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For UK healthcare professionals only

# Differentiating Inflammatory and Mechanical Back Pain

Challenge your decision making

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# Introduction

Welcome to this first module in a series of educational guides on inflammatory back pain. This module, *Differentiating Inflammatory and Mechanical Back Pain*, compares the key features of mechanical and inflammatory back pain and contains guidance and information to assist you in distinguishing inflammatory back pain in your patients.

- **Back pain is very common: 60-80% of the UK population report back pain at some point in their life.<sup>1</sup> Back pain is not only a major source of pain and disability, but has other secondary effects on patients' quality of life and is also detrimental to society as a whole:**

- Approximately 6-9% of UK adults consult their GP about lower back pain each year.<sup>2,3</sup>
- Back pain is one of the main reasons for work loss and a major cost to Western society.<sup>4</sup> Recurrent and chronic pain account for 75-85% of total workers' absenteeism.<sup>5</sup>
- Over half of chronic back pain patients can suffer with insomnia.<sup>6</sup>
- Individuals with back pain can suffer severe emotional stresses and relationship breakdowns as a result of their condition, including severe emotional distress to the partner and limitations in fulfilling their family role.<sup>4</sup>

- Chronic back pain is defined as pain which occurs for 3 months.<sup>7</sup>
- Identifying back pain as **acute** or **chronic** is one of the key processes in determining the source of the pain.
- **Mechanical back pain (MBP)**, which arises from structural changes which may be in the spinal joints, vertebrae or soft tissues, can be chronic but is usually acute in onset and often self-limiting.<sup>7,8</sup>
- **Inflammatory back pain (IBP)**, due to an underlying inflammatory disease such as inflammatory arthritis, results in chronic back pain lasting 3 months.<sup>7</sup>
- It is important to distinguish inflammatory from mechanical back pain as early as possible as the management and treatment of the two conditions is very different.

# Back pain: inflammatory vs. mechanical

There are many different causes of back pain and these various sources can present with similar symptoms, often meaning it is difficult to distinguish the underlying pathology during musculoskeletal evaluation.



## Mechanical back pain

is pain which arises from a structure within the spine, including the vertebral bodies, intervertebral discs, zygapophysial joints, sacroiliac (SI) joints, spinal ligaments, paraspinal muscles, dura, spinal cord, and nerves.<sup>8</sup>

## Inflammatory back pain

is a symptom complex rather than a condition, and often indicates inflammation of the vertebrae, joints of the spine and entheses – the sites of tendon and ligament attachment to bone.

## Other possible sources of back pain

### Possible sources which may present with mechanical back pain<sup>9</sup>

- Degenerative disc diseases
- Facet joint derangement
- Osteoarthritis
- Muscle imbalance
- Spinal stenosis
- Herniated disc
- Spondylolisthesis
- Fracture
- Severe kyphosis
- Severe scoliosis
- Transitional vertebrae

### Possible sources which may present with inflammatory back pain<sup>7,9</sup>

- Inflammatory arthritis
  - Axial Spondyloarthritis including Ankylosing Spondylitis (AS)
  - Psoriatic arthritis (PsA)
  - Inflammatory bowel disease (IBD)
  - Psoriatic spondylitis
  - Reiter's syndrome

### Other possible sources of back pain<sup>9</sup>

- Abdominal aortic aneurysm
- Tumours including metastases
- Renal diseases
- Gastrointestinal diseases
- Disease of the pelvic organs
- Fibromyalgia
- Paget's disease of the bone
- Scheuermann's disease (osteochondrosis)
- Tuberculous sacroiliitis
- Infections such\* as:
  - Epidural abscess
  - Osteomyelitis
  - Septic discitis
  - Paraspinal abscess
  - Shingles

The above table outlines several examples of different sources of back pain but the list is not exhaustive.

\*Infections which result in back pain due to inflammatory sources can also lead to mechanical pain as a result of changes caused by the infection; for example, disc degeneration and collapse resulting from vertebral disc infection.

