



University of Brighton

Clinical Research Centre for Health Professions

**Whiplash Associated Disorder:
A one year standardised data collection project**

South Thames Musculoskeletal Research and Audit Group

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Introduction

This work builds on a series of standardised data collection and audit projects carried out in the South east of England in out-patient physiotherapy departments in the 1990's.

The first project carried out in 1994-1996 involved the out-patient physiotherapy departments in the then Mid-Kent Healthcare Trust. Using a series of focused discussion groups, a pilot standardised data collection tool for musculoskeletal physiotherapy services was established. Following this development a series of pilot studies took place in order to refine and produce a tool that had content and face validity with the physiotherapists within the Trust. The tool was used to collect data re the clinical activities of all physiotherapists within the out-patient physiotherapy departments within the Mid-Kent Healthcare Trust over a one year period. A full report was published on this work (Moore, 1996).

Leading on from this work the developed tool was refined to appeal to a more specialised musculoskeletal physiotherapy audience and led to baseline data collections involving 14 Trusts within the South Thames region taking place. The first project involved the collection of data with regard to low back pain patients and the second focused on patients with cervical spine dysfunction. Each of these two projects contained elements of audit (Moore, 1998; Moore, 1999).

The South Thames Audit Group continued to meet on a regular basis following the 'Cervical Spine' and 'Back Pain' audits, and some further refinement of the data collection tool took place. The group were keen to develop standardised data collection activities in the South East of England and formed the South Thames Musculoskeletal Research and Audit Group in 2002. This group identified whiplash as the next musculoskeletal condition on which to focus.

The standardised data collection tool used in this current work was based on the previous standardised data collection tool used in the audit of outcome of physiotherapy intervention for outpatients with cervical spine dysfunction (Moore, 1999). The Moore 1999 tool was used as a basis for discussion from members of the five representative Trusts of the South Thames Musculoskeletal Research and Audit Group, and consensus was reached about what topic areas should be included in the standardised data collection tool for patients suffering from whiplash. The consensus process took a number of months to complete with representatives from each Trust consulting with staff members in their own Trusts in order to develop a wider consensus as to what items were appropriate. The completed standardised data collection form consisted of 40 items (see page 7). Following the development of the standardised data collection form the codings to be used were then developed using an iterative consultative process amongst the five NHS Trusts. The codings are shown on page 8. The whiplash classification was based on the Quebec Task Force recommendations (Spitzer et al. 1995).

The group decided to carry out baseline data collection over a period of one year to include all whiplash patients requiring treatment in each Trust over the one year period. Following this activity results have been fed back via representatives from each Trust to the physiotherapy departments. This document will allow Trusts to compare their activities with those of neighbouring Trusts and will also allow departments to identify any areas of concern, interest, strengths or weaknesses and subsequently to follow these up using principles of clinical governance and quality improvement. This document will be the basis of a series of publications which will be supported by the literature and also recently published guidelines. The group hopes that the results of this baseline data collection project will help to inform national and international practice debate and the development of research questions relevant to whiplash associated disorder.

The publication of this report is timely as it closely follows the publication of The Chartered Society of Physiotherapy's "Clinical guidelines for the physiotherapy management of whiplash associated disorder" (Moore et al., 2005).

This tool has been developed in order to give musculoskeletal physiotherapists based in NHS Trusts an opportunity to develop a set of baseline data on which to base audit and research activities and also to provide a basis for discussion amongst therapists whether based in one Trust or across a number of Trusts.

Moore AP. (1996). *The development of the Mid Kent & Brighton outcome measurement tool for physiotherapy outpatient services: full report*. University of Brighton, Brighton. ISBN 1871966-54-X.

Moore AP. (1998). *An audit of the outcome of physiotherapy intervention for outpatients with back pain against set clinical standards*. University of Brighton. ISBN 1-901177-45-9.

Moore AP. (1999). *An audit of the outcome of physiotherapy intervention for outpatients with cervical spine pain and dysfunction*. University of Brighton. ISBN 1-901177-50-5.

Moore A, Jackson A, Jordan H, Hammersley S, Hill J, Mercer C, Smith T, Thompson J, Woby S, Hudson A. (2005). *Clinical guidelines for the physiotherapy management of whiplash associated disorder*. Chartered Society of Physiotherapy, London. ISBN 1904400159.

Spitzer WO, Skovron ML, Salmi LR, Cassidy JD, Duranceau J, Suissa S, Zeiss E, Weinstein JN and Nogbuk N. (1995). *Scientific monograph of the Quebec Task Force on whiplash-associated disorders: Redefining "Whiplash" and its management*. Spine, 20 (8), Suppl, 1S-73S.

Methodology

The following Trusts and Departments took part in the audit:-

- Worthing and Southlands Hospitals NHS Trust
- East Sussex Hospitals NHS Trust
 - Eastbourne District General Hospital
 - Conquest Hospital, St Leonards on Sea
- Maidstone Weald PCT
- Brighton & Sussex University Hospital NHS Trust
 - Princess Royal Hospital, Haywards Heath
 - Hove Polyclinic, Hove
 - Brighton General, Brighton
 - Royal Sussex County, Brighton

Each Trust was asked to collect data on every patient suffering from whiplash that was referred through each department. The data collection period lasted 12 months from 1st January 2004 to 31st December 2004.

This report highlights the results of the study.

For purposes of confidentiality the results broken down by Trusts and/or Departments have been anonymised.

Procedures for each Trust

East Sussex Hospitals NHS Trust

Conquest Hospital

Recruitment included all patients whom had suffered a whiplash injury and who had continuous or fluctuating symptoms which echoed those manifesting immediately or soon after the initial injury.

All new patient referrals were assessed by a senior physiotherapist, in accordance with the department's referral guidelines for waiting times (category 1 = "ASAP"; category 2 = "soon"; category 3 = "waiting list").

Patients were advised to purchase a copy of the whiplash education booklet by Waddell, Burton and McClune (2002) from the hospital shop at a cost of £2.50.

Eastbourne District General Hospital

All neuromusculoskeletal new-patient referrals were designated 'urgent' or 'routine' by a senior physiotherapist, using departmental criteria as a guideline. Whiplash referrals were included within these and not sub-categorised. Following a patient's first appointment they were included into the audit if the assessing physiotherapist concluded that the patient had suffered whiplash, or were suffering WAD.

Patients were advised to purchase a copy of the whiplash education booklet by Waddell, Burton and McClune (2002) from the hospital shop. Patients were also given individualised exercise programmes and advice.

Maidstone Weald PCT

All patients were given a physiotherapy referral form on visiting their GP, and were asked to contact the department directly by telephone to make an appointment. All patients were screened on the phone by the admin staff and asked whether their symptoms were as a result of a road traffic accident. These patients were recruited in to the audit and a data collection form inserted into their records. All patients were booked in to see a qualified member of staff. Any patients who were not initially identified by phone but on assessment by a physiotherapist were found to have suffered a whiplash injury were also included in the audit.

Patients were provided with a free copy of the whiplash education booklet.

Brighton & Sussex University Hospital NHS Trust

All patients who suffered a whiplash and had continuous or fluctuating symptoms which echoed those manifested immediately and soon after initial injury were included. Potential patients were identified from information on the referral cards, and marked as "whiplash audit". Following the initial examination the treating therapist completed the relevant parts of the standardised audit form. Any changes in treatment were documented as necessary. On completion of the treatment the outcome of treatment section was completed. This was filled in for all patients even if they failed to complete the treatment. At the end of the audit period (1st January 2004 – 31 December 2004) all forms were sent to the University of Brighton for data analysis.

BSUH Sites were: Princess Royal Hospital, Brighton General, Royal Sussex County, Hove Polyclinic.

Princess Royal Hospital provided their patients with a free copy of the whiplash education booklet by Waddell, Burton and McClune (2002).

Royal Sussex County, Brighton General and Hove Polyclinic patients received a personal exercise program (Physio Tools Ltd).

Worthing & Southlands Hospitals NHS Trust

All referrals to physiotherapy labelled as WAD, or referrals regarding symptoms resulting from traumatic acceleration/deceleration injury to the neck injury were included in the audit.

Once patients were identified, the referral was coded by clerical staff, to allow identification of the patients at a later date. A data collection tool was attached to the referral. Clerical staff kept a list of patient's code and name separately. A one hour new patient slot was booked for the patient in accordance with the departments prioritising guidelines. The data collection tool was kept with the patients notes throughout treatment. At discharge, the physiotherapist completed the outcome of treatment section with the patient. If the patient failed to attend their final appointment, they were contacted by the clerical staff to arrange a follow up. If they did not attend this, the treating physiotherapist contacted the patient by telephone to complete the form over the phone. Completed forms were collected in a separate file at each site. These were checked to ensure the data was complete. The forms were sent to the University of Brighton on a 3 monthly basis.

Patients received a personal exercise program (Physio Tools Ltd).

Standardised data collection form

STANDARDISED DATA COLLECTION TOOL FOR PHYSIOTHERAPY OUT-PATIENT MANAGEMENT OF WHIPLASH AND WHIPLASH ASSOCIATED DISORDERS

1. O.P.D.I.D.
 2. Patients name: Family name
 First name
 Second name
 3. Patient Hospital ID No
 4. Date of birth
 5. Occupation
 6. Full/part time 7. Hours per week
 8. Gender 9. WAD Classification 10. Date of injury
 11. Acute/chronic

12. Mechanism of Injury
 13. Present symptoms 1 2 3 4 5 6

14. Physiotherapy diagnosis Statement (62 characters max)

15. Body site 1. Body site 2. Body site 3. Body site 4.
 16. Origin of referred symptoms 17. Joint/level 1. of symptoms Joint/level 2. of symptoms Joint/level 3. of symptoms Joint/level 4. of symptoms

18. Laterality of symptoms 19. Date of referral for treatment

20. Date of commencement of PT treatment

21. Length of wait from first GP/Consultant contact to referral for treatment this episode (weeks) 22. Length of wait from referral receipt to commencement of PT treatment (weeks)

23. Date treatment terminated

24. Weighting of psycho-social and physical factors: a) The problem b) Communication
 c) Mobility d) Social e) Other conditions f) Total

Modalities	1	2	3	4	25a. Treatment rationale
25. Treatment details Initial treatment	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>
1 st change	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>
2 nd change	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>
3 rd change	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>
4 th change	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>	<input type="text" value=""/> <input type="text" value=""/>

26. Whiplash education booklet used 27. Degree of difficulty in treatment of the patient

28. Factors influencing outcome 29. Number of treatments this episode

30. Number of treatment episodes since first injured 31. Number of therapists involved in treatment

32. Grade of the physiotherapist(s) involved in treatment 33. Referral source

Outcome of treatment Therapist assessed

34. Outcome of referral 35. Initial assessment of functional physical and subjective outcomes 36. Expected functional physical and subjective outcomes

37. Actual functional physical and subjective outcomes. 38. Goal achievement at discharge 39. Factors affecting prognosis
 40. Estimated real cost of treatment (in Pounds)

Updated 19.01.04

STANDARDISED DATA COLLECTON TOOL FOR PHYSIOTHERAPY MANAGEMENT OF WHIPLASH AND WHIPLASH ASSOCIATED DISORDERS

Coding

- 1. Please insert the Trust or Unit Location ID number**
- 2. Patient's full Name.**
Please insert: Patient's Surname/Family Name followed by the first-name and then the second given-name
- 3. Hospital identification number taken from the hospital records**
- 4. Date of Birth**
Please include all year digits
- 5. Occupation**
 1. Managers and Administrators (inc. officers in UK armed forces, senior police officers, senior prison officers, senior fire service officers)
 2. Professional Occupations (inc. Judges, teachers, psychologists, librarians)
 3. Associate Professional and Technical Occupations (inc. nurses, authors, physiotherapists, computer programmers, professional athletes, actors)
 4. Clerical and Secretarial Occupations
 5. Craft and Related Occupations (inc. builders, butchers, mechanics)
 6. Personal and Protective Service Occupations (inc. armed forces, police, fire and prison officers, waiters, hairdressers, assistant nurses, dental nurses)
 7. Sales Occupations (inc. floral arrangers, buyers)
 8. Plant and Machinery Operatives (inc. bus conductors, taxi drivers)
 9. Unemployed (more than 2 years)
 10. Retired (more than 2 years)
 11. Housewife/husband (if more than 2 years)
 12. School person, Junior/Secondary school
 13. Student HE/FE, other
 14. Other Occupation (inc. farm workers, postal workers, window cleaners)
 15. Prisoner
 16. Long-term sickness
 17. Other

N.B.: Use categories 1-8 or 14 if employment ceased for less than 2 years for reasons stated in categories 9-11
- 6. Full/part-time employment**
 1. Full-time
 2. Part-time (1 day/week)
 3. Part-time (2 days/week)
 4. Part-time (3 days/week)
 5. Part-time (4 days/week)
 6. Part-time (5 days/week)
- 7. Hours per week**
Number of hours
- 8. Gender**
 1. Female
 2. Male
- 9. WAD classification/Quebec Taskforce**
 1. WAD I: Neck pain without physical signs
 2. WAD II: Neck pain with physical signs
 3. WAD III: Neck and arm pain with neurological signs
 4. WAD IV: Neck pain associated with fracture or dislocation
- 10. Date of injury**
Please insert date first injured

11. Acute/Chronic

Acute (less than six weeks duration)
Chronic (more than six weeks duration)

12. Mechanism of Injury

Transport incident: Rear impact
Transport incident: Front impact
Transport incident: Side impact
Transport incident: Multiple directional impact
Acceleration injury: sport or other
Deceleration injury: sport or other
Other mechanism

13. Present Symptoms

Use more than one category up to a maximum of six. The symptoms are ranging from:

- | | |
|-----------------------|----------------------------------|
| 1. Neck pain, | 11. Concussion |
| 2. Loss of movement, | 12. Dysphagia |
| 3. Headache, | 13. Memory disturbance |
| 4. Referred pain, | 14. Proprioceptive loss |
| 5. Paraesthesiae | 15. Functional impairment |
| 6. Weakness, | 16. Emotional/personality change |
| 7. Visual disturbance | 17. Sleep disturbance |
| 8. Dizziness | 18. Dysarthria |
| 9. Tinnitus | 19. Drop attacks |
| 10. Dysphasia | 20. Formication |

14. Physiotherapy Diagnosis

Please give specific details of your physiotherapy diagnosis, i.e. normally relating the structural dysfunction, e.g. facet/joint impingement. You have 62 characters in order to record your individual physiotherapy diagnosis.

