Bandolier 19

Evidence-based health care **First published September 1995**

BACK PAIN

Bandolier has been asked by a number of readers to seek out information on back pain and its treatment. This is a complex subject of great importance. There are useful publications which are both useful guides into the literature and which also provide useful guidance for purchasers and providers.

The two major publications reviewed are from the Clinical Standards Advisory Group (CSAG) and are available from HMSO. They are complementary: one examines the epidemiology and cost of back pain [1] while the second develops management guidelines [2].

How big is the problem?

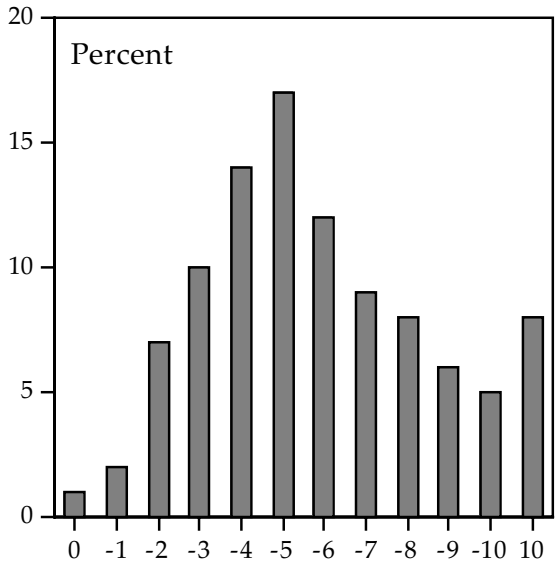
Very big. The sheer amount of information presented for the epidemiology of back pain [1] is staggering, but fascinating. Most people with back pain have moderate to severe pain.
The overall numbers, from population prevalence to those having surgery, are shown below.

Getting bigger!

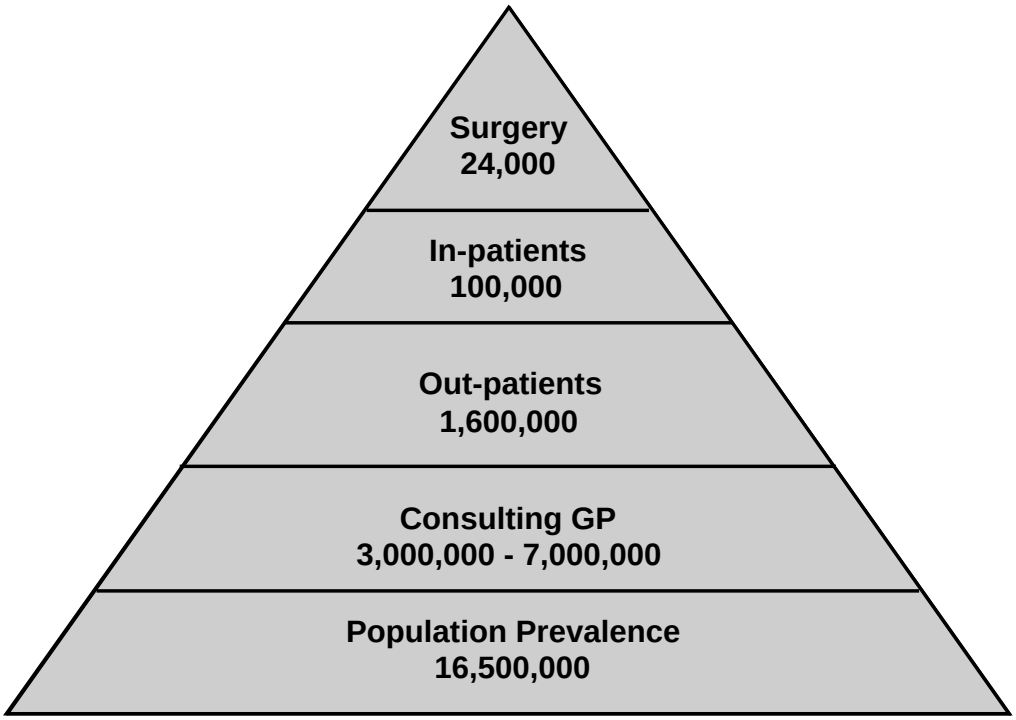
The evidence from Britain and elsewhere is that back pain is becoming a bigger problem - not that there is any evidence of changing pathology, but rather due to changed attitudes and expectations. This trend has been particularly noticeable since the mid '80s. The total number of days in Britain for back incapacity obtained through sickness and invalidity benefit has risen dramatically in recent years:-

The British experience is by no means unusual, with other countries seeing an even steeper rise to higher levels.