# Subjective examination: the importance of assessing patient history

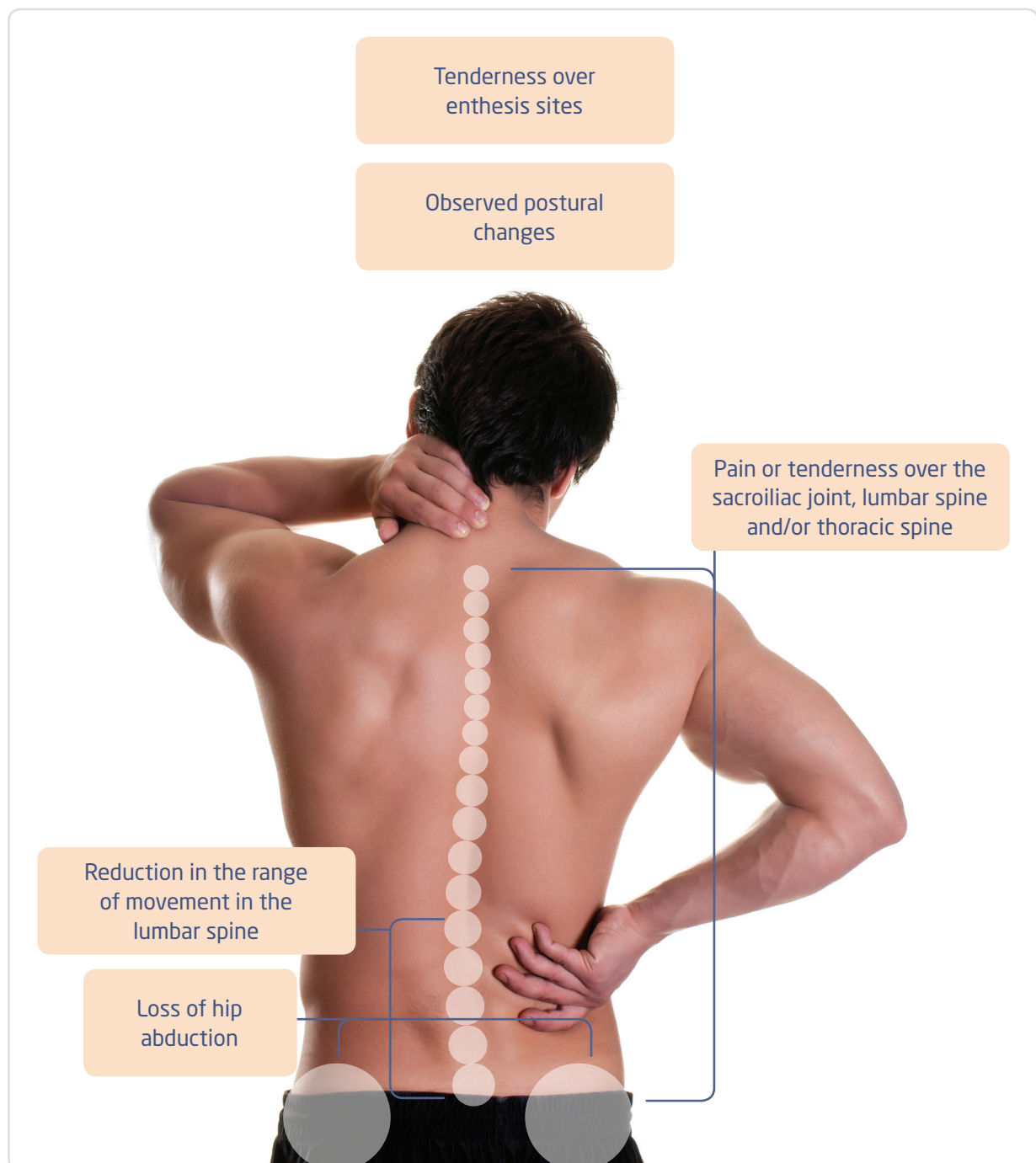
In order to build an accurate picture of your patient's back pain and attain a hypothesis of underlying cause, it is important to assess the pattern of back pain in line with the patient's history.

