Axial SpA Assessment Academy Toolkit
Supporting Assessment of Axial Spondyloarthritis (Axial SpA)
Introduction

Axial Spondyloarthritis (spondyloarthritis) is a type of spondyloarthritis in which the predominant symptom is back pain and where radiographic sacroiliitis may or may not be present.

The early symptoms of axial SpA include back pain and stiffness, which are often mistaken as symptoms for mechanical back pain. Inflammation of the joints may eventually lead to new bone development, joint fixation (ankylosis), and spine fusion, thus limiting mobility in the patient. Axial SpA also commonly involves the peripheral joints, entheses, and extra-articular sites, such as the eyes, skin and bowel.

How to use this toolkit

The patient assessment pathway (page 6) recommended by the assessment academy sets out:

- The possible secondary care referral routes for patients with inflammatory back pain
- The type of assessment needed at each stage and the accompanied tools available
- If any referral should be considered
- Guideline recommendations for the timing of re-assessments.

Each tool in this booklet can be used independently and is available for download from the Back in Focus website, www.axialspabackinfocus.co.uk

The current challenges in managing axial SpA

- There is often a long delay between when a person first experiences symptoms of axial SpA and when they are diagnosed, in some cases up to 8 years.1
- Diagnostic delay is often a result of the inability to differentiate inflammatory back pain from mechanical back pain. Consequently, there may be a delay in referral to rheumatology clinics from other specialities.
- The diverse phenotypic manifestations of axial SpA can also provide challenges in properly diagnosing, classifying and monitoring the disease and may lead to under treatment of ‘less typical’ SpA cases.2

UK Axial SpA Assessment Academy

The Back in Focus Axial SpA Assessment Academy (referred to ‘Assessment Academy’ thereafter) has been developed by AbbVie Ltd to provide information on the assessment of axial SpA and recommend a patient pathway and tools to optimise the assessment of axial SpA in patients with the aim to better manage the disease.

Aim of this toolkit

This resource is designed to help standardise the assessment for axial SpA across spinal triage services and rheumatology, musculoskeletal, physiotherapy, osteopathy and chiropractic units - with an aim of earlier diagnosis and treatment of axial SpA.

Talking AS

Talking AS is an online tool designed to help make assessing AS easier and quicker. Patients with AS can record their BASDAI, BASFI and Spinal Pain Score online, prior and/or after treatment, allowing healthcare professionals to monitor their disease outcomes online, particularly prior to/at clinic appointments.

Talking AS is provided by AbbVie Ltd in association with the Royal National Hospital for Rheumatic Diseases, Bath.
Patient assessment pathway for Axial SpA (including AS)*

The Assessment Academy has recommended the following pathway for the management of Axial SpA. This pathway has been set out in a clinical poster, one of the tools provided, which is displayed on the following page and appendix A.

- **Patient with back pain completes a screening questionnaire**
- **Referral to triage service: medical record, radiology, physiotherapy, chiropractic or osteopathy where appropriate**
- **Assess for inflammatory back pain, mechanical back pain or both**
- **Diagnose mechanical back pain or other**
- **Referral to other specialist team or back to primary care**
- **Referral to triage service: medical record, radiology, physiotherapy, chiropractic or osteopathy where appropriate**
- **Patient completes BASDAI, BASFI and spinal pain score online (Talking AS). Clinician to check score online before/during follow-up**
- **Follow-up as necessary, but at a minimum an annual BASMI is recommended**
- **Physiotherapy to assess disease severity using BASDAI and BASMI at 12 weeks if the patient is receiving anti-TNF therapy, or at 16 weeks if receiving an IL-17 inhibitor. BSR/BHPR (2014) guidelines recommend assessing responders every 6 months**
- **Conduct the following extra-articular diseases:**
  - uveitis
  - cutaneous disease
  - urological symptoms
  - psoriasis
  - Dactylitis
  - Extra-articular disease

* The numbering corresponds to the numbered boxes on the poster and in this toolkit.

