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INDUSTRIAL INJURIES ADVISORY COUNCIL

POSITION PAPER 18

BACK AND NECK PAIN

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Back and neck pain

SUMMARY

1. This position paper sets out the Industrial Injuries Advisory Council's (IIAC) position on the potential prescription for back and neck disorders. Back and neck pain are important common problems affecting many workers: 60–80% of people report having had back pain at some stage in their life. There is a large literature on back and neck pain and its associated risk factors. Multiple work-related risk factors have been implicated as causing or aggravating back and neck pain, including physical factors (e.g. awkward posture) and psychosocial factors (e.g. lack of social support).

2. Back and neck pain are sometimes disabling. However, in most cases symptoms resolve relatively quickly and without prolonged disability. Many people experience recurring episodes of back and neck pain over their lifetime, but only a minority become chronically disabled.

3. IIAC has identified significant barriers to prescription, including problems with diagnosis. Back and neck pain are symptoms, and not diseases. The pathological and anatomical origins of back and neck pain tend to be unclear in all but a few specific cases. Poor correlations exist between symptoms of back and neck pain and pathological changes found on X-rays and MRI scans of the spine. For these reasons, objective diagnosis and verification of back and neck symptoms is difficult in many cases.

4. Owing to the inherent difficulty with case definition and diagnosis, IIAC is presently unable to recommend prescription for back and neck pain. However, injuries to the back and neck, occurring as a result of an identifiable accident, continue to be covered under the accident provisions of the Industrial Injuries Disablement Benefit (IIDB) Scheme.

5. Spinal pain caused or aggravated by work is an important occupational health issue and IIAC will continue to monitor emerging research evidence, especially that relating to more robust means of diagnosis.

6. Reform of the IIDB Scheme is currently being considered, including the possibility of a greater focus on vocational rehabilitation and support. Research suggests back pain may be one disorder where rehabilitation could be used effectively to enable people to remain in work. This position paper also highlights several preventative measures to combat back and neck pain.

BACKGROUND TO THIS REPORT

7. In recent times there has been growing concern about the large potential toll of work-related musculoskeletal illness in Britain. The Health and Safety Executive (HSE) estimates that during 2005/6 around one million people had a musculoskeletal disorder that they believed was caused or made worse by work, the main anatomical site of complaint being the back (437,000 work-attributed cases).

8. Given this background, IIAC has undertaken an investigation to review whether, and under what circumstances, it might be possible to extend the schedule of prescription under the Social Security Contributions and Benefits Act 1992 to include complaints of back pain and neck pain related to work.

9. This position paper sets out the legal and pragmatic framework generally used by the Council in decision-making, and discusses its application to the potential prescription of work-related back and neck pain.

THE ROLE OF THE INDUSTRIAL INJURIES ADVISORY COUNCIL

10. IIAC is an independent statutory body set up in 1946 to advise the Secretary of State for Social Security on matters relating to the IIDB Scheme. The major part of the Council's time is spent considering whether the list of prescribed diseases for which benefit may be paid should be enlarged or amended.

THE LEGAL AND PRACTICAL REQUIREMENTS FOR PRESCRIPTION

11. The Social Security Contributions and Benefits Act 1992 states that the Secretary of State may prescribe a disease where he is satisfied that the disease:

- ought to be treated, having regard to its causes and incidence and any other relevant considerations, as a risk of the occupation and not as a risk common to all persons; and
- is such that, in the absence of special circumstances, the attribution of particular cases to the nature of the employment can be established or presumed with reasonable certainty.

12. In other words, a disease may only be prescribed if there is a recognised risk to workers in an occupation, and the link between disease and occupation can be established or reasonably presumed in individual cases.

13. In seeking to address the question of prescription for any particular condition, the Council first looks for a workable definition of the disease. It then searches for a practical way to demonstrate in the individual case that the disease can be attributed to occupational exposure with reasonable confidence.

14. For this purpose, reasonable confidence is interpreted as being based on the balance of probabilities. It may be possible to ascribe a disease to a particular occupational exposure from the specific clinical features of the disease. For example, a disease may only occur due to occupational exposures (e.g. coal workers' pneumoconiosis) or there may be highly specific tests for work causation (as is often the case for occupational asthma). However, for many disorders that concern the Council, including back and neck pain, there is no reliable way to distinguish occupationally related from non-occupationally related cases.