Severity of back pain in the general population



Back pain and the NHS in one year



Year	Total number of days (million)
1955	8
1965	14
1975	20
1985	35
1991/2	81

Age

The peak incidence of back pain and sciatica occurs at about age 40-60. Age of onset is spread relatively evenly from 16 years to the early 40s, gradually declines thereafter and is uncommon after the mid fifties. In those who continue to have back pain it is more likely to be more frequent or constant with increasing age.

Sex

There is little difference in the incidence of back pain in men and women.

Co-morbidity

Up to 60% of people with low back pain also have some neck symptoms. Back pain is commonly associated with other complaints.

Social class

There is conflicting evidence for a relationship between prevalence of low back pain and disability and lower social class. This may largely be related to manual and non-manual occupations.

Occupation

There is general though not unanimous agreement that back pain is more common in people in heavy manual occupations who undertake heavy lifting. People in such jobs take significantly more time off work with back pain.

Smoking

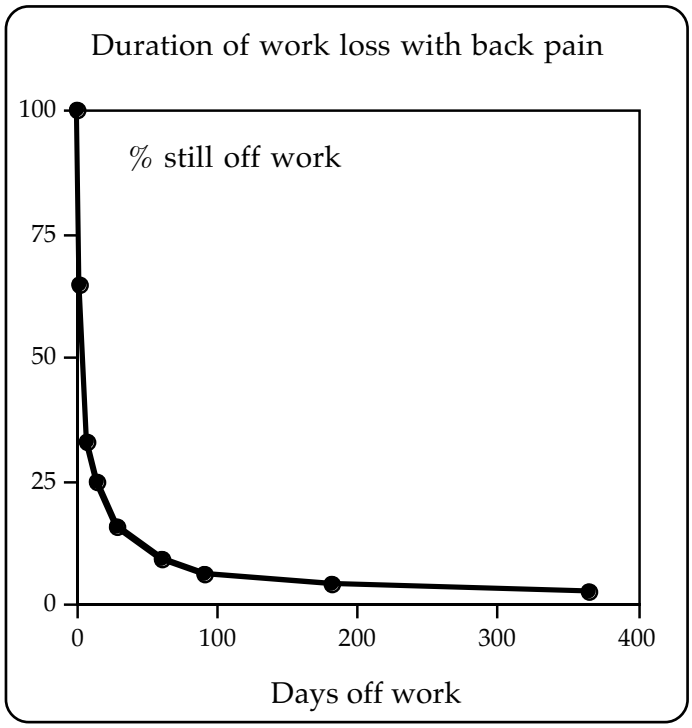
There is considerable evidence of an increased prevalence of low back pain associated with smoking. This may be due to coincide with a complex set of demographic social and lifestyle factors.

Disability and work loss

Surveys show that 6% of employed people with back pain lost at least one working day because of back pain in the previous four weeks. This is equivalent to 1.9% of all employed people losing at least one day in four weeks, and includes 0.3% who were off for the entire four weeks. The estimate of total working days lost in Britain is 52 million (with 95% confidence intervals of 35-69 million days).

Half the total days lost due to back pain are due to the 85% of people who are off work for short periods of less than seven days, and half by the 15% of people who are off work for more than one month.

The longer a person is off work with back pain, the lower their chance of returning to work. After six months there is about a 50% chance of returning to work; this has fallen to about 25% at one year and 10% by two years.



Costs

The estimated cost to the NHS is £481 million a year (min-max range £356 - 649 million), with non NHS costs (such as private consultations and prescriptions) being an additional £197 million.

Costs of DSS benefits is estimated at about £1.4 billion with lost production estimated at £3.8 billion.

This breaks down to an annual NHS cost to a purchasing authority of 250,000 people of £2.2 million (range £1.6 - £2.9 million). A typical GP practice with five GPs and 10,000 patients would bear costs of about £88,000 (range £65,000 - £118,000).

Management guidelines for acute back pain

An overview of the management guidelines for acute back pain is given in the box on page 4. The document from which these are taken [2] develops the background to these ideas and provides two useful algorithms to back this up.

