

Chapter 33

Requirements and Final Recommendations

Santo Davide Ferrara, Rafael Boscolo-Berto, and Guido Viel

Abstract This chapter sets out in summarized form the requirements and the final recommendations regarding the ascertainment and evaluation of personal injury and damage under civil-tort law following the methodology described in detail in Chaps. 30, 31, and 32.

The recommendations, which are listed in numerical order, pertain to the cultural background and minimum level of expertise and competence that the ascertaining clinical and/or medicolegal expert and his/her co-advisors must possess and the logical and procedural steps indispensable for the ascertainment and evaluation of any impairment, disability, and/or pecuniary/nonpecuniary losses causally related to a personal injury.

33.1 Recommendation 1 - Essential Expertise and Competence of the Ascertaining Expert

Currently, there is a lack of consensus on a universal definition and/or qualification of specialist in legal medicine or personal injury and damage evaluator, leading to a lack of an international recognition of such authority.

Therefore, it is recommended that the clinical and/or medicolegal expert who deals with cases of personal injury and damage ascertainment and evaluation demonstrates the essential knowledge set out below:

- (a) Notions of tort/civil and administrative laws regarding personal injury and damage, with particular reference to the regulations in the healthcare and insurance sectors.

S.D. Ferrara (✉) • R. Boscolo-Berto • G. Viel
Department of Legal and Occupational Medicine, Toxicology and Public Health, University-Hospital of Padova, Via Falloppio 50, 35128 Padova, Italy
e-mail: santodavide.ferrara@unipd.it; rafael.boscoloberto@unipd.it; guido.viel@unipd.it

- (b) Theoretical and practical notions of clinical and medicolegal semeiotics devoted to the assessment of psychophysical validity in relation to tort/civil and insurance laws.
- (c) Theoretical notions on the subject of material causality, ascertainment methodology, and criteria for the identification of the causal value/link between the event and the injury and between this latter and the temporary/permanent impairment.

33.2 Recommendation 2 - Essential Knowledge of the Consultant

The clinician, surgeon, radiologist, biomechanical engineer, or any other consultant who assists the ascertaining expert in cases of personal injury and damage should possess the title of specialist in their particular field of study, obtained at the university level.

He/she is required to demonstrate theoretical and practical competence in the specialist subdiscipline, which is the object of the case under examination.

33.3 Recommendation 3 - Collection of Circumstantial, Clinico-Documental-Instrumental Data

It is recommended that the ascertaining expert collects the circumstantial, clinico-documental, and instrumental data related to the case, retrieving all information believed to be useful for a diagnostic framework, for the reconstruction of the injuring event, and for the identification of the clinicopathological features, injuries, impairments, and disabilities.

All documentary data relating to the circumstances and the mechanism of injury (e.g., records drafted by the police, complaint forms relating to the event, etc.) should be acquired.

In cases of traumatic events, adjunctive documentary data describing the type and characteristics of the involved means, the role of the injured person, the presence of correctly used protection safeguards (belt, helmet), and the material damages to the involved means, and the report on the dynamics of the accident should be collected.

The clinical documents of prime importance to be collected and examined are described in detail in the Guidelines, Chaps. 31–32. In cases of hospitalization, they should include the anamnesis and physical examination, medical order sheet, emergency room assistance sheet or emergency room report, inter-consultation sheet, reports of complementary examinations, presurgery examination sheet, operating room report, postsurgery evolution sheet, nursing journal, and clinical discharge report. In case of outpatient care, without hospital admission or after hospital

discharge, they should include all clinical evaluations where a subject has undergone an outpatient procedure, any instrumental examinations, medical certificates, and/or prescribed therapies.

In any case, any rehabilitation documents produced during the clinical evolution of the injury and the healing/stabilization process must be collected and examined. These documents will be explanations/summaries of the type of exercise and/or treatment scheduled, execution times and/or application, and their frequency on a daily/weekly/monthly basis, encompassing the total duration of the treatment and the progressive and final reports produced in relation to it.