*Measurement in cm; †Measurement in degrees. IMD: Intermalleolar distance; TTW, Tragus to wall. The average score of the 5 assessments gives the BASMI result.

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**Assessing Axial SpA (including AS) poster**

This toolkit will describe each assessment displayed in the pathway in the following two sections:
- Diagnosing Axial SpA
- Monitoring Axial SpA

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*The recommendations made in this pathway are based on the expert opinions of Dr Alex Bennett, Dr Karl Gaffney, Claire Harris, Dr Andrew Keat, Dr Pedro Machado, Dr Helena Marzo-Ortega, Prof Dennis McGonagle, Dr Raj Sengupta, Dr Stefan Siebert and Prof. Paul Wordsworth.*
Section 1: Diagnosing Axial SpA
Section 1: Diagnosing Axial SpA

1. Assessment of inflammatory back pain: ASAS experts’ criteria

Early recognition of the key features of Axial SpA is essential to ensure appropriate referral and early diagnosis. Inflammatory back pain (IBP) is the most prominent of these features and it is important for healthcare practitioners in both primary and secondary care settings to differentiate it from other causes of back pain. The use of the ASAS experts’ criteria is recommended to assess IBP. This is a set of five questions and requires a ‘yes’ or ‘no’ response from the patient (Appendix B).

If the patient answers ‘yes’ to four or more questions, the patient is positive for IBP and should be referred to a rheumatologist.

2. Assessing for possible axial SpA

Axial SpA may be diagnosed as either ankylosing spondylitis (AS) or non-radiographic axial SpA (nr-axSpA), depending on the presence of radiographic sacroiliitis.2,4

- **AS** is a form of axial SpA in which lesions of the sacroiliac joint meet the modified New York criteria (mNYc) for AS and are visible on X-ray4
- **Nr-axSpA** is a form of axial SpA in which sacroiliac joint lesions are either not present on X-ray or do not meet the mNYc for AS. Lesions may, however, be present on MRI. These and/or other clinical criteria are used for the diagnosis of nr-axSpA5

Axial SpA can be divided into three groups according to imaging-based criteria.

- **Advanced radiographic forms of AS.** In which an X-ray shows up both sacroiliitis (i.e. inflammation of the sacroiliac joint) and/or spinal changes (as defined by the mNYc)6
- **Earlier radiographic forms of AS.** In which an X-ray shows up sacroiliitis but no spinal changes (as defined by the mNYc)6
- **Non-radiographic axial SpA.** In which sacroiliac joint lesions are either not present on X-ray or do not meet the mNYc, with the disease diagnosed through MRI and clinical criteria6

Modified New York criteria for the diagnosis of AS4:

A diagnosis of definite AS may be made if the radiographic criterion is present plus at least one clinical criterion. **Radiographic criteria:**

- Sacroiliitis grade ≥2 bilaterally or sacroiliitis grade 3–4 unilaterally.

**Clinical criteria:**

- Low back pain and stiffness for >3 months which improves with exercise but is not relieved by rest.
- Limitation of motion of the lumbar spine in both the sagittal and frontal planes
- Limitation of chest expansion relative to normal values corrected for age and sex.
Section 1: Diagnosing Axial SpA

Assessing SpondyloArthritis International Society (ASAS) Classification Criteria for axial SpA

The ASAS (Assessment of SpondyloArthritis International Society) Classification criteria were developed to support assessment of those who do not fulfill the mNYc for AS.

There are two ‘arms’ of the Classification Criteria:
- The imaging arm where sacroiliitis is present (by MRI or by X-ray) and the patient has one or more SpA features
- The clinical arm where the patient is positive for HLA-B27 and has two or more SpA features.