15. Body Site Codes

Please use more than one code if appropriate, ie. where multiple dysfunction is occurring

- | | |
|---|---|
| 1. Occipital | 13. Upper thoracic |
| 2. Temporal | 14. Upper thoracic + referral to upper limb(s) |
| 3. Parietal | 15. Upper thoracic + referral to mid and lower thorax |
| 4. Maxillary | 16. Lumbar spine |
| 5. Mandibular | 17. Lumbar spine + referral to buttock |
| 6. Occipito-frontal | 18. Lumbar spine + referral to mid thigh |
| 7. Cervical spine | 19. Lumbar spine + referral to knee |
| 8. Cervical spine + referral to shoulder | 20. Lumbar spine + referral to mid calf |
| 9. Cervical spine + referral to elbow | 21. Lumbar spine + referral to heel |
| 10. Cervical spine + referral to wrist | 22. Lumbar spine + referral to foot and toes |
| 11. Cervical spine + referral to hand | |
| 12. Cervical spine + referral to head and/or face | |

16. Origin of referred symptoms

1. Neural origin – nerve root/peripheral in origin
2. Neural origin – spinal cord/cauda Equina
3. Joint origin
4. Muscle origin
5. Bony origin
6. Bony and ligamentous origin
7. Neural origin and joint
8. Neural joint and muscle
9. Neural joint, muscle and bony
10. Neural joint, muscle, bony and other
11. Other combinations

17. Symptomatic level (for the current whiplash syndrome only) on palpation

(State up to 3 or state 26 multiple)

- | | |
|-------------|---------------|
| 1. C0 – C1 | 15. T7 – T8 |
| 2. C1 – C2 | 16. T8 – T9 |
| 3. C2 – C3 | 17. T9 – T10 |
| 4. C3 – C4 | 18. T10 – T11 |
| 5. C4 – C5 | 19. T11 – T12 |
| 6. C5 – C6 | 20. T12 – L1 |
| 7. C6 – C7 | 21. L1 – L2 |
| 8. C7 – C8 | 22. L2 – L3 |
| 9. T1 – T2 | 23. L3 – L4 |
| 10. T2 – T3 | 24. L4 – L5 |
| 11. T3 – T4 | 25. L5 – S1 |
| 12. T4 – T5 | 26. Multiple |
| 13. T5 – T6 | |
| 14. T6 – T7 | |

18. Laterality of Symptoms

1. Unilateral
2. Bilateral

19. Date of referral for physiotherapy treatment

(this episode – please use full year date)

20. Date of commencement of physiotherapy treatment

(this episode – please use full year date)

21. Length of wait from first GP/Consultant contact to referral for physiotherapy treatment (this episode – please record in weeks)

22. Length of wait from referral to commencement of physiotherapy treatment

(this episode - please record in working days)

23. Date treatment terminated – Last consultation – (include sos appointment if applicable) - (please use full year date)

24. Weighting of Psychosocial and physical factors.

Please rate using the scale below as an ongoing assessment any factors (23 – 23e) which may have or had an effect on physiotherapy management and/or patient recovery.

0. None,
1. Mild
2. Moderate
3. Quite severe,
4. Severe

24a. Problem

Please give an indication of the severity of the problem i.e. in terms of trauma and/or dysfunction

24b. Communication/sensory

Please give an indication of the severity of communication or sensory difficulties, e.g. Inability to communicate, hearing impairment, co-existing central nervous system problem or language problems.

24c. Mobility

Please give an indication of severity of any co-existing mobility problems e.g. Difficulties with sitting, necessity for a walking aid for an allied or co-existing problem, transportation

24d. Social circumstances

Please give an indication of severity of any social circumstances which may impact on treatment strategy. These could include parent, bereavement, financial problems, unemployment, etc.

24e. Other conditions

Please give an indication of severity of other conditions which might impact on the management of this patient, e.g. Patient with heart condition, respiratory condition, and any other existing medical or orthopaedic condition.

24f. Total of above scores = 20 maximum score

25. Treatment details:

This section allows the recording of up to four treatment modalities in one session and allows for the recording of a change of modality/combination of modalities for up to a maximum of five changes.

- | | |
|-------------------------------------|--------------------------------------|
| 1. Advice re. self-management | 20. Soft collar |
| 2. Advice to carer/relative | 21. PNF |
| 3. Education | 22. Re-education of muscle imbalance |
| 4. Education and advice | 23. Neuro-dynamics facilitation |
| 5. Active exercises - strengthening | 24. Acupuncture |
| 6. Active exercises - mobilising | 25. Trigger-point release |
| 7. Traction | 26. Soft tissue stretching |
| 8. Mobilisation | 27. Injection therapy |
| 9. Manipulation | 28. Bio-feedback |
| 10. McKenzie approach | 29. Dietary education |
| 11. Combined movements (Edwards) | 30. Pilates |
| 12. Snags and Nags | 31. Interferential |
| 13. Muscle energy techniques | 32. Short wave diathermy |
| 14. Reflexology | 33. TENs |
| 15. Aromatherapy | 34. Ultrasound |
| 16. Massage | 35. Local-heat (IR./Packs/Pad) |
| 17. Friction | 36. Laser |
| 18. CT massage | 37. Class activities |
| 19. Strapping | |

Advice refers to simple instruction e.g. sleeping postures, advice about pillows, advice about sitting and working postures. Education in this context means giving the patient formal instruction into the anatomy, pathology of the region of the dysfunction together with the underlying principles involved in the management which might occur in an individual or group basis.

Importantly patients should have enough information in an understandable format in order to allow them to feel in control and able to participate in their management.

25a. Indication of Treatment Progression rationale

(Please state if the change in the treatment modalities was due to the need to progress treatment further or due to failure of the initial treatment choice to produce results). Use more than one category if appropriate.

1. Need to progress
2. Failure of response to initial treatment
3. Equipment not available
4. Change of therapist

26. Whiplash education booklet used

1. Yes
2. No

27. Therapist estimated degree of difficulty in treatment or management of the patient

(the physiotherapist should rate on a scale of 0 to 10 the degree of difficulty experienced in managing the patient. Consideration should be given to the physical effort, the intellectual input, the time taken, the mental and emotional effort needed and required to manage or treat the patient effectively). Score 0 where little or no effort is necessary, 10 where maximum effort was required.

28. Factors influencing the outcome of treatment

1. Pain free at first visit
2. Inappropriate referral
3. Re-referred to consultant or GP
4. Other medical intervention, e.g. drugs, injection, osteopath, chiropractor, homeopath, collar, corset, surgery, etc...
5. General state, e.g. compensation case, stress levels, level of intelligence, attitude of patient, motivation, social circumstances, understanding of condition, smoking, drinking, etc.
6. Life-style influences, e.g. job, home circumstances, age, sport, etc
7. Other medical conditions, e.g. cardiac.
8. Time since onset
9. Natural progression
10. Lack of treatment
11. Patient moved from the area
12. Patient unwilling or unable to attend for treatment
13. RIP
14. No other factors
15. Exacerbation of condition
16. Transport difficulties
17. Parking difficulties
18. Access to treatment area difficulties
19. Change in grade of therapist
20. Spontaneous recovery
21. Therapist sickness
22. Patient unable to attend first appointment offered
23. Difficulty with childcare
24. Difficulty with obtaining leave of absence from work
25. Litigation
26. Non adherence to medication

29. Number of treatments

(this episode)

30. Number of treatments

(episodes since first injured)

31. Number of therapists involved in the treatment

(Please also therapists include assistants and students)

32. Physiotherapists Grades

1. Junior
2. Senior 2
3. Senior 1
4. Superintendent IV
5. Superintendent I
6. Superintendent II
7. Superintendent III
8. Extended scope practitioner
9. Clinical specialist
10. Consultant
11. Assistant
12. Technical instructor
13. Student

33. Referral source

- 1 General Practitioner
- 2 Consultant
- 3 Orthopaedic Practitioner
- 4 Other healthcare professional
- 5 Accident and Emergency
- 6 Self referral

34. Outcome of referral

1. Inappropriate referral
2. Treatment not commenced (department informed)
3. Treatment not commenced (department not informed) (DNA)
4. Treatment interrupted (FTA – department not informed)
5. Treatment interrupted (UTA – department informed – includes self discharge)
6. Transferred within district
7. Transferred outside district
8. Assessment completed no physiotherapy required
9. Assessment completed. Advice re self care given
10. Treatment completed. Regular discharge
11. Died
12. Referred back to GP/Consultant
13. Patient non compliant
14. Physiotherapy not effective
15. Other

35, 36, 37. Expected and actual, Functional, Physical and Subjective outcomes

Scores should be completed by the Therapist in conjunction with the patient for the initial assessment of functional ability, the expected functional outcome and the actual functional outcome.

10. No pain, no referral of symptoms, no functional restriction, no working restriction, no SIN factors present (i.e. severity, irritability in nature) patient able to participate in all sport, leisure and social activities taking no medication. Patient's expected range of movement = 100% in all ranges
9. Very low severity and irritability, symptoms occurring very infrequently. Able to work fully and carry out leisure, sports and social activities with only a minimal restriction from time to time. 90% range of motion available in one or more ranges. 100% ranges of motion available in all other ranges. Has no need to resort to simple analgesia.
8. Low severity, irritability and nature factors, sleep unaffected. Infrequent symptoms, working full-time. Some aspects of work slightly modified some minimal restriction of social, leisure and sports activities from time to time. 80% range of movement in one or two physiological ranges. All others 100%. Needs analgesia and anti-inflammatories from time to time when symptoms present.
7. Moderately low SIN factors, working full time in a modified way. Sleeps well in the main. Symptoms felt occasionally. Leisure, sport and social activities unaffected in the main. 70% range of motion available in one physiological range of motion. All others 100%. Some analgesia necessary when symptoms at their worst.
6. Moderate to mild severity and irritability. Symptoms felt regularly. Working almost full time in a modified way. Leisure and social activities affected occasionally. Contemplating returning to sport. 60% range of motion available in one or two ranges of motion. All others 100%. More than occasional use of analgesia.
5. Moderate severity and irritability in nature. Moderate symptoms felt intermittently, almost daily. Some sleep loss occasionally. Working part time in a modified way. No sport activities. Leisure and social activities possible if careful. Able to do most daily living activities unaided. One range of motion reduced to 50%. Regular use of analgesia.
4. Moderate SIN factors. Sleep disturbed once or twice a week. Moderate symptoms daily, pain moderately intense. Working on a very part time basis. Pain local and/or referred. Participating in leisure and social activities at a restricted level. The majority of functional tasks provoke symptoms. Less than 40% range of motion in one physiological range of movement. Analgesia used most days.

3. Moderately high SIN factors. Local and/or referral of pain. Intermittent severe and intense pain but felt regularly, throughout the day. Unable to work due to symptoms. sleep disturbed-. Performing some functional tasks with some restriction. No sporting activities possible. Leisure activities somewhat curtailed. Under 30% range of movement available in one or more ranges. Analgesia taken regularly throughout the day,
2. High SIN factors. Severe and intense pain almost constant. Local and/or referral. Sleep disturbed every night. Performs minimal functional tasks at home. Leisure and social activities curtailed by symptoms by a large degree. No sporting activity possible. Range of movement reduced to 20%, or less in one range of motion. Heavy reliance on analgesia.
1. Very high SIN factors. Severe and intense pain felt constantly. Unable to sleep, works or participates in leisure and social activities in any form. Range of movement less than 20% in one or more direction. Completely reliant on drug therapy for minimal pain relief.

38. Goal Achievement at Discharge

(In terms of patient and therapist goal achievement). Note: goals should include pain, range of movement, function, patient's interpretation of subjective perceived improvements and the ability to work.

a. Goals exceeded	1-6 treatments	1
	7-12 treatments	2
	13-18 treatments	3
	19 + treatments	4

When the goal/outcomes expected at the initial assessment have been surpassed by the actual achievements attained by the patient, i.e. symptom free, increased range of movement compared to other limb before incident, function better than before. Able to work fully.

b. Goals fully achieved	1-6 treatments	5
	7-12 treatments	6
	13-18 treatments	7
	19 + treatments	8

All goals/outcomes achieved to 100%, i.e. symptom free, full range of movement, no pain, and function as before incident. 100% perceived improvement. If during assessment it is clear that advice only is needed or that the aim of intervention was to assess mobility and this is achieved then the goal is fully achieved. A non-physiotherapy goal may be set e.g. to involve other agencies, if this is done then the goals are fully achieved. Also, if the goal was to achieve 80% recovery at discharge, for the patient to achieve 100% recovery with appropriate home management strategy, then the goals have been fully achieved.

c. Goals significantly achieved	1-6 treatments	9
	7-12 treatments	10
	13-18 treatments	11
	19 + treatments	12

When 50% or more of the agreed goals are achieved or the patient is half way to the expected outcome, i.e. there are maybe a 50% improvement in subjective and objective findings, one or more problems still present but are resolving slowly but the majority of problems have already been resolved. Patient able to work in a restricted or modified way.

d. Goals partially achieved	1-6 treatments	13
	7-12 treatments	14
	13-18 treatments	15
	19 + treatments	16

Less than 50% of the goals set are achieved, there is minimal improvement of subjective/or objective findings based on the initial assessment, some problems are still outstanding, some initial improvement which has failed to continue. Patient unable to work but will manage some domestic tasks and contemplate return to work in a highly modified way

e. Goals not achieved	1-6 treatments	17
	7-12 treatments	18
	13-18 treatments	19
	19 + treatments	20

No change in the objective or subjective findings, inappropriate goals set and were not a measure of true potential or when goals were not met due to influences outside the therapist's control the reason for this should be linked with the other factors and stated in the patient's notes. In all circumstances the signs and symptoms for this group of patients functions will have remained static. Patient unable to contemplate work.

f. Other, i.e. worse, poor referral, additional problems	1-6 treatments	21
	7-12 treatments	22
	13-18 treatments	23
	19 + treatments	24

Patient's condition worse, pain increased, range of movement reduced. Ability to work and functional ability worsened.

39. Factors affecting prognosis

1. Bilateral neurological signs/symptoms
2. Severe neck and arm pain
3. Breathing difficulties
4. Difficulty supporting the head
5. Deformity

At one to three weeks post injury

20. No indication of improvement
21. Getting progressively worse
22. Not involved in usual daily responsibilities
23. Seeking more drugs
24. Becoming more dysfunctional
25. Symptom magnification
26. Becoming depressed

Pre-existing factors

6. Headache
7. Age/degenerative changes
8. Female

Factors at time of accident

9. State of preparedness for crash
10. Rotate/inclined head position at impact
11. Head trauma
12. Head restraints

Psychological

27. Somatisation
28. Anxiety (about illness and disability)
29. Attention deficits
29. Psychological traits (depression)
30. Litigation
31. No indication of prognosis

At time of initial assessment

13. Severe neck symptoms
14. Immediate onset intense headache
15. Radicular symptoms
16. Multiple symptoms
17. Initial neck movement restriction
18. Sleep disturbance
19. Radiological abnormalities

40. Estimated real cost of treatment (in Pounds)

Results

The results of this year's study are presented descriptively in this section. Where the data is broken down by Trusts and / or Departments the data has been coded for confidentiality purposes.

Patient numbers

The total number of patients who were treated for whiplash injuries within all the Trusts during the data collection period was 178. The breakdowns of patient numbers seen by each of the Trusts/Departments are shown in Table 1.

Table 1. Number of whiplash patients treated by Trust

Trust Code	Number	Percentage
A	38	21
B	20	11
C	32	18
D	9	5
E	8	4
F	51	30
G	20	11
Total	178	100

Age and gender of whiplash patients treated

The age ranges of patients treated (from 16-77 years) are shown in figure 1. The average age was 37.4 (SD 12.8), the median age was 37.

