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Foreword

I have always believed that every patient who goes to see their doctor wants to know the following:

- Doctor, what's wrong with me?
- Doctor, how long is it going to take to get better?
- Doctor, is there anything that I can do to help it get better?
- Doctor, is there anything that you can do or give me to help it?

The order of importance to each individual may alter slightly, but for most, a reassuring answer to the first question is always somewhere near the top. Implicit here is a simple desire to know whether there is something seriously wrong. It is often the most important starting point for a successful treatment outcome.

Perhaps clinicians need to think about this more, because without a thorough understanding and without reassurance, the patient's progress is likely to be hampered by feelings of uncertainty and insecurity. Would you go back to work, comply with a series of exercises

or take a prescribed medicine if you still had an uneasy inkling that something was badly wrong or something had been missed?

A great many patients, acute and chronic, report that they have not been listened to fully, not examined fully and not been reassured or had an adequate explanation of their symptoms. Many people with benign pain complaints remain burdened by uncertainty and hence are unable to recover in any meaningful way. The title of an old but very important article by Nortin Hadler always rings in my ears: 'If you have to prove you are ill, you can't get well' (Hadler 1996). The main message for me is: 'Top-down before bottom-up', which simply means that for every clinical encounter undertaken it is the clinician's responsibility to reassure the patient (top-down), before embarking on the 'physical' (bottom-up) recovery pathway.

In my daily dealings with patients I frequently hear about pain that comes on for no reason and often quite severely, about pain that keeps the patient awake at night, that gets rapidly worse and pain that the patient thinks is something serious. Patients are naturally worried; after all, worry is what often drives their help-seeking behaviour.

I strongly believe that in order to be successful all good therapists need to be far more explicit here. At the end of every first session with all my patients I state/ask the following: 'It is important before moving on with treatment/rehabilitation that you feel comfortable that I have listened to all your problems, all your concerns and examined you fully. I need you to feel reassured

about what is wrong and the recovery process. Do you have any concerns?'.

You simply cannot ask this question if you are not confident, if you do not know.

Having up-to-date 'Red Flag' knowledge is essential for clinician confidence and in turn for patient confidence – every therapist or doctor should be able to say to every patient seen that they been through a check list of features that signifies a serious disorder and the need for further investigation.

This book is so important and so timely as we start to learn more and more about the importance of clinician–patient interactions. Reassurance is a pain killer, and you cannot give reassurance if you are unsure!

This is a book that every clinician should have a personal copy of and continue to refer to throughout their whole professional life.

Louis Gifford

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Introduction

The Chartered Society of Physiotherapy describes 1978 as a 'watershed' in the physiotherapy profession. It was in this year that physiotherapists became clinically autonomous in the UK. Today access to physiotherapy is still largely controlled by a traditional medical model. However, these are changing times with modernization, blurring of professional boundaries and more creative ways of delivering healthcare. Physiotherapists are coming increasingly into the spotlight at the cutting edge of healthcare provision. There is widening access to physiotherapy by innovations such as telephone help lines, increased patient choice and improved timing of care. This book has been written for musculoskeletal physiotherapists, students, lecturers and other practitioners who work with patients complaining of spinal pain. Six out of ten people will feel back pain at some time in their life, many seeking medical help; 1% of these cases will have serious pathology. These changing times, inevitably, put clinicians in a position where they will be faced with serious spinal pathology. This book is devoted in its entirety to helping to identify the 1% of cases with:

- tumour
- infection or
- other conditions requiring urgent specialist investigation and treatment (e.g. fractures).

Grieve (1994) suggests that the identification of serious pathology depends more on 'awareness, vigilance and suspicion rather than a set of rules'. This book endeavours to provide a set of guidelines to raise awareness and vigilance and provoke appropriate suspicion. Gifford & Butler (1997) suggest that clinical reasoning is an analytical process in which data from a variety of sources, pertinent to the patient's unique clinical scenario, are examined. This book contains a valuable range of data to support this reasoning process with respect to serious spinal pathology.

We will endeavour to answer your questions about indicators for serious pathology (Red Flags) that we have been frequently asked. The answers are often embedded in a diverse literature and difficult to find. This book consolidates these facts into a concise, readable summation of important Red Flag details. In addition, it provides a sounder, more robust basis on which to make a clinical decision by providing an 'index of suspicion' cutting through the 'red haze' surrounding Red Flags. The index of suspicion for each Red Flag item is denoted by an attached flag system – those with a higher index have a larger number of flags. It clarifies issues such as:

- How much weight loss is considered significant?
- Is the risk of developing serious pathology the same at 6 years, 16 years and 66 years of age?