In patients with chronic back pain (≥3 months) who were <45 years old at onset

SpA features
- Inflammatory back pain (IBP)
- Arthritis
- Heel enthesitis
- Uveitis
- Dactylitis
- Psoriasis
- Crohn’s disease/ulcerative colitis
- Good response to non-steroidal anti-inflammatory drugs (NSAIDs)
- Family history of SpA
- HLA-B27 positivity
- Elevated C-reactive protein (CRP)

Sacroiliitis on imaging
- Active (acute) inflammation on MRI highly suggestive of sacroiliitis associated with SpA or definite radiographic sacroiliitis according to mNYc

ASAS/OMERACT definition of a positive sacroiliac joint MRI

Required
MRI evidence of bone marrow inflammation must be present and the features required for the definition of active sacroiliitis on MRI are:
1. Bone marrow oedema (BMO) on a T2-weighted sequence sensitive for free water (STIR or T2FS) or bone marrow contrast enhancement on a T1-weighted sequence (such as T1FS post-Gd).
2. Inflammation must be clearly present and located in a typical anatomical area (subchondral bone).
3. MRI appearance must be highly suggestive of SpA

Not required
- Other findings related to sacroiliitis may be observed on MRI but are not required to fulfill the imaging criterion ‘active sacroiliitis on MRI’.
- In the absence of MRI signs of BMO, the presence of structural lesions such as fat metaplasia, sclerosis, erosion or ankylosis does not meet the definition of ‘active sacroiliitis on MRI’.

Guidelines for MRI interpretation
- BMO representing an inflammatory lesion that meets the criterion for a positive sacroiliac joint will usually be easily seen on at least two consecutive slices of an MRI scan.
- Detection of inflammation on a single slice may be sufficient for the criterion ‘highly suggestive of SpA’ if there is more than one inflammatory lesion present.

ASAS/OMERACT definition of a positive spinal MRI

1. The presence of ≥3 corner inflammatory lesions.
2. The presence of several (3-5) corner fatty lesions.

X-Ray and MRI in axial SpA

X-Ray

Grading of radiographic sacroiliitis:
Grade 0: normal
Grade 1: suspicious changes (no specific abnormality)
Grade 2: minimal abnormality - loss of definition at the edge of the SI joints, there is some sclerosis and perhaps minimal erosion, there may be some joint space narrowing
Grade 3: moderate abnormality - (definite sclerosis on both sides, blurring and indistinct margins and erosive changes with loss of joint space)
Grade 4: complete ankylosis (without residual sclerosis)

MRI

ASAS/OMERACT definition of a positive sacroiliac joint MRI

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MRI evidence of bone marrow inflammation must be present and the features required for the definition of active sacroiliitis on MRI are:

1. Bone marrow edema (BMO) on a T2-weighted sequence sensitive for free water (STIR or T2FS) or bone marrow contrast enhancement on a T1-weighted sequence (such as T1FS post-Gd).
2. Inflammation must be clearly present and located in a typical anatomical area (subchondral bone).
3. MRI appearance must be highly suggestive of SpA

Not required
- Other findings related to sacroiliitis may be observed on MRI but are not required to fulfill the imaging criterion ‘active sacroiliitis on MRI’.
- In the absence of MRI signs of BMO, the presence of structural lesions such as fat metaplasia, sclerosis, erosion or ankylosis does not meet the definition of ‘active sacroiliitis on MRI’.

Guidelines for MRI interpretation
- BMO representing an inflammatory lesion that meets the criterion for a positive sacroiliac joint will usually be easily seen on at least two consecutive slices of an MRI scan.
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ASAS/OMERACT definition of a positive spinal MRI

1. The presence of ≥3 corner inflammatory lesions.
2. The presence of several (3-5) corner fatty lesions.

Please note while MRI evidence of sacroiliitis is not classified as an ASAS SpA feature this is still a feature of the disease and therefore can be referred to as an axial SpA feature.
### Clinical features