Figure 1. Age range of whiplash patients

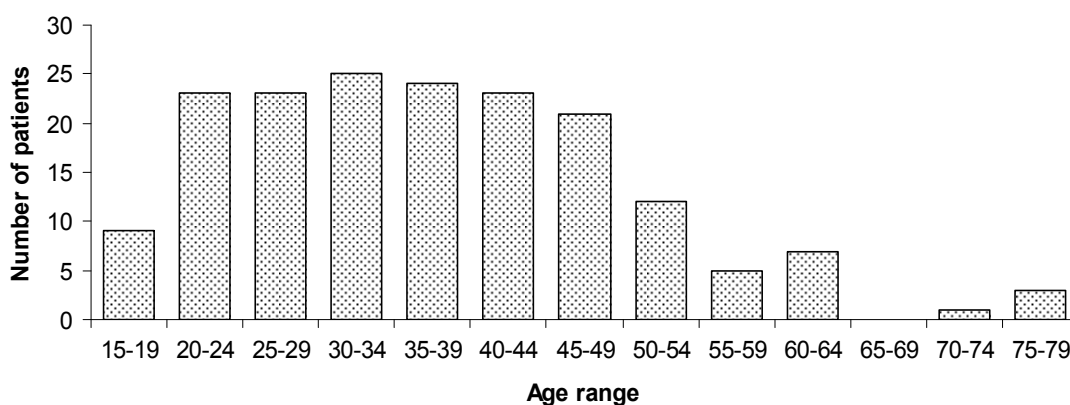
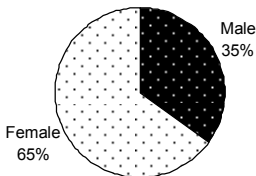


Figure 2 shows the numbers of patients treated by gender, indicating more female patients with whiplash injuries were treated than male patients. Epidemiological studies suggest that women are 1.5 times more likely to experience symptoms of WAD (Spitzer et al. 1995). One hypothesis proposed is that given the same head size, men have more neck musculature than women, making them less prone to whiplash injury.

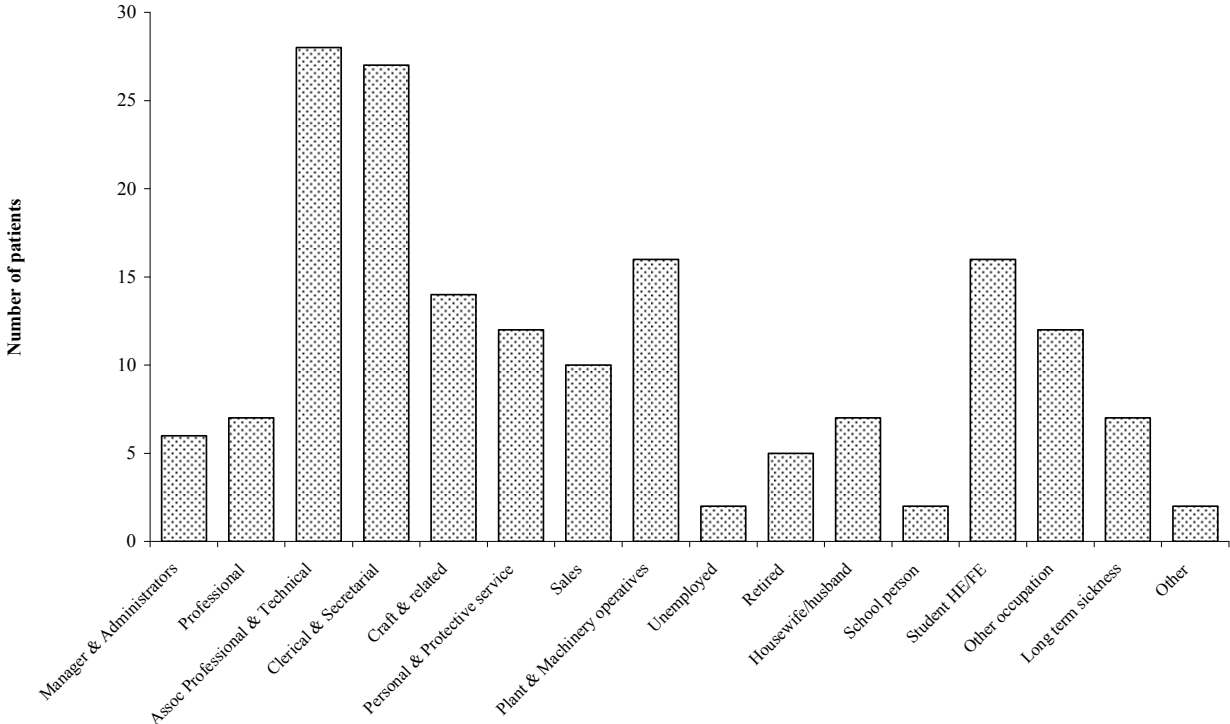
Figure 2 Gender of whiplash patients



Occupations of patients treated with whiplash

The occupations of patients treated are shown in figure 3. It is of interest to note the larger proportion of Clerical/Secretarial and Associate Professional & Technical Occupations. A breakdown of occupations by gender revealed a greater number of females (37%) compared to males (21%) were employed in the Clerical/Secretarial and Associate Professional & Technical Occupations.

Figure 3 Frequency of occupations of patients



As shown in table 2, the majority of patients treated were in full time employment.

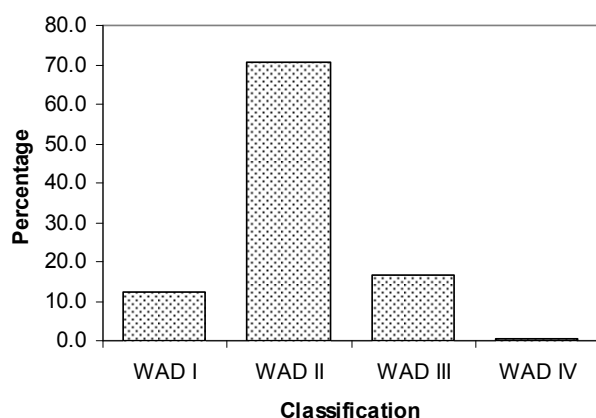
Table 2 Patients mode of employment (full time or part time)

Employment	Number	Percentage
Full time	122	80
1 day/wk	2	1
2 days/wk	7	5
3 days/wk	13	8
4 days/wk	3	2
5 days/wk	6	4
<i>Total</i>	<i>153</i>	<i>100</i>

WAD Classifications

The WAD classifications are based on those by Spitzer et al. (1995). The percentage of patients treated by each WAD classification is shown in figure 4, and a breakdown of the number of patients by each Trust are displayed in table 3.

Figure 4 WAD classification



WAD I: Neck pain without physical signs
WAD II: Neck pain with physical signs
WAD III: Neck and arm pain with neurological signs
WAD IV: Neck pain associated with fracture or dislocation

Table 3 WAD classification by Trust

Trust Code	WAD I (n=)	WAD II (n=)	WAD III (n=)	WAD IV (n=)
A	5	24	8	0
B	1	15	3	0
C	5	20	5	1
D	0	4	5	0
E	1	6	1	0
F	6	35	5	0
G	3	15	2	0
<i>Total reported</i>	<i>21</i>	<i>119</i>	<i>29</i>	<i>1</i>

Chronicity

The frequency of patients treated for acute or chronic injuries were similar as shown in figure 5. A further breakdown of the data revealed 59% of the patients reported as 'chronic' were greater than three months duration. The chronicity of injury by Trust is shown in table 4.

Figure 5 Chronicity

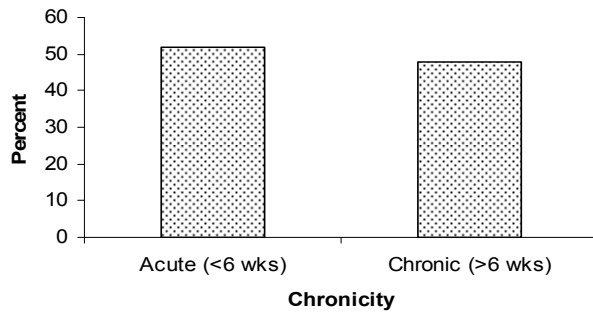


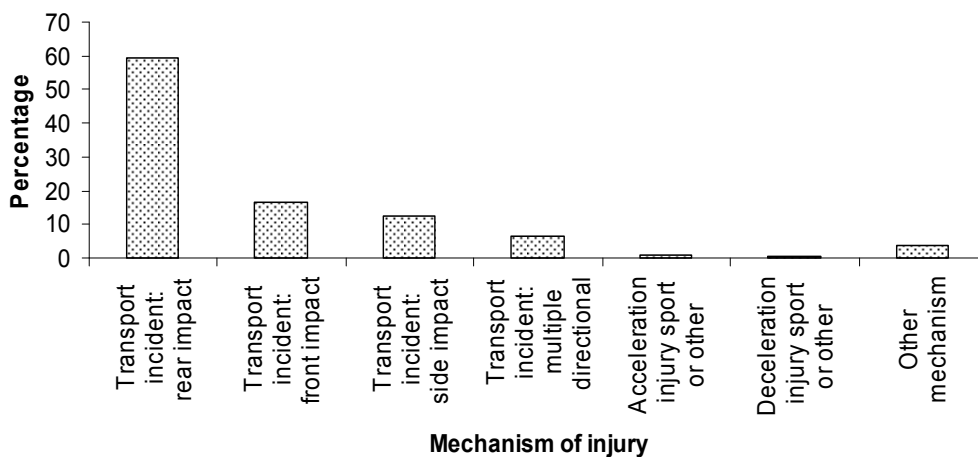
Table 4 Chronicity of injury by Trust

Trust Code	Acute (n=)	Chronic (n=)
A	5	32
B	13	7
C	20	12
D	2	7
E	5	3
F	35	13
G	10	10

Mechanism of Injury reported

The majority of patients treated reported rear impact transport incidences as the mechanism of injury.

Figure 6 Mechanism of injury



Present symptoms

The frequency of reported 'present symptoms' (up to a maximum of 6 symptoms per patient) are reported in table 5. The most frequently reported symptoms were neck pain, loss of ROM, headache and referred pain. This table shows that 177 of the patients had one reported symptom, 161 patients had 2 reported symptoms and 10 patients had 6 reported symptoms.

- 21% of all patients had two symptoms: neck pain & loss ROM.
- 17% of all patients had three symptoms: neck pain, loss ROM and headache.
- 27% of all patients had four symptoms: neck pain, loss ROM, headache plus one other symptom.

Table 5 Frequency of reported 'present symptoms'
(n = number of patients)

Code	Symptom	Percentage of symptoms reported						Total (n=560)
		S 1 (n=177)	S 2 (n=161)	S 3 (n=116)	S 4 (n=66)	S 5 (n=30)	S 6 (n=10)	
1	Neck pain	94.4	0.6	-	1.5	-	-	30.0
2	Loss ROM	1.7	73.3	5.2	4.5	-	-	23.5
3	Headache	1.1	12.4	42.2	-	-	-	12.6
4	Referred pain	0.6	6.8	21.6	21.2	6.7	-	9.5
5	Paraesthesia	-	2.5	10.3	12.1	10.0	-	4.6
6	Weakness	-	2.5	1.7	4.5	3.3	-	1.5
7	Visual	0.6	0.6	0.9	-	3.3	-	0.7
8	Dizziness	0.6	0.6	3.4	6.1	6.7	-	2.1
9	Tinnitus	-	-	0.9	4.5	-	-	0.7
10	Dysphasia	-	-	-	-	-	-	0
11	Concussion	-	-	-	-	-	-	0
12	Dysphagia	0.6	-	-	-	-	-	0.1
13	Memory disturbance	0.6	-	-	-	3.3	-	0.3
14	Proprioceptive loss	-	-	0.9	3.0	-	-	0.5
15	Functional impairment	-	-	3.4	18.2	30.0	10.0	4.7
16	Emotional	-	-	-	4.5	6.7	40.0	1.7
17	Sleep disturbance	-	0.6	8.6	15.2	30.0	50.0	6.0
18	Dysarthria	-	-	0.9	3.0	-	-	0.5
19	Drop attacks	-	-	-	-	-	-	0
20	Formication	-	-	-	1.5	-	-	0.1
		100 %	100 %	100 %	100 %	100 %	100 %	100 %

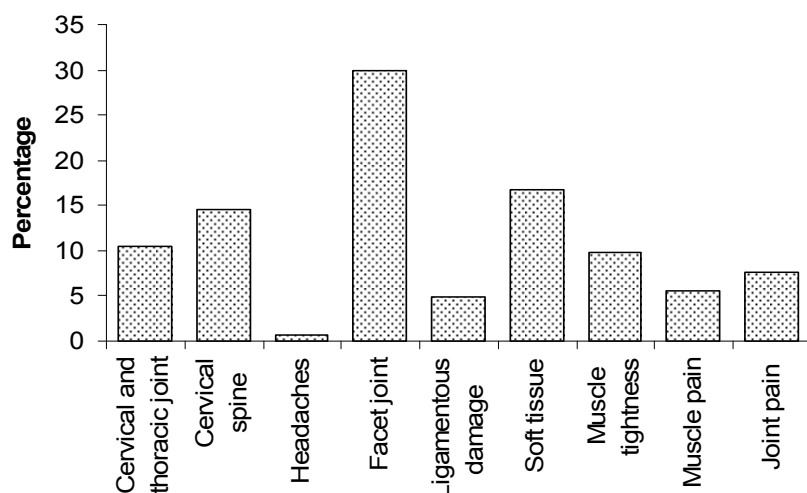
Each symptom column indicates the percentage of patients who reported the designated problem. For example, column S1 indicates the percentage of patients who reported the designated problem as their 'predominate' symptom. Column S2 indicates the percentage of patients who reported the designated problem as their 'second most predominate symptom', and so on.

This table demonstrates the wide range of disturbing symptoms that a patient may experience following a whiplash injury.

Physiotherapist diagnosis

The frequency of physiotherapy diagnosis is displayed in figure 7. The most frequent diagnoses were the facet joints.

Figure 7 Frequency of physiotherapy diagnoses



The most frequent diagnosis were facet joint problems, this is interesting since research suggests we cannot accurately specify a specific structure at fault. Under double-blind controlled conditions, it has been shown that zygapophyseal joint pain is the single most common basis for chronic neck pain after whiplash, and that at least 27% of headaches after whiplash can be traced to C2-3 zygapophyseal joints (Bogduk 1995 in Spitzer et al.1995).

Body sites reported

The reported body sites are shown in table 6. The most frequently reported body sites were the cervical spine, the cervical spine + referral to the shoulder and thirdly the upper thoracic spine.

Table 6 Frequency of reported body sites

Code	Body site	Number	Percentage
1	Occipital	22	6.3
2	Temporal	11	3.1
3	Parietal	4	1.1
4	Maxillary	0	0
5	Mandibular	0	0
6	Occipito-frontal	6	1.7
7	Cervical spine (CS)	74	21.3
8	CS + ref to shoulder	77	22.2
9	CS + ref to elbow	12	3.4
10	CS + ref to wrist	7	2.0
11	CS + ref to hand	17	4.9
12	CS + ref to head and or face	15	4.3
13	Upper thoracic (UT)	45	13.0
14	UT + ref to upper limb(s)	10	2.8
15	UT + ref to mid & lower thorax	13	3.7
16	Lumbar spine (LS)	23	6.6
17	LS + ref to buttock	5	1.4
18	LS + ref to mid spine	1	0.2
19	LS + ref to knee	0	0
20	LS + ref to mid calf	2	0.5
21	LS + ref to heel	2	0.5
22	LS + ref to foot and toes	0	0
<i>Total</i>		<i>346</i>	<i>100</i>

For patients with only **one** reported body site (n=55) the two most frequently reported sites were the cervical spine (36%) and the cervical spine with referral to shoulder (38%).

For patients with **two** reported body sites (n=79) the most frequently reported was the cervical spine with the upper thoracic spine (15%).