The following questions may help you to determine if your patient has, or has had, some of the clinical signs associated with inflammatory back pain:

- **How long has the patient been experiencing back pain?**  
Chronic back pain of 3 months could indicate an inflammatory source.<sup>7</sup>
- **Has the patient experienced back pain previous to this?**  
The current episode of back pain may be of a shorter duration, but the patient could have had previous episodes of back pain indicating chronicity.
- **How old was the patient when the back pain started?**  
Inflammatory back pain due to inflammatory arthritis usually has an onset before the age of 40.<sup>7</sup>
- **Is there a family history of inflammatory back pain such as ankylosing spondylitis, a type of inflammatory arthritis mainly affecting the spine?**  
Autoimmune inflammatory conditions such as inflammatory arthritis can have a strong hereditary component.<sup>10</sup>
- **Does the pain improve with the use of non-steroidal anti-inflammatory drugs (NSAIDs)?**  
Patients with back pain due to inflammatory arthritis often respond well to NSAIDs.<sup>7,11</sup>
- **Does the patient have a history of other musculoskeletal problems?**  
Enthesitis, inflammation at sites where tendons and ligaments attach onto bone, at locations such as the heels, knees and ribs can be a histopathological characteristic of inflammatory arthritis affecting the spine.<sup>12</sup>
- **Has the patient experienced any of the following: iritis, psoriasis, IBD, peripheral joint inflammation?**  
Autoimmune inflammatory conditions such as these have a strong association with types of inflammatory arthritis which are a cause of back pain.<sup>11</sup>
- **How does the patient describe the pain - e.g. gnawing, throbbing, deep?**  
These descriptions are commonly used to depict pain caused by an inflammatory source within the spine.
- **What is the usual pattern of back pain over a 24 hour period? For example, is the pain worse in the morning or during periods of inactivity?**  
Pain caused by inflammatory back pain does not improve with rest and can be associated with morning stiffness for >30 minutes after rising.<sup>7</sup>

## Objective examination: indicators of inflammatory back pain (IBP)

During physical examination there are several key features to be aware of which may indicate inflammatory back pain.



## Distinguishing inflammatory back pain: further supporting questions

Once you have established your patient is suffering from back pain which may be inflammatory in nature, there are several key questions you can ask to help further classify if it is mechanical or inflammatory. The following five questions are from the ASAS (Assessment of SpondyloArthritis international Society) criteria for identifying inflammatory back pain:

### 1. Did your back pain start when you were aged younger than 40?

Inflammatory back pain usually begins in the third decade of life and is unlikely to have an onset after 45 years.<sup>7</sup>

It is important to ascertain the patient's age at the onset of the back pain as opposed to only recording their current age as they may have been experiencing back pain for several years.

### 2. Did your back pain develop gradually?

Unlike inflammatory back pain, mechanical back pain, such as disc herniation, is frequently of a more sudden onset. IBP has an insidious onset and patients are likely to have been experiencing back pain for >3 months.<sup>7</sup>

### 3. Does your back pain improve with movement?

Symptoms of musculoskeletal inflammation are often improved with movement and exercise.<sup>7</sup>

### 4. Do you find there is no improvement in your back pain when you rest?

Similar to the above, no improvement of the pain with rest is a classic feature of inflammatory back pain.

### 5. Do you suffer from back pain at night which improves upon getting up?

Patients with inflammatory back pain often experience a worsening of symptoms when resting at night, and waking during the second half of the night due to pain and discomfort is a key feature of inflammatory back pain.<sup>7</sup>