**Definitions of spondyloarthritis features**

<table>
<thead>
<tr>
<th>Clinical criteria</th>
<th>Definition</th>
</tr>
</thead>
</table>
| IBP (inflammatory back pain) | IBP according to experts: 4 of 5 of the following parameters present:  
• Age at onset <40 years  
• Insidious onset  
• Improvement with exercise  
• No improvement with rest  
• Pain at night (with improvement upon getting up) |
| Arthritis | Past or present active synovitis diagnosed by a physician |
| Family history | Presence in first-degree or second-degree relatives of any of the following:  
• Ankylosing spondylitis  
• Psoriasis  
• Uveitis  
• Reactive arthritis  
• Inflammatory bowel disease (IBD) |
| Psoriasis | Past or present psoriasis diagnosed by a physician |
| IBD (inflammatory bowel disease) | Past or present Crohn's disease or ulcerative colitis diagnosed by a physician |
| Dactylitis | Past or present dactylitis diagnosed by a physician |
| Enthesitis | Heel enthesitis: past or present spontaneous pain or tenderness at examination of the site of the insertion of the Achilles tendon or plantar fascia at the calcaneus |
| Uveitis anterior | Past or present uveitis anterior, confirmed by an ophthalmologist |
| Good response to NSAIDs | 24-48 hours after a full dose of an NSAID, the back pain is not present anymore or much better |

<table>
<thead>
<tr>
<th>Lab or imaging diagnostics</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLA-B27</td>
<td>Positive testing according to standard laboratory techniques</td>
</tr>
<tr>
<td>Elevated CRP</td>
<td>CRP above upper normal limit, after exclusion of other causes for elevated CRP concentration in the presence of back pain</td>
</tr>
<tr>
<td>Sacroiliitis by X-rays</td>
<td>Bilateral grade 2-4 or unilateral grade 3-4, according to the modified New York criteria</td>
</tr>
<tr>
<td>Sacroiliitis by MRI</td>
<td>Active inflammatory lesions of sacroiliac joints with definite bone marrow edema/ostitis suggestive of sacroiliitis associated with SpA</td>
</tr>
</tbody>
</table>
Section 2

Monitoring Axial SpA
### Monitoring Axial SpA

**Assess disease severity.**
At every appointment:
- BASDAI
- Spinal pain score
- BASFI
- BASMI
- WPAI
- BAS-G
- ASDAS

**Physiotherapist to assess disease severity using:**
- BASDAI
- BASFI
- BASMI
- If not received from rheumatology

Once a patient is diagnosed with axial SpA, their disease should be monitored using a range of composite indices and questionnaires. The following have been recommended by the Back in Focus Steering Committee.

### Assessing disease activity

#### Bath Ankylosing Spondylitis Disease Activity Index (BASDAI)

The BASDAI was developed as a composite index to measure disease activity (Appendix C). The markers of disease activity include severity of fatigue, spinal and peripheral joint pain, localised tenderness and morning stiffness (both qualitative and quantitative). The BASDAI is user-friendly (taking between 30 seconds and 2 minutes to complete), highly reliable and is sensitive to clinical changes.

Ask your patients to complete the six questions with a rating between 0-10 (0 being none and 10 being very severe), based on how their axial SpA has affected them in the last week.

**Calculating the BASDAI score**

**A.** Add scores for questions 1-4

**B.** Calculate the mean for questions 5 and 6

**C.** Add A and B and divide by 5

This gives a BASDAI score out of 10. The higher the BASDAI score, the greater the patient’s disability due to axial SpA.

### Spinal Pain Score

The spinal pain experienced by the patient should also be monitored. The spinal pain numerical scale or a visual analogue scale can be used. The numerical scale is recommended. The spinal pain score can be recorded on the BASDAI sheet.

**Spinal pain score**

Please refer your patient to Talking AS.‡

How would you describe the overall level of pain you have experienced in your spine in the past week? Please circle the box which is the most appropriate to describe how severe your condition has been in this area.

- None
- Mild
- Moderate
- Severe
- Very severe

You should also encourage your patient to complete the BASDAI and spinal pain score online on [www.talkingAS.com](http://www.talkingAS.com) so that you can monitor their disease severity.