The first algorithm is for diagnostic triage, which includes red flags for possible serious spinal pathology and nerve root problems. The second algorithm is for the primary care management of simple backache, which stresses early activity. Both are easy to follow.

Overview of management guidelines for acute back pain

Initial consultation

Diagnostic triage
- simple backache
- nerve root pain -- urgent referral
- serious spinal pathology -- urgent referral

Early management strategy

Aims: symptomatic relief of pain, prevent disability

Prescribe simple analgesics, NSAIDS
- avoid narcotics if possible and never more than 2 weeks

Arrange physical therapy if symptoms last more than a few days
- manipulation
- active exercise and physical activity
  - modifies pain mechanisms, speeds recovery

Advise rest only if essential: 1-3 days
- prolonged bed rest is harmful

Encourage early activity
- activity is not harmful
- reduces pain
- physical fitness beneficial

Practise psychosocial management; this is fundamental
- promote positive attitude to activity and work
- distress and depression

Advise absence from work only if unavoidable; early return to work
- prolonged sickness absence makes return to work increasingly difficult

Biopsychosocial assessment at 6 weeks

Review diagnostic triage
ESR and X-ray lumbosacral spine if specifically indicated
Psychosocial and vocational assessment

Active rehabilitation programme

Incremental aerobic exercise and fitness programme of physical reconditioning
Behavioural medicine principles
Close liaison with the workplace

Secondary referral

Second opinion
Vocational assessment and guidance
Pain management
Rehabilitation
Surgery

Final outcome measure: maintain productive activity; reduce work loss

Benefits

The authors of the CSAG report have done some interesting economic modelling of the effect of the management guidelines and service recommendations on NHS resource use. The analysis is based where possible on the results of controlled trials.

It is not a straightforward analysis, because there are implications both for savings and for redistribution of resources to obtain more effective treatment. However, they were able to estimate the maximum and minimum sizes of the effects of guideline implementation on some key resources in the NHS:-

NHS Resource use	Minimum	Maximum
GP consultation	-7.5%	-22.5%
X-rays	-12.5%	-37.5%
Prescribed drugs	-8.0%	-25.0%
Physical therapy	Reorganisation of NHS physical therapy	

Ongoing research

More studies on back pain treatment are continually being published. One good RCT from Finland recently published in the New England Journal [3] compared bed rest, exercise and ordinary activity in acute low back pain. The conclusion was that continuing ordinary activity within the limits permitted by the pain leads to more rapid recovery than either bed rest or back-mobilising exercises.

References:

1 Epidemiology Review: The Epidemiology and Cost of Back Pain. Clinical standards Advisory Group. 1994 HMSO £14.00. ISBN 0-11-321889-3.

2 Back Pain. Report of a CSAG Committee on Back Pain. 1994 HMSO £14.95. ISBN 0-11-321887-7.

3 A Malmivaara, U Häkkinen, T Aro et al. The treatment of acute low back pain - bed rest, exercises, or ordinary activity? New England Journal of Medicine 1995 332: 351-5.

How do I find?

Why are there so many names for MEDLINE?

When you look for articles in the clinical literature you may be using Index Medicus (printed version) or searching a CD-ROM database in your local library, in the practice or in your department using SilverPlatter, Ovid (formerly CD Plus) or Knowledge Finder or perhaps using a telephone line (on-line) to the BMA. These names, which are commonly used as synonyms for MEDLINE (strictly speaking MEDLINE refers to the electronic version of Index Medicus, International Nursing Index and Index to Dental Literature) refer to the search software that is used by commercial organisations licensed by the US National Library of Medicine. In all cases the content is the same, namely the National Library of Medicine MEDLARS database. They are not different versions of MEDLINE.

Ovid Technologies and SilverPlatter are the two major suppliers in the UK. They have each developed their own software (Ovid for Ovid Technologies and SPIRS or WINSPIRS for SilverPlatter) for accessing MEDLINE. When you dial up the BMA you are searching MEDLINE using Ovid software. Knowledge Finder is the software used by the Aries Systems Corporation to search MEDLINE and is more common in the US than in the UK.

Other databases

Although MEDLINE is pretty comprehensive for clinical enquiries it has a strong US bias and may not be the best source of references if you are interested in other aspects of health care. There are other more appropriate databases for different areas, namely HealthPlan for health management, and CINAHL (Cumulative Index to Nursing and Allied Literature) for nursing and the allied professions. You should also consider searching EMBASE (electronic version of printed Excerpta Medica) which has a better coverage of European journals and also includes more references to drugs and therapeutics. You will be able to search EMBASE with the help of your local library or do it yourself if you are a member of an academic institution which subscribes to EMBASE on the Bath Information Data Service (BIDS).