15. Attribution to occupation on the balance of probabilities then rests on epidemiological evidence that work in the prescribed job, or with the prescribed occupational exposure, increases the risk of developing disease by a factor of two or more, as set out in previous reports of the Council.

16. Certain other practical conditions need to be met before IIAC can recommend prescription:

- the disease must be capable of definition and diagnosis with some reasonable degree of confidence;
- that diagnosis should be possible without the need to subject claimants to expensive or invasive tests or procedures;
- the disease must be serious enough to cause a meaningful degree of disability;
- it should be feasible to confirm the relevant exposures in the schedule within the constraints of the Scheme.

17. In reviewing the question of prescription for back and neck pain, the Council first considered these practical issues. As is customary, a public and professional call for evidence was also issued. However, the Council did not proceed to its usual detailed review of the scientific literature for reasons described below.

FREQUENCY, NATURAL HISTORY AND IMPACT

Low-back pain

18. Low-back pain (LBP) is one of the commonest conditions afflicting adults of working age. It represents a leading cause of short- and sometimes long-term disability and a major cause of sickness absence and health care consumption. In the UK, the total annual cost of LBP to the National Health Service is said to exceed £500 million.

19. Estimates of disease frequency depend upon case definition (e.g. the precise location of pain; its duration, frequency, or functional impact; and the time period of reference). However, some 17% to 31% of adults have LBP at any given point in time, 19% to 43% have had it recently (in the past 2 weeks to 3 months) and the lifetime prevalence runs at 60% to 80%.

20. Symptoms can manifest early in life. Surveys of young adults entering first employment suggest that LBP is already common and often predates work. The prevalence of symptoms rises only modestly with age and duration of employment thereafter.

21. In some people, episodes of LBP recur, and it has been estimated that 20% of those with LBP will continue to have symptoms of some degree over long periods of their life, while 5–7% will report these as chronic illness. However, most episodes of LBP are short-lived and resolve within 4 weeks. In such cases relapse is all too frequent and many studies have shown that LBP tends to run a relapsing, episodic, recurrent course throughout life.

22. Individual episodes of LBP can be severely disabling. However, most episodes do not cause major or prolonged disability, and the overlap between symptoms, disability, lost work time and healthcare-seeking is only approximate. In general, patients who consult a GP have a similar pattern of symptoms to non-consulters; and the best predictor of future work loss is a past history of work loss.

Neck pain

23. Neck pain in the general population presents a similar picture to LBP. According to various international studies, two-thirds of adults experience neck pain at some time, while 14% to 23% have symptoms lasting more than three months. A study from the UK estimated the prevalence of neck pain lasting more than a week in the past four weeks to be about 14%. Symptoms tend to be reported more often by older subjects, with a peak sometimes described in mid-life.

24. Population-based follow-up studies in Canada, the Netherlands, and the UK suggest that chronic neck pain, like LBP, is a relapsing recurring condition with many individuals shifting their status over time. In one survey, 15% of those initially free of neck pain developed new symptoms over the next 12 months, but just 0.6% of the cohort became disabled. Among subjects who had neck pain initially, only a third became completely symptom free a year on, a further third reported persistence, almost 10% experienced an aggravation of symptoms, and a fifth had recurrent episodes of discomfort. In a two-year follow-up study of service workers 17–18% reported new symptoms, a third reported symptoms at each time point; and two-thirds reported recurrent episodes but few of these were classified as disabled.

SOURCES OF PAIN AND DIAGNOSIS

25. In the overwhelming majority of presentations the pathological and anatomical origin of LBP is unclear. Many structures in and around the lumbar spine, and in the peripheral and central nervous system, can give rise to pain. Establishing the source of symptoms in a given case is fraught with uncertainty, even following the application of invasive tests or sensitive imaging methods.

26. Age-related changes are readily discoverable on X-rays of the lumbar spine after the age of 30 years, irrespective of the back pain history. In a classical study of residents of Leigh, Wensleydale, Watford and the Rhondda, Lawrence found that 74% of men and 59% of women aged 35 years and over had some degree of disc degeneration ('wear and tear') on plain X-rays of the lumbar spine, and that 51% and 49% respectively had detectable changes in the cervical spine. Severe changes were less common (e.g. 21% of men had severe lumbar disc degeneration affecting at least one spinal level) and more often symptomatic, but the relation with pain was fairly weak. Moreover, the clinician's assessment of lumbar spinal degeneration had a poor correspondence with the findings on X-ray.