Talking AS is provided by AbbVie Ltd in Association with the Royal National Hospital for Rheumatic Diseases, Bath.
Assessing functional impact

The Bath Ankylosing Spondylitis Functional Index (BASFI)

Physical function in axial SpA is measured using the BASFI. It aims to assess the degree of limitation in a patient’s ability to carry out everyday tasks over the last week. The BASFI contains a list of 10 questions which can be filled out by the patients themselves and takes approximately one minute to complete. The BASFI index is structured so that the first eight questions focus on functional anatomy and the last two questions relate to global assessments that measure the patient’s functional ability to cope with everyday life.

Ask your patients to complete the 10 questions with a rating between 0-10 (0 being none and 10 being very severe), based on how their axial SpA has affected them over the last week.

Calculating the BASFI score

A. Add scores for questions 1-10.
B. Divide by 10 to calculate the mean.

This gives a BASFI score out of 10. The higher the BASFI score, the more severe the patient’s limitation of function due to axial SpA.

Assessing spinal mobility

Bath Ankylosing Spondylitis Metrology Index (BASMI)

Spinal mobility is a quantitative measurement of the physical limitations experienced by a patient with axial SpA, and is assessed by healthcare professionals. It has traditionally been measured using the Bath Ankylosing Spondylitis Metrology Index (BASMI), a validated index consisting of five clinical measurements including:

- Tragus to wall distance
- Lateral lumbar flexion
- Modified Schober’s test (Lumbar flexion)
- Cervical rotation
- Internalleolar distance (IMD)

How to conduct the clinical measurements for the BASMI*

a) Tragus to wall

Starting position

Ask the patient to stand bare feet; back to wall; knees straight; scapulae, buttocks and heels against the wall; shoulders level; outer edges of feet 30 cm apart and feet parallel.

Ensure the head is in as neutral a position (anatomical alignment) as possible.

Method

Ask the patient to draw the chin in as far as possible (retraction). Keeping both of your eyes open and the side of your face against the wall, measure the distance between the tragus of the ear and the wall, using a rigid ruler or a tape measure with metal ends. Take the mean of the left and right measurements to get the tragus to wall score.

Ensure no cervical extension, rotation, flexion or side flexion occurs.

It is best to use a wall without a skirting board.

Ensure retraction is maintained whilst both sides are measured.

*All images for BASMI measurements are courtesy of Liz Van Rossen MCSP, Extended Scope Practitioner in Rheumatology physiotherapy, East Kent Hospital University Trust.
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Axial SpA

b) Lateral lumbar flexion

Starting position
Ask the patient to stand bare feet; back to wall; knees straight; scapulae, buttocks and heels against wall; shoulders level; outer edges of feet 30 cm apart and feet parallel.

Method
Before any movement occurs, keeping the patient’s arms, wrist and fingers straight, measure from tip of the middle finger to the floor. Ask the patient to reach towards the floor by side flexing, with palms placed on the lateral aspect of the thighs. Re-measure from the tip of middle finger to the floor. The difference between the two measurements represents the amount of side flexion. Repeat these steps on other side, and take the mean of the left and right measurements to get the lumbar side flexion score.

Ensure that the patient keeps his/her arms, fingers and knees straight and heels on floor. Ensure any forward flexion, extension or rotation of the trunk is avoided.

It is best to use a wall without a skirting board, and you may need to accommodate a leg length discrepancy with block under foot.

c) Modified Schober’s test (Lumbar flexion)

Starting position
Ask the patient to stand with the outer edges of his/her bare feet 30cm apart and feet in line. Mark a point midway along a line level with the iliac crests (at the L4/5 junction). Mark a second point 10cm above this and a third 5cm below the first to give a 15cm line.

Method
Ask the patient to flex forward from the waist with knees fully extended. Measure the distance between the upper and lower two marks. Any increase beyond 15cm represents the amount of movement achieved.

At the end of the movement, you may choose to allow slight knee flexion to decrease influence of hamstrings. This should be documented.

d) Cervical rotation

Starting position
Ask the patient to lie supine on the floor or a wide plinth, with his/her forehead in a horizontal position and head in a neutral position. You may need to use a pillow, books or a foam block to achieve this. Carefully document to ensure the same setup is used on future re-assessments.

