-traumatic amnesia; or
- significant intracranial pathology on CT scan or MRI.

Neuropsychological testing should be conducted by a registered clinical neuropsychologist who is a member, or is eligible for membership, of the Australian Psychological Society's College of Neuropsychology.

5.9 Assessment of **arousal and sleep disorders** (Section 13.3c, pp 317–319, AMA5): refers to assessment of primary sleep disorders following neurological injury. The assessor should make ratings of arousal and sleep disorders based on the clinical assessment that would normally have been done for clinically significant disorders of this type (i.e. sleep studies or similar tests).

5.10 **Olfaction and taste**: the assessor should use AMA5 Chapter 11, Section 11.4c (p 262) and Table 11–10 (pp 272–275) to assess olfaction and taste, for which a maximum of 5% WPI is allowable for total loss of either sense.

5.11 **Visual impairment** assessment (AMA4 Chapter 8, pp 209–222): An ophthalmologist should assess all impairments of visual acuity, visual fields, extra-ocular movements or diplopia.

5.12 **Trigeminal nerve** assessment (p 331, AMA5): Sensory impairments of the trigeminal nerve should be assessed with reference to AMA5 Table 13–11 (p 331). The words "sensory loss or dysaesthesia" should be added to the table after the words "neuralgic pain" in each instance. Impairment percentages for the three divisions of the trigeminal nerve should be apportioned with extra weighting for the first division. If present, motor loss for the trigeminal nerve should be assessed in terms of its impact on mastication and deglutition (p 262, AMA5).

5.13 **Spinal accessory nerve**: AMA5 provides insufficient reference to the spinal accessory nerve (cranial nerve XI). This nerve supplies the trapezius and sternomastoid muscles. For loss of use of the nerve to trapezius, the assessor should refer to AMA5 Chapter 16 on upper limb assessment, and a maximum of 10% impairment of the upper limb may be assigned. For additional loss of use of sternomastoid, a maximum of 3% upper limb impairment may be added.

5.14 Assessment of **sexual functioning** (Chapter 7, pp 143–171, AMA5): Impotence should only be assessed as an impairment where there is objective evidence of spinal cord, cauda equina, or bilateral nerve root dysfunction, or lumbosacral plexopathy. There is no additional impairment rating for impotence in the absence of objective clinical findings.

5.15 Impairment due to miscellaneous peripheral nerves should be evaluated with reference to the table on the following page:

Table 6.1: Criteria for rating permanent impairment due to facial disorders and/or disfigurement

Class 1 0%–5% impairment of the whole person	Class 2 6%–10% impairment of the whole person	Class 3 11%–15% impairment of the whole person	Class 4 16%–50% impairment of the whole person
Facial abnormality limited to disorder of cutaneous structures, such as visible simple scars (not hypertrophic or atrophic) or abnormal pigmentation (refer to AMA5 Chapter 8 for skin disorders) or mild, unilateral, facial paralysis affecting most branches or nasal distortion that affects physical appearance or partial loss or deformity of the outer ear	Facial abnormality involves loss of supporting structure of part of face, with our without cutaneous disorder (eg, depressed cheek, nasal, or frontal bones) or near complete loss of definition of the outer ear	Facial abnormality involves absence of normal anatomic part or area of face, such as loss of eye or loss of part of nose, with resulting cosmetic deformity, combine with any functional loss, eg, vision (AMA5 Chapter 12) or severe unilateral facial paralysis affecting most branches or mild, bilateral, facial paralysis affecting most branches	Massive or total distortion of normal facial anatomy with disfigurement so severe that it precludes social acceptance, or severe, bilateral, facial paralysis affecting most branches or loss of a major portion of or entire nose

Note: Tables used to classify the examples in Section 11.3 (pp 256–259, AMA5) should also be ignored and assessors should refer to the modified table above for classification.

6.5 Example 11–11 (p 257, AMA5): Add “Visual impairment related to enophthalmos must be assessed by an Ophthalmologist”.

The nose, throat and related structures

Respiration (Section 11.4a, pp259–261, AMA5)

6.6 In regard to the reference to sleep apnoea in Chapter 11 of AMA5 (Section 11.4a, p259, AMA5): a sleep study is mandatory and an examination by a specialist appropriate to the cause of the person's sleep apnoea (for example, an ear, nose and throat specialist) should be conducted before an assessment for sleep apnoea is conducted by an approved assessor.

6.7 The assessment of sleep apnoea is addressed in Section 5.6 of AMA5 (p 105) and assessors should refer to this Chapter, as well as sections 8.8–8.10 (p 38-39) in this Guide.

6.8 **AMA5 Table 11–6 criteria for rating impairment due to air passage defects** (p 260, AMA5): this table should be replaced with Table 6.2 on the following page when assessing permanent impairment due to air passage defects.

6 Ear, nose, throat and related structure

AMA5 Chapter 11 applies to the assessment of permanent impairment of the ear (with the exception of hearing impairment), nose, throat and related structures, subject to the modifications set out below.

Introduction

6.1 AMA5 Chapter 11 (pp 245–275) details the assessment of the ear, nose, throat and related structures. With the exception of hearing impairment, which is dealt with in Chapter 9 of this Guide, AMA5 Chapter 11 should be followed in assessing permanent impairment, with the variations included below.

6.2 The level of impairment arising from conditions that are not work related needs to be assessed by the medical assessor and taken into consideration in determining the level of permanent impairment. The level at which pre-existing conditions and lifestyle activities such as smoking contribute to the level of permanent impairment requires judgement on the part of the clinician undertaking the impairment assessment. The manner in which any deduction for these is applied needs to be recorded in the assessing specialist's report.

The ear

6.3 Equilibrium is assessed according to Section 11.2b (pp 252–255, AMA 5), but add these words to Table 11–4 (p 253, AMA5), Class 2:

“...without limiting the generality of the above, a positive Hallpikes test is a sign and an objective finding.”

The face (pp255–259 AMA5)

6.4 Table 11–5 (p 256 AMA5) should be replaced with the Table 6.1 on the following page when assessing permanent impairment due to facial disorders and/or disfigurement.

Table 6.2: criteria for rating permanent impairment due to air passage defects

Percentage impairment of the whole person					
Class 1a 0%–5%	Class 1 0%–10%	Class 2 11%–29%	Class 3 30%–49%	Class 4 50%–89%	Class 5 90%+
There are symptoms of significant difficulty in breathing through the nose. Examination reveals significant partial obstruction of the right and/or left nasal cavity or nasopharynx or significant septal perforation.	Dyspnea does not occur at rest and dyspnea is not produced by walking freely on a level surface, climbing stairs freely or performance of other usual activities of daily living and dyspnea is not produced by stress, prolonged exertion, hurrying, hill-climbing, or recreational or similar activities requiring intensive effort* and examination reveals partial obstruction of the oropharynx, larynx, upper trachea (to the fourth cartilaginous ring), lower trachea, bronchi, or complete (bilateral) obstruction of the nose or nasopharynx	Dyspnea does not occur at rest and dyspnea is not produced by walking freely on a level surface, climbing one flight of stairs, or performance of other usual activities of daily living but dyspnea is produced by stress, prolonged exertion, hurrying, hill-climbing, or recreational or similar activities (except sedentary forms) and examination reveals partial obstruction of the oropharynx, larynx, upper trachea (to the fourth cartilaginous ring), lower trachea, bronchi, or complete (bilateral) obstruction of the nose or nasopharynx	Dyspnea does not occur at rest and dyspnea is produced by walking freely more than one or two level blocks, climbing one flight of stairs even with periods of rest, or performance of other usual activities of daily living and dyspnea is produced by stress, prolonged exertion, hurrying, hill-climbing, or recreational or similar activities and examination reveals partial obstruction of the oropharynx, larynx, upper trachea (to the fourth cartilaginous ring), lower trachea or bronchi	Dyspnea occurs at rest, although individual is not necessarily bedridden and dyspnea is aggravated by the performance of any of the usual activities of daily living (beyond personal cleansing, dressing or grooming) and examination reveals partial obstruction of the oropharynx, larynx, upper trachea (to the fourth cartilaginous ring), lower trachea or bronchi	Severe dyspnea occurs at rest and spontaneous respiration is inadequate and respiratory ventilation is required and examination reveals partial obstruction of the oropharynx, larynx, upper trachea (to the fourth cartilaginous ring), lower trachea or bronchi

*Propylactic restriction of activity, such as strenuous competitive sport, does not exclude subject from class 1.

Note: Individuals with successful permanent tracheostomy or stoma should be rated at 25% WPI. Example 11–16 (p 261, AMA5): Partial obstruction of the larynx affecting only one vocal cord is better linked to voice (Section 11.4e, AMA5).

6.9 When using Table 11–7, Relationship of Dietary Restrictions to Permanent Impairment (p 262, AMA5), consider % impairment of the whole person — first category to be 0–19%, not 5%–19%.

Speech (pp 262–264, AMA5)

- 6.10 Regarding the first sentence of the "Examining procedure" subsection (pp 263–264): the examiner should have sufficient hearing for the purpose — disregard "normal hearing as defined in the earlier section of this Chapter on hearing".
- 6.11 Examining procedure (pp 263–264), second paragraph: "The examiner should base judgements of impairment on two kinds of evidence: (1) attention to and observation of the individual's speech in the office — for example, during conversation, during the interview, and while reading and counting aloud — and (2) reports pertaining to the individual's performance in everyday living situations." Disregard the next sentence: "The reports or the evidence should be supplied by reliable observers who know the person well."
- 6.12 Examining procedure (pp 263–264): where the word "American" appears as a reference, substitute "Australian", and change measurements to the metric system (e.g., 8.5 inch = 22 cm).

The voice (Section 11.4e, pp 264–267, AMA5)

- 6.13 Substitute the word "laryngopharyngeal" for "gastroesophageal" in all examples where it appears.
- 6.14 Example 11.25 (Impairment Rating, p 269), second sentence: add the underlined phrase "Combine with appropriate ratings due to other impairments including respiratory impairment to determine whole person impairment."