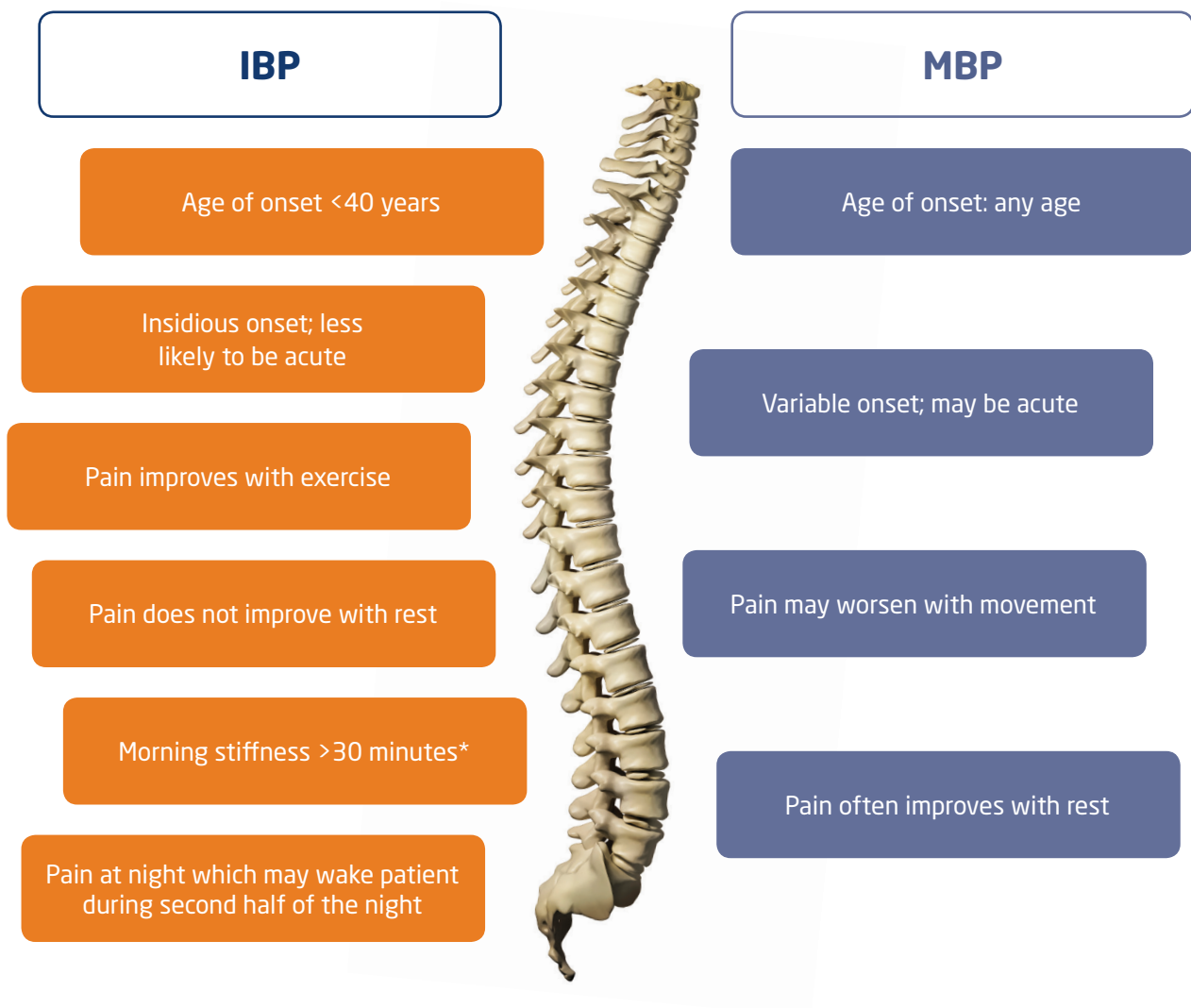
**Inflammatory back pain requiring further investigation is usually indicated if the answer is 'yes' to 4 or more of these parameters.<sup>7</sup>**

In addition to these key distinguishing features, as outlined by the ASAS criteria for inflammatory back pain, other signs of inflammatory back pain to look out for include:

- Good response to NSAIDs<sup>7</sup>
- Alternating buttock pain<sup>7,13</sup>
- Waking during the second half of the night<sup>13</sup>
- 'Morning stiffness': pain and stiffness for >30 minutes after rising in the morning<sup>7,13</sup>



# Comparison of inflammatory back pain (IBP) and chronic mechanical back pain (MBP)



“Early morning stiffness (EMS) is a common feature in inflammatory joint disease; many subjects may describe extended EMS particularly in the low back when inflammation is present; this time could up to an hour or more”

“Early recognition of IBP is important in order to facilitate effective management; increased awareness and improved classification should improve all outcomes for these patients.”

**Susan Gurden**, Advanced Physiotherapy Practitioner in Rheumatology,  
Aneurin Bevan Health Board, Wales

# The inflammatory back pain questionnaire

The Assessment of SpondyloArthritis International Society (ASAS) expert criteria, is a simple and useful tool which you can use to assess your patient's pain.<sup>7</sup>

The criteria comprises the following questions:

Have you suffered back pain for more than 3 months?

If yes:

**Did your back pain start when you were aged 40 or under?**

**Did your back pain develop gradually?**

**Did your back pain improve with exercise?**

**Do you find there is no improvement in your back pain when you rest?**

**Do you suffer from back pain at night which improves upon getting up?**

The criteria are fulfilled if at least four out of five parameters are present. In this case, please refer the patient to a rheumatologist for further investigation as the pain could be due to a form of inflammatory arthritis.