27. Modern imaging methods enable an even wider variety of abnormalities to be detected (e.g. bulging, protrusion and herniation of the discs between vertebrae; compression of nerve roots emerging from the spine; tears of the posterior annulus; arthropathy of the facet joints). Recent studies confirm (as with X-ray changes) that these abnormalities are common even in those without symptoms. Thus, when Bodin *et al.* assessed 67 asymptomatic 20–80 year-olds with MRI they found that 20% of under 60 year-olds and 36% of over 60 year-olds had at least one herniated disc. Ernst *et al.* reported disc bulges in 73% of asymptomatic patients and disc protrusions (a more severe form of bulging) in 50%. Boos *et al.* found disc protrusions in 63% of an asymptomatic control group who reported physical risk factors in their occupational history and Weishaupt *et al.* found disc bulges and protrusions in a similar proportion of their symptom-free study sample.

28. Rare and more severe progressions of disc prolapse (e.g. disc extrusion and sequestration) may have more specific associations with LBP, and this is currently an area of active research (see paragraph 52).

29. The position for neck pain is similar to that for LBP. Although the International Association for the Study of Pain (IASP) recognises about 60 sources of neck pain, the origin of symptoms is typically unclear. The IASP defines three categories as common – 'cervical spinal pain of unknown origin' (neck pain in the absence of a clear diagnosis), zygapophyseal joint pain, and pain arising from the disc – but underlying pathology is difficult to distinguish clinically in the absence of invasive tests or rare special circumstances.

30. Findings on clinical examination (e.g. tender points, restricted neck movement) are more common in those with symptoms, but not specific. Signs can also be found in those without neck pain, and in population samples the correlation between signs and symptoms tends to lie along a continuum, rather than in sharply distinct diagnostic groups. As with LBP, there seems to be only a weak correlation between X-ray appearances and disabling neck pain symptoms. In the absence of reliable clinical pointers and a clear understanding about the origin of symptoms, approaches to the classification and diagnosis of neck pain have differed, with confusing variations in practice. Abnormalities can readily be detected on modern imaging in those without symptoms.

RISK FACTORS

Low-back pain

31. Many factors, both occupational and personal, are associated with LBP, although associations have not always been strong or consistent between research inquiries. Predisposing personal characteristics include: older age, female sex, smoking, low physical fitness, extremes of height, lumbar mobility and pre-existing spinal abnormalities. In addition, psychological factors such as low mood, health anxiety and 'distress' can be predictive of new episodes of LBP, persistence of symptom episodes, and disability from LBP with healthcare-seeking. Certain pessimistic ('fear-avoidance') beliefs are also thought to favour non-recovery and among those in work, associations have been found with certain perceptions about the workplace psychosocial environment (high work demands, low support from colleagues and supervisors, low personal control over work, job dissatisfaction etc.).

32. Physical exposures at work may also cause or aggravate symptoms. Potentially relevant physical risk factors include lifting, forceful movements, exposure to whole-body vibration and awkward working postures.

33. A considerable body of research evidence exists on occupational physical risk factors and back pain. Thus, for example, a systematic review by the US National Institute for Occupational Health (NIOSH) concluded that there was 'strong evidence' that lifting and whole-body vibration cause LBP, 'some evidence' that heavy physical workload and awkward posture were linked with symptoms, and 'insufficient evidence' for static work posture. Much of the evidence was assembled from self-reported symptoms, but surgical admissions for the more severe category of disc prolapse seem also to be more common in those who lift or drive occupationally.

34. It should be noted, however, that NIOSH, while looking for a general consistency of research findings, did not report the evidence from the standpoint of a doubling of risk, as the Council requires for prescription.

35. LBP tends to be reported somewhat more often by people in heavy manual occupations, and workers in these jobs tend to lose significantly more time from work during episodes of LBP. However, LBP is common even in white-collar settings, and some authorities consider that physical risk factors account for only a small proportion of the observed overall (multi-factorial) effect.

Neck pain

36. Neck pain is similarly multi-factorial. Non-occupational associations have been reported with gender, obesity, smoking habits, concurrent pain at other anatomical sites, mental distress, and poor self-rated health. In addition, systematic reviews have identified varying levels of evidence that work activities (e.g. prolonged static loading of the neck-shoulder muscles, extremes of working posture involving the neck-shoulder musculature, highly repetitive work, and work with forceful exertion of the upper limb) can cause or aggravate neck pain, including neck pain with tenderness.