Ear, nose, throat and related structures impairment evaluation summary

- 6.15 Table 11–10 (pp 272–275, AMA5): Disregard this table, except for impairment of olfaction and/or taste, and hearing impairment as determined under this Guide.

Table 7.2: Criteria for rating permanent impairment due to bladder disease

Class 1 0%–15% WPI	Class 2 16%–40% WPI	Class 3 41%–70% WPI
Symptoms and signs of bladder disorder and requires intermittent treatment and normal functioning between malfunctioning episodes	Symptoms and signs of bladder disorder e.g., urinary frequency (urinating more than every two hours), severe nocturia (urinating more than three times a night), urge incontinence more than once a week and requires continuous treatment	Abnormal (ie under- or over-) reflex activity (eg, intermittent urine dribbling, loss of control, urinary urgency and urge incontinence once or more each day) and/or no voluntary control of micturition; reflex or areflexic bladder on urodynamics and/or total incontinence e.g. fistula

7.6 Example 7–16 (p151, AMA5) should be reclassified as an example of Class 2, as the urinary frequency is more than every two hours and continuous treatment would be expected.

Urethra

7.7 Table 7–4 (p 153, AMA5) should be replaced with Table 7.3, below, when assessing permanent impairment due to urethral disease. This table includes ratings involving stress incontinence

Table 7.3: Criteria for rating permanent impairment due to urethral disease

Class 1 0%–10% WPI	Class 2 11%–20% WPI	Class 3 21%–40% WPI
Symptoms and signs of urethral disorder and requires intermittent therapy for control	Symptoms and signs of urethral disorder, stress urinary incontinence more than three times a week and cannot effectively be controlled by treatment	Urethral dysfunction resulting in intermittent urine dribbling, or stress urinary incontinence at least daily

Urinary incontinence

7.8 Urge urinary incontinence is the involuntary loss of urine associated with a strong desire to void. Stress urinary incontinence is the involuntary loss of urine occurring with clinically demonstrable raised intra-abdominal pressure. It is expected that urinary incontinence of a regular or severe nature (necessitating the use of protective pads or appliances) will be assessed as follows:

- Stress urinary incontinence (demonstrable clinically): 11–25% according to severity
- Urge urinary incontinence: 16–40% according to severity
- Mixed (urge and stress) incontinence: 16–40% according to severity
- Nocturnal enuresis or wet in bed: 16–40% according to severity
- Total incontinence (continuously wet, e.g. from fistula): 50–70%

The highest scoring condition is to be used to assess impairment — combinations are not allowed.

7 Urinary and reproductive systems

AMA5 Chapter 7 applies to the assessment of permanent impairment of the urinary and reproductive systems, subject to the modifications set out below.

Introduction

- 7.1 AMA5 Chapter 7 (pp 143–171) provides clear details for assessment of the urinary and reproductive systems. Overall the Chapter should be followed in assessing permanent impairment, with the variations included below.
- 7.2 For both male and female sexual dysfunction, identifiable pathology should be present for an impairment percentage to be given.

Urinary diversion

- 7.3 Table 7–2 (p 150, AMA5) should be replaced with Table 7.1, below, when assessing permanent impairment due to urinary diversion disorders. This table includes ratings for neobladder and continent urinary diversion.
- 7.4 Continent urinary diversion is defined as a continent urinary reservoir constructed of small or large bowel with a narrow catheterisable cutaneous stoma through which it must be emptied several times a day.

Table 7.1: Criteria for rating permanent impairment due to urinary diversion disorders

Diversion type	% WPI
Ureterointestinal	10%
Cutaneous ureterostomy	10%
Nephrostomy	15%
Neobladder/replacement cystoplasty	15%
Continent urinary diversion	20%

Bladder

7.5 Table 7–3 (p 151, AMA5) should be replaced with Table 7.2 on the following page when assessing permanent impairment due to bladder disease. This table includes ratings involving urge and total incontinence (defined in paragraph 7.8).

Male reproductive organs

Penis

7.9 AMA5, p 157: the box labelled "Class 3, 21–35%" should read "Class 3, 20% Impairment of the Whole Person" as the descriptor "No sexual function possible" does not allow a range. (The correct value is shown in Table 7–5). Note, however, that there is a loading for age, so a rate higher than 20% is possible.

Testicles, epididymides and spermatic cords

7.10 Table 7–7 (p 159, AMA5) should be replaced with Table 7.4, below, when assessing permanent impairment due to testicular, epididymal and spermatic cord disease. This table includes rating for infertility and equates impairment with female infertility (see Table 7.5. in this Chapter of this Guide). Infertility in either sex must be considered to be of equal impact, age for age.

7.11 **Male infertility** is defined as azoospermia or other cause of inability to cause impregnation even with assisted contraception techniques.

7.12 Loss of sexual function **related to spinal injury** should only be assessed as an impairment where there is other objective evidence of spinal cord, cauda equina or bilateral nerve root dysfunction. The ratings described in Table 13–21 on p 342 of AMA5 are used in this instance. There is no additional impairment rating system for loss of sexual function in the absence of objective clinical findings.

Table 7.4: Criteria for rating permanent impairment due to testicular, epididymal and spermatic cord disease

Class 1 0%–10% WPI	Class 2 11%–15% WPI	Class 3 16%–35% WPI
Testicular, epididymal or spermatic cord disease symptoms and signs and anatomic alteration and no continuous treatment required and no seminal or hormonal function or abnormalities or solitary testicle	Testicular, epididymal or spermatic cord disease symptoms and signs and anatomic alteration and cannot effectively be controlled by treatment and detectable seminal or hormonal abnormalities	Trauma or disease produces bilateral anatomic loss of the primary sex organs or no detectable seminal or hormonal function or infertility

Female reproductive organs

Fallopian tubes and ovaries

7.13 Table 7–11 (p167, AMA5) should be replaced with Table 7.5, on the following page, when assessing permanent impairment due to fallopian tube and ovarian disease. This table includes rating for infertility and equates impairment with male infertility (see Table 7.4, above). Infertility in either sex must be considered to be of equal impact, age for age.

7.14 **Female infertility**: a woman in the childbearing age is infertile when she is unable to conceive naturally. This may be due to anovulation, tubal blockage, cervical or vaginal blocking or an impairment of the uterus.

Table 7.5: Criteria for rating permanent impairment due to fallopian tube and ovarian disease

Class 1 0%–15% WPI	Class 2 16%–25% WPI	Class 3 26%–35% WPI
Fallopian tube or ovarian disease or deformity symptoms and signs do not require continuous treatment or only one functioning fallopian tube or ovary in the premenopausal period or bilateral fallopian tube or ovarian functional loss in the postmenopausal period	Fallopian tube or ovarian disease or deformity symptoms and signs require continuous treatment, but tubal patency persists and ovulation is possible	Fallopian tube or ovarian disease or deformity symptoms and signs and total tubal patency loss or failure to produce ova in the premenopausal period or bilateral fallopian tube or bilateral ovarian loss in the premenopausal period; infertility

- 8.9 Before permanent impairment can be assessed, the person must have appropriate assessment and treatment by an ear, nose and throat surgeon and a respiratory physician who specialises in sleep disorders.
- 8.10 Degree of permanent impairment due to sleep apnoea should be calculated with reference to Table 13-4 (p 317, AMA5).
- Hypersensitivity pneumonitis (AMA5 Section 5.7)**
- 8.11 Permanent impairment arising from disorders included in this section is assessed according to the impairment classification in AMA5 Table 5-12.
- Pneumoconiosis (AMA5 Section 5.8)**
- 8.12 Permanent impairment due to pneumoconiosis is assessed according to the impairment classification in AMA5 Table 5-12.
- Lung cancer (AMA5 Section 5.9)**
- 8.13 Permanent impairment due to lung cancer should be assessed at least six months after surgery. Table 5-12 (not Table 5-11) should be used for assessment of permanent impairment.
- 8.14 Persons with residual lung cancer after treatment are classified in Respiratory Impairment Class 4 (Table 5-12).
- Permanent impairment due to respiratory disorders (AMA5 Section 5.10)**
- 8.15 Table 5-12 (p 107, AMA5) should be used to assess permanent impairment for respiratory disorders. The pulmonary function tests listed in Table 5-12 must be performed under standard conditions. Exercise testing is not required on a routine basis.
- 8.16 An isolated abnormal diffusing capacity for carbon monoxide (Dco) in the presence of otherwise normal results of lung function testing should be interpreted with caution and its aetiology should be clarified.

8 Respiratory system

AMA5 Chapter 5 applies to the assessment of permanent impairment of the respiratory system, subject to the modifications set out below.

Introduction

- 8.1 AMA5 Chapter 5 provides a useful summary of the methods for assessing permanent impairment arising from respiratory disorders.
- 8.2 The level of impairment arising from conditions that are not work related needs to be assessed by the medical assessor and taken into consideration in determining the level of permanent impairment. The level at which pre-existing conditions and lifestyle activities such as smoking contribute to the level of permanent impairment requires judgement on the part of the clinician undertaking the impairment assessment. The manner in which any deduction for these is applied needs to be recorded in the assessing specialist's report.

Examinations, clinical studies and other tests for evaluating respiratory disease (AMA5 Section 5.4)

- 8.3 AMA5 Tables 5-2b, 5-3b, 5-4b, 5-5b, 5-6b and 5-7b give the lower limits of normal values for pulmonary function tests. These are used in Table 5-12 to determine the impairment classification for respiratory disorders.
- 8.4 Classes 2, 3 and 4 in Table 5-12 list ranges of whole person impairment. The assessor should nominate the nearest whole percentage based on the complete clinical circumstances when selecting within the range.

Asthma (AMA5 Section 5.5)

- 8.5 In assessing permanent impairment arising from occupational asthma, the assessor will require evidence from the treating physician that:
- At least three lung function tests have been performed over a six month period and that the results were consistent and repeatable over that period; and
 - the worker has received maximal treatment and is compliant with his/her medication regimen.
- 8.6 Bronchial challenge testing should not be performed as part of the impairment assessment, therefore in Table 5-9 (p 104, AMA5) ignore column four (PC20 mg/mL or equivalent, etc).
- 8.7 Permanent impairment due to asthma is rated by the score for the best post-bronchodilator forced expiratory volume in one second (FEV1) (score in column 2, AMA5 Table 5-9) plus per cent of FEV₁ (score in column 3) plus minimum medication required (score in column 5). The total score derived is then used to assess the percent impairment in Table 5-10 (p 104, AMA5).