# Assess your knowledge of differentiating inflammatory (IBP) and mechanical back pain (MBP)

Please complete the multiple choice questions below.

1. Chronic back pain is usually defined as back pain occurring for  
(choose one answer)
  - a. >3 weeks ☐
  - b. >3 months ☐
  - c. >6 weeks ☐
  - d. >6 months ☐
  
2. The age of onset for inflammatory back pain caused by inflammatory  
arthritis is usually (choose one answer)
  - a. <40 years of age ☐
  - b. 40-60 ☐
  - c. >60 ☐
  - d. Any age ☐
  
3. The age of onset for mechanical back pain is more frequently  
(choose one answer)
  - a. <30 years of age ☐
  - b. 30-50 ☐
  - c. >50 ☐
  - d. Any age ☐

4. Inflammatory back pain is more frequently related to the following characteristics (tick all that apply)
- a. 'Morning stiffness' – pain and stiffness for >30 minutes after rising ☐
  - b. Decreased pain with rest ☐
  - c. Decreased pain with movement ☐
  - d. Pain which disturbs sleep ☐
  - e. Sudden onset ☐
5. Mechanical back pain is more frequently related to the following characteristics (tick all that apply)
- a. Sudden/acute onset ☐
  - b. Insidious onset ☐
  - c. Decreased pain with movement ☐
  - d. Increased pain with rest ☐
  - e. 'Morning stiffness' – pain and stiffness for >30 minutes after rising ☐
6. Which of the following cases presented do you think is most likely to be related to inflammatory back pain? (choose one answer)
- a. 60 year old male with back pain for less than 3 months, which causes pain at night and sleep disturbances ☐
  - b. 34 year old male with back pain for 5 years which is worst at night ☐
  - c. 25 year old female with chronic back pain which is eased with rest ☐
  - d. 29 year old male with back pain for 3 months which is worsened by exercise ☐

7. Which of the following cases presented do you think is most likely to be related to inflammatory back pain? (choose one answer)
- a. 27 year old male with lower back pain for 2 weeks following a car accident ☐
  - b. 30 year old female with back pain for 3 months which has not improved since she was prescribed NSAIDs ☐
  - c. 40 year old male with back and buttock pain which came on suddenly while exercising a week ago ☐
  - d. 28 year old female who has had increasingly severe lower back pain for 6 months but the pain has improved since she has been taking NSAIDs ☐
8. You have just assessed a patient you suspect may have inflammatory back pain, what do you do next? (choose one answer)
- a. Refer to a physiotherapist ☐
  - b. Refer to a rheumatologist ☐
  - c. Refer to a chiropractor ☐
  - d. Tell patient to rest ☐

Answers are provided on the back page.

## Personal reflection and new key learning points

## Personal actions

1. What will I do differently in daily clinical practice?

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2. What key questions will I ask my patients with chronic lower back pain?

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## Useful contacts and further information

British Health Professionals in Rheumatology (BHPR)

[www.rheumatology.org.uk](http://www.rheumatology.org.uk)

NASS guide to inflammatory back pain

<http://nass.co.uk/getting-my-diagnosis>

The Chartered Society of Physiotherapy (CSP)

[www.csp.org.uk](http://www.csp.org.uk)

AStretch

[www.astretch.co.uk](http://www.astretch.co.uk)

ASAS

[www.asas-group.org](http://www.asas-group.org)

## Modules in this series

### Module 1: Differentiating Inflammatory and Mechanical Back Pain

A comparison of the features of inflammatory and mechanical back pain and a detailed outline of the assessment and diagnosis process for inflammatory back pain.

### Module 2: What is Axial Spondyloarthritis?

An overview of the epidemiology, symptoms and classification of axSpA, and the clinical features that identify potential patients.

### Module 3: Assessing the Signs, Symptoms and Clinical Manifestations of Axial SpA

Information on the key clinical features and extra-articular manifestations of non-radiographic axial SpA and AS and how to identify these.

### Module 4: Treatment of Axial Spondyloarthritis

Non-pharmacological and pharmacological management of patients with axSpA.

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## Answers to questions

1: b; 2: a; 3: d; 4: a,c,d; 5: a; 6: b; 7: d; 8: b