What's the best way to search?

The most important stage of any search is deciding and defining exactly what it is you wish to find - avoid just typing in the first word that comes to mind. Formulate your query in terms of a question and then break this down into the component concepts and decide which is of greater or lesser importance to the success of the search. You will be surprised how this helps to clarify your search.

MeSH

The next stage is to 'translate' your 'natural language' query into MeSH-speak!

What is MeSH? The National Library of Medicine indexes every article that is included in MEDLINE, using a controlled list of words known as a thesaurus. This list is called the Medical Subject Headings list or MeSH for short. The authors of MeSH have made a deliberate choice of the terms to be used, for example the preferred term for kidney disease is KIDNEY DISEASES not renal diseases. For most entries, there will be broader, narrower and related terms. When searching for good quality evidence it is important not to miss out on what could be key references and so deciding on the best term or terms to use is critical. There is an advantage to searching with MeSH terms - because the

index term describes the *content* of the paper, your search will pick up those papers which are about the subject you are interested in, even if the title or abstract do not contain the subject word.

It is also important to make sure you include all relevant indexing terms and don't inadvertently limit your search. You may have heard of MeSH 'explosions'. If you 'explode' a MeSH term this means that the software will search for all the papers that have been indexed with the narrower concepts which are included under the broader term. For example, without exploding the term heart disease, your search would miss out all the papers on arrhythmia.

The chances are you won't be able to lay your hands on a printed copy of MeSH. Fortunately both Ovid and SilverPlatter include the MeSH terms in their search package. Ovid will automatically map the word you type in to a MeSH term. You can also have a look at the MeSH preferred terms by clicking on 'tools' in the bar at the top of the screen. Silver Platter has a thesaurus option which contains the MeSH terms.

What are 'Boolean operators' and why should I use them?

Although all commercial providers of MEDLINE cater for 'natural language' queries to a greater or lesser extent, you can do a more effective search by using the MeSH terms that you have selected and combining these with the logical connectors OR and AND. Remember Venn diagrams from school? Thus, if you are interested in nutrition of the elderly, the terms you would select are *nutrition* and the related terms *diet*, *food, food habits*. By combining these terms with the connector OR, you will find all the papers indexed under *nutrition* as well as all those that have been indexed under *diet* and *food* and *food habits*. You would then limit your search to only those papers which concern old people by using the connector AND, and the term *aged.*

Thus:
#1 NUTRITION OR DIET OR FOOD OR FOOD HABITS
#2 #1 AND AGED

Unfortunately indexers are human and they make mistakes and omissions. So to be absolutely sure that you are getting as many published papers as possible, i.e. your search has maximum sensitivity - you should search using not only MeSH terms, but also using as many synonyms for your subject as you can think of, that might occur in the title or abstract, e.g.

ANEMIA - HYPOCHROMIC (this is a MeSH term)
OR

Iron deficiency anaemia (This is a natural language phrase)

In this example note that anaemia is spelt differently in the US and UK

This is a very superficial skate through search strategies - your local health librarian will be happy to help you put these ideas into practice!

Glossary
thesaurus = list of preferred subject words (forget about Roget!)
natural language = the way YOU say it
sensitivity = maximum recall
Boolean operators = AND, OR (use to combine search terms)

Judy Palmer Oxford

SCREENWATCH

Lest ***Bandolier*** seems to be nihilistic, a charge that some have levelled after the publication of the ***Bandolier*** screening Blacklist, we now publish a Screening Whitelist - tests for which there is adequate evidence of effectiveness. Perhaps there should also be a Screening Greylist of screening tests currently being offered to the population but which are now being reviewed by the MRC and by the R&D Programme.

Whitelist

Child health screening is being investigated in the Hall Report, the national review of child health screening services, and so is not part of the Whitelist at present as the report is expected to be published later in the year. Neither is screening of the elderly covered in this list at present. Screening here is concentrated on people aged between 20 and 65 years of age. The Whitelist is quite short to begin with, but argued suggestions for additions to, or deletions from the list would be welcomed.