Obstructive sleep apnoea (AMA5 Section 5.6)

- 8.8 This section needs to be read in conjunction with Section 11.4 (p 259, AMA5) and Section 13.3c (p 317).

In the presence of significant conduction hearing loss, the extension tables do not apply. AMA5 Table 11-3 is replaced by Table 9.1 at the end of this chapter.

Hearing impairment

- 9.8 Impairment of a worker's hearing is determined according to evaluation of the individual's binaural hearing impairment.
- 9.9 **Permanent hearing impairment** should be evaluated when the condition is stable. Prosthetic devices (that is, hearing aids) must not be worn during the evaluation of hearing sensitivity.
- 9.10 **Hearing threshold level for pure tones** is defined as the number of decibels above standard audiometric zero for a given frequency at which the listener's threshold of hearing lies when tested in a suitable sound attenuated environment. It is the reading on the hearing level dial of an audiometer that is calibrated according to Australian Standard AS 2586-1983.
- 9.11 **Evaluation of binaural hearing impairment:** Binaural hearing impairment is determined by using the tables in the 1988 NAL publication with allowance for presbycusis according to the presbycusis correction table, if applicable, in the same publication.

The Binaural Tables RB 500-4000 (NAL publication, pp11-16) are to be used, except when it is not possible or would be unreasonable to do so. For the purposes of calculating binaural hearing impairment, the better and worse ear may vary as between frequencies.

Where it is necessary to use the monaural tables, the binaural hearing impairment (BHI) is determined by the formula:

$$BHI = \frac{<4 \times (\text{better ear hearing loss}) + \text{worse ear hearing loss}}{5}$$

- 9.12 **Presbycusis correction** (NAL publication, p 24) only applies to occupational hearing loss contracted by gradual process — for example, occupational noise induced hearing loss and/or occupational solvent induced hearing loss.

- 9.13 **Binaural hearing impairment and severe tinnitus:** Up to 5% may be added to the work-related binaural hearing impairment for severe tinnitus caused by a work-related injury.

- after presbycusis correction, if applicable; and
- before determining whole person impairment.

Assessment of severe tinnitus is based on a medical specialist's assessment.

- 9.14 **Only hearing ear:** A worker has an "only hearing ear" if he or she has suffered a non-work-related severe or profound sensorineural hearing loss in the other ear. If a worker suffers a work-related injury causing a hearing loss in the only hearing ear of x dBHL at a relevant frequency, the worker's work-related binaural hearing impairment at that frequency is calculated from the binaural tables using x dB as the hearing threshold level in both ears. Deduction for presbycusis if applicable and addition for severe tinnitus is undertaken according to this guide.

- 9.15 When necessary, binaural hearing impairment figures should be rounded to the nearest 0.1%. Rounding up should occur if equal to or greater than 0.05%, and rounding down should occur if equal to or less than 0.04%.

9 Hearing

AMA5 Chapter 11 applies to the assessment of permanent impairment of hearing, subject to the modifications set out below.

Assessment of hearing impairment (hearing loss)

- 9.1 A worker may present for assessment of hearing loss for compensation purposes before having undergone all or any of the health investigations that generally occur before assessment of permanent impairment. For this reason and to ensure that conditions other than "occupational hearing impairment" are precluded, the worker must undergo an audiometric test for hearing conducted by an audiologist for the purposes of assessment. For air conduction testing, the test must comply with AS/NZS 1269.4:2005 (Occupational noise management – Auditory assessment).

- 9.2 The worker's hearing levels must be determined separately for the left and right ears at audiometric test frequencies 500, 1000, 1500, 2000, 3000 and 4000Hz with an audiometer complying with AS IEC 60645.3:2002 (Electroacoustics – Audiological equipment – Auditory test signals of short duration for audiometric and neurological purposes).

- 9.3 The medical assessment needs to be undertaken in accordance with the hearing impairment section of the Evaluation Summary Table 11-10 (pp 272-273, AMA5). The test must be preceded by a period of quiet of at least 8 hours. The audiologist performing the assessment must examine the worker. The audiologist's assessment must be based on medical history and ear, nose and throat examination, evaluation of relevant audiological tests and evaluation of other relevant investigations available to the medical assessor. Only audiologists can sign medical reports.

- 9.4 Some of the relevant tests are discussed in the Evaluation Summary Table 11-10 (pp 272-273, AMA5). The relevant row for these guides is the one headed "Hearing impairment" with the exception of the last column headed "Degree of impairment". The degree of impairment is determined according to this Guide.

- 9.5 Disregard Sections 11.1b and 11.2 (pp 246-255, AMA5), but retain Section 11.1a (Interpretation of Symptoms and Signs, p 246).

- 9.6 The level of hearing impairment caused by non-work-related conditions is assessed by the audiologist and considered when determining the level of work-related hearing impairment. While this requires medical judgment on the part of the examining audiologist, any non-work-related deductions should be recorded in the report.

- 9.7 Disregard Tables 11-1, 11-2, 11-3 (pp 247-250, AMA5). For the purposes of this Guide, National Acoustic Laboratory (NAL) Tables from the NAL Report No. 118, *Improved Procedure for Determining Percentage Loss of Hearing* (January 1988) are adopted as follows:

- Tables RB 500-4000 (pp 11-16)
- Tables RM 500-4000 (pp 18-23)
- Appendix 1 and 2 (pp 8-9)
- Appendix 5 and 6 (pp 24-26)
- Tables EB 4000-8000 (pp 28-30)
- Table EM 4000-8000 (pp 32-34)

10 The visual system

AMA4 Chapter 8 applies to the assessment of permanent impairment of the visual system, subject to the modifications set out below.

Introduction and approach to assessment

- 10.1 The visual system must be assessed by an ophthalmologist.
- 10.2 For any visual system injury that results in an assessment of permanent impairment, the degree of PI must be assessed as follows:
 - The Royal Australian and New Zealand College of Ophthalmologists (RANZCO) Eye Guide for a visual injury.
 - If a vision injury results in permanent impairment of vision and this injury is not specifically mentioned in the RANZCO Eye Guide, the degree of permanent impairment resulting from the injury must be assessed under Chapter 8 (pp 209–222) of the American Medical Association *Guides to the Assessment of Permanent Impairment Fourth Edition* (AMA4) which is adopted without significant change.
- 10.3 The RANZCO Guide and AMA4 are used rather than AMA5 for the assessment of permanent impairment of the visual system because:
 - the equipment recommended for use in AMA5 is expensive and not owned by most privately practising ophthalmologists (eg, the Goldman apparatus for measuring visual fields);
 - the assessments recommended in AMA5 are considered too complex, raising a risk that resulting assessments may be of a lower standard than if the AMA4 method was used.
 - there is little emphasis on diplopia in AMA5, yet this is a relatively frequent problem.
 - many ophthalmologists are familiar with the RANZCO impairment guide, which is similar to AMA4.

10.4 Impairment of vision should be measured with the injured worker wearing their prescribed corrective spectacles and/or contact lenses, if that was normal for the injured worker before the workplace injury. If, as a result of the workplace injury, the injured worker has been prescribed corrective spectacles and/or contact lenses for the first time, or different spectacles and/or contact lenses than those prescribed before injury, the difference should be accounted for in the assessment of permanent impairment.

10.5 The ophthalmologist should perform, or review, all tests necessary for the assessment of permanent impairment rather than relying on tests, or interpretations of tests, done by the orthoptist or optometrist.

10.6 An ophthalmologist should assess visual field impairment in all cases.

10.7 In Section 8.5, "Other Conditions" (p 222, AMA4), the "additional 10% impairment" referred to means 10% *whole person* impairment, not 10% impairment of the visual system.

9.16 Table 9.1 is used to convert binaural hearing impairment, after deduction for presbycusis (if applicable), after deduction of the first 5% of the worker's diminution of hearing (consistent with section 125(4) of the *Workers' Compensation and Rehabilitation Act 2003*) and after addition for severe tinnitus, to whole person impairment.

- 9.17 The method of subtracting a previous impairment for noise induced hearing loss, where the previous impairment was not assessed in accordance with this Guide, is:
 - The current level of binaural hearing impairment is established by the relevant specialist.
 - Convert this to WPI from Table 9.1 below.
 - Calculate the proportion of the current binaural hearing impairment that was accounted for by the earlier assessment and express it as a percentage of the current hearing impairment.
 - The percentage of current hearing impairment that remains is the amount to be compensated.
 - This needs to be expressed in terms of WPI for calculation of compensation entitlement.

Table 9.1: Relationship of binaural hearing impairment to WPI

% Binaural hearing impairment	% WPI	% Binaural hearing impairment	% WPI
0.0–1.1	0	50.1–52.7	21
1.2–2.5	1	52.8–55.0	22
2.6–4.7	2	55.1–57.7	23
4.6–7.6	3	57.8–60.0	24
7.7–9.7	4	60.1–62.5	25
9.8–12.6	5	62.6–65.0	26
12.7–15.0	6	65.1–67.7	27
15.1–17.6	7	67.8–70.0	28
17.7–19.8	8	70.1–72.8	29
19.9–22.6	9	72.9–75.0	30
22.7–24.8	10	75.1–77.8	31
24.9–27.4	11	77.9–80.0	32
27.5–29.9	12	80.1–82.8	33
30.0–32.6	13	82.9–85.1	34
32.7–34.9	14	85.2–87.8	35
35.0–37.7	15	87.9–90.2	36
37.8–39.9	16	90.3–92.7	37
40.0–42.7	17	92.8–95.1	38
42.8–44.9	18	95.2–97.6	39
45.0–47.7	19	97.7–100	40
47.8–50.0	20		

11 Psychiatric and psychological disorders

AMA5 Chapter 14 is excluded and replaced by this chapter.

