

Appendix 2.

Steps of Clinical Reasoning Process.

Overview of variables of Quality Indicators for the physiotherapy care process in patients with Whiplash-Associated Disorders (WAD)

I. Administration (n=6)	
Name	Name
Year of referral	Year
Type of referring	Nominal: GP; medical specialist; self-referral (2005)
Medical information	Free text
Request for help	Free text
Period since accident	Ordinal: phase 1: <7 days; phase 2: 1-3 weeks; phase 3a (normal recovery) and phase 3b (delayed recovery): 4-6 weeks; phase 4a (normal recovery) and phase 4b (delayed recovery): 7-12 weeks; phase 5 (chronic): 3-6 months; phase 6 (chronic): >6 months
II History taking (n=35)	
IIa. Sociodemographic characteristics (n=5)	
Age	Continuous: age in years at start
Gender	Nominal: female; male
Education	Ordinal: low; advanced; high
Family status	Nominal: single; relation; married
Employment status	Nominal: not employed; volunteer; employed; student; retired
IIb. Accident related information (n=6)	
Location in vehicle	Dichotomous: driver; passenger
Use of seatbelt	Dichotomous: no; yes
Use of positioned headrest	Dichotomous: no; yes
Anticipated collision	Dichotomous: no; yes
Type of trauma	Nominal: neck trauma without direct head trauma; neck trauma with direct head trauma; other type of neck trauma; unknown
Time of onset of whiplash-related complaints	Ordinal: immediately; ≤2 days; 3-7 days; 8-14 day; >2 weeks;
IIc. Pre-existent health status before injury (n=9)	
Pre-existent activity limitations	Dichotomous: no; yes
Pre-existent participation problems	Dichotomous: no; yes
Pre-existent job-related problems	Dichotomous: no; yes
Comorbidity	Dichotomous: no; yes
Relevant medication use	Dichotomous: no; yes
Previous history of neck injury	Dichotomous: no; yes
Previous neck pain and stiffness	Dichotomous: no; yes
Previous irradiating arm pain	Dichotomous: no; yes
Pre-existent pain else	Dichotomous: no; yes
IId. Previous diagnostics and treatment (n=5)	
Medical imaging neck diagnostics	Dichotomous: no; yes
Cervical soft collar after trauma	Dichotomous: no; yes Continuous: if yes, number of weeks
Pain medication	Dichotomous: no; yes

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Modalities of (manual) physiotherapy	Code of Classification of Physiotherapy Modalities
Recovery after previous treatment	Nominal: fully recovered; partially recovered; stabilization; deterioration; inestimable
<i>Ile. Current health status and recovery rate since accident (n=10)</i>	
Impairments in musculoskeletal neck functions	Dichotomous: no; yes
Activity limitations	Dichotomous: no; yes
Participation problems	Dichotomous: no; yes
Job-related problems	Dichotomous: no; yes
Recovery rate since accident	Nominal: normal; inestimable; delayed
Type and number of complaints	Ordinal: ≤3 : neck pain, stiffness, decreased range of neck motion; 4-6: + dizziness, headache and tinnitus; 7-9:+ cognitive impairments; >9: + rest
Type of signs and symptoms	Ordinal: type 1: neck symptoms (pain, stiffness and tenderness) and no physical sign; type 2: + decreased range of motion; type 3:+ neurological signs
Inventory prognostic factors (Waddell's sign)	Nominal: <3; ≥3
Use of coping	Nominal: active; inestimable; passive
Fear avoidance	Nominal: no; inestimable; yes
Pain medication	Dichotomous: no; yes
Symptoms related to presence of central sensitization	Nominal: no; inestimable; yes
<i>III. Objectives of examination (n=4)</i>	
Objectives of musculoskeletal examination	Dichotomous: no; yes
Objectives of neurological examination	Dichotomous: no; yes
Objectives of oto-neurological examination (2000)	Dichotomous: no; yes
Objectives of psychological examination (2000)	Dichotomous: no; yes
<i>IV. Clinical examination (n=16)</i>	
<i>Musculoskeletal examination</i>	
Observation of posture	Dichotomous: no; yes
Range of motion	Dichotomous: no; yes
Palpation	Dichotomous: no; yes
<i>Neurological examination</i>	
Sensory functions and pain	Dichotomous: no; yes
Muscle functions	Dichotomous: no; yes
Reflexes	Dichotomous: no; yes
Coordination	Dichotomous: no; yes
Cranial nerve functions	Dichotomous: no; yes
<i>Oto-neurological examination (2000)</i>	
Standing and gait testing	Dichotomous: no; yes
Dizziness test	Dichotomous: no; yes
Positional testing	Dichotomous: no; yes
Eyes movement test	Dichotomous: no; yes
Dix – Hallpike test	Dichotomous: no; yes