Method
Using a goniometer/inclinometer, ask the patient to rotate his/her head as far as possible, keeping the shoulders still. Measure both sides and take the mean of the left and right measurements to get the cervical rotation score.

Ensure no neck flexion or side flexion occurs.

e) Intermalleolar distance

Starting position
Ask the patient to lie supine on the floor or a wide plinth, with knees in extension.

Method
Ask the patient to take their legs as far apart as possible, keeping their knees straight and legs in contact with the resting surface. Measure the distance between the medial malleoli.

Measure quickly as movement can be painful. Be ready to measure before asking patient to achieve movement.
How to calculate the BASMI score

Please assess the patient on each using the BASMI 0 – 10 scale. The BASMI assessment sheet (appendix E) provided as a Back in Focus resource allows you to record all the patients scores and calculate the score.

Calculating the BASMI score:

A. Add together the scores for each measurement according to the table above.
B. This will provide you with a figure out of 50. Divide this by 5 to give you the BASMI score.

The higher the BASMI score the more severe the patient’s limitation of movement due to axial SpA.

The Bath Ankylosing Spondylitis Global Score (BAS-G)

Please read the question below to your patient and circle the box they feel is most appropriate to describe the effect their disease has had on their well being over the last week.

<table>
<thead>
<tr>
<th>Score</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Very mild</td>
</tr>
<tr>
<td>2</td>
<td>Mild</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Severe</td>
</tr>
</tbody>
</table>

The Bath Ankylosing Spondylitis Global Score (BAS-G) is used to calculate the ASDAS (Ankylosing Spondylitis Disease Activity Score). More information on the ASDAS can be found here www.ASAS-group.org/clinical-instruments.php?id=01*

*This website is not owned by AbbVie. AbbVie have no responsibility for the content.

Points TTW* Lateral flexion* Modified Schober* Cervical rotation† IMD*
0 ≤10 ≤20 ≤7.0 ≥85 ≥120
1 10-12.9 18-20 6.4-7.0 76.6-85 110-119.9
2 13-15.9 15.9-17.9 5.7-6.3 68.1-76.5 100-109.9
3 16-18.9 13.8-15.8 5.0-5.6 59.6-68 90-99.9
4 19-21.9 11.7-13.7 4.3-4.9 51.1-59.5 80-89.9
5 22-24.9 9.6-11.6 3.6-4.2 42.6-51 70-79.9
6 25-27.9 7.5-9.5 2.9-3.5 34.1-42.5 60-69.9
7 28-30.9 5.4-7.4 2.2-2.8 25.6-34 50-59.9
8 31-33.9 3.3-5.3 1.5-2.1 17.1-25.5 40-49.9
9 34-36.9 1.2-3.2 0.8-1.4 8.6-17 30-39.9
10 ≥37 ≥1.2 ≥0.7 ≥8.5 ≤30

* Measurement in cm; † measurement in degrees IMD, Intermalleolar distance; TTW, tragus to wall.

Used with permission from Royal National Hospital for Rheumatic Diseases, Bath.
Assessing impact of interventions

8 Ankylosing Spondylitis Quality of Life (ASQoL)

Improvement in a patient’s quality of life is an important assessment when measuring whether a treatment is effective or the patient’s disease is being managed appropriately. ASQoL is used to assess the impact of a new treatment or to compare different treatment regimens. It comprises 18 questions which are quick and easy for the patient to complete (taking less than five minutes), making it suitable for use in clinical settings and could be completed in the waiting room before a consultation.

9 Work Productivity and Activity Impairment (WPAI)

The WPAI is one of the most commonly used outcome assessments for work productivity and limit in daily activity in axial SpA. It is a set of six questions for the patient to complete to measure reduced productivity, both at work and during non-work activities, in a quantitative way.

The WPAI is quick to complete and the patient can complete this in the waiting room before a consultation.
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Axial SpA

10 Ankylosing Spondylitis Disease Activity Score (ASDAS)

The Ankylosing Spondylitis Disease Activity Score (ASDAS) is a composite index to assess disease activity in Ankylosing Spondylitis (AS). It combines five disease activity variables resulting in one single score, the score then reflects a disease activity state. ASDAS response criteria have also been developed.