Introduction

- 11.1 This chapter lays out the method for assessing psychiatric impairment. The evaluation of impairment requires a medical examination.
- 11.2 Evaluation of psychiatric impairment is conducted by a Medical Assessment Tribunal.
- 11.3 Psychiatric and psychological disorders may be a primary impairment or secondary to a physical impairment and are assessed in the same way.

Background to the development of the scale

- 11.4 The psychiatric impairment rating scale (PIRS) used here was originally developed, using AMA4, for the New South Wales Motor Accidents Authority. It was then further modified for Comcare. At this time the conversion table was added. Finally, to ensure relevance in the workers' compensation context, the PIRS was extensively reviewed with reference to AMA5. Changes have been made to the method for assessing pre-injury impairment, and to some of the descriptors within each of the functional areas.

Diagnosis

- 11.5 The impairment rating must be based upon a psychiatric diagnosis (according to a recognised diagnostic system) and the report must specify the diagnostic criteria upon which the diagnosis is based. Impairment arising from any of the somatoform disorders (pp 485–511, DSM IV TR) are excluded from this chapter.
- 11.6 If pain is present as the result of an organic impairment, it should be assessed as part of the organic condition under the relevant table. This does not constitute part of the assessment of impairment relating to the psychiatric condition. The impairment ratings in the body organ system chapters in AMA5 make allowance for any accompanying pain.
- 11.7 It is expected that the Medical Assessment Tribunal will provide a rationale for the rating based on the injured worker's psychiatric symptoms. The diagnosis is among the factors to be considered in assessing the severity and possible duration of the impairment, but is not the sole criterion to be used. Clinical assessment of the person may include information from the injured worker's own description of his or her functioning and limitations; from family members and others who may have knowledge of the person. Medical reports, feedback from treating professionals, results of standardised tests, including appropriate psychometric testing performed by a qualified clinical psychologist, and work evaluations may provide useful information to assist with the assessment. Evaluation of impairment will need to take into account variations in the level of functioning over time. Percentage impairment refers to "whole person impairment".

Permanent impairment

- 11.8 A psychiatric disorder is permanent if in your clinical opinion, it is likely to continue indefinitely. Regard should be given to:
- the duration of impairment;
 - the likelihood of improvement in the injured workers' condition;
 - whether the injured worker has undertaken reasonable rehabilitative treatment;
 - any other relevant matters.

Effects of treatment

- 11.9 Consider the effects of medication, treatment and rehabilitation to date. Is the condition stable? Is treatment likely to change? Are symptoms likely to improve? If the injured worker declines treatment, this should not affect the estimate of permanent impairment. The Medical Assessment Tribunal may make a comment in the report about the likely effect of treatment or the reasons for refusal of treatment.

Co-morbidity

- 11.10 Consider co-morbid features (e.g. Alzheimer's disease, personality disorder, substance abuse) and determine whether they are directly linked to the work-related injury or whether they were pre-existing or unrelated conditions.

Pre-existing impairment

- 11.11 To measure the impairment caused by a work-related injury or event, the psychiatrist must measure the proportion of WPI due to a pre-existing condition. Pre-existing impairment is calculated using the same method for calculating current impairment level. The assessing psychiatrist uses all available information to rate the injured workers pre-injury level of functioning in each of the areas of function. The percentage impairment is calculated using the aggregate score and median class score using the conversion table below. The injured worker's current level of impairment is then assessed, and the pre-existing impairment level (%) is then subtracted from their current level to obtain the percentage of permanent impairment directly attributable to the work-related injury. If the percentage pre-existing impairment cannot be assessed, 10% of the estimated level of the condition now being assessed is to be deducted.

Psychiatric impairment rating scale (PIRS)

- 11.12 Behavioural consequences of psychiatric disorder are assessed on six scales, each of which evaluates an area of functional impairment:

1. Self care and personal hygiene (Table 11.1)
2. Social and recreational activities (Table 11.2)
3. Travel (Table 11.3)
4. Social functioning (relationships) (Table 11.4)
5. Concentration (Table 11.5)
6. Employability (Table 11.6)

} Activities of daily living

- 11.13 Impairment in each area is rated using class descriptors. Classes range from 1 to 5, in accordance with severity. The standard form must be used when scoring the PIRS. The examples of activities are examples only. The assessing psychiatrist should take account of the person's cultural background. Consider activities that are usual for the person's age, sex and cultural norms.

Table 11.5: Psychiatric impairment rating scale — Concentration, persistence and pace

Class 1	No deficit, or minor deficit attributable to the normal variation in the general population. Able to pass a TAFE or university course within normal time frame.
Class 2	Mild impairment: can undertake a basic retraining course, or a standard course at a slower pace. Can focus on intellectually demanding tasks for periods of up to 30 minutes, then feels fatigued or develops headache.
Class 3	Moderate impairment: unable to read more than newspaper articles. Finds it difficult to follow complex instructions (eg, operating manuals, building plans), make significant repairs to motor vehicle, type long documents, follow a pattern for making clothes, tapestry or knitting.
Class 4	Severe impairment: can only read a few lines before losing concentration. Difficulties following simple instructions. Concentration deficits obvious even during brief conversation. Unable to live alone, or needs regular assistance from relatives or community services.
Class 5	Totally impaired: needs constant supervision and assistance within institutional setting.

Table 11.6: Psychiatric impairment rating scale — Employability

Class 1	No deficit, or minor deficit attributable to the normal variation in the general population. Able to work full time. Duties and performance are consistent with the injured worker's education and training. The person is able to cope with the normal demands of the job.
Class 2	Mild impairment. Able to work full time but in a different environment from that of the pre-injury job. The duties require comparable skill and intellect as those of the pre-injury job. Can work in the same position, but no more than 20 hours per week (eg, no longer happy to work with specific persons, or work in a specific location due to travel required).
Class 3	Moderate impairment: cannot work at all in same position. Can perform less than 20 hours per week in a different position, which requires less skill or is qualitatively different (eg, less stressful).
Class 4	Severe impairment: cannot work more than one or two days at a time, less than 20 hours per fortnight. Pace is reduced, attendance is erratic.
Class 5	Totally impaired. Cannot work at all.

Using the PIRS to measure impairment

11.14 Rating psychiatric impairment using the PIRS is a two-step procedure:

- Determine the median class score.
- Calculate the aggregate score.

Determining the median class score

11.5 Each area of function described in the PIRS is given an impairment rating which ranges from Class 1 to 5. The six scores are arranged in ascending order, using the standard form. The median is then calculated by averaging the two middle scores. E.g.:

Example A:	1, 2, 3, 3, 4, 5	Median Class = 3
Example B:	1, 2, 2, 3, 3, 4	Median Class = 2.5 = 3*
Example C:	1, 2, 3, 5, 5	Median Class = 4

*If a score falls between two classes, it is rounded up to the next class. A median class score of 2.5 thus becomes 3.

11.16 The median class score method was chosen, as it is not influenced by extremes. Each area of function is assessed separately. While impairment in one area is neither

Table 11.1: Psychiatric impairment rating scale — Self care and personal hygiene

Class 1	No deficit, or minor deficit attributable to the normal variation in the general population
Class 2	Mild impairment: able to live independently, looks after self adequately, although may look unkempt occasionally; sometimes misses a meal or relies on take-away food.
Class 3	Moderate impairment: Can't live independently without regular support. Needs prompting to shower daily and wear clean clothes. Does not prepare own meals, frequently misses meals. Family member or community nurse visits (or should visit) 2-3 times per week to ensure minimum level of hygiene and nutrition.
Class 4	Severe impairment: Needs supervised residential care. If unsupervised, may accidentally or purposefully hurt self.
Class 5	Totally impaired: Needs assistance with basic functions, such as feeding and toileting.

Table 11.2: Psychiatric impairment rating scale — Social and recreational activities

Class 1	No deficit, or minor deficit attributable to the normal variation in the general population: regularly participates in social activities that are age, sex and culturally appropriate. May belong to clubs or associations and is actively involved with these.
Class 2	Mild impairment: occasionally goes out to such events without needing a support person, but does not become actively involved (eg, dancing, cheering favourite team).
Class 3	Moderate impairment: rarely goes out to such events, and mostly when prompted by family or close friend. Will not go out without a support person. Not actively involved, remains quiet and withdrawn.
Class 4	Severe impairment: never leaves place of residence. Tolerates the company of family member or close friend, but will go to a different room or garden when others come to visit family or flat mate.
Class 5	Totally impaired. Cannot tolerate living with anybody, extremely uncomfortable when visited by close family member.

Table 11.3: Psychiatric impairment rating scale — Travel

Class 1	No deficit, or minor deficit attributable to the normal variation in the general population: Can travel to new environments without supervision.
Class 2	Mild impairment: can travel without support person, but only in a familiar area such as local shops, visiting a neighbour.
Class 3	Moderate impairment: cannot travel away from own residence without support person. Problems may be due to excessive anxiety or cognitive impairment.
Class 4	Severe impairment: finds it extremely uncomfortable to leave own residence even with trusted person.
Class 5	Totally impaired: may require two or more persons to supervise when travelling.

Table 11.4: Psychiatric impairment rating scale — Social functioning

Class 1	No deficit, or minor deficit attributable to the normal variation in the general population: No difficulty in forming and sustaining relationships (eg, partner, close friendships lasting years).
Class 2	Mild impairment: existing relationships strained. Tension and arguments with partner or close family member, loss of some friendships.
Class 3	Moderate impairment: previously established relationships severely strained, evidenced by periods of separation or domestic violence. Spouse, relatives or community services looking after children.
Class 4	Severe impairment: unable to form or sustain long term relationships. Pre-existing relationships ended (eg, lost partner, close friends). Unable to care for dependants (eg, own children, elderly parent).
Class 5	Totally impaired: unable to function within society. Living away from populated areas, actively avoiding social contact.

equivalent nor interchangeable with impairment in other areas, the median seems the fairest way to translate different impairments onto a linear scale.