We explore and discuss a number of terms including three-dimensional thinking, conditional probabilities and 'Red Herrings'. The term Red Herring originates from the very pungent salted and smoked herrings, which were red in colour, used by anti-hunting campaigners in the 1800s to create false trails. The hounds invariably followed the false trails created by these Red Herrings, allowing the fox to escape. In this book we use the term Red Herrings in a broad way as a concept that incorporates psychosocial and biomedical parameters. Red Herrings are an important phenomenon to be aware of as they can mislead the clinician and confuse the clinical picture, leading to unnecessary and sometimes catastrophic delay in ultimate diagnosis.

We hope that you are as excited as we are by the possibilities that this book creates. We consider that our 'index of suspicion' can be a vital tool in the clinical decision-making process. By weighting Red Flags, critical conditions can be more rapidly identified. The contents of this book will boost confidence in your own clinical judgement by helping you to collate the appropriate information and logically process these findings. If serious pathology is identified at an early stage, clinicians can raise the alarm to potentially greatly improve a patient's prognosis. This will ultimately add to your own empowerment and rewards within your role. The technical application of physiotherapy is relatively straightforward. The challenge lies partly in knowing which techniques to apply to which patients but above all in not only knowing when physiotherapy is

inappropriate but recognizing when something serious is going on.

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Chapter 1

Red Flags

CHAPTER CONTENTS

In recent years there has been an increased demand for musculoskeletal medicine. This has led to a dramatic expansion in a number of professions involved in the management of musculoskeletal disorders. For example, across the European Union the number of physiotherapists increased by 21% between 1996 and 1999 (European Commission 2004). Along with these changes, healthcare systems are evolving and being reorganized. In the European Union there has been a major shift towards managing patients in primary care with a result that the number of acute hospital beds fell by 30% between 1980 and 2000 (European Commission 2004).

Simultaneous to these developments physiotherapists have expanded their role and are more commonly taking on the role of first contact and extended scope practitioners in a variety of non-traditional settings. These changes in practice are leading to challenges and opportunities not previously faced by the physiotherapy profession. Many of the conditions we discuss in this book have been around for centuries. However, more physiotherapists are now increasingly likely to come into contact with these serious cases earlier in the disease processes where previously they may not have seen them at all.

In the United Kingdom the Chartered Society of Physiotherapy (CSP) has established a clinical interest group dedicated to extended scope practitioners (ESPs). The membership stood at 250 in 2004 (CSP 2004). The role of extended scope physiotherapy practitioners includes:

- requesting investigations, e.g. blood tests, scans, X-rays, nerve conduction studies
- using the result of investigations to assist clinical diagnosis and appropriate management of patients
- listing for surgery
- referring to other medical and paramedical professions.

It is difficult to determine exactly how many patients with serious spinal pathology present to physiotherapists. During a 7-year period of working in a specialist spinal assessment clinic where 1000 patients were seen annually, it is estimated by one of the authors that on average there was 1 patient a month who presented with serious spinal pathology of some type. In comparison, it is reported that an average general practitioner in England or Wales will see approximately 8 or 9 new cases of cancer each year (Department of Health 2000a). It is therefore important that physiotherapists remain vigilant to the possibility that the patient in front of them may have a serious pathology.

HISTORICAL PERSPECTIVE OF PHYSIOTHERAPY

According to Cyriax (1982), the first mention of a professor of physiotherapy dates from AD 585. Rehabilitation in ancient Greece and Rome was described by Hippocrates and other scholars. At around the time that Daniel David Palmer was founding chiropractic in North America, the London massage scandal of

1894 galvanized legislators in Britain to regulate masseuses. The profession had fallen into disrepute and massage parlours were being described by the *British Medical Journal* as hotbeds of vice (Barclay 1994). In 1894 Miss Rosalind Paget and Miss Lucy Robinson, two qualified masseuses, took steps to redeem the reputation of massage as a respectable treatment. This eventually led to the birth of the Chartered Society of Physiotherapy. In 1973, in the UK, the McMillan report moved the physiotherapy profession forwards dramatically by recommending professional autonomy allowing physiotherapists greater responsibility and freedom to treat and diagnose (Barclay 1994). Development of professional autonomy has continued to now include extended scope practitioner and consultant physiotherapist posts (Department of Health 2000b).