ISSUES RELATED TO PRESCRIPTION

Problems of case verification

37. A fundamental concern in the context of prescription is the issue of case verification. LBP and neck pain are symptoms and not diagnoses.

38. The foregoing paragraphs highlight the limitations of diagnostic tests to define underlying pathology and the substantial false positive rates (positive tests in those without symptoms) that can arise.

39. In recent times such limitations over diagnosis have prompted a pragmatic approach in routine clinical care. Simple filter questions are used to identify, among the many with symptoms, the few who might benefit from additional investigation. A small minority of patients with troublesome symptoms (especially those suggestive of nerve root compression) undergo scans, and the concurrence of symptoms and a consistent scan abnormality may encourage surgical intervention. However, even in such cases, important problems of clinical interpretation arise. In a recent study of 57 patients with back and leg pain confined to one side, MRI abnormalities were found on the symptomatic side in 73% of cases, but also on the asymptomatic side in 33%. In two-thirds of patients there was no exact match between the level of injury predicted by the examination and the level of abnormality on MRI.

40. The large majority of cases of 'mechanical' 'non-specific' back or neck pain (back or neck pain of uncertain origin) are lumped together and treated on the basis of reported symptoms and reported disability, without further tests. Researchers have followed a similar approach – for the most part, case definitions are based on self-report of symptoms in standard questionnaires. Thus, pragmatically, at present, clinicians and researchers deal with patients and their symptoms.

41. However, the Council considers that, in the context of the Scheme, cases would normally need to be confirmed by more objective means than a simple history of symptoms.

42. Given the limitation of modern imaging methods, other possible approaches to case verification were explored, including: careful physical examination by an experienced clinician (to discover, for example, evidence of local tenderness, pain on movement, or painfully restricted movement); the administration of a standardised disability questionnaire; and formal 'Functional Capacity Evaluations' for LBP (such as the shuttle walk test, the 'five minutes of walking' test and the 'one minute of stand up' test). However, each of these is wanting as an independent measure of outcome. Each would rely on the claimant's input and co-operation and their account of affairs, and so would at best be semi-objective; and evidence on the reliability of clinical and functional assessment seems strictly limited.

Natural history

43. A different kind of challenge is posed by the intermittency of symptoms. Many episodes of work-associated LBP and neck pain are short-lived in terms of disability. Many will recur, but recurrences are hard to predict with the same reliability as for some other prescribed diseases with intermittent manifestations (e.g. occupational asthma when working with a provoking sensitiser).

44. Although short-term time-limited awards can be made under the Scheme, the high frequency of back and neck pain and their intermittent natural history would pose a logistic challenge in assessment and in payment. While alone such considerations are a barrier to prescription, they would not preclude it.

Accidental injury

45. In order for a condition to be added to the list of prescribed diseases it needs to have diagnostic features that are defined and can be clearly demonstrated. The causes of back and neck pain are varied and may often be unclear. Even specialist medical opinion may disagree in individual cases. The absence of diagnostic features definable in individual cases is a barrier to prescription.

46. However, personal injury arising from a specific accident (or series of accidents) can be considered under the accident provisions of the IIDB Scheme. The accident provisions include accidental injury to the back and neck, either to the bone or to the soft tissues. Initially the test is one of fact as to whether an accident did or did not occur, and provided an accident or series of accidents can be identified, then any disability arising from the injury incurred may be assessed.

47. Soft tissue accidental damage (the most common type of accidental injury) is not often permanent. Subsequent bouts of back or neck pain are thus not necessarily related to the original event, but may be a manifestation of the frequent and recurrent nature of back and neck pain in the population as a whole.

ASSESSMENT OF THE EVIDENCE

48. The Council recognises that LBP and neck pain are common important problems that affect many workers. It also recognises a body of research evidence suggesting that physical activities at work may cause or aggravate such pains in some individuals and to some extent.

49. However, a practical issue that precedes full review of the very large scientific literature relating LBP or neck pain to activities in the workplace is whether the diagnosis can be substantiated in relation to prescription. The considerations in paragraphs 25 to 30 suggest that one important precondition for prescription – that of robust diagnosis – would be hard to meet. In particular, it seems unlikely that the symptoms could be confirmed independently of the claimant's own account. (Therefore there would also be a high risk of disagreement between different observers).