- Breast cancer screening for women over 50 years - but see [1 & 2].
- Cervical cancer screening for women over 20 years - not more often than every five years for maximum cost-effectiveness.
- Screening for high blood pressure according to the British Hypertension Society guidelines.
- Identifying cigarette smokers and advising them of the benefits of stopping smoking.

This list does not cover case finding, the systematic identification of individuals at high risk - for example identifying the first degree relatives of people who have had a myocardial infarction under the age of 50 years.

Reference:

1 CJ Wright, CB Mueller. Screening mammography and public health policy: the need for perspective. Lancet 1995 346: 29-32.
2 Correspondence. Lancet 346: 436-9.

TEST OF THE MONTH

Several readers have asked ***Bandolier*** to start a 'test of the month' series, looking at the evidence and practice of diagnostic and imaging tests and their value. Source material for such a series is not widely available, and preparing the evidence is not easy. Nevertheless, B***andolier*** feels that a start should be made, if only to encourage readers to point out where information is available, or to induce them to start their own reviews.

The series starts with a description of the electrocochleogram (ECochG) for Ménière's disease from Mr Grant Bates, an Oxford ENT surgeon.

Electrocochleogram

Ménière's disease was covered in ***Bandolier*** 13. A health Authority of 250,000 patients would expect to see some 60 cases a year. Treatment is usually with betahistine, which trials have shown to be effective. The usual doses of 48 to 64 mg a day costs upwards of £235 a year, and it may also be effective for patients with benign paroxysmal positional vertigo, but not where balance disorders have other causes.

There are rarely physical signs and many patients with unsteadiness and/or vertigo are undiagnosable and usually improve with time. Electrocochleography is an objective test for endolymphatic hydrops - and by far the most common cause of endolymphatic hydrops is Ménière's disease. It is a simple test that takes 20 minutes to perform, and though a fine needle is passed through the tympanic membrane it is not unpleasant for the patient. It allows the diagnosis of Ménière's disease to be confirmed or refuted so that appropriate prognostic advice can be given together with medical or surgical treatments if indicated.

What it involves

With the affected ear uppermost, and the tympanic membrane anaesthetised, a fine needle connected to a recording wire is passed through the anterior part of the membrane until it meets the medial wall of the inner ear. Here the needle is very close to the cochlea hair cells and is recording the electrical activity directly from these hair cells.

Tonal clicks are then applied to the ear through headphones, usually at about 1000Hz, but of variable frequency and intensity. The needle is connected to an oscilloscope which records the activity from the cochlea and provides an electrical record of events in the inner ear. The electrocochleogram (ECochG) records particularly the summating potential, thought to arrive from electrical potential surrounding the basilar membrane. This alters with the degree of distension of the basilar membrane and thus measures endolymphatic hydrops and confirms Ménière's disease.

About 1000 clicks are performed and the activity recorded for 10 milliseconds after each click. The information is summated by computer. Subjects with Ménière's disease have abnormal wave forms [1].

Three stages

There are three main stages of Ménière's disease:-

1 Early: hearing returns to normal between attacks of vertigo. ECochGs suggest hydrops is increased before an attack and gradually lessens during an attack, and returns to normal afterwards.

2 Mid stages: hearing fluctuates but does not completely return to normal between attacks. The ECochG may show changes when the patient notices the feeling of fullness of ear before an attack of vertigo.

3 End stage: hearing is poor and no longer fluctuates the ECochG almost always abnormal and there is a 50% reduction in vestibular function in the affected ear.

When to do an ECochG

In all patients who have unilateral persistent otological symptoms an MRI is required to exclude acoustic neuroma, which can mimic the presentation of Ménière's disease. It is sensible thereafter to confirm Ménière's with an ECochG so that appropriate effective treatments can be applied.

Electrocochleography is available in virtually all ENT departments, takes only 20 minutes or so and requires an ENT surgeon and usually an audiologist. The equipment has many other uses in otolaryngology.

Grant Bates Radcliffe Infirmary, Oxford

Reference:

1 WPR Gibson, RTR Ramsden, DA Moffat. Clinical electrocochleography and diagnosis and management of Ménière's disorder. Audiology 1977 16: 389-401.

Useful Internet addresses:

Vestibular Disorders Association:
http://www.teleport.com/~veda/index.html
Otolaryngology On-line:
http://vumclib.mc.vanderbilt.edu/~floyd/ent.html
Primary care Teaching Module:
http://www-med.stanford.edu/MedSchool/DGIM/Teaching/Modules