33.4 Recommendation 4 - Systematic Clinical Examination for Any Personal Injury/Damage

It is recommended that the clinical examination involves collection of the anamnesis and a careful psychophysical examination, including internistic, osteoarticular, musculoskeletal, neurological, psychic, and local examinations.

After identifying the examined person collecting his/her name, surname, date of birth, marital status, address, telephone, e-mail, information regarding his/her education, and any eventual personal insurance cover, the examiner investigates the date and place of the event, the type of means involved, and the dynamics of the event.

The anamnesis should include the *family medical history*, recording any health information of the relatives of the examined person (up to the third generation); the *physiological medical history*, recording information on psychomotor development, lifestyle, sexual habits, allergies, diuresis, defecation, the sleep schedule, and remote diseases, with a comprehensive list of previous sicknesses, operations, traumatic accidents, and prostheses and/or orthoses; *recent disease history*, with a focus on the immediate signs/symptoms after the event, the evolution of the clinical picture, the treatments applied, the follow-up pathways and any future scheduled reevaluations, and a detailed account of current problems, complaints, and symptoms; *work-related and social life aspects*, detailing general/specific working aptitudes, education, previous (listed in chronological order) and current occupation, and daily recreational activities, such as hobbies and domestic, sport, and leisure activities.

The *psychophysical examination* should be performed in a consulting room equipped with a dressing room, bathroom, and medical bed and provided with measurement instruments and provoking tests (e.g., goniometer, inclinometer, ruler, sphygmomanometer, sterile needles, stethoscope, etc.). The psychophysical examination consists of a comprehensive clinical and medicolegal visit, including internistic, osteoarticular-musculoskeletal, neurological, psychic, and local examination of the injured/damaged area/s.

Any visible injuries or sequelae will be photographed (overview picture followed by a detailed picture with scale) and analytically described with regard to their localization (using landmarks), mutual distribution, and morphometric characteristics. Inspection will be followed by palpation, percussion, and auscultation where applicable. The local examination must identify any impairment of the articular, muscular, and/or neurological function differentiating true disorders from malingering and/or simulation.

It is recommended to use widespread quantitative scales, previously validated and published in peer-reviewed journals, for the objective identification and quantification of suspected impairments, such as pain, esthetic prejudice, and loss of independence.

33.5 Recommendation 5 - Systematic Clinical Examination for Psychic-Existential Damage

In cases of suspected psychic-existential damage, the ascertaining expert should collect all documentary and anamnestic data useful for the definition of the *preexisting* and *current* “*social-psycho-somatic state*,” including all *somatic, cognitive* (perceptual, expressive, attentional, executive, memory, comprehension, and orientational functions), *personological* (personality traits/disturbances, psychiatric disturbances/pathologies), and *socio-relational* data.

Apart from the data set out in Recommendation 4, it is recommended that the *medical history* comprises also work-related, emotional, sexual, cultural, social, and recreational aspects of life. The *clinical examination* should collect *objective data* on appearance and personal care, vigilance and awareness, behavior, collaboration, psychomotor activity, posture, facial expressions and gestures, mood and affectivity, language, perception, content of thought, orientation and memory, concentration and attention, reading and writing abilities, control of impulses, capacity of judgment and insight, awareness of disease, visual and spatial capacity, and praxic and executive capacity. The verification of the “*veracity*” of the findings derived from the systematic clinical objective examination can be performed through targeted instrumental examinations and neuropsychological tests.

In cases of suspected malingering, the expert should refer to Recommendation 7.

33.6 Recommendation 6 - Systematic Clinical Examination for Whiplash-Associated Disorders

It is recommended that in cases of suspected whiplash injury, the *anamnesis* includes information on preexisting diseases (e.g., cerebral and/or cervical trauma, osteochondrosis, spinal or cerebrovascular diseases), immediate post-traumatic

symptoms, and symptomatology between the time of the trauma and the time of the ascertainment. Particular attention should be paid to cervical stiffness and pain (registered using the visual analogue scale), headache, pain in the shoulders and interscapular area, disorientation, irritability, visual disturbances, cognitive impairments, postural impairments, dizziness, tinnitus, nausea, dorsal and/or lumbar pain, paraesthesia, dysesthesia and a tingling sensation in the upper arms, swallowing impairments and disturbances at the level of the temporomandibular joint, and any sleep disturbances. Information on the periods of cervical collar immobilization, drug therapies, and/or rehabilitation services must be collected.