ASDAS can be calculated in two ways (as below) but the version with CRP if preferred.

**ASDAS-CRP**

\[
0.12 \times \text{Back Pain} + 0.06 \times \text{Duration of Morning Stiffness} + 0.11 \times \text{Patient Global} + 0.07 \times \text{Peripheral Pain/Swelling} + 0.58 \times \ln(\text{CRP}+1)
\]

**ASDAS-ESR**

\[
0.08 \times \text{Back Pain} + 0.07 \times \text{Duration of Morning Stiffness} + 0.11 \times \text{Patient Global} + 0.09 \times \text{Peripheral Pain/Swelling} + 0.29 \times \sqrt{\text{ESR}}
\]

Quick ASDAS calculation forms are also available. The ASDAS-CRP and ASDAS-ESR quick calculation forms can be downloaded [here](http://www.asas-group.org/clinical-instruments.php?id=01). Assessment of SpondyloArthritis International Society (ASAS) have also developed an online ASDAS calculator which can be accessed here [here](http://www.asas-group.org/clinical-instruments/asdas_calculator/asdas.html). A desktop version of the ASDAS calculator can be downloaded here [here](http://www.asas-group.org/clinical-instruments.php?id=01).

Further information on the ASDAS can be found on the ASAS website here [here](http://www.asas-group.org/clinical-instruments.php?id=01).

"AbbVie has no responsibility for the content of these websites."
Appendix A

‘Assessing Axial Spondyloarthritis’ poster

Appendix B

IBP Questionnaire

Inflammatory Back Pain Assessment
Assessment of SpondyloArthritis international Society (ASAS) experts’ criteria

Has your patient suffered from back pain for more than 3 months?

[ ] Yes  [ ] No

If your patient answered Yes, please ask them the questions below.

Patient name:

Date of appointment:

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

[ ] Yes  [ ] No

2. Did your back pain develop gradually?

[ ] Yes  [ ] No

3. Does your back pain improve with exercise?

[ ] Yes  [ ] No

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

[ ] Yes  [ ] No

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

[ ] Yes  [ ] No

For healthcare professional use only.

The criteria are fulfilled if at least four out of five parameters are present. In this case, please refer the patient to a rheumatologist.
Appendix C

BASDAI Questionnaire

Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and Spinal Pain Score

Please read each question to your patient and circle the box they feel is the most appropriate to describe how severe their condition has been in this area. Each question relates to how they have felt in the past week.

<table>
<thead>
<tr>
<th>Patient name:</th>
<th>Date of birth / hospital number:</th>
</tr>
</thead>
</table>

1. How would you describe the overall level of fatigue/tiredness you have experienced?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

2. How would you describe the overall level of pain you have experienced in your spine from the time you wake up?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

3. How would you describe the overall level of pain/swelling in joints other than the neck, back or hips?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

4. How would you describe the overall level of AS neck, back or hip pain you have had?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

5. How would you describe the overall level of morning stiffness you have had from the time you wake up?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

6. How long does your morning stiffness last from the time you wake up?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

7. How would you describe the overall level of discomfort you have had from any tender areas to touch or pressure?
   - None
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Very severe

Spinal Pain Score

How would you describe the overall level of pain you have experienced in your spine in the past week? Please circle the box which represents your answer.

- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- Very severe

BASDAI Score (for calculation instructions turn over)³

Spinal Pain Score (score from 0-10, for pain experienced in last 24hrs)³

Is the patient eligible for biologic therapy?

Yes
No

For clinician use only

Appendix D

BASFI Questionnaire

Bath Ankylosing Spondylitis Functional Index (BASFI)

Please read each question to your patient and circle the box they feel is the most appropriate to describe how difficult the below activities have been for them in the last week. There is no wrong answer.