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<i>Psychological examination</i> Observation of pain behavior (2000) Fear Avoidance Beliefs Questionnaire (FABQ) (2002): Pain Coping Inventory (PCI) (2002)	Dichotomous: no; yes Dichotomous: no; yes Dichotomous: no; yes
V. Analysis and conclusion (n=14)	
Classification Whiplash-Associated Disorders	Ordinal: WAD 0: no neck symptoms, no physical sign(s); WAD 1: neck pain, stiffness or tenderness only, no physical sign(s); WAD 2: neck symptoms and musculoskeletal sign(s); WAD 3: neck symptoms and neurological sign(s); WAD 4: neck symptoms and fracture or dislocation
Time phase since accident	Ordinal: phase 1: <7 days; phase 2: 1-3 weeks; phase 3a (normal recovery) and phase 3b (delayed recovery): 4-6 weeks; phase 4a (normal recovery) and phase 4b (delayed recovery): 7-12 weeks; phase 5 (chronic): 3-6 months; phase 6 (chronic): >6 months
Recovery rate since accident	Nominal: normal; inestimable; delayed
Determination of health profile	Ordinal: Profile A: normal recovery, low intensity of pain, decreasing pain, increasing activities; profile B: inestimable recovery, middle intensity of pain, persistent pain, persistent activity limitations; profile C: delayed recovery, high intensity of pain, increasing pain, decreasing activities
<i>Prognostic factors related to recovery</i> Observation pain behavior Modified Waddell's sign Use of coping Fear avoidance	Nominal: no; inestimable; yes Nominal: ≤3; >3 Nominal: active; inestimable; passive Nominal: no; inestimable; yes
Use of questionnaires FABQ PCI	Dichotomous: no; yes
Presence of signs of central sensitization (2009)	Nominal: no; inestimable; yes
Contact with GP in case of insufficient or no results expected	Dichotomous: no; yes
Indication physiotherapy	Nominal: no; doubtful; yes
VI. Treatment plan (n=5)	
<i>Treatment goals</i> Phase 1: <7 days: reducing pain; providing information and explaining the functioning consequences and underlying pain mechanisms Phase2: 1-3 weeks: see Phase 1 + improving functions	Dichotomous: no; yes Dichotomous: no; yes

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Phase 3a (normal recovery): 4 – 6 weeks: see Phase 2 + increasing activities and participation	Dichotomous: no; yes
Phase 3b (delayed recovery): 4 – 6 weeks: explaining underlying pain mechanisms, improving active coping, decreasing fear avoidance, increasing physical loadability, increasing activities and participation	Dichotomous: no; yes
Phase 4a (normal recovery): 7 – 12 weeks: see Phase 3a + minimizing delay in work participation	Dichotomous: no; yes
Phase 4b (delayed recovery): 7 – 12 weeks: see Phase 3b	Dichotomous: no; yes
Phase 5 (chronic): 3 – 6 months: see Phase 3b	Dichotomous: no; yes
Phase 6 (chronic): > 6 months: see Phase 3b	Dichotomous: no; yes
Prognostic duration of treatment period	Ordinal: inestimable; <1 month; 2-3 months; 4-6 months; >6 months
Prognostic number of treatment sessions	Ordinal: inestimable; <5 sessions; 5-10 session; 11-15 sessions; 16-20 sessions; >20 sessions
Pre-treatment measures pain (Visual Analogue Scale (VAS): 0 – 100) and functioning (Neck Disability Index (NDI): 0 -50) (2002)	Dichotomous: no; yes
Treatment plan in agreement with patient	Dichotomous: no; yes
VII. Treatment (n=2)	
<i>Physiotherapy modalities with best available evidence in agreement with treatment goals per phase since accident</i>	
Phase 1: Education, coaching, active exercise therapy	Dichotomous: no; yes
Phase 2: See Phase 1 + cervical soft collar (< 1 week), massage therapy (< 2 weeks)	Dichotomous: no; yes
Phase 3a: See Phase 1 + physical loading exercise therapy	Dichotomous: no; yes
Phase 3b: Pain education, exercise therapy based on cognitive and physical principles,	Dichotomous: no; yes
Phase 4a: See Phase 3a + graded activity	Dichotomous: no; yes
Phase 4b: See Phase 3b + graded exposure	Dichotomous: no; yes
Phase 5: See Phase 4b	Dichotomous: no; yes
Phase 6: See Phase 5	Dichotomous: no; yes
Check for treatment side or adverse effects	Dichotomous: no; yes
VIII. Evaluation (n=11)	
Evaluation during treatment process	Nominal: no; every session; every week; every month
Type of evaluation	Nominal: by asking; by treatment goals; by questionnaires
If necessary, adjustment of treatment goals and treatment modalities	Dichotomous: no; yes
Contact physician if insufficient treatment result	Dichotomous: no; yes

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Final evaluation	Dichotomous: no; yes
Type of evaluation	Nominal: by asking; by treatment goals; by outcome measures
Post-treatment measures pain (Visual Analogue Scale (VAS): 0-100) and functioning (Neck Disability Index (NDI): 0-50) (2002)	Dichotomous: no; yes
Evaluation by Global Perceived Effect (GPE 0-7) (2002)	Dichotomous: no; yes
Return to work participation	Ordinal: no; not employed; employed with task adjustments; employed with working conditions; employed without adjustments; retired
Duration of treatment period	Ordinal: inestimable; <1 month; 2-3 months; 4-6 months; >6 months
Number of treatment sessions	Ordinal: inestimable; <5 sessions; 5-10 session; 11-15 sessions; 16-20 sessions; >20 sessions
IX. Discharge (n=3)	
Reason for discharge	Dichotomous: no; yes
Written report	Dichotomous: no; yes
Arrangement of aftercare (since 2003)	Dichotomous: no; yes