The psychophysical examination should include a comprehensive medicolegal visit, with internistic, psycho-emotional, neurological, osteoarticular, musculoskeletal, and eyes-nose-throat examinations, paying attention to any decreased reflexes, strength deficit, deficit of sensitivity, decreased range of motion, presence of points of tenderness, masticatory disturbances, balance and coordination disturbances, and visual disturbances.

The local examination should include the inspection of the posture and position of the head and neck, palpatory/algometric ascertainment of cervical spinal and transverse apophyses, cervical and thoracic superior muscle structures, upper limb neurological ascertainment (motor function, sensitivity, reflexes), active/passive motor function of the cervical spine measured by inclinometer (flexion-extension-rotation, latero-flexion), and evaluation of the shoulder and upper limb sensitivity (tactile, thermic, dolorific) of biceps (C5), triceps (C6), brachioradialis (C7) reflexes, and muscle strength in the neck, shoulders, and upper limb (motion against resistance).

33.7 Recommendation 7 - Neuropsychological Tests for Detecting Malingering

The detection of simulating and/or dissimulating behaviors consisting of the intentional exhibition of false or exaggerated symptoms motivated by external incentives is one of the most difficult challenges encountered by the clinical or forensic expert during the ascertainment of personal injury and damage.

It is recommended, therefore, that in case of suspected simulation/dissimulation, the ascertaining expert utilizes multiple sources of independent data, integrating the clinical interview and systematic objective examination with tests and tools specifically devoted to the detection of malingering. The most important instruments to be used are the *discrepancy method* (i.e., analyzing the consistency between the exhibited symptoms and the syndrome), the *symptom validity testing*, the *floor effect strategy*, the *structured inventory of malingered symptomatology* (SIMS), the *test of memory malingering* (TOMM), and the *aIAT*, a novel variant of the *implicit association test*, which evaluates the trueness of a referred autobiographical event.

33.8 Recommendation 8 - Instrumental Exams and/or Specialist Consultation

In the case that after the systematic clinical examination further anatomic-functional data are needed, a specialist can be consulted or instrumental exams can be prescribed. Instrumental exams of first and second level can be prescribed directly by the ascertaining expert or by the consulted specialist.

First level exams are ultrasound, magnetic resonance imaging (MRI), electrocardiography, electroencephalography, and any other investigations, which are not harmful for the examinee.

Any exams based on the use of ionizing radiation or those which could pose a risk for the examinee belong to the second level (e.g., computed tomography, positron emission tomography, electromyography, endoscopy, etc.).

For whiplash-associated disorders, first level examinations are MRI for highlighting fatty infiltration at the level of the extensor muscles of the neck, cochleovestibular examination, and electronystagmography. Second level examinations are electromyography (EMG) to confirm a clinical suspicion of radiculopathy, loss of sensitivity, or lack of muscle strength and any exams based on the use of ionizing radiation or those who could pose a risk for the examinee.

The interpretation of the instrumental results can be performed by the ascertaining physician with sufficient experience and/or expertise in that specific field or by the consulted specialist.

33.9 Recommendation 9 - Verification of Stabilization

It is recommended that the evaluation process starts only if the injury/disease has reached its maximal medical improvement, which means that healing or stabilization to a permanent sequela/e occurred.

In the event that the clinical situation is still evolving (i.e., ongoing disease), it is necessary to postpone the ascertainment until healing or stabilization occurs.

33.10 Recommendation 10 - Clinical and Medicolegal Epicrisis

It is recommended that the comparative analysis of all the collected data aims at assessing the preexisting health status (a), reconstructing the damaging event (b), identifying the clinicopathological diagnosis (c), and the corresponding medicolegal diagnosis (d), in terms of temporary/permanent impairment or other damages (e.g., sexual dysfunction, esthetic prejudice, decrease of the quality of life, etc.).