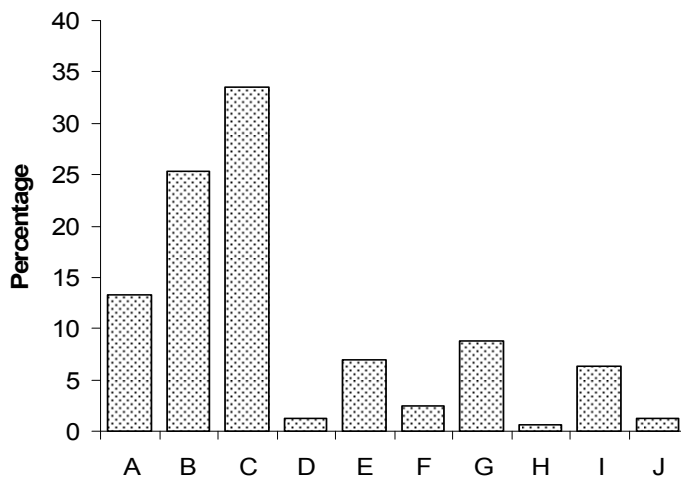
30 patients had **three** reported body sites, and 12 patients had **four** reported body sites, of which there were no commonly reported combinations.

Bodysites for example, in the thoracic spine and lumbar spine, were only recorded if the patient associated the problems in the bodysite with their whiplash injury. Of note is the fact that 9.2% of patients included in the study complained of symptoms in the lumbar spine related to the whiplash injury.

Physiotherapists assessment of origin of referred symptoms

The reported origins of the referred symptoms are displayed in figure 8. The most commonly reported origins were muscle (34%) and joint (25%).

Figure 8 Origin of referred symptoms



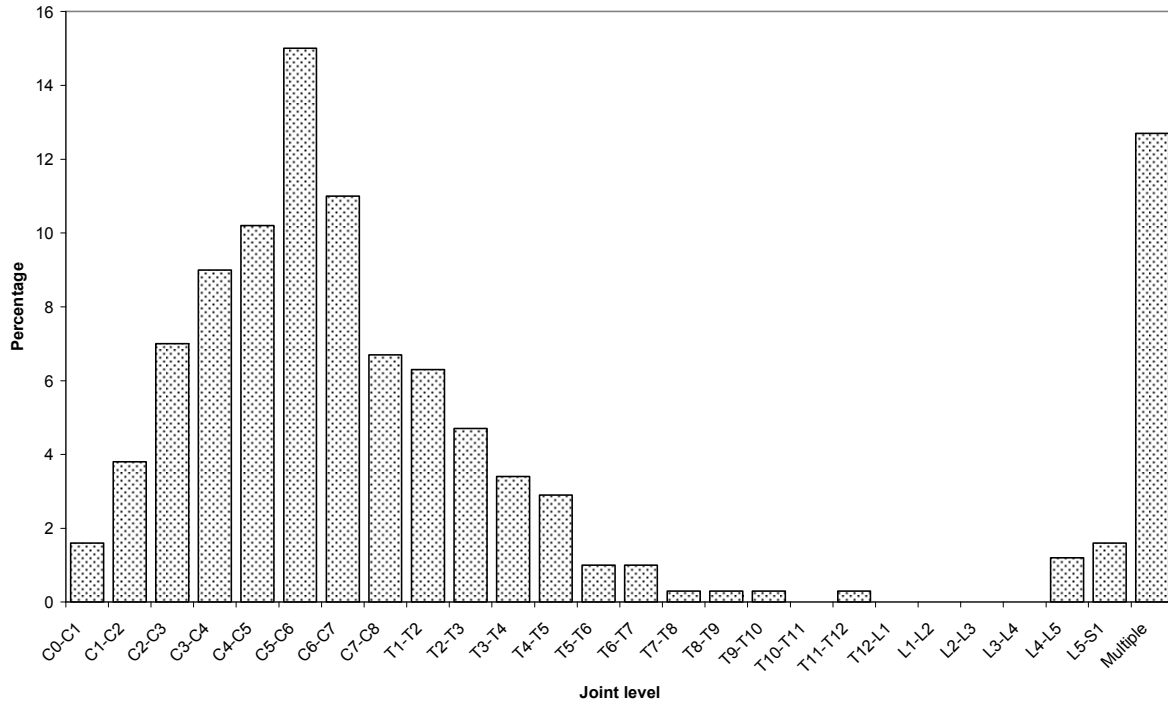
Key:-

- A = Neural - nerve root/peripheral in origin
- B = Joint origin
- C = Muscle origin
- D = Bony origin
- E = Bony & ligamentous origin
- F = Neural origin & joint
- G = Neural joint & muscle
- H = Neural joint, muscle & bony
- I = Neural joint, muscle, bony & other
- J = Other combinations

Symptomatic level on palpation

The frequency of reported joint / level symptoms is shown in figure 9 below. The most commonly reported joint/level symptoms were the C5-C6 (15%), and multiple levels (13%).

Figure 9 Joint/level symptoms on palpation



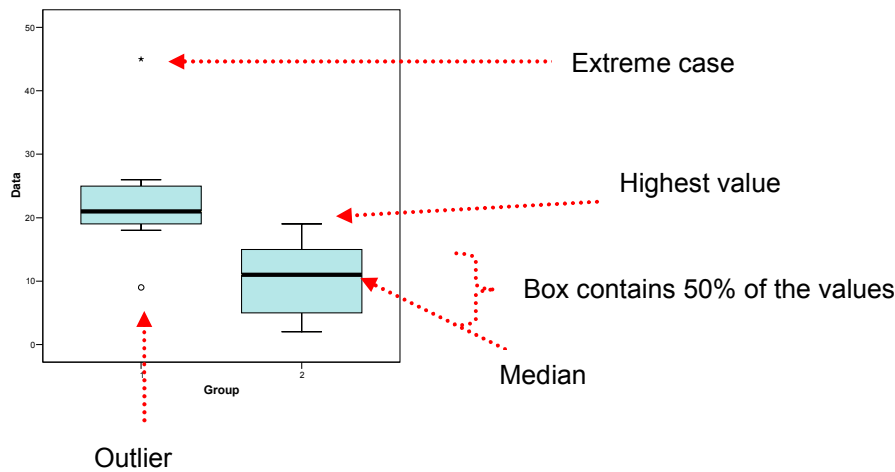
Laterality of symptoms

There was little difference in laterality of symptoms in patients; 48% had bilateral, and 52% had unilateral symptoms.

Waiting times

To facilitate comparison between the Trusts for waiting times, box plots are reported. An example box plot is shown below. Box plots are summary plots based on the median, quartiles and extreme values. The box represents the interquartile range which contains 50% of the values. The whiskers are lines that extend to the highest and lowest values, excluding outliers. Outliers are shown by circles and extremes are shown by asterisks. The line across the box indicates the median. Outliers are cases with values between 1.5 and 3 box lengths from the upper or lower edge of the box. Extremes are cases with values more than 3 box lengths from the upper or lower edge of the box.

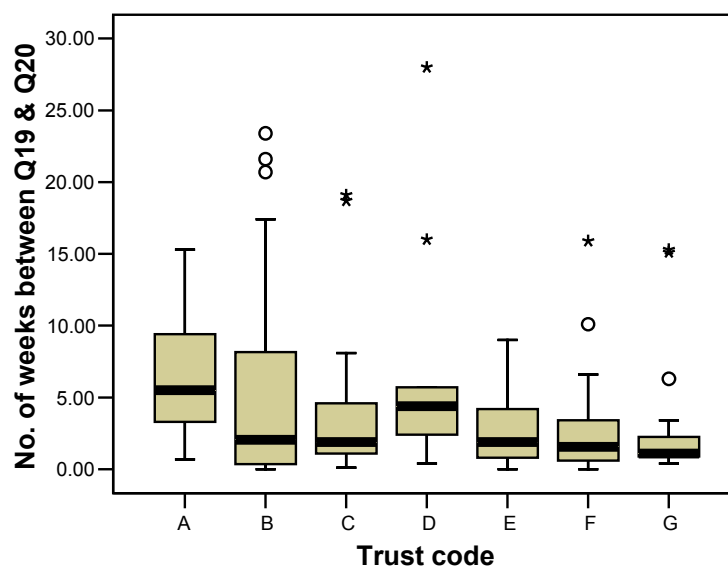
Example box plot



Number of weeks between referral for treatment (Q19) and date treatment commenced (Q20).

The average length of time between referral for treatment and the date treatment commenced was 4.2 weeks (SD 5.1), with values ranging from 0 – 28 weeks. The differences between Trusts, as shown in Figure 10, will be related to referral mechanisms and existing waiting lists.

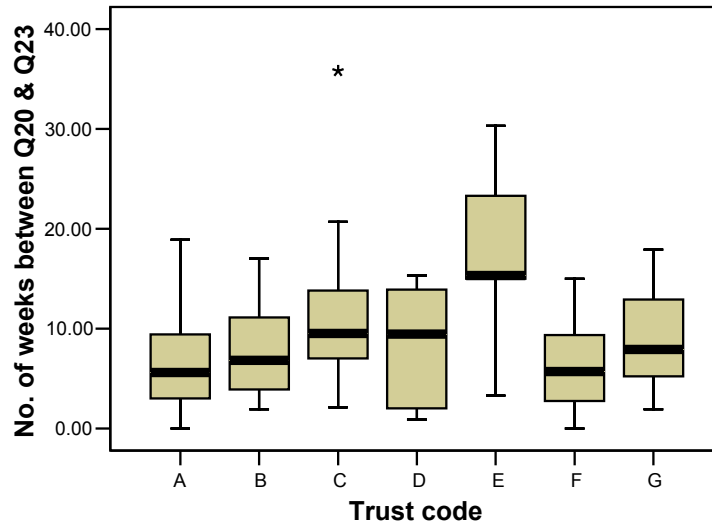
Figure 10 Weeks between referral for treatment and treatment commencing



Number of weeks between commencement of treatment (Q20) and termination of treatment (Q23)

The average length of time between treatment commencing and treatment terminating was 8.2 weeks (SD 5.9), with values ranging from 0 – 36 weeks. Figure 11 highlights the difference in treatment times between the Trusts.

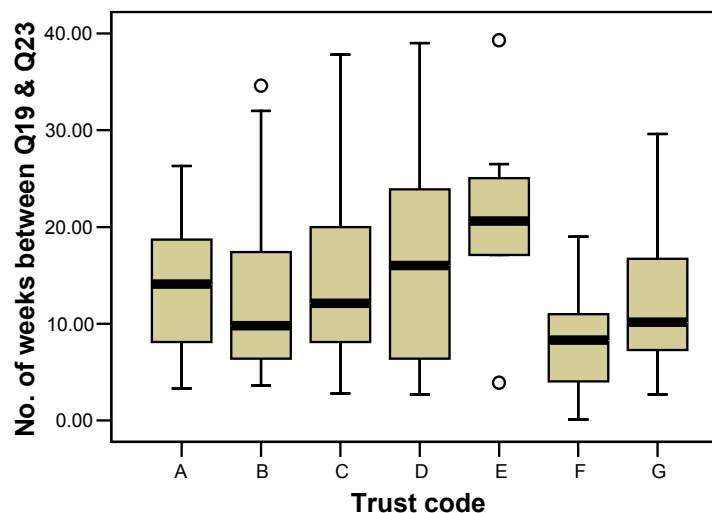
Figure 11 Weeks between treatment commencing and treatment terminating for each Trust



Number of weeks between referral for treatment (Q19) and termination of treatment (Q23)

The average length of time between referral for treatment and termination of treatment was 12.5 weeks (SD 7.9), with values ranging from 0 – 39 weeks. Figure 12 displays the number of weeks for each of the Trusts.

Figure 12 Weeks between referral for treatment and termination of treatment for each Trust



Psycho-social and physical factors

Therapists used a rating score (0 = none, 1 = mild, 2 = moderate, 3 = quite severe, 4 = severe) on factors that may have had an effect on physiotherapy management and / or patient recovery.