50. Given this inherent limitation, the Council decided not to pursue a full literature review. It has concluded that further consideration of prescription is currently ruled out because the diagnosis rests on a self-report of LBP or neck pain with no robust and effective process for independent corroboration. However, workers injured as a result of acute trauma to the spine will continue to be compensated by the Scheme's accident provisions.

51. The Council notes that several other European countries have scheduled back and neck disorders for prescription – a common focus being on the outcomes of degenerative disc disease or disc prolapse on the one hand and the exposures of heavy lifting and whole body vibration on the other. The possibility of prescribing in these terms was considered but rejected, primarily because of problems of case definition and case verification.

THE FUTURE

52. The Council learned during its inquiries that current research effort by the Medical Research Council in Southampton is directed at discovering whether any MRI appearances show a sufficiently specific relation to LBP to be useful in defining a subset of cases with underlying pathology. This may offer a potential way forward for the future. The challenge would then lie in amassing epidemiological evidence of a doubling of risk for these outcomes in relation to specific occupational exposures that could be verified within the Scheme.

53. Such outcomes would need to be sufficiently uncommon as to pass the 'doubling of risk' test. It should be noted that for case definitions that are extremely frequent in the general population, it becomes difficult or impossible to demonstrate a doubling of risks and so to make occupational attribution 'on the balance of probabilities'.

54. Currently, consultations are underway about the future structure of the IIDB Scheme, including the potential to deploy resources to aid vocational rehabilitation. Back pain is a condition that might be targeted under such a configuration. Research evidence suggests that the longer a person is off work with LBP the greater the likelihood of long-term health-related unemployment. Many authorities believe that more intensive and earlier efforts at rehabilitation are required in sub-chronic cases (e.g. those with 6 to 12 weeks of sickness absence) to avoid this outcome. The challenge of corroborating diagnosis would be no less great in such cases, but would be less important in the context of functional rehabilitation, as would the distinction between symptoms caused as compared with symptoms aggravated by work. Arguably, such a use of funds could be beneficial to employers and employees alike and cost-effective from the taxpayer's perspective.

55. In any event, the Council recognises the necessity to monitor future research in this important area of public and occupational health.

PREVENTION

56. Prevention is an important but complex issue, given that psychological factors (including the patient's own beliefs and expectations) can contribute to the overall pattern of illness.

57. Aside from managing any contributory pyscho-social issues, recommended preventative measures include involving employees in assessing the risks and finding ways to avoid or reduce them, and providing training and information to the workforce. In addition steps taken to reduce manual handling and bending and twisting in the workplace can help those with back pain continue working or return to work earlier following an episode of back pain.

58. However, it is also acknowledged that it is not possible for employers to prevent all back pain, so early reporting of symptoms, proper treatment and suitable rehabilitation are essential. It is important for workers with back pain to get back to work as soon as possible. Employers need to carry out a new risk assessment when back pain sufferers return, to check whether changes need to be made to the tasks they do. Full recovery is aided, in some more difficult cases, by gradually returning them to normal work.

59. Under the Manual Handling Operations Regulations employers have specific duties to avoid the need for hazardous manual handling, so far as is reasonably practicable, to assess the risks of injury from any such manual handling that cannot be avoided and to reduce the risk of injury, so far as is reasonably practicable.

60. Risk factors for neck pain are multi-factorial and prevention is less well studied or understood. However, the same general approach may be helpful. Problems should be pro-actively identified then eliminated at source if this is practicable; i.e. does the task have to be performed in the way it is, or could it be automated? Again, employees should contribute to the design of risk reduction strategies for a specific task or tasks on which they work.

61. For neck pain, as for most work-related musculoskeletal disorders, effective risk reduction strategies involve changes to the task, the individual or work group and/or the environment:

- Changes to the task may include redesign of the workstation or the equipment used to perform the task. Job rotation between employees is often used to decrease an employee's exposure to a specific risk if that risk cannot be eliminated.
- Changes to the individual or work groups may involve providing the correct training and information in order for them to perform their tasks. However, provision of training should be used to complement other risk reduction strategies and not as the only control measure.
- Changes to the working environment may involve modifying the working temperature, lighting levels or an employee's exposure to draughts or cold air movements. Changes to influence the psychosocial environment may be required which may involve a review of work organisation, working hours or the scheduling of breaks.

62. Again, these measures may also help those with neck pain continue working or return to work earlier following an episode of neck pain.

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