Median class score and percentage impairment

11.17 Each median class score represents a range of impairment, as shown below.

- Class 1 = 0–3%
- Class 2 = 4–10%
- Class 3 = 11–30%
- Class 4 = 31–60%
- Class 5 = 61–100%

Calculation of the aggregate score

11.18 The aggregate score is used to determine an exact percentage of impairment within a particular Median Class range. The six class scores are added to give the aggregate score.

Use of the conversion table to arrive at percentage impairment

11.19 The aggregate score is converted to a percentage score using the conversion table.
 11.20 The conversion table was developed to calculate the percentage impairment based on the aggregate and median scores.

11.21 The scores within the conversion table are spread in such a way to ensure that the final percentage rating is consistent with the measurement of permanent impairment percentages for other body systems.

Table 11.7: Conversion table

		Aggregate score																									
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Class 1	% Impairment	0	0	1	1	2	2	2	3	3																	
Class 2	% Impairment			4	5	5	6	7	7	8	9	9	10														
Class 3	% Impairment								11	13	15	17	19	22	24	26	28	30									
Class 4	% Impairment												31	34	37	41	44	47	50	54	57	60					
Class 5	% Impairment																	61	65	70	74	78	83	87	91	96	10

Conversion table — explanatory notes

- A. Distribution of aggregate scores**
- The lowest aggregate score that can be obtained is: 1+1+1+1+1+1=6
 - The highest aggregate score is 5+5+5+5+5+5= 30
 - The table therefore has aggregate scores ranging from 6 to 30.
 - Each Median Class score has an impairment range, and a range of possible aggregate scores (eg, Class 3 = 11–30%)
 - The lowest aggregate score for Class 3 is 13 (1+1+2+3+3+3= 13)
 - The highest aggregate score for Class 3 is 22. (3+3+3+3+5+5=22)
 - The conversion table distributes the impairment percentages across aggregate scores

B. Same aggregate score in different classes

- The conversion table shows that the same aggregate score leads to different percentages of impairment in different median classes.

- For example, an aggregate score of 18 is equivalent to an impairment rating of:
 - 10% in Class 2,
 - 22% in Class 3,
 - 34% in Class 4.
- This is due to the fact that an injured worker whose impairment is in Median Class 2 is likely to have a lower score across most areas of function. They may be significantly impaired in one aspect of their life, such as travel, yet have low impairment in Social Function, Self-care or Concentration.
- Someone whose impairment reaches Median Class 4 will experience significant impairment across most aspects of his or her life.

Examples: (Using the previous cases)

Example A

PIRS scores	1	2	3	4	5	Median class	= 3
Aggregate score	1 +	2 +	3 +	3 +	4 +	5 =	18
Total % Impairment							22%

Example B

PIRS scores	1	2	2	3	4	Median class	= 3
Aggregate score	1 +	2 +	2 +	3 +	3 +	4 =	15
Total % Impairment							15%

Example C

PIRS scores	1	2	3	5	5	Median class	= 4
Aggregate score	1 +	2 +	3 +	5 +	5 +	5 =	21
Total % Impairment							44%

12 Haematopoietic system

AMA5 Chapter 9 applies to the assessment of permanent impairment of the haematopoietic system, subject to the modifications set out below.

Introduction

12.1 AMA5 Chapter 9 (pp 191–210) provides guidelines on the method of assessing permanent impairment of the haematopoietic system. Overall, that chapter should be followed when conducting the assessment, with variations indicated below.

12.2 Impairment of end organ function due to haematopoietic disorder should be assessed separately, using the relevant chapter of this Guide. The percentage whole person impairment due to end organ impairment should be combined with any percentage whole person impairment due to haematopoietic disorder, using the Combined Values Table (pp 604–606, AMA5).

Anaemia

12.3 Table 12.1 (below) replaces Table 9–2 (p 193, AMA5).

Table 12.1: Classes of anaemia and percentage whole person impairment

Class 1: 0–10% WPI	Class 2: 11–30% WPI	Class 3: 31–70% WPI	Class 4: 71–100% WPI
No symptoms and haemoglobin 100–120g/L and no transfusion required	Minimal symptoms and haemoglobin 80–100g/L and no transfusion required	Moderate to marked symptoms and haemoglobin 50–80g/L before transfusion and transfusion of 2 to 3 units required, every 4 to 6 weeks	Moderate to marked symptoms and haemoglobin 50–80g/L before transfusion and transfusion of 2 to 3 units required, every 2 weeks

12.4 The assessor should exercise clinical judgement in determining whole person impairment, using the criteria in Table 12.1. For example, if comorbidities exist which preclude transfusion, the assessor may assign Class 3 or Class 4, on the understanding that transfusion would under other circumstances be indicated. Similarly, there may be some claimants with Class 2 impairment who, because of comorbidity, may undergo transfusion.

12.5 Pre-transfusion haemoglobin levels in Table 12.1 are to be used as indications only. It is acknowledged that for some claimants, it would not be medically advisable to permit the claimant's haemoglobin levels to be as low as indicated in the criteria of Table 12.1.

12.6 The assessor should indicate a percentage whole person impairment, as well as the Class.

Polycythaemia and myelofibrosis

12.7 The level of symptoms (as in Table 12.1) should be used as a guide for the assessor in cases where non-anaemic tissue iron deficiency results from venesection.

Table 11.8: PIRS rating form

Name	Claim reference number	
D.O.B.	Age at time of injury	
Date of injury	Occupation before injury	
Date of assessment	Marital status before Injury	
Psychiatric diagnoses	1.	2.
	3.	4.
Psychiatric treatment		
Is impairment permanent?	Yes	No (Circle one)
PIRS category	Class	Reason for decision
Self care and personal hygiene		
Social and recreational activities		
Travel		
Social functioning		
Concentration, persistence and pace		
Employability		
Score	Median	
Class	=	
Aggregate Score	%	
+	+	+
+	+	+
+	+	+
Total =		

Impairment (%WPI) from table 11.7
 Less pre existing impairment (if any)
 Final Impairment (%WPI)

White blood cell diseases

12.8 In cases of functional asplenia, the assessor should assign 3% whole person impairment. This should be combined with any other impairment rating, using the Combined Values Table (pp 604–606, AMA5).

Haemorrhagic and platelet disorders

12.9 Table 9–4 (p 203, AMA5) is to be used as the basis for assessing haemorrhagic and platelet disorders.

12.10 For the purposes of this Guide, the criteria for inclusion in Class 3 of AMA5 Table 9–4 (p 203) is:

- Symptoms and signs of haemorrhagic and platelet abnormality and/or
- Requires continuous treatment and
- Interference with daily activities; requires occasional assistance.

12.11 For the purposes of this Guide, the criteria for inclusion in Class 4 of Table 9–4 (p 203, AMA5) is:

- Symptoms and signs of haemorrhagic and platelet abnormality and/or
- Requires continuous treatment and
- Difficulty performing daily activities; requires continuous care.

Thrombotic disorders

12.12 Table 9–4 (p 203, AMA5) is used as the basis for determining impairment due to thrombotic disorder.

13 The endocrine system

AMA5 Chapter 10 applies to the assessment of permanent impairment of the endocrine system, subject to the modifications set out below.

Introduction

13.1 AMA5 Chapter 10 provides a useful summary of the methods for assessing permanent impairment arising from disorders of the endocrine system.

13.2 Refer to other chapters in AMA5 for related structural changes — the visual system (Chapter 12), the skin (pigmentation, Chapter 8), the central and peripheral nervous system (memory, Chapter 13), the urinary and reproductive system (infertility, renal impairment, Chapter 7), the digestive system (dyspepsia, Chapter 6), the cardiovascular system (Chapters 3 and 4).

13.3 The clinical findings to support the impairment assessment are to be reported in the units recommended by the Royal College of Pathologists of Australia. (See Appendix 1 of this Chapter, p69).

13.4 Westergren erythrocyte sedimentation rate (WSR) is equivalent to ESR.

Adrenal cortex

13.5 AMA5, p 222, first paragraph: disregard the last sentence, "They also affect inflammatory response, cell membrane permeability, and immunologic responses, and they play a role in the development and maintenance of secondary sexual characteristics." Replace with: "Immunological and inflammatory responses are reduced by these hormones and they play a role in the development and maintenance of secondary sexual characteristics."

13.6 AMA5 Example 10–18 (pp 224–225); see reference to ESR (13.4, above).

13.7 AMA5 Example 10–20 (p 225): History: For "hypnotic bladder" read "hypotonic bladder".

Diabetes mellitus

13.8 AMA5, p 231: refer to the Australian Diabetes Association Guidelines with regard to levels of fasting glucose. (Position statement from the Australian Diabetes Society, reprinted in Appendix 2 to this chapter).

13.9 AMA5, p 231: insert at the end of the second paragraph: "The goal of treatment is to maintain haemoglobin A1c within 1% of the normal range (4%–6.3%)."

Mammary glands

13.10 AMA5 Example 10–45 (p 239), Current Symptoms: Disregard the last sentence, "Both bromocriptine and cabergoline cause nausea, precluding use of either drug" and replace with: "Routine use of bromocriptine and cabergoline is normal in Australia. It is rare that nausea precludes their use."

Criteria for rating permanent impairment due to metabolic bone disease

13.11 AMA5, p 240: Impairment due to a metabolic bone disease itself is unlikely to be associated with a work injury and would usually represent a pre-existing condition.

13.12 Impairment from fracture, spinal collapse or other complications may arise as a result of a work injury associated with these underlying conditions (as noted in AMA5, Section 10.10c) and would be assessed using the other Chapters indicated, with the exception of Chapter 18 (Pain) which is excluded from this Guide.

Appendix 13.1 Interpretation of pathology tests

From *Manual of Use and Interpretation of Pathology Tests*, 3rd edition. Reprinted with kind permission of the Royal College of Pathologists of Australasia.