Figure 13 Score ratings for the problem

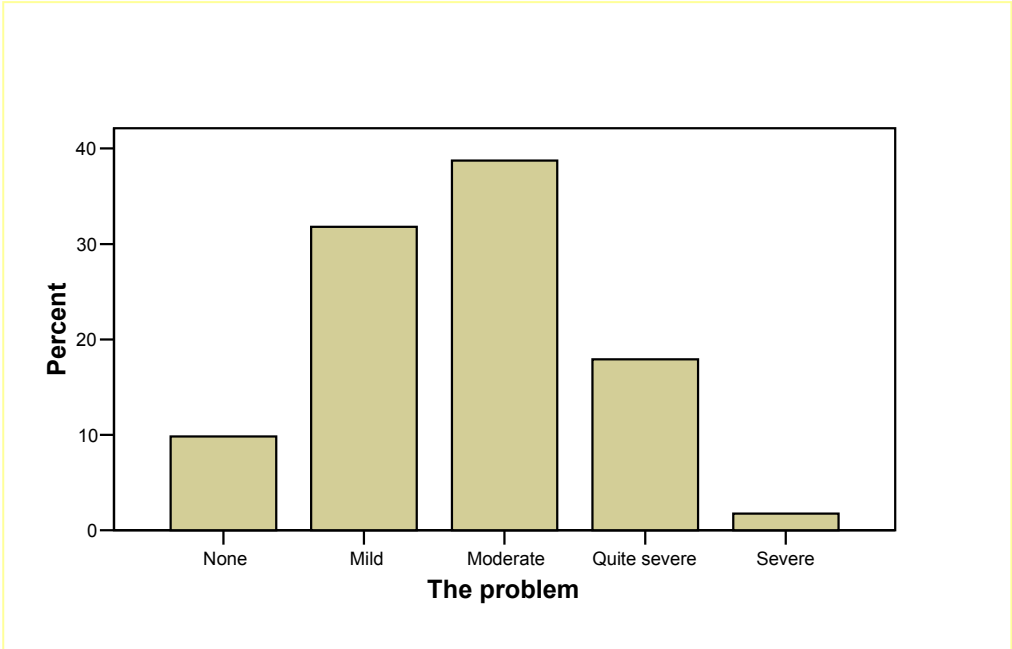


Figure 14 Score ratings for communication

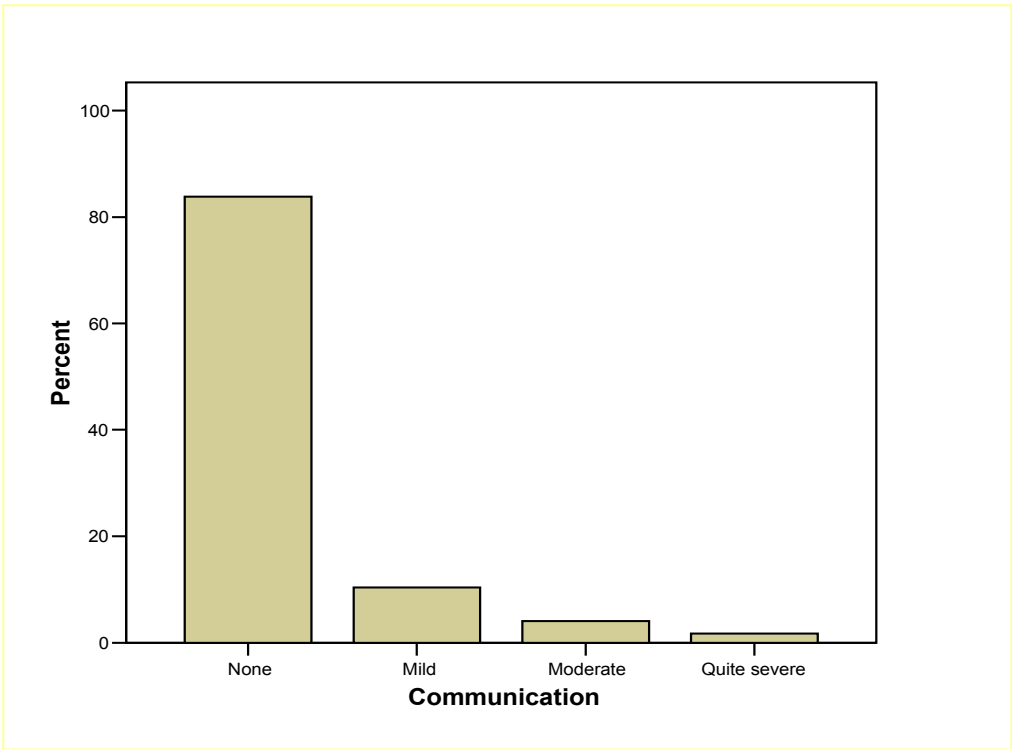


Figure 15 Score ratings for mobility

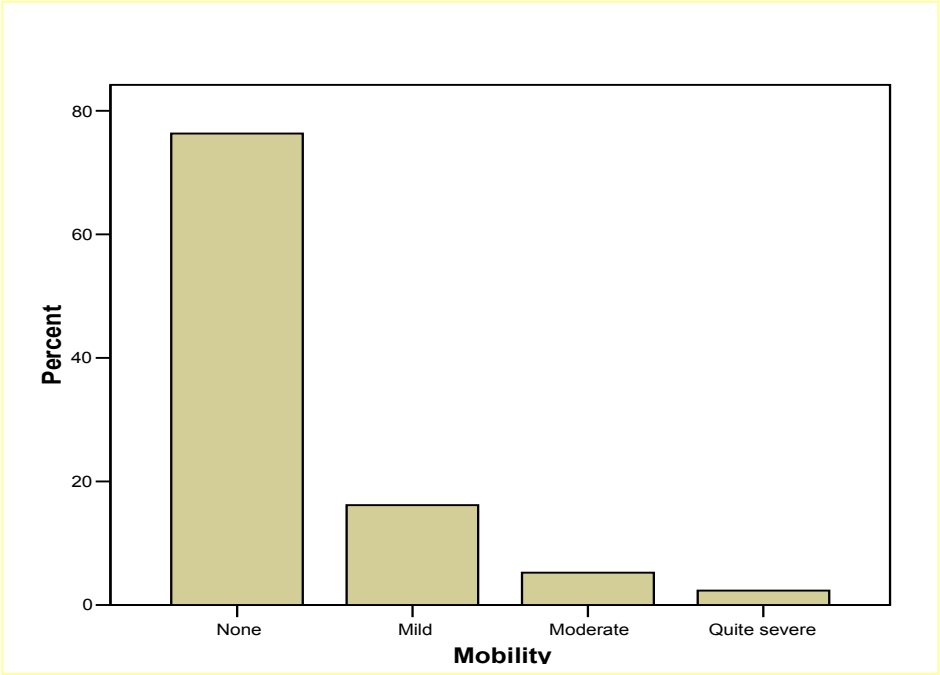


Figure 16 Score ratings for social factors

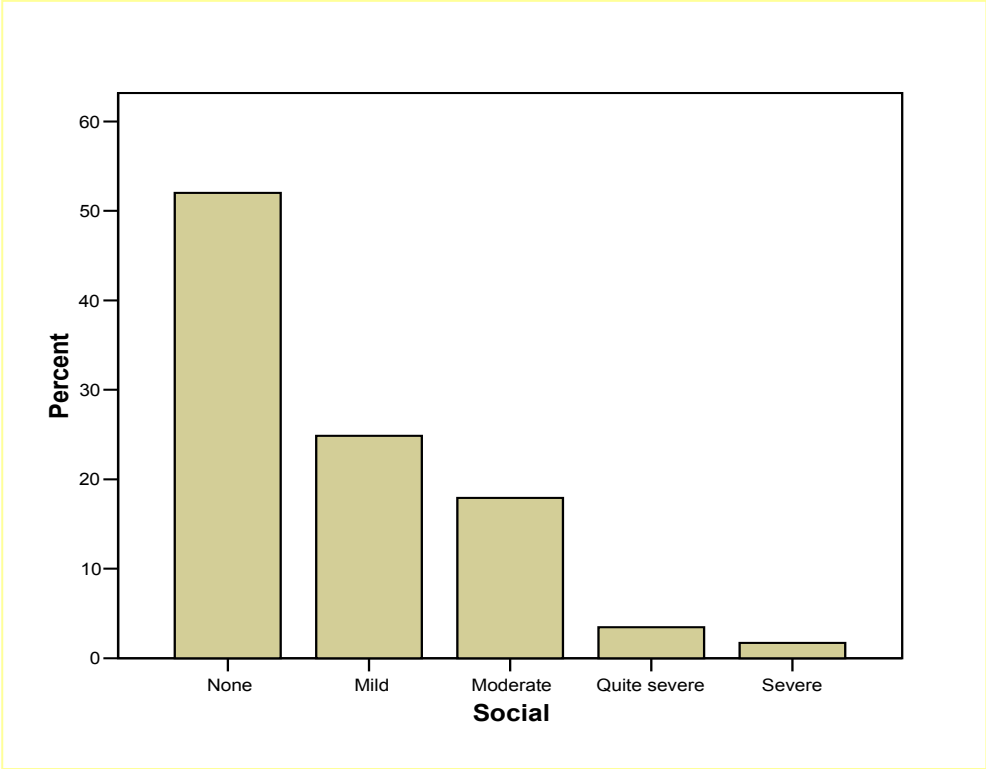


Figure 17 Score ratings for other conditions

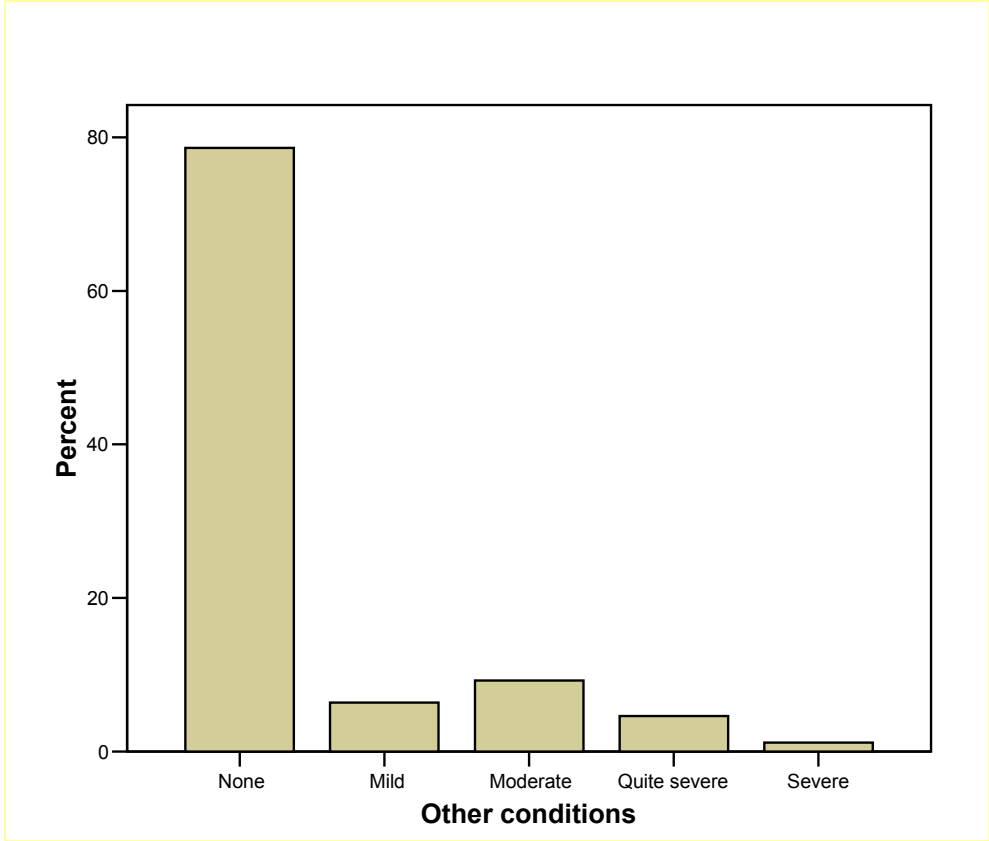
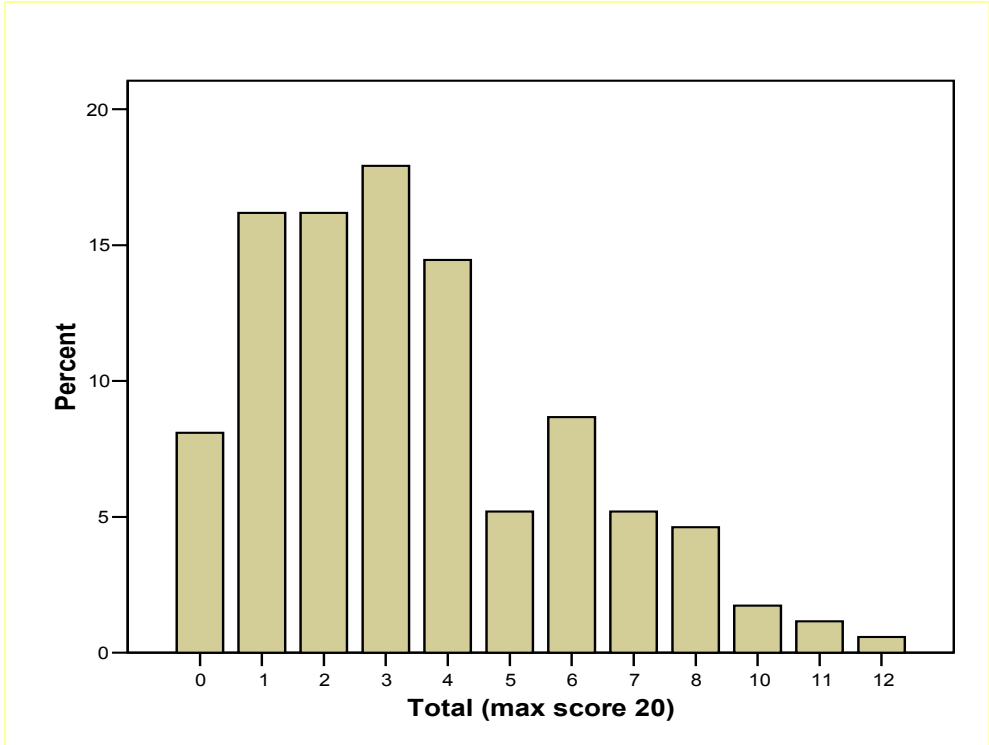


Figure 18 Total score ratings for psycho-social and physical factors



Treatment details

The frequency of reported treatment details are displayed in table 7. The most commonly reported treatments were: active mobilising exercises; education + advice; advice re self management and mobilisation. The table reflects the frequency of modality of treatment used during the complete course of treatment. For example, therapists may have used 3 treatments initially, which might have changed during the course of the treatment depending on progression.

Table 7 Treatment details

Code	Treatment	Number
1	Advice re self management	136
2	Advice to carer/relative	2
3	Education	31
4	Education and advice	130
5	Active exercises – strengthening	61
6	Active exercises – mobilising	182
7	Traction	8
8	Mobilisation	91
9	Manipulation	3
10	McKenzie approach	8
11	Combined movements (Edwards)	0
12	Snags and Nags	21
13	Muscle energy techniques	2
14	Reflexology	0
15	Aromatherapy	0
16	Massage	29
17	Friction	0
18	CT massage	2
19	Strapping	7
20	Soft collar	4
21	PNF	1
22	Re-education of muscle imbalance	24
23	Neuro-dynamics facilitation	6
24	Acupuncture	7
25	Trigger point release	29
26	Soft tissue stretching	31
27	Injection therapy	0
28	Bio-feedback	0
29	Dietary education	0
30	Pilates	1
31	Interferential	2
32	Short wave diathermy	6
33	TENS	9
34	Ultrasound	13
35	Local heat (IR/Packs/Pad)	25
36	Laser	0
37	Class activities	2

With regards to initial treatments used, the most frequently used combinations were:-

- a) Advice re self management / education and advice / active mobilising exercises
- b) Advice re self management / active mobilising exercises
- c) Education and advice / active mobilising exercises

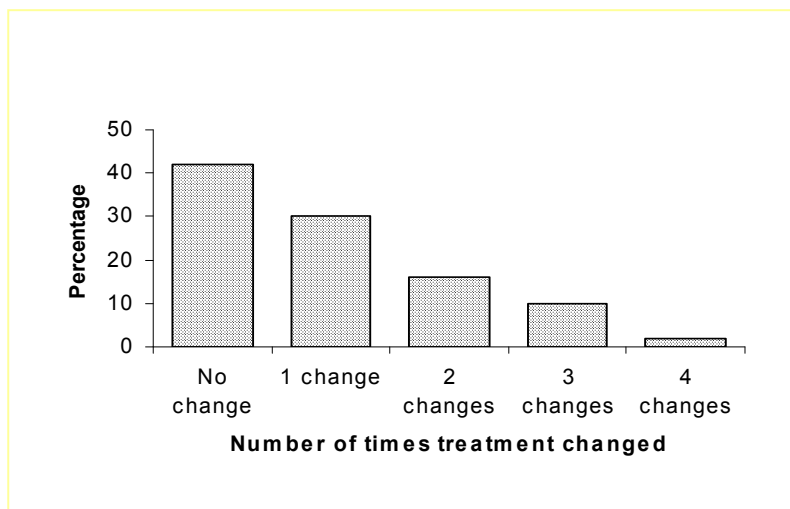
Interestingly, therapists used mobilising exercises much more than strengthening exercises. Cumulative evidence suggests active exercise as part of a multimodal intervention may be beneficial in the short and long term. Cumulative evidence also suggests that mobilisation techniques can be used as an adjunct to strategies that promote activation (Spitzer et al, 1995).

The reported use of soft collars as a mode of treatment in four patients (in the acute stage) was surprising considering the evidence that their use may promote inactivity, which can delay recovery (Spitzer et al, 1995). The recent clinical guidelines do not recommend the use of soft collars in the treatment of WAD in the acute stage (Moore et al, 2005).

Change in modality

The number of times the modality for each patient were changed during this period is reported in figure 19. The majority of patients did not receive a change in treatment modality.

Figure 19 Modality change



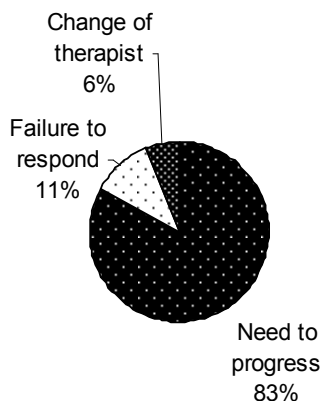
Looking at the Trusts separately (see table 8) the difference in modality changes are highlighted.

Table 8 Number of changes in modality for each Trust (%)

	Trust code						
	A	B	C	D	E	F	G
Treatment	%						
No change	37	15	34	33	25	70	20
1 change	37	50	31	33	38	22	35
2 changes	21	20	22	11	25	2	15
3 changes	2.5	15	10	23	12	6	25
4 changes	2.5	0	3	0	0	0	5

The physiotherapists were asked to select a rationale for the change in treatment modality from the following:- need to progress; failure of response to initial treatment; equipment not available or change of therapist.