- (a) *Preexisting health status.* The reconstruction of the preexisting health status is fundamental in order to detect any changes that occurred as a result of the damaging event and for evaluating any differential damages attributable to the event itself, according to the principle of personalization of the ascertainment.
- (b) *Reconstruction of the damaging event.* Based on the available circumstantial data, the recorded medical history, and the clinical objective data, the dynamics of the damaging event and the mechanism of injury must be reconstructed. For that purpose, if the event is characterized by an impact, a biomechanical expert could be consulted, in order to analyze all the available information regarding the scenario before and after the questioned event and elaborating a finite element model (FEM) taking into account the main aspects of interest (i.e., velocity, trajectory, energy, etc.).
- (c) *Identification of the clinicopathological features.* The clinicopathological features of the injury/disorder must be reconstructed in order to reach a clinical diagnosis of the initial, intermediate, and final stages. A thorough analysis and clear description of the physiopathological pathways, which connect the diverse evolutive phases of the injury/disease, must be performed. The physiopathological features and pathways are examined on the basis of scientific sources, such as guidelines, consensus documents, operational procedures, evidence-based publications (Cochrane reviews, meta-analysis, etc.), and other literature sources composed of treatises and articles published in peer-reviewed journals (PubMed-Medline, Embase, Scopus, Ovid, ISI Web of Science, etc.), preferably with impact factor.
- (d) *Identification of injury, temporary, and permanent impairment.* After examining the scientific sources and reconstructing the physiopathological processes linking the identified clinicopathological features, the following have to be determined:
 - Injury and temporary impairment related to the initial clinicopathological features.
 - Temporary impairment related to the intermediate clinicopathological features.
 - Permanent impairment related to the final/stabilized clinicopathological features.

Moreover, the presence of any other types of impairments with clinical and medicolegal relevance, such as sexual sphere modifications, esthetic prejudice, alteration of daily activities, relational and social life, must be identified.

33.11 Recommendation 11 - Impairment and Disability Characterization

It is recommended that an analytical characterization of the temporary/permanent impairments, the disability and any other pecuniary or nonpecuniary losses of medicolegal relevance, be performed. Pecuniary losses may be classified under two different headings, the first concerning the additional expenses incurred as a result of the damaging event (“damnum emergens”) and the second concerning the loss of earnings and other benefits the injured person would have received but for the damaging event (“lucrum cessans”). Nonpecuniary losses comprise any esthetic prejudice, sexual dysfunction, and/or temporary/permanent functional impairment, with their impact and repercussion on the leisure and social activities.

The objective analytical characterization of the impairments and their repercussion on the work-capacity and leisure activities furnished by the ascertaining expert will be utilized by the judge for better estimating the pecuniary and nonpecuniary losses causally related to the damaging event.

33.12 Recommendation 12 - Evaluation of the Causal Value and Link

It is recommended that the causal value/link between the event and the injury and between that injury and the temporary/permanent impairment be verified. This verification must be based on “criteria of scientific probability,” such as (a) universal laws, by means of deduction; (b) statistical laws, by means of inference, or, in the absence of such laws, according to (c) the criterion of rational credibility. If this is not possible, due to the absence of “explanatory laws,” the ascertainment must be interrupted. The standard of proof required in tort/civil cases varies according to the national laws, but is generally based on the rule of “more probable, than not” (i.e., enough evidence does exist to make the scientific explanation more likely than not that the fact the claimant seeks to prove is true). It is recommended, however, due to the identical nature of the medicolegal reasoning in criminal and civil court cases (i.e., the demonstration of the *condition sine qua non*) that the ascertaining expert adopts the same evaluation criteria, meaning the search for evidence as an affirmation of “evidence-based medicine.” Moreover, the identification of the degree of probability of the causal link should always be performed and expressed as an estimated percentage of probability.