Reference ranges, plasma or serum, unless otherwise indicated

Alanine aminotransferase (ALT)	(adult)	< 35 U/L
Albumin	(adult)	32–45 g/L
Alkaline phosphatase (ALP)	(adult, non-pregnant)	25–100 U/L
Alpha fetoprotein	(adult, non-pregnant)	< 10 µg/L
Alpha-1-antitrypsin		1.7–3.4 g/L
Anion gap		8–16 mmol/L
Aspartate aminotransferase (AST)		< 40 U/L
Bicarbonate (total CO ₂)		22–32 mmol/L
Bilirubin (total)	(adult)	< 20 µmol/L
Calcium	(total)	2.10–2.60 mmol/L
	(ionised)	1.17–1.30 mmol/L
Chloride		95–110 mmol/L
Cholesterol (HDL)	(male)	0.9–2.0 mmol/L
	(female)	1.0–2.2 mmol/L
Cholesterol (total)		< 5.5 mmol/L
<i>(National Heart Foundation Australia² recommendation)</i>		
Copper		13–22 µmol/L
Creatine kinase (CK)	(male)	60–220 U/L
	(female)	30–180 U/L
Creatinine	(adult male)	0.06–0.12 mmol/L
	(adult female)	0.05–0.11 mmol/L
Gamma glutamyl transferase (GGT)	(male)	< 50 U/L
	(female)	< 30 U/L
Globulin	adult	25–35g/L
Glucose	(venous plasma) - (fasting)	3.0–5.4 mmol/L
	(venous plasma) - (random)	3.0–7.7 mmol/L
Lactate dehydrogenase (LD)	(adult)	110–230 U/L
Magnesium	(adult)	0.8–1.0 mmol/L
Osmolality	(adult)	280–300 m. osmol/kg water
pCO ₂	(arterial blood)	4.6–6.0 kPa (35–45 mmHg)
PH	(arterial blood)	7.36–7.44 (36–44 mmol/L)

Reference ranges, plasma or serum, unless otherwise indicated (cont.)

Phosphate	0.8–1.5 mmol/L
pO ₂	(arterial blood) 11.0–13.5 kPa (80–100 mmHg)
Potassium	(plasma) 3.4–4.5 mmol/L (serum) 3.8–4.9 mmol/L (male) 150–500 mU/L (female) 0–750 mU/L (adult) 62–80 g/L 135–145 mmol/L
Protein, total	
Sodium	
Testosterone and related androgens	See Table A (below)

Therapeutic intervals

Amitriptyline	150–900 nmol/L	60–250 µg/L
Carbamazepine	20–40 µmol/L	6–12 mg/L
Digoxin	0.6–2.3 nmol/L	0.5–1.8 µg/L
Lithium	0.6–1.2 mmol/L	
Nortriptyline	200–650 nmol/L	50–170 µg/L
Phenobarbitone	65–170 µmol/L	15–40 mg/L
Phenytoin	40–80 µmol/L	10–20 mg/L
Primidone	22–50 µmol/L	4.8–11.0 mg/L
Procaïnamide	17–42 µmol/L	4–10 mg/L
Quinidine	7–15 µmol/L	2.3–4.8 mg/L
Salicylate	1.0–2.5 mmol/L	140–350 mg/L
Theophylline	55–110 µmol/L	10–20 mg/L
Valproate	350–700 µmol/L	50–100 mg/L
Thyroid stimulating hormone (TSH)		0.4–5.0 mIU/L
Thyroxine (free)		10–25 pmol/L
Triglycerides (fasting)		< 2.0 mmol/L
Triiodothyronine (free)		4.0–8.0 pmol/L
Urate	(male)	0.20–0.45 mmol/L
	(female)	0.15–0.40 mmol/L
Urea	(adult)	3.0–8.0 mmol/L
Zinc		12–20 µmol/L

Table A: Reference intervals for testosterone and related androgens (serum)

	Male		Female	
	Pre-pubertal	Adult (age related)	Pre-pubertal	Adult (age related)
Free testosterone (pmol/L)	< 0.5	170–510	< 0.5	< 4.0
Total testosterone (nmol/L)	55–100	8–35	55–100	< 4.0
SHBG (nmol/L)		10–50	30–90	(250–500 in the 3rd trimester)
Dihydrotestosterone (nmol/L)		1–2.5		

Reference ranges, plasma or serum, unless otherwise indicated	
Iron	(adult) 10–30 µmol/L
Iron (total) binding capacity (TIBC)	45–80 µmol/L
Transferrin	1.7–3.0 g/L
Transferrin saturation	0.15–0.45 (15–45%)
Ferritin	(male) 30–300 µg/L
	(female) 15–200 µg/L
Vitamin B12	120–680 pmol/L
Folate	(red cell) 360–1400 nmol/L
	(serum) 7–45 nmol/L

Reference ranges, citrated plasma

Activated partial thromboplastin time (APTT)	25–35 seconds
– Therapeutic range for continuous infusion heparin	1.5–2.5 x baseline
Prothrombin time (PT)	11–15 seconds
International normalised ratio (INR)	
– Therapeutic range for oral anticoagulant therapy	2.0–4.5
Fibrinogen	1.5–4.0 g/L

Reference ranges, serum

Rheumatoid factor (nephelometry)	< 30 IU/L
C3	0.9–1.8 g/L
C4	0.16–0.50 g/L
C-reactive protein	< 5.0 mg/L
Immunoglobulins:	
IgG	6.5–16.0g/L
IgA	0.6–4.0g/L
IgM	0.5–3.0g/L

Reference intervals for lymphocyte subsets

	Adult
Total lymphocytes	1.5–4.0
CD3	0.6–2.4
CD4 (T4)	0.5–1.4
CD8 (T8)	0.2–0.7
CD19	0.04–0.5
CD16	0.2–0.4
CD4/CD8 ratio	1.0–3.2

Reference ranges, urine

Calcium	2.5–7.5 mmol/24 hours
Chloride (depends on intake, plasma levels)	100–250 mmol/24 hours
Cortisol (free)	100–300 nmol/24 hours
Creatinine	(child) 0.07–0.19 mmol/24 hours/kg
	(male) 9–18 mmol/24 hours
	(female) 5–16 mmol/24 hours
HMMA	< 10 mmol/mol creatinine
	(infant) < 35 µmol/24 hours
	(adult) 2.5–8.0 mmol/24 hours
Magnesium	50–1200 m.osmol/kg water
Osmolality (depends on hydration)	10–40 mmol/24 hours
Phosphate (depends on intake, plasma levels)	40–100 mmol/24 hours
Potassium (depends on intake, plasma levels)	< 150 mg/24 hours
Protein, total	< 250 mg/24 hours
	(pregnancy) 75–300 mmol/24 hours
Sodium (depends on intake, plasma levels)	(male) 2.2–6.6 mmol/24 hours
Urate	(female) 1.6–5.6 mmol/24 hours
Urea (depends on protein intake)	420–720 mmol/24 hours

Reference ranges, whole blood

Haemoglobin (Hb)	(adult male) 130–180 g/L
	(adult female) 115–165 g/L
Red cell count (RCC)	(adult male) 4.5–6.5 x 10 ¹² /L
	(adult female) 3.8–5.8 x 10 ¹² /L
Packed cell volume (PCV)	(adult male) 0.40–0.54
	(adult female) 0.37–0.47
Mean cell volume (MCV)	80–100 fL
Mean cell haemoglobin (MCH)	27–32 pg
Mean cell haemoglobin concentration (MCHC)	300–350 g/L
Leucocyte (White Cell) Count (WCC)	4.0–11.0 x 10 ⁹ /L
Leucocyte differential count	
– Neutrophils	2.0–7.5 x 10 ⁹ /L
– Eosinophils	0.04–0.4 x 10 ⁹ /L
– Basophils	< 0.1 x 10 ⁹ /L
– Monocytes	0.2–0.8 x 10 ⁹ /L
– Lymphocytes	1.5–4.0 x 10 ⁹ /L
Platelet count	150–400 x 10 ⁹ /L
Erythrocyte sedimentation rate (ESR)	1–10 mm/hour
	male 17–50 yrs
	male >50 yrs
	female 17–50 yrs
	female >50 yrs
Reticulocyte count	3–12 mm/hour
	5–20 mm/hour
	10–100 x 10 ⁹ /L
	(0.2–2.0%)

Appendix 13.2 New classification and criteria for diagnosis of diabetes mellitus
Position Statement from the Australian Diabetes Society* New Zealand Society for the Study of Diabetes,¹ Royal College of Pathologists of Australasia² and Australasian Association of Clinical Biochemists³

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Introduction

Recently, there has been major growth in knowledge about the aetiology and pathogenesis of different types of diabetes and about the predictive value of different blood glucose levels for development of complications. In response, both the American Diabetes Association (ADA) and the World Health Organization (WHO) have re-examined, redefined and updated the classification of and criteria for diabetes, which have been unchanged since 1985. While the two working parties had cross-representation, they met separately, and differences have emerged between their recommendations.

The ADA published its final recommendations in 1997,¹ while the WHO group published its provisional conclusions for consultation and comment in June 1998.²

The WHO process called for comments on the proposal by the end of September 1998, with the intention of finalising definitive classification and criteria by the end of December 1998 and of publishing these soon thereafter. However, WHO publications need to go through an internal approval process and it may be up to 12 months before the final WHO document appears.

A combined working party of the Australian Diabetes Society, New Zealand Society for the Study of Diabetes, Royal College of Pathologists of Australasia and Australasian Association of Clinical Biochemists was formed to formulate an Australasian position on the two sets of recommendations and, in particular, on the differences between them. This is an interim statement pending the final WHO report, which will include recommendations on diabetes classification as well as criteria for diagnosis. We see it as very important to inform Australasian health professionals treating patients with diabetes about these changes.

What are the new diagnostic criteria?

The new WHO criteria for diagnosis of diabetes mellitus and hyperglycaemia are shown in Box 1. The major change from the previous WHO recommendation³ is the lowering of the

diagnostic level of fasting plasma glucose to ≥ 7.0 mmol/L, from the former level of ≥ 7.8 mmol/L. For whole blood, the proposed new level is ≥ 6.1 mmol/L, from the former ≥ 6.7 mmol/L.