Figure 20 Pie chart illustrating rationale for change in treatment modality



Whiplash Education

Overall 46% of physiotherapists reported issuing an education book to patients. The breakdown for each of the Trusts is shown in table 9. As reported in the Introduction of this report, some of the Trusts used the education booklet by Waddell, Burton and McClune (2002) and others used individual exercise programmes by Physio Tools Ltd.

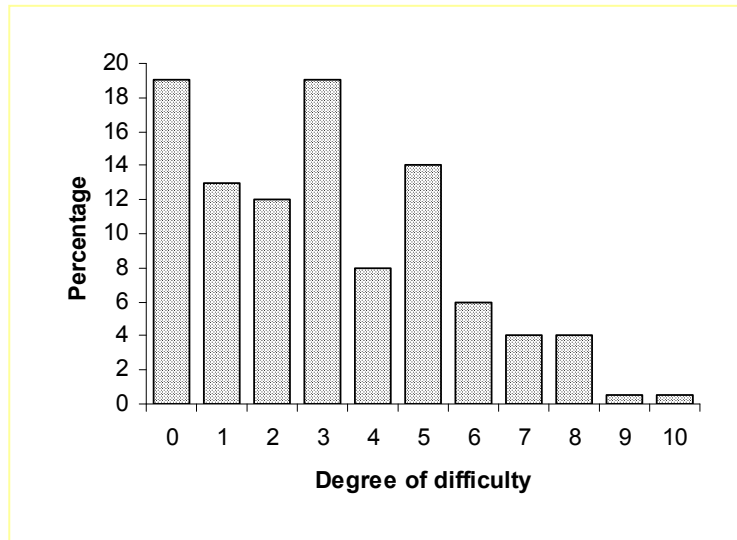
Table 9 Percentage of patients issued with a whiplash education booklet or personal exercise programme for each Trust

Trust Code	Percentage
A	30
B	20
C	45
D	14
E	25
F	90
G	25

Degree of difficulty in treating the patient

Physiotherapists rated on a scale of 0 to 10 the degree of difficulty experienced in managing the patient, as shown in figure 21. Consideration was given to the physical effort, the intellectual input, the time taken, the mental and emotional effort needed and required to manage or treat the patient effectively. The score 0 was given where little or no effort was necessary, and a score of 10 where maximum effort was required.

Figure 21 Degree of difficulty in treatment or management of the patient



Effort scores were surprisingly low, particularly since almost half the patients were chronic patients and perhaps more challenging. This will depend of the level of experience of therapists dealing with these patients.

Factors influencing the outcome of treatment

Physiotherapists were asked to report up to four factors influencing the outcome of each patient's treatment. The percentage of cases for each factor are listed in table 10. The most frequently reported factor affecting outcome was "lifestyle influences" (25%). Surprisingly, only 4% reported litigation as an influencing factor.

In 48% of patients only one factor was reported to influence outcome. The most frequent factor reported was "no other factors" (37%), followed by "general state" (17%) and "lifestyle influences" (17%).

In 26% of patients two factors were reported to influence outcome. The most frequent combination was "general state + lifestyle influences" (23%), therefore linking in with possible yellow flag assessment.

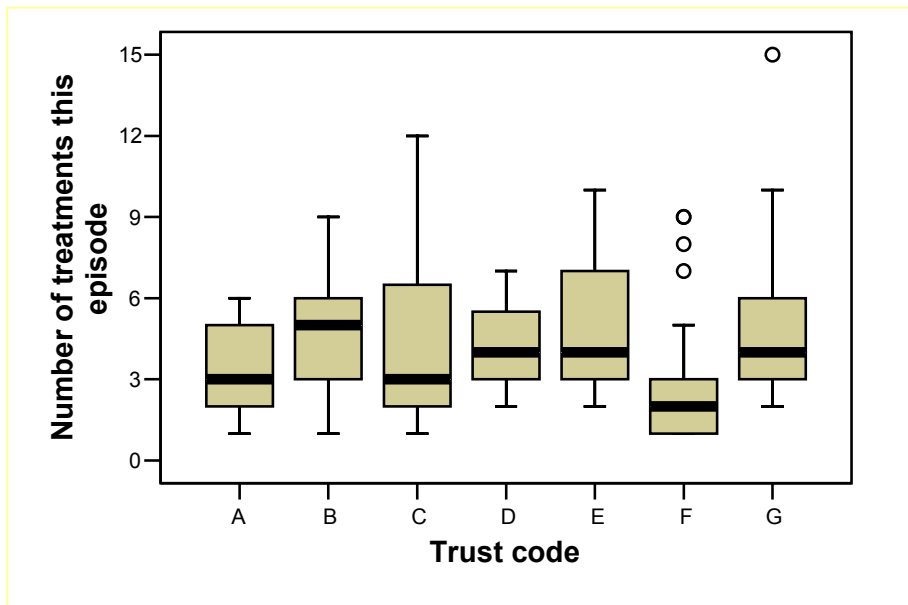
Table 10 Factors influencing the outcome of treatment

Code	Factors influencing outcome of treatment	Percentage
1	Pain free at first visit	<1
2	Inappropriate referral	0
3	Re-referred to consultant or GP	<1
4	Other medical intervention	4
5	General state	18
6	Lifestyle influences	25
7	Other medical conditions	4
8	Time since onset	10
9	Natural progression	6
10	Lack of treatment	2
11	Patient moved from the area	<1
12	Patient unwilling or unable to attend for treatment	5
13	RIP	0
14	No other factors	13
15	Exacerbation of condition	2
16	Transport difficulties	0
17	Parking difficulties	0
18	Access to treatment area difficulties	0
19	Change in grade of therapist	2
20	Spontaneous recovery	<1
21	Therapist sickness	0
22	Patient unable to attend first appointment offered	0
23	Difficulty with childcare	0
24	Difficulty with obtaining leave of absence from work	1
25	Litigation	4
26	Non adherence to medication	<1
	(260 factors were reported from 178 patients)	

Number of treatments this episode

Physiotherapists were asked to report on the number of treatments this episode. Overall, the values reported ranged from 1 to 15 treatments, with an average of 3.8 (SD 2.5). The number of treatments this episode for each of the trusts are shown in figure 22. The average number of treatments of 3.8 would indicate a very positive outcome for this group of patients. One Trust thought that their average treatment may have been higher as they had a larger number of students treating these patients, who would obviously find treating this type of syndrome more challenging than qualified staff.

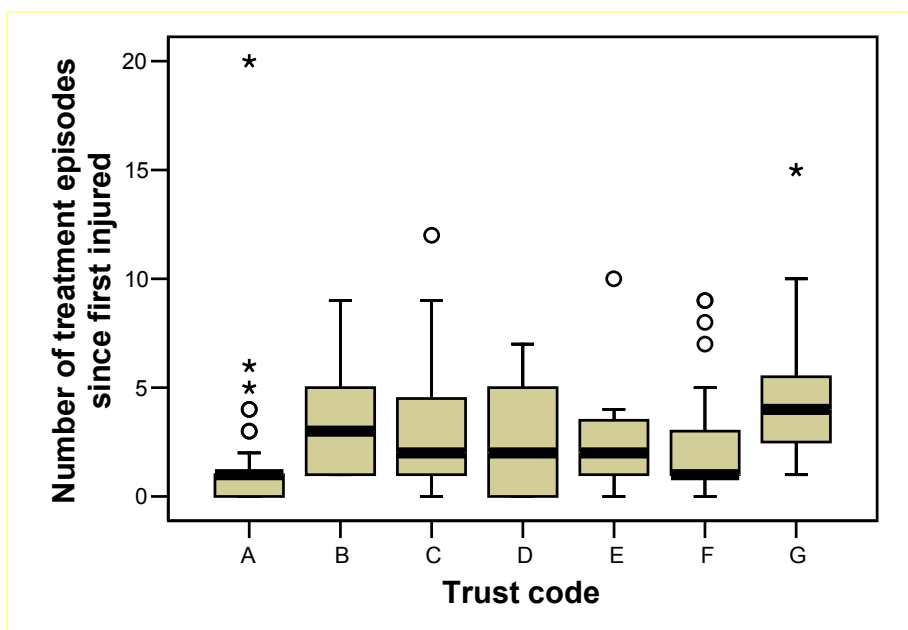
Figure 22 Number of treatments this episode for each Trust



Number of treatment episodes since first injured

Physiotherapists were asked to report on the number of treatment episodes since the patient was first injured. Overall, the values reported ranged from 0 to 20 episodes, with an average of 2.8 (SD 2.9). The numbers of treatment episodes since first injured for each of the trusts are displayed in figure 23.

Figure 23 Number of treatment episodes since first injured for each Trust



Number of therapists involved in treatment

The average number of physiotherapists involved in treatment was 1.2 (SD 0.6), with numbers ranging from one to five. The numbers of therapists involved for each of the trusts are shown in table 11.

Table 11 Number of physiotherapists involved in treatment for each of the Trusts

Trust code	Number of therapists involved				
	1	2	3	4	5
A	34	1	0	1	2
B	16	3	1	0	0
C	28	2	1	0	0
D	7	1	0	0	0
E	4	4	0	0	0
F	40	3	0	0	0
G	13	4	3	0	0

Grade of physiotherapists involved in treatment

The grades of the physiotherapists involved in the treatment are shown in figure 24, with table 12 showing the breakdown for each of the Trusts.

Figure 24 Grade of physiotherapists involved in treatment

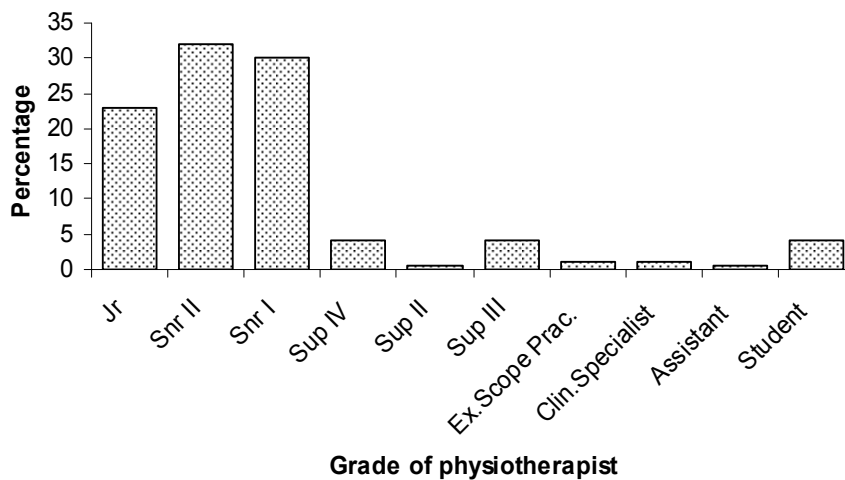


Table 12 Grades of physiotherapists involved in treatment for each Trust

Trust Code	Jr	Sn II	Sr I	Sup IV	Sup II	Sup III	Ext. S.P.	Clin. Spec	Assist.	Student
A	0	19	12	5	0	0	0	2	0	0
B	4	1	17	0	0	0	0	0	0	0
C	16	7	9	4	1	0	0	0	1	0
D	2	6	3	0	0	0	0	0	0	0
E	8	0	2	0	0	0	0	0	0	0
F	12	21	8	0	0	6	0	0	0	2
G	2	8	7	0	0	1	2	0	0	6

Source of referral

The majority of patients were referred by their GP’s as shown in figure 25. The breakdown for each Trust is reported in table 13. There was a physiotherapist working as an Extended Scope Practitioner in the Trust where 9 referrals were made directly from A & E, which would explain the high numbers of patients receiving direct referrals.

Figure 25 Referral source

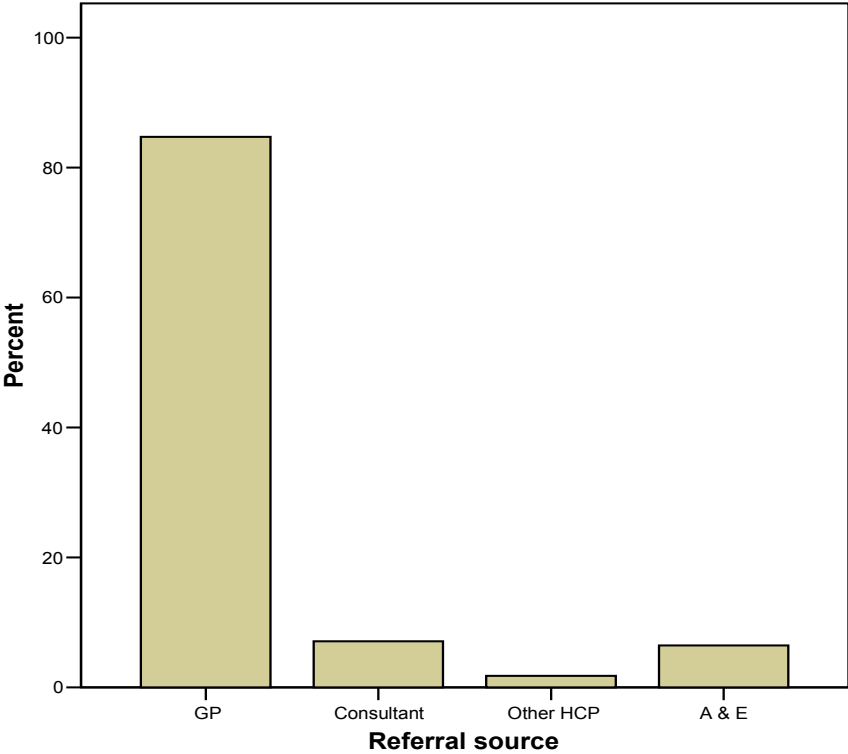


Table 13 Number of patients from each referral source, reported by Trust

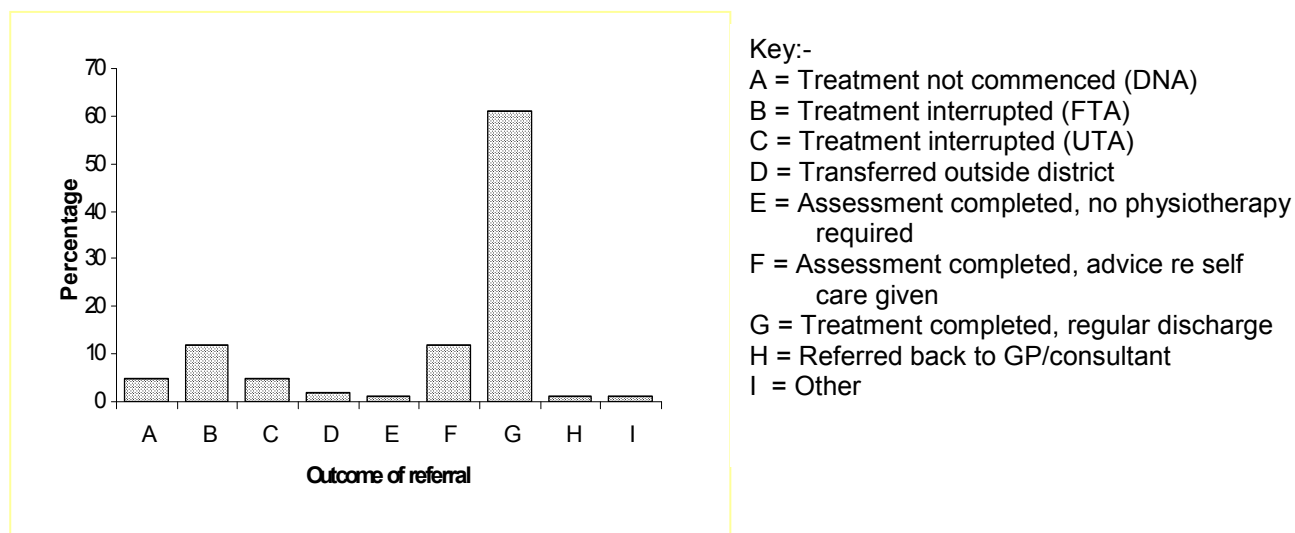
Trust Code	GP (n=)	Consultant (n=)	Other HCP (n=)	A & E (n=)
A	37	0	0	1
B	15	4	1	0
C	27	1	2	1
D	7	0	0	0
E	7	1	0	0
F	33	4	0	9
G	18	2	0	0

It would be useful to note that one Trust who received referrals through General Practitioners noticed that 40% of those referred by General Practitioners had attended A & E in the previous week.