EARLY DEVELOPMENT OF INDICATORS OF SERIOUS PATHOLOGY

Historically the profession of physiotherapy has relied on the medical profession for recognition. According to Roberts (1994), the founders of the Chartered Society of Physiotherapy 'traded professional autonomy for the respectability offered by doctors'. The relationship has often been paternalistic on the part of medicine towards physiotherapy. Under these conditions physiotherapists often took the role of technicians carrying out treatments that were prescribed by doctors. However, in their teaching early modern day medical advocates of manual therapy, such as James Mennell and James

Cyriax, not only embraced the profession of physiotherapy but recognized the potential for, and started to encourage, independent practice.

Mennell was actively influencing physiotherapy training as early as the First World War (Barclay 1994). In the introduction of his classic book *The Science and Art of Joint Manipulation* he implies that for doctors to prescribe only one treatment restricts the potential of a successful outcome of physiotherapy (Mennell 1949).

Cyriax describes devoting his whole life to perfecting a method of clinical examination which led to accurate diagnosis of locomotor disorders. His medical peers considered him to be something of a maverick as not only did he develop manipulation techniques which he practised himself but he also taught these diagnostic and treatment techniques to physiotherapists (Cyriax 1982).

Within their teaching both Mennell and Cyriax were aware of the need for caution in some presentations. However, unlike their historical predecessors Mennell and Cyriax both realized that the indication of serious pathology could be more subtle than waiting for its obvious visible manifestation. This prompted them to highlight certain presentations which could suggest something sinister as the underlying cause.

Mennell's Red Flags (Mennell 1952)

- Smallpox
- Influenza
- Genitourinary (gonorrhoea)
- Prostate cancer
- Acute kidney problems
- Multiple sclerosis
- Parkinson's disease
- Tuberculosis (TB)
- Paget's disease
- Appendicitis
- Sepsis – bowel/teeth/tonsillitis
- Haemorrhoids

Cyriax's Red Flags (Cyriax 1982)

- Backache with fever
- Neoplasm
- Root pain >8 months' duration or with gross limitation of every movement
- Weak psoas major
- Afebrile osteomyelitis
- Aortic occlusion
- Spinal claudication
- Nutritional osteomalacia
- Gonorrhoeal fasciitis
- Multiple root palsy
- 'Forbidden area' (thoracolumbar junction pain, should be considered suspiciously)

One of the problems with the way these conditions are presented is that unfortunately they are incorporated into different parts of the main body of the text; extensive reading is therefore necessary before clinicians can access these important facts.

It is also important to consider the major influence of the work of physiotherapists Robin McKenzie and Geoffrey Maitland on the field of musculoskeletal medicine. It is interesting to see how McKenzie's attitude towards the identification of Red Flags appears to have evolved. In the 1990 edition of his book on the cervical and thoracic spine, McKenzie (1990) states: 'It has always been my belief that the differential diagnosis should be established by the patient's family practitioner . . . The patient once screened by the medical practitioner, should have had unsuitable pathologies excluded.' However, in McKenzie's latest edition of his lumbar spine book (McKenzie & May 2003) there is a chapter on serious spinal pathology that discusses some of the Red Flags; in this chapter it is stated: 'serious spinal conditions . . . need early identification and onward referral'. This implies that there is now a role for physiotherapists in recognizing serious pathology.

The most recent edition of *Maitland's Vertebral Manipulation* includes a chapter titled 'The doctor's role in diagnosis and prescribing vertebral manipulation' (Brewerton 2001). This implies that doctors retain the role of initially recognizing serious pathology; in the UK this is not now always the case. However, it is true that historically physiotherapy has relied on the

medical profession to provide an accurate diagnosis of the patient's condition which would then inform the physiotherapist's decision to treat. Whilst Maitland states that malignancy of the vertebral column is a contraindication to manual techniques, no guidance for identifying indicators of serious conditions is given.

The current teaching on Red Flags within orthopaedic medicine (Ombregt et al 2003) is more specific; the following warning signs in the subjective history of the cervical spine are described:

- gradual increase in pain; prolonged timescale compared to discogenic patterns
- expanding pain, i.e. spreading across a number of segments rather than shifting within a segment
- bilateral arm pain: suggests non-discal lesion
- radicular pain below 35 years of age
- arm pain over 6 months' duration
- elderly patient with initial presentation or rapid increase in pain or stiffness over 1 or 2 months
- arm pain increased by cough
- paraesthesia all over body provoked by neck flexion
- cord symptoms
- dysphagia
- progressive neck pain at night
- history of cancer.