This change is based primarily on cross-sectional studies demonstrating the presence of microvascular⁴ and macrovascular complications⁵ at these lower glucose concentrations. In addition, the 1985 WHO diagnostic criterion for diabetes based on fasting plasma glucose level (≥ 7.8 mmol/L) represents a greater degree of hyperglycaemia than the criterion based on plasma glucose level two hours after a 75 g glucose load (≥ 11.1 mmol/L).⁶ A fasting plasma glucose level of ≥ 7 mmol/L accords more closely with this 2 h post-glucose level.

Recommendation: The ADA and the WHO committee are unanimous in adopting the changed diagnostic level, and the Australasian Working Party on Diagnostic Criteria recommends that healthcare providers in Australia and New Zealand should adopt it immediately.

Clinicians should note that the diagnostic criteria differ between clinical and epidemiological settings. In clinical practice, when symptoms are typical of diabetes, a single fasting plasma glucose level of ≥ 7.0 mmol/L or 2 h post-glucose or casual postprandial plasma glucose level of ≥ 11.1 mmol/L suffices for diagnosis. If there are no symptoms, or symptoms are equivocal, at least one additional glucose measurement (preferably fasting) on a different day with a value in the diabetic range is necessary to confirm the diagnosis. Furthermore, severe hyperglycaemia detected under conditions of acute infective, traumatic, circulatory or other stress may be transitory and should not be regarded as diagnostic of diabetes. The situation should be reviewed when the primary condition has stabilised.

1: Values for diagnosis of diabetes mellitus and other categories of hyperglycaemia²

	Glucose concentration (mmol/L <mg/dL>)		
	Whole blood		Plasma
	Venous	Capillary	Venous
Diabetes mellitus			
Fasting	≥ 6.1 (≥ 110)	≥ 6.1 (≥ 110)	≥ 7.0 (≥ 126)
or 2 h post-glucose load	≥ 10.0 (≥ 180)	≥ 11.1 (≥ 200)	≥ 11.1 (≥ 200)
or both			
Impaired glucose tolerance (IGT)	< 6.1 (< 110)	< 6.1 (< 110)	< 7.0 (< 126)
Fasting (if measured)	≥ 6.7 (≥ 120) and < 10.0 (< 180)	≥ 7.8 (≥ 140) and < 11.1 (< 200)	≥ 7.8 (≥ 140) and < 11.1 (< 200)
and 2 h post-glucose load	≥ 5.6 (≥ 100) and < 6.7 (< 120)	≥ 5.6 (≥ 100) and < 6.1 (< 110)	≥ 6.1 (≥ 110) and < 7.0 (< 126)
Impaired fasting glycaemia (IFG)	< 6.7 (< 120)	< 7.8 (< 140)	< 7.8 (< 140)
Fasting			
2 h post-glucose load (if measured)			

For epidemiological or population screening purposes, the fasting or 2 h value after 75 g oral glucose may be used alone. For clinical diagnosis of diabetes mellitus, the fasting or 2 h value should be used in addition to the other criteria. This is especially important for hyperglycaemia with acute metabolic decompensation or obvious symptoms. Glucose concentrations should not be determined on serum unless red cells are immediately removed, otherwise glycolysis will result in an unpredictable underestimation of the true concentrations. It should be stressed that glucose presentatives do not totally prevent glycolysis. If whole blood is used, the sample should be kept at 0–4°C or centrifuged immediately, or assayed immediately. Table reproduced with permission from Alberti KGMM, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: diagnosis and classification of diabetes mellitus. Provisional Report of a WHO Consultation. *Diabet Med* 1998; 15: 539–553. Copyright John Wiley & Sons Limited.

How has the classification of diabetes changed?

The proposed new classification encompasses both clinical stages and aetiological types of hyperglycaemia and is supported by numerous epidemiological studies. The classification by aetiological type (Box 2) results from new knowledge of the causes of hyperglycaemia, including diabetes. The terms insulin-dependent and non-insulin-dependent diabetes (IDDM and NIDDM) are eliminated and the terms type 1 and type 2 diabetes retained. Other aetiological types, such as diabetes arising from genetic defects of β -cell function or insulin action, are grouped as "other specific types", with gestational diabetes as a fourth category.

The proposed staging (Box 3) reflects the fact that any aetiological type of diabetes can pass or progress through several clinical phases (both asymptomatic and symptomatic) during its natural history. Moreover, individuals may move in either direction between stages.

Impaired glucose tolerance and impaired fasting glycaemia

Impaired glucose tolerance (IGT), a discrete class in the previous classification, is now categorised as a stage in the natural history of disordered carbohydrate metabolism. Individuals with IGT are at increased risk of cardiovascular disease, and not all will be identified by fasting glucose level.

In reducing the use of the OGTT, the ADA recommended a new category — impaired fasting glycaemia (IFG) — when fasting plasma glucose level is lower than that required to diagnose diabetes but higher than the reference range (< 7.0 mmol/L but \geq 6.1 mmol/L). Limited data on this category show that it increases both risk of progressing to diabetes⁹ and cardiovascular risk.⁵ However, data are as yet insufficient to determine whether IFG has the same status as IGT as a risk factor for developing diabetes and cardiovascular disease and as strong an association with the metabolic syndrome (insulin resistance syndrome).

IFG can be diagnosed by fasting glucose level alone, but if 2 h glucose level is also measured some individuals with IFG will have IGT and some may have diabetes. In addition, the number of people with OGTT results indicating diabetes but fasting plasma glucose level < 7.0 mmol/L is unknown, but early data suggest there may be major variation across different populations.¹⁰

2: Aetiological classification of disorders of glycaemia*

Type 1 (β -cell destruction, usually leading to absolute insulin deficiency)
Autoimmune
Idiopathic

Type 2 (may range from predominantly insulin resistance with relative insulin deficiency to a predominantly secretory defect with or without insulin resistance)

Other specific types
Genetic defects of β -cell function
Genetic defects in insulin action
Diseases of the exocrine pancreas
Endocrinopathies
Drug or chemical induced
Infections
Uncommon forms of immune-mediated diabetes
Other genetic syndromes sometimes associated with diabetes

Gestational diabetes
* As additional subtypes are discovered, it is anticipated they will be reclassified within their own specific category. Includes the former categories of gestational impaired glucose tolerance and gestational diabetes. Table reproduced with permission from Alberti KGMM, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: diagnosis and classification of diabetes mellitus. Provisional Report of a WHO Consultation. Diabet Med 1998; 15: 539-553. Copyright John Wiley & Sons Limited.

In epidemiological settings, for study of high-prevalence populations or selective screening of high-risk individuals, a single measure — the glucose-level 2 h post-glucose load — will suffice to describe prevalence of impaired glucose tolerance (IGT).

What about the oral glucose tolerance test?

Previously, the oral glucose tolerance test (OGTT) was recommended in people with a fasting plasma glucose level of 5.5–7.7 mmol/L or random plasma glucose level of 7.8–11.0 mmol/L. After a 75 g glucose load, those with a 2 h plasma glucose level of < 7.8 mmol/L were classified as normoglycaemic, of 7.8–11.0 mmol/L as having IGT and of \geq 11.1 mmol/L as having diabetes.

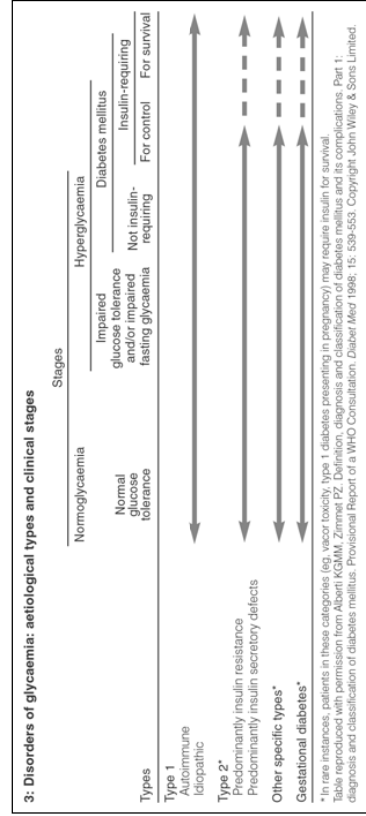
The new diagnostic criteria proposed by the ADA and WHO differ in their recommendations on use of the OGTT. The ADA makes a strong recommendation that fasting plasma glucose level can be used on its own and that, in general, the OGTT need not be used.¹ The WHO group² argues strongly for the retention of the OGTT and suggests using fasting plasma glucose level alone only when circumstances prevent the performance of the OGTT.

There are concerns that many people with a fasting plasma glucose level < 7.0 mmol/L will have manifestly abnormal results on the OGTT and are at risk of microvascular and macrovascular complications. This has major ramifications for the approach to diabetes screening, particularly when the Australian National Diabetes Strategy proposal,⁷ launched in June 1998 by Dr Michael Woodridge, then Federal Minister for Health and Aged Care, has early detection of type 2 diabetes as a key priority.

Recommendation: The Australasian Working Party on Diagnostic Criteria has major concerns about discontinuing use of the OGTT and recommends that a formal recommendation on its use in diabetes screening be withheld until the final WHO recommendation is made. However, in the interim, the OGTT should continue to be used.

Diabetes in pregnancy

The ADA has retained its old criteria for diagnosis of gestational diabetes.¹ These differ from those recommended by both WHO² and the Australian Working Party on Diabetes in Pregnancy⁸ and are generally not recognised outside the United States. The new WHO statement retains the 1985 WHO recommendation that both IGT and diabetes should be classified as gestational diabetes. This is consistent with the recommendations of the Australasian Diabetes in Pregnancy Society, which recommended a diagnostic 2 h venous plasma glucose level on the OGTT of \geq 8.0 mmol/L. In New Zealand, a cut-off level of \geq 9.0 mmol/L has been applied.⁸



A number of studies, including the DECODE initiative of the European Diabetes Epidemiology Group, have reported that individuals classified with IFG are not the same as the IGT group.¹¹ The European Group believes that, on available European evidence, the ADA decision to rely solely on fasting glucose level would be unwise.