Outcome of referral

The outcome of referral is displayed in figure 26 below. Most of the patients gained a regular discharge following completion of their treatment. Twenty two percent were lost to the service because of non-attendance.

Figure 26 Outcome of referral



The outcome of referral for each trust is shown in table 14.

Table 14 Outcome of referral for each trust

Trust code	Outcome of referral								
	A	B	C	D	E	F	G	H	I
A (n=38)	-	3	3	1	1	3	26	1	-
B (n=19)	-	1	1	-	-	2	15	-	-
C (n=31)	2	4	2	1	-	2	19	1	-
D (n=9)	-	3	-	-	-	1	5	-	-
E (n=7)	1	2	1	-	-	-	3	-	-
F (n=51)	6	5	2	-	-	13	24	-	1
G (n=20)	-	3	-	1	-	1	15	-	-
Overall %	5%	12%	5%	2%	<1%	13%	61%	1%	<1%

Initial assessment of functional, physical and subjective status

Outcome coding:

10 = No pain, no referral of symptoms, no functional restriction, no working restriction, no SIN factors present (i.e. severity, irritability in nature) patient able to participate in all sport, leisure and social activities taking no medication. Patient's expected range of movement = 100% in all ranges.

9 = Very low severity and irritability, symptoms occurring very infrequently. Able to work fully and carry out leisure, sports and social activities with only a minimal restriction from time to time. 90% range of motion available in one or more ranges. 100% ranges of motion available in all other ranges. Has no need to resort to simple analgesia.

8 = Low severity, irritability and nature factors, sleep unaffected. Infrequent symptoms, working full-time. Some aspects of work slightly modified some minimal restriction of social, leisure and sports activities from time to time. 80% range of movement in one or two physiological ranges. All others 100%. Needs analgesia and anti-inflammatories from time to time when symptoms present.

7 = Moderately low SIN factors, working full time in a modified way. Sleeps well in the main. Symptoms felt occasionally. Leisure, sport and social activities unaffected in the main. 70% range of motion available in one physiological range of motion. All others 100%. Some analgesia necessary when symptoms at their worst.

6 = Moderate to mild severity and irritability. Symptoms felt regularly. Working almost full time in a modified way. Leisure and social activities affected occasionally. Contemplating returning to sport. 60% range of motion available in one or two ranges of motion. All others 100%. More than occasional use of analgesia.

5 = Moderate severity and irritability in nature. Moderate symptoms felt intermittently, almost daily. Some sleep loss occasionally. Working part time in a modified way. No sport activities. Leisure and social activities possible if careful. Able to do most daily living activities unaided. One range of motion reduced to 50%. Regular use of analgesia.

4 = Moderate SIN factors. Sleep disturbed once or twice a week. Moderate symptoms daily, pain moderately intense. Working on a very part time basis. Pain local and/or referred. Participating in leisure and social activities at a restricted level. The majority of functional tasks provoke symptoms. Less than 40% range of motion in one physiological range of movement. Analgesia used most days.

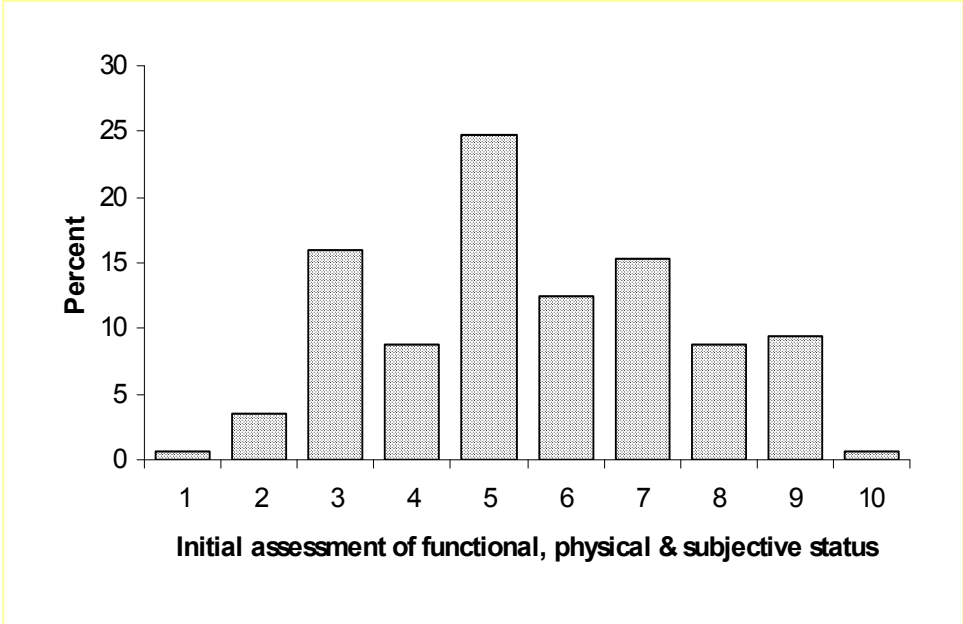
3 = Moderately high SIN factors. Local and/or referral of pain. Intermittent severe and intense pain but felt regularly, throughout the day. Unable to work due to symptoms. sleep disturbed-. Performing some functional tasks with some restriction. No sporting activities possible. Leisure activities somewhat curtailed. Under 30% range of movement available in one or more ranges. Analgesia taken regularly throughout the day,

2 = High SIN factors. Severe and intense pain almost constant. Local and/or referral. Sleep disturbed every night. Performs minimal functional tasks at home. Leisure and social activities curtailed by symptoms by a large degree. No sporting activity possible. Range of movement reduced to 20%, or less in one range of motion. Heavy reliance on analgesia.

1 = Very high SIN factors. Severe and intense pain felt constantly. Unable to sleep, works or participates in leisure and social activities in any form. Range of movement less than 20% in one or more direction. Completely reliant on drug therapy for minimal pain relief.

The initial assessments of functional ability are displayed in figure 27. The most frequently reported was 'moderate severity and irritability in nature' (e.g.:- moderate symptoms felt intermittently, almost daily; some sleep loss occasionally; no sport activities; ROM reduced to 50%; regular use of analgesia). It is interesting to note that 54% of patients were complaining of moderate to very high severity of symptoms.

Figure 27 Initial assessment of functional, physical and subjective status



A breakdown of functional ability for each trust is reported in table 15.

Table 15 Initial assessment of functional, physical and subjective status for each Trust

Trust code	Initial assessment code									
	1	2	3	4	5	6	7	8	9	10
A (n=38)	-	-	5	2	15	4	5	2	5	-
B (n=20)	-	1	5	1	5	2	4	1	1	-
C (n=29)	-	2	2	4	5	4	5	5	2	-
D (n= 9)	-	-	-	2	3	-	1	2	-	1
E (n= 8)	-	-	2	-	2	1	1	-	2	-
F (n=46)	1	2	11	4	6	8	7	2	5	-
G (n=20)	-	1	2	6	6	2	3	3	1	-

Expected functional, physical and subjective outcome

The expected outcomes are displayed in figure 28. The most frequently reported expected functional, physical and subjective outcome was 'no pain' (e.g.:- no referral of symptoms; no functional restriction; no working restriction; no SIN factors present; no medication; 100% ROM). A breakdown of these patients by chronicity revealed 43% of 'acute' patients and 23% of 'chronic' patients had an expected functional, physical and subjective outcome of 'no pain'.

The expected functional, physical and subjective outcome reported for each trust is shown in table 16.

Figure 28 Expected functional, physical and subjective outcome

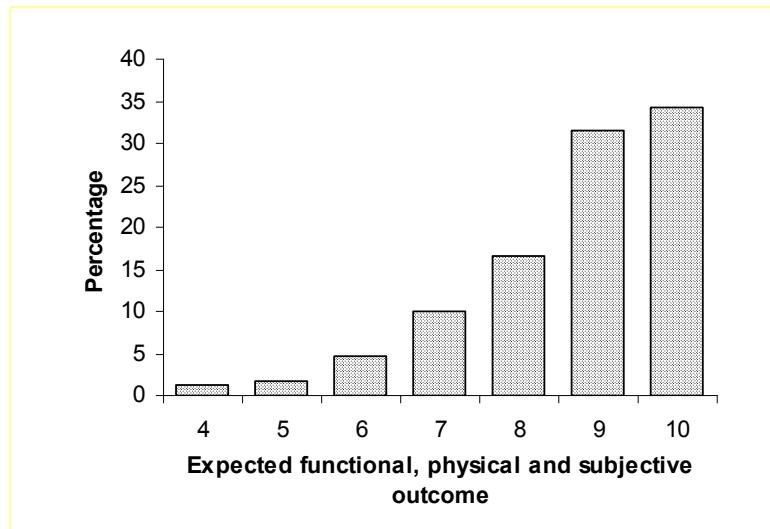


Table 16 Expected functional, physical and subjective outcome for each Trust

Trust code	Expected functional outcome categories									
	1	2	3	4	5	6	7	8	9	10
A (n=38)	-	-	-	-	2	3	7	12	11	3
B (n=20)	-	-	-	1	-	3	3	3	7	3
C (n=29)	-	-	-	-	1	-	3	7	6	12
D (n= 9)	-	-	-	-	-	-	-	1	4	4
E (n= 8)	-	-	-	-	-	-	-	3	4	1
F (n=45)	-	-	-	-	-	2	3	-	13	27
G (n=20)	-	-	-	1	-	-	1	2	8	8

Actual functional, physical and subjective outcome

The actual outcomes achieved are displayed in figure 29. The most frequently reported actual outcome was 'very low severity and irritability' (e.g.:- symptoms occurring very infrequently; 90% ROM; no need for analgesia). A breakdown of actual outcomes for each trust is reported in table 17.

Figure 29 Actual functional, physical and subjective outcomes

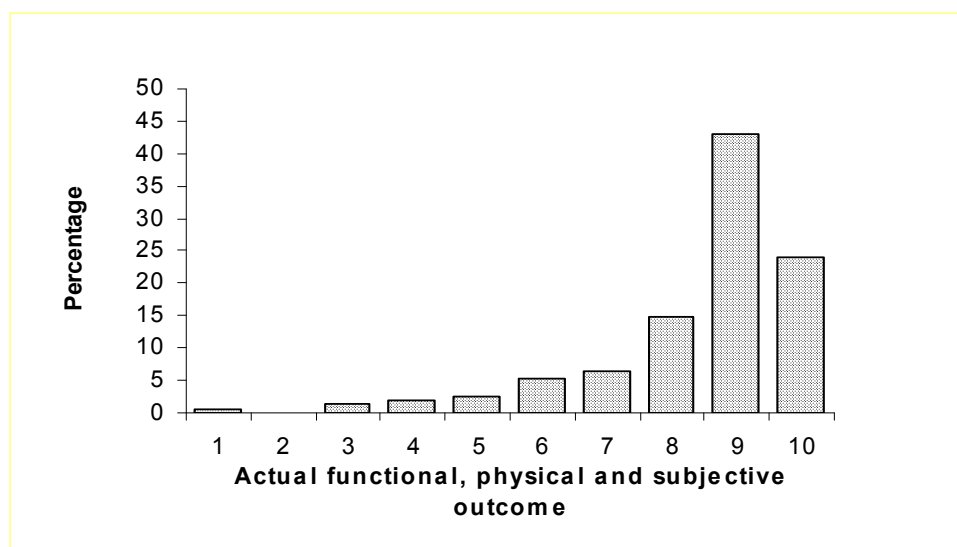
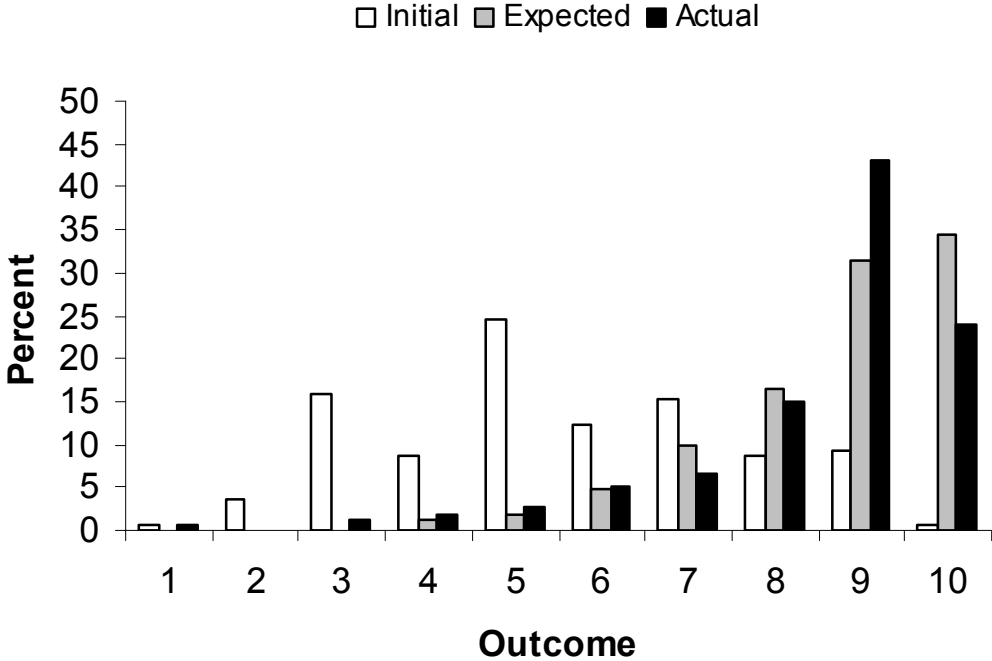


Table 17 Actual functional, physical and subjective outcome for each Trust

Trust code		Actual functional outcome									
		1	2	3	4	5	6	7	8	9	10
A	(n=37)	-	-	-	2	2	2	5	6	17	3
B	(n=18)	1	-	1	1	-	-	2	5	6	2
C	(n=25)	-	-	-	-	1	1	1	4	15	3
D	(n= 9)	-	-	-	-	-	1	1	-	2	5
E	(n= 5)	-	-	-	-	-	1	-	2	2	-
F	(n= 41)	-	-	-	-	-	2	1	3	15	20
G	(n=19)	-	-	1	-	1	1	-	3	9	4

The bar chart below (figure 30) displays the initial status together with the expected and actual functional, physical and subjective outcomes for all patients.