In addition, the following warning signs in the objective examination of the cervical spine are listed:

Articular

- Painful restriction in full articular pattern in short period of time
- Gross limitation of rotations
- End feel soggy, empty or muscle spasm
- Side flexion away: only painful movement
- Scapular elevation limited.

Non-articular

- Unusual myotome involvement:
  - T1 palsy
  - excessive loss of power
  - two or three nerve root signs and symptoms
  - painless weakness
  - resisted movements of neck not only painful but weak
- Distal symptoms before central
- Anaemia
- Horner's syndrome
- Hoarse voice.

Whilst this teaching is very specific there is now a wealth of information but no apparent system of weighting given to different symptoms and signs. For example, how important is hoarse voice in isolation in someone who has a cervical spine problem? This may cause inappropriate levels of distress if clinical reasoning processes do not consider the overall picture and the conditional probabilities (see Ch. 2).

Apart from the development of Red Flag lists within specific schools of thought, there have also been significant developments in government-driven initiatives. These have attempted to collate a wide range of research-based data and present evidence-based guidelines in user-friendly formats.

CLINICAL GUIDELINES

Over the past three decades there has been a well-recognized increase in the levels of disability associated with spinal problems, with leading authorities referring to back pain as 'a 20th century medical disaster' (Waddell 2004). This has occurred despite the plethora of publications in relation to the management of back pain. However, there have been significant positive developments in the form of clinical guidelines for the diagnosis and management of spinal pain.

Quebec Task Force report 1987

The first of these guidelines was the Quebec Task Force report (Spitzer 1987). This was commissioned as a consequence of an increase in debilitating back pain in the working population of Quebec, Canada. The Task Force was particularly concerned with work status.

In addition, the report described 11 diagnostic categories for spinal disorders.

Quebec Task Force diagnostic categories (Spitzer 1987)

- Pain without radiation
- Pain and radiation to extremity above knee or elbow
- Pain and radiation to extremity below knee or elbow
- Pain and radiation into limb with neurological signs
- Presumptive compression of a spinal nerve root on a simple roentgenogram (i.e. spinal instability or fracture)
- Compression of a spinal nerve root confirmed by specific imaging techniques
- Spinal stenosis
- Post-surgical status 1–6 months
- Post-surgical status >6 months intervention (asymptomatic/symptomatic)
- Chronic pain syndrome
- Other diagnosis

It is interesting to note when reviewing this list that serious pathology would be classified under the vague diagnostic category of 'Other diagnosis'.

Incorporated within the main body of the text the following indicators suggest that more serious disease may be present:

- age <20 or >50 years
- history and/or signs of serious trauma
- history of neoplasm
- fever
- neurological deficit.

The report suggests 'Upon identifying such clinical indicators the clinician should order appropriate

paraclinical tests (e.g. plain roentgenograms of the spine, inflammatory or osseous laboratory evaluation, myelography, CT scan or radionucleotide bone scan)'.

CSAG report 1994

In the United Kingdom in 1991 the Clinical Standards Advisory Group (CSAG) was set up as an independent source of expert advice to the Ministry of Health. It was commissioned 'to advise on standards of clinical care for, and access to and availability of services to NHS patients with back pain' (CSAG 1994). CSAG considered duration of back pain and work loss as significant predictors of outcome. It was reported that 90% of low back pain recovered spontaneously in the first 6 weeks. However, if work loss continued for more than 6 months there was only a 50% chance of sufferers returning to their original employment. This report appears to be the first to use the phrase 'Red Flags' for describing diagnostic indicators of serious spinal pathology.

Five diagnostic categories for spinal disorders (CSAG 1994)

- Simple backache
- Nerve root pain
- Red Flags
- Cauda equina syndrome/widespread neurological disorder
- Inflammatory disorder

CSAG goes on to describe the diagnostic triage. This highlights the clinical importance of assessing that patients have musculoskeletal problems. Non-spinal and serious pathologies should be excluded from the diagnosis and the presence and extent of any nerve root pathology determined.

Diagnostic triage CSAG (1994)

- Simple backache (95% of cases)
- Nerve root pain (<5% of cases)
-  Possible serious spinal pathology (<1% of cases)

Historically medical triage involves the screening of patients into three priority groups. It developed in response to the problem of dealing with large numbers of wartime casualties:

- those who will die despite intervention (no treatment given)
- those who will survive without intervention (no treatment given)
- those who will only survive with intervention (treatment given).

Triage in back pain applies exactly the same principle, when the following conditions are suspected:

- simple mechanical low back pain (medical intervention not appropriate)