14 The skin

AMA5 Chapter 8 applies to the assessment of permanent impairment of the skin, subject to the modifications set out below.

- 14.1 AMA5 Chapter 8 (pp 173–190) refers to skin diseases generally rather than work-related skin diseases alone. This Chapter has been adopted for measuring impairment of the skin system, with the following variations.
- 14.2 Disfigurement, scars and skin grafts may be assessed as causing significant permanent impairment when the skin condition causes limitation in the performance of activities of daily living (ADL).
- 14.3 For cases of facial disfigurement, refer to Table 6.1 in Chapter 6 (p 34).
- 14.4 Table 8–2 (p 178, AMA5) provides the method of classification of impairment due to skin disorders. Three components — signs and symptoms of skin disorder, limitations in activities of daily living and requirements for treatment — define five classes of permanent impairment. The assessing specialist should derive a specific percentage impairment within the range for the class that best describes the clinical status of the claimant.
- 14.5 The skin is regarded as a single organ and all non-facial scarring is measured together as one overall impairment rather than assessing individual scars separately and combining the results.
- 14.6 A scar may be present and rated as 0% WPI.
- 14.7 The Table for the Evaluation of Minor Skin Impairment (TEMSKI) (See Table 14.1) is an extension of Table 8-2 in AMA5. The TEMSKI divides Class 1 of Permanent Impairment (0-9%) due to skin disorders into 5 categories of impairment. The TEMSKI may be used by trained assessors (who do not specialise in the skin body system), for determining impairment from 0 – 4% in the Class 1 category, that has been caused by minor scarring following surgery. Impairment greater than 4% must be assessed by a specialist who has undertaken the requisite training in the assessment of the skin body system.
- 14.8 The TEMSKI is to be used in accordance with the principle of 'best fit'. The assessor must be satisfied that the criteria within the chosen category of impairment best reflect the skin disorder being assessed. The skin disorder should meet most, but does not need to meet all, of the criteria within the impairment category in order to satisfy the principle of 'best fit'. The assessor must provide detailed reasons as to why this category has been chosen over other categories.
- 14.9 Where there is a range of values in the TEMSKI categories, the assessor should use clinical judgement to determine the exact impairment value.
- 14.10 The case examples provided in AMA5 Chapter 8 do not, in most cases, relate to permanent impairment that results from a work-related injury. Reference should be made to similar cases previously determined by the MAT or provided in training, in addition to AMA5 Examples 8.1–8.22 (pp 178–187).

Recommendation: The Australasian Working Party on Diagnostic Criteria recommends immediate adoption of the new classification. However, clinicians should be aware that some cases of diabetes will be missed unless an OGTT is performed. Thus, if there is any suspicion or other risk factor suggesting glucose intolerance, the working party continues to recommend use of an OGTT pending the final WHO recommendation.

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15 Cardiovascular system

AMA5 Chapters 3 and 4 apply to the assessment of permanent impairment of the cardiovascular system, subject to the modifications set out below.

Introduction

15.1 The cardiovascular system is discussed in AMA5 Chapters 3 (Heart and Aorta) and 4 (Systemic and Pulmonary Arteries) (pp 25–85). These Chapters can be used to assess permanent impairment of the cardiovascular system with the following minor modifications.

15.2 It is noted that in this chapter there are wide ranges for the impairment values in each category. Assessors should use their clinical judgement to express a specific percentage within the range suggested.

Exercise stress testing

15.3 As with other investigations, it is not the role of a medical assessor to order exercise stress tests purely for the purpose of evaluating the extent of permanent impairment.

15.4 If exercise stress testing is available, then it is a useful piece of information in arriving at the overall percentage impairment.

15.5 If previous investigations are inadequate for a proper assessment to be made, the medical assessor should consider the value of proceeding with the evaluation of permanent impairment without adequate investigations and data (see Chapter 1, p 9 — Ordering of additional investigations).

Permanent impairment — stable and stationary

15.6 As for all assessments, a permanent impairment is one that remains stable and stationary, meaning it has been medically stable for the previous three months and is unlikely to change by more than 3%WPI in the next 12 months with or without further medical or surgical treatment.

Vascular diseases affecting the extremities

15.7 Note that in this section, Table 4–4 and Table 4–5 (p 76, AMA5) refer to percentage impairment of the upper or lower extremity. Therefore, an assessment of impairment concerning vascular impairment of the arm or leg requires that the percentages identified in Tables 4–4 and 4–5 be converted to whole person impairment. The table for conversion of the upper extremity is Table 16–3 (p 439, AMA5) and the table for conversion of the lower extremity is Table 17–3 (p 527, AMA5).

Thoracic outlet syndrome

15.8 Impairment due to thoracic outlet syndrome is assessed according to AMA5 Chapter 16, The Upper Extremities and Chapter 2 (pg 10) of this Guide.

This table uses the principle of 'best fit'. You should assess the impairment to the whole skin system against each criteria and then determine which impairment category best fits (or describes) the impairment. A skin impairment will usually meet most, but does not need to meet all, criteria to best fit a particular impairment category.

Criteria	0% WPI	1% WPI	2% WPI	3 - 4% WPI	5 - 9% WPI
Description of the scar(s) and/or skin condition(s) (shape, texture, colour)	Claimant is not conscious or is barely conscious of the scar(s) or skin condition	Claimant is conscious of the scar(s) or skin condition	Claimant is conscious of the scar(s) or skin condition	Claimant is conscious of the scar(s) or skin condition	Claimant is conscious of the scar(s) or skin condition
Location	Any staple or suture marks are barely visible	Minimal trophic changes	Any staple or suture marks are clearly visible	Trophic changes evident to touch	Trophic changes are visible
ADL / Treatment	No effect on any ADL	Negligible effect on any ADL	Minor limitation in the performance of few ADL	Minor limitation in the performance of few ADL AND exposure to chemical or physical agents (for example, sunlight, heat, cold etc.) may temporarily increase limitation.	Limitation in the performance of few ADL (INCLUDING restriction in grooming or dressing AND exposure to chemical or physical agents (for example, sunlight, heat, cold etc.) may temporarily increase limitation or restriction.
Contour	No contour defect	Minor contour defect	Contour defect visible	Contour defect easily visible	Contour defect easily visible
Adherence to underlying structures	No adherence	No adherence	No adherence	No adherence	Some adherence
Location	Anatomic location of the scar(s) or skin condition is not usually visible with usual clothing/hairstyle	Anatomic location of the scar(s) or skin condition is usually visible with usual clothing/hairstyle	Anatomic location of the scar(s) or skin condition is visible with usual clothing/hairstyle	Anatomic location of the scar(s) or skin condition is visible with usual clothing/hairstyle	Anatomic location of the scar(s) or skin condition is usually and clearly visible with usual clothing/hairstyle
ADL / Treatment	No effect on any ADL	Negligible effect on any ADL	Minor limitation in the performance of few ADL	Minor limitation in the performance of few ADL AND exposure to chemical or physical agents (for example, sunlight, heat, cold etc.) may temporarily increase limitation.	Limitation in the performance of few ADL (INCLUDING restriction in grooming or dressing AND exposure to chemical or physical agents (for example, sunlight, heat, cold etc.) may temporarily increase limitation or restriction.
Adherence to underlying structures	No adherence	No adherence	No adherence	No adherence	Some adherence

Table 14.1 Table for the Evaluation of Minor Skin Impairment (TMSKI)

16 Digestive system

AMA5 Chapter 6 applies to the management of permanent impairment of the digestive system.

- 16.1 The digestive system is discussed in AMA5 Chapter 6 (pp 117-142). This Chapter can be used to assess permanent impairment of the digestive system.
- 16.2 **AMA5, p 136: Section 6.6 Hernias.** Occasionally in regard to inguinal hernias there is damage to the ilio inguinal nerve following surgical repair. Where there is loss of sensation in the distribution of the ilio inguinal nerve involving the upper anterior medial aspect of the thigh, a 1% WPI should be assessed.
- 16.3 Where, following repair, there is severe dysaesthesia in the distribution of the ilio inguinal nerve, a 2% WPI should be assessed.
- 16.4 Where, following repair of a hernia of the abdominal wall, there is residual persistent excessive induration at the site, which is associated with significant discomfort, this should be assessed as a Class 1 herniation (Table 6-9, p 136, AMA5).
- 16.5 Impairments due to nerve injury and induration can not be combined. The higher impairment should be chosen.
- 16.6 A person who has suffered more than one work related hernia recurrence and who now has limitation of ADL's (e.g. lifting) should be assessed as herniation Class 1 (Table 6-9, p 136, AMA5).

Evaluation of permanent impairment arising from chronic pain

Following consultation with Professor Michael Cousins and Doctor Mike Nicholas of the University of Sydney Pain Management and Research Centre, the AMA5 Chapter devoted to assessment of chronic pain is to be disregarded for the purposes of this Guide.

The reasons for this are:

- the Chapter does not contain validated instruments that convert the rating given by an examiner into a whole body impairment rating.
- no work has been done at this time to enable such conversion to occur.
- measuring impairment for this condition is complex and requires a high degree of specialised knowledge and experience. This level of knowledge and experience is not widespread and it would be difficult to ensure consistency and equity in the assessment process.

Impairment ratings in this Guide attempt to account for the pain commonly associated with many disorders and others, such as complex regional pain syndrome, are specifically included in the Guide. It is recognised in AMA5 that chronic pain is not adequately accounted for in the other Chapters. However, work on a better method is still in progress and it would be premature to specify an alternative at present.

Work is being undertaken by the University of Sydney Pain Management and Research Centre that will enable such a chapter to be written in the future.

As with all largely subjective complaints in compensation systems, there is a concern that monetary compensation for non-specific conditions such as chronic pain can in some cases complicate the restorative and rehabilitative efforts of the worker and his or her health advisers. Hence the need for further investigation to determine a better and fairer system that recognises the difficulties associated with these conditions while, at the same time, promoting effective rehabilitation.

When the work is completed, it may be possible to introduce assessment of permanent impairment arising from chronic pain.

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