Figure 30 The initial, expected and actual functional, physical and subjective outcomes for all patients



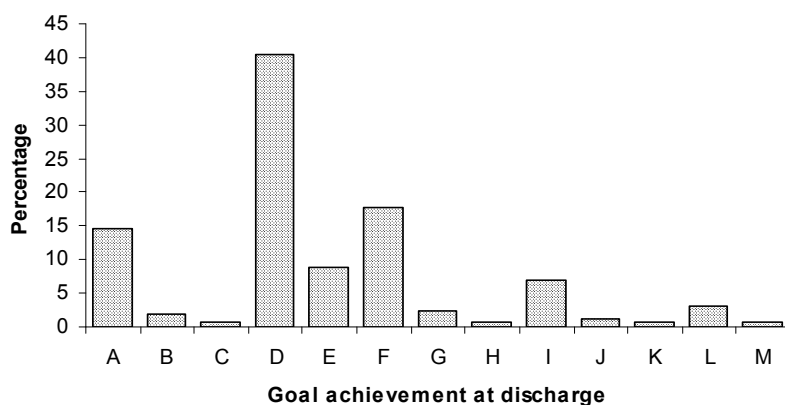
Interestingly for patients with reported expected outcomes of 'no pain' (34%), the actual outcome was less than predicted (24%), however this may reflect the fact that patients are often discharged before full recovery has been made.

On the whole, a very positive outcome for this group of patients.

Goal achievement at discharge

Goal achievement at discharge is shown in figure 31 and table 18, with a breakdown for each trust in table 19. Goals were recorded in terms of patient and therapist achievement goals (goals included pain, ROM, function, patient's interpretation of subjective perceived improvements and the ability to work). The most frequently reported goal achievement was 'goals fully achieved within 1-6 treatments'.

Figure 29 Goal achievements at discharge for all patients



Codes: A = Goals exceeded (1-6 treatments). B = Goals exceeded (7-12 treatments). C = Goals exceeded (19+ treatments). D = Goals fully achieved (1-6 treatments). E = Goals fully achieved (7-12 treatments). F = Goals significantly achieved (1-6 treatments). G = Goals significantly achieved (7-12 treatments). H = Goals significantly achieved (13-18 treatments). I = Goals partially achieved (1-6 treatments). J = Goals partially achieved (7-12 treatments). K = Goals partially achieved (13-18 treatments). L = Goals not achieved (1-6 treatments). M = Goals not achieved (19+ treatments)

Table 18 Goal achievement at discharge for all patients

66% of patients either exceeded or fully achieved the goals set at the commencement of treatment.

Goal achievement at discharge	Percentage
Goals exceeded	17.1
Goals fully achieved	49.4
Goals significantly achieved	20.8
Goals partially achieved	8.9
Goals not achieved	3.8
<i>Total</i>	<i>100</i>

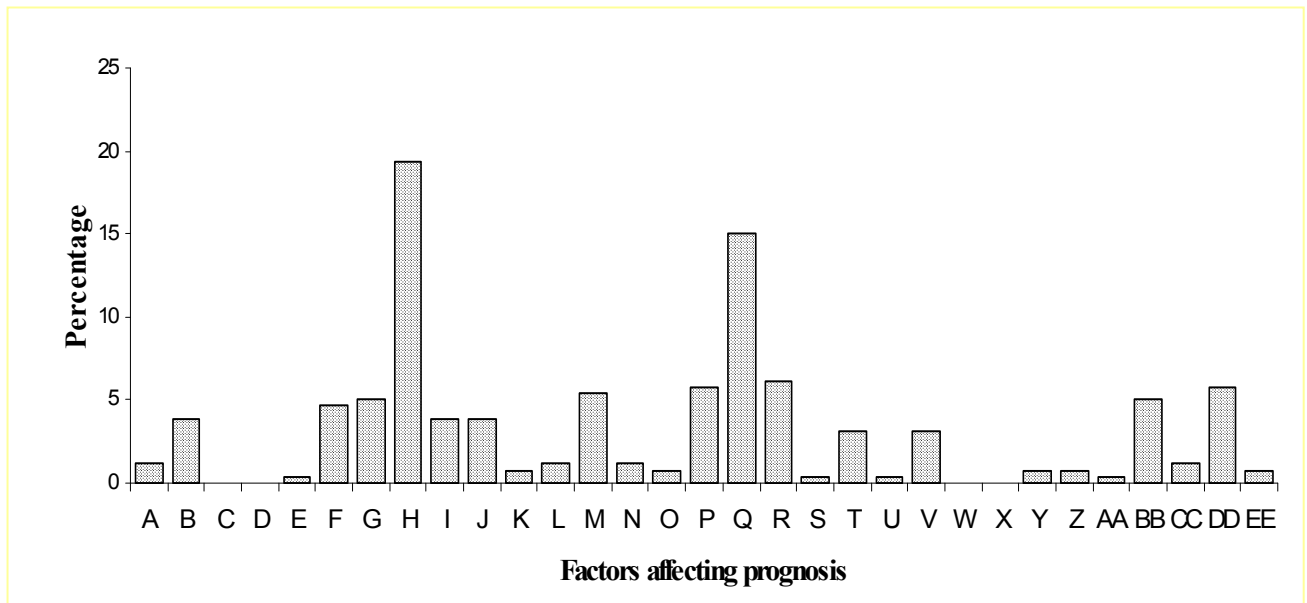
Table 19 Goal achievement at discharge for each trust

Trust code		Goal achievement at discharge												
		A	B	C	D	E	F	G	H	I	J	K	L	M
A	(n=36)	8	-	-	17	1	1	-	-	5	1	-	3	-
B	(n=18)	3	1	1	5	1	4	1	-	2	-	-	-	-
C	(n=29)	3	1	-	6	5	10	1	-	-	1	-	1	1
D	(n= 9)	4	-	-	1	1	1	-	-	1	-	-	1	-
E	(n= 5)	-	-	-	1	2	-	-	-	1	-	1	-	-
F	(n=42)	2	1	-	28	2	8	1	-	-	-	-	-	-
G	(n=19)	3	-	-	6	2	4	1	1	2	-	-	-	-

Factors affecting prognosis

Physiotherapists recorded up to 3 factors affecting each patient's prognosis (from a list of 31 possible factors including pre-existing factors; factors at time of accident; at time of initial assessment; at one to two weeks post injury and psychological factors). The frequency of these factors, for all patients, are displayed in figure 32. Interestingly being female appears to be the highest factor affecting prognosis, but this would need further investigation to clarify why this is the case.

Figure 32 Factors affecting prognosis



Codes:-

A = Bilateral neurological signs and symptoms
 B = Severe neck & arm pain
 C = Breathing difficulties
 D = Difficulty supporting the head
 E = Deformity
 F = Headache
 G = Age / degenerative changes
 H = Female
 I = State of preparedness for crash
 J = Rotate / inclined head position at impact
 K = Head trauma
 L = Head restraints
 M = Severe neck symptoms
 N = Immediate onset intense headache
 O = Radicular symptoms
 P = Multiple symptoms

Q = Initial neck movement restriction
 R = Sleep disturbance
 S = Radiological abnormalities
 T = No indication of improvement
 U = Getting progressively worse
 V = Not involved in usual daily responsibilities
 W = Seeking more drugs
 X = Becoming more dysfunctional
 Y = Symptom magnification
 Z = Becoming depressed
 AA = Somatisation
 BB = Anxiety
 CC = Psychological traits (depression)
 DD = Litigation
 EE = No indication of prognosis

Goal achievement at discharge by most commonly reported body sites

The majority of patients' goals were "fully achieved" within 1-6 treatments, as shown below.

Table 20 Goal achievement at discharge by the most commonly reported body sites

Goal	No. of treatments	Cervical spine + ref to shoulder	Cervical spine
Goals exceeded	1 – 6	8 %	14 %
	7 – 12	2 %	
	13 – 18		
	19 +		
Goals fully achieved	1 – 6	44 %	58 %
	7 – 12	14 %	
	13 – 18		
	19 +		
Goals significantly achieved	1 – 6	12 %	18 %
	7 – 12	2 %	2 %
	13 – 18	2 %	
	19 +		
Goals partially achieved	1 – 6	10 %	4 %
	7 – 12	2 %	
	13 – 18		2 %
	19 +		
Goals not achieved	1 – 6	4 %	
	7 – 12		
	13 – 18		
	19 +		2 %
Other (i.e. worse)	1 – 6		
	7 – 12		
	13 – 18		
	19 +		

Outcome of referral by diagnosis

The outcomes of referral by diagnosis for all the patients are displayed in table 21.

Table 21 Outcome of referral by diagnosis

Outcome of referral code	Diagnosis								
	Cervical & thoracic	Cervical	Headache	Facet joint	Ligamentous damage	Soft tissue	Muscle tightness	Muscle pain	Joint pain
A	-	-	-	2	-	1	1	-	-
B	-	2	1	3	1	2	3	1	4
C	2	1	-	1	-	3	-	-	-
D	-	1	-	-	-	1	1	-	-
E	-	-	-	-	-	-	-	-	-
F	-	4	-	6	-	6	3	3	-
G	10	14	-	34	2	20	7	6	8

Codes:-

A = Treatment not commenced (DNA)

B = Treatment interrupted (FTA)

C = Treatment interrupted (UTA)

D = Transferred outside district

E = Assessment completed, no physiotherapy required

F = Assessment completed, advice re self care given

G = Treatment completed, regular discharge

Number of treatments this episode per physiotherapist grade

Treatment numbers for this episode by grade of therapist are shown in table 22. As would be expected, there is a downward trend by grade in terms of the number of treatments per episode of care indicating less treatment is required if treatment is being given by more experienced clinicians. It is likely that the Clinical Specialists were seeing more complex patients.

Table 22 Number of treatments this episode by grade of physiotherapist

Grade	Mean	Min	Max
Junior (n=39)	5	1	15
Senior II (n=55)	3.8	1	10
Senior I (n=53)	3.8	1	9
Super IV (n=7)	2.8	1	5
Super II (n=1)		1	1
Super III (n=6)	2.7	1	4
Extended Scope Practitioner (n=2)	3.5	3	4
Clinical Specialist (n=2)	4.5	3	6
Assistant (n=1)		9	9
Student (n=7)	5.7	2	15

Average number of treatment sessions for each WAD grade

Tables 23 and 24 display the number of treatment sessions this episode per WAD classification for all patients, and for each trust (respectively).

Table 23 Number of treatment sessions this episode by WAD classification for all patients

Number of treatment sessions				
WAD classification	n =	Mean	Min	Max
I	18	3.1	1	9
II	106	3.5	1	10
III	26	5.1	1	15
IV	1		12	

Table 24 Number of treatment sessions this episode by WAD classification for each Trust

Number of treatment sessions					
WAD	Trust code	n =	Mean	Min	Max
I	A	5	2.2	1	4
	B	1	-	-	5
	C	5	5.2	2	9
	D	-	-	-	-
	E	1	-	-	4
	F	4	1.2	1	2
	G	2	3	3	3
II	A	23	3.5	1	6
	B	13	4.6	1	9
	C	16	3.5	2	7
	D	3	4.6	2	7
	E	5	5.6	2	10
	F	35	2.3	1	9
	G	11	5.0	2	10
III	A	8	4.0	1	6
	B	2	3.5	3	4
	C	5	5.8	2	8
	D	4	4.0	3	6
	E	1	-	-	4
	F	4	6.7	5	9
	G	2	9.5	4	15
IV	A	-	-	-	-
	B	-	-	-	-
	C	1	-	-	12
	D	-	-	-	-
	E	-	-	-	-
	F	-	-	-	-
	G	-	-	-	-

Percentage of acute / chronic patients for each WAD grade

The percentages of patients (acute/chronic) for each WAD classification are shown below in table 25.

Table 25 Patients displayed by WAD grade and injury type (acute or chronic)

WAD		n =	Percent
I	Acute	10	50
	Chronic	10	50
II	Acute	67	56
	Chronic	52	44
III	Acute	12	41
	Chronic	17	59
IV	Acute	0	0
	Chronic	1	100

Initial functional, physical and subjective assessment for each WAD grade

The initial assessments of functional, physical and subjective status are displayed for each WAD grade in table 26 (for outcome codes see page 38).

Table 26 Initial functional, physical and subjective status for each WAD grade

	WAD I	WAD II	WAD III	WAD IV
Initial assessment code	Percent	Percent	Percent	Percent
1	-	1	-	-
2	-	3	4	-
3	-	15	32	-
4	5	7	18	100
5	16	25	29	-
6	11	14	8	-
7	11	19	3	-
8	20	9	-	-
9	37	7	3	-
10	-	-	3	-
	100%	100%	100%	100%

Expected functional, physical and subjective outcome for each WAD grade

The expected outcomes are displayed for each WAD grade in table 27 (for outcome codes see page 38).

Table 27 Expected functional, physical and subjective outcome for each WAD grade

	WAD I	WAD II	WAD III	WAD IV
Expected outcome code	Percent	Percent	Percent	Percent
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	2	-	-
5	-	2	4	-
6	-	4	11	-
7	-	9	14	-
8	16	14	25	-
9	37	33	25	-
10	47	36	21	100
	100%	100%	100%	100%

Actual functional, physical and subjective outcome for each WAD grade

The actual outcomes are displayed for each WAD grade in table 28 (for outcome codes see page 38).

Table 28 Actual functional, physical and subjective outcome for each WAD grade

	WAD I	WAD II	WAD III	WAD IV
Actual outcome code	Percent	Percent	Percent	Percent
1	-	1	-	-
2	-	-	-	-
3	-	1	4	-
4	-	2	4	-
5	-	3	4	-
6	-	7	4	-
7	-	5	15	-
8	16	12	22	-
9	53	43	33	100
10	31	26	15	-
	100%	100%	100%	100%

Goal achievement at discharge for each WAD grade

For each WAD grade, the goal achieved at discharge is shown in table 29.

Table 29 Goal achieved at discharge for each WAD grade

	WAD I	WAD II	WAD III	WAD IV
Goal achieved at discharge	Percent	Percent	Percent	Percent
Goals exceeded (1-6 treatments)	12	13	21	-
Goals exceeded (7-12 treatments)	-	2	4	-
Goals exceeded (13-18 treatments)	-	-	-	-
Goals exceeded (19+ treatments)	-	1	-	-
Goals fully achieved (1-6 treatments)	58	46	14	-
Goals fully achieved (7-12 treatments)	12	6	14	-
Goals fully achieved (13-18 treatments)	-	-	-	-
Goals fully achieved (19+ treatments)	-	-	-	-
Goals significantly achieved (1-6 treatments)	12	20	14	-
Goals significantly achieved (7-12 treatments)	-	1	7	100
Goals significantly achieved (13-18 treatment)	-	-	4	-
Goals significantly achieved (19+ treatments)	-	-	-	-
Goals partially achieved (1-6 treatments)	6	5	14	-
Goals partially achieved (7-12 treatments)	-	2	-	-
Goals partially achieved (13-18 treatments)	-	1	-	-
Goals partially achieved (19+ treatments)	-	-	-	-
Goals not achieved (1-6 treatments)	-	2	8	-
Goals not achieved (7-12 treatments)	-	-	-	-
Goals not achieved (13-18 treatments)	-	-	-	-
Goals not achieved (19+ treatments)	-	1	-	-
Other, i.e. worse etc (1-6 treatments)	-	-	-	-
Other, i.e. worse etc (7-12 treatments)	-	-	-	-
Other, i.e. worse etc (13-18 treatments)	-	-	-	-
Other, i.e. worse etc (19+ treatments)	-	-	-	-
	100%	100%	100%	100%

Summary

The standardised data collection period of one year has been a useful exercise for the Trusts involved. It has meant that considerable dialogue has taken place between the Trust representatives themselves and the clinical teams.

The information presented in this report will serve as useful baseline data in which to set standards of care in practice; as comparative data for other Trusts and will facilitate audit activities in relation to clinical effectiveness. It is hoped also that the data will provide a stimulus for the production of a series of informed research questions, and stimulate further research activity.

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