<table>
<thead>
<tr>
<th>Patient name:</th>
<th>Date of appointment:</th>
</tr>
</thead>
</table>

1. Putting on your socks or tights without help or aids (eg, sock aid).
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

2. Bending forward from the waist to pick up a pen from the floor without an aid.
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

3. Reaching up to a high shelf without help or aids (eg, helping hand).
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

4. Getting up off the floor without help from lying on your back.
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

5. Climbing 12 to 15 steps without using a handrail or walking aid. One foot at each step.
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

6. Standing unsupported for 10 min without discomfort.
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

7. Doing a full day’s activities, whether it be at home or at work.
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

8. Doing physically demanding activities (eg, physiotherapy, exercises, gardening or sports).
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

9. Looking over your shoulder without turning your body.
   - Easy
   - 0
   - 1
   - 2
   - 3
   - 4
   - 5
   - 6
   - 7
   - 8
   - 9
   - 10
   Impossible

10. Doing a full day’s activities, whether it be at home or at work.
    - Easy
    - 0
    - 1
    - 2
    - 3
    - 4
    - 5
    - 6
    - 7
    - 8
    - 9
    - 10
    Impossible

For clinician use only

BASFI Score Calculation

Add the scores from questions 1-10 and divide by 10

BASFI Score
Appendix E

BASMI Assessment

Bath Ankylosing Spondylitis Metrology Index (BASMI)

For clinician use only

Record the patient's results for the five measurements within the BASMI in the table below. For further information on how to perform each of these measurements refer to the Axial Spondyloarthritis (SpA) Assessment Academy Booklet.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Left</th>
<th>Right</th>
<th>Mean or total score</th>
<th>BASMI points</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Tragus to wall distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Lateral lumbar flexion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Modified Schöber's test (Lumbar flexion)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Cervical rotation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Intermalleolar distance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total BASMI points (out of 50):

BASMI score (total points ÷ 5) = 10

Calculating the BASMI

The result of each assessment is assigned a score according to the table below. Adding up all the scores will provide a total out of 50. This is divided by 5 to give the BASMI score. The higher (nearer 10) the BASMI score the more severe the patient's limitation of movement due to axial SpA.

BASMI score calculation table

<table>
<thead>
<tr>
<th>Points</th>
<th>TTW*</th>
<th>Lateral lumbar flexion†</th>
<th>Modified Schöber*</th>
<th>Cervical rotation†</th>
<th>IMD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&lt;10</td>
<td>&lt;10</td>
<td>&gt;7.0</td>
<td>&gt;85</td>
<td>&gt;120</td>
</tr>
<tr>
<td>1</td>
<td>10-12.9</td>
<td>16.5-19.9</td>
<td>6.4-7.0</td>
<td>76.6-94.9</td>
<td>110-119.9</td>
</tr>
<tr>
<td>2</td>
<td>13-15.9</td>
<td>15.9-17.9</td>
<td>7.0-8.6</td>
<td>68.1-76.5</td>
<td>100-109.9</td>
</tr>
<tr>
<td>3</td>
<td>16-18.9</td>
<td>13.8-15.8</td>
<td>5.0-5.5</td>
<td>55.6-68</td>
<td>90-99.9</td>
</tr>
<tr>
<td>4</td>
<td>19-21.9</td>
<td>11.7-13.7</td>
<td>4.3-4.9</td>
<td>51.1-59.3</td>
<td>80-89.9</td>
</tr>
<tr>
<td>5</td>
<td>22-24.9</td>
<td>9.6-11.6</td>
<td>3.6-4.2</td>
<td>42.6-51</td>
<td>70-79.9</td>
</tr>
<tr>
<td>6</td>
<td>25-27.9</td>
<td>7.5-9.5</td>
<td>2.9-3.5</td>
<td>34.1-42.5</td>
<td>60-69.9</td>
</tr>
<tr>
<td>7</td>
<td>28-30.9</td>
<td>5.4-7.4</td>
<td>2.2-2.8</td>
<td>25.6-34</td>
<td>50-59.9</td>
</tr>
<tr>
<td>8</td>
<td>31-33.9</td>
<td>3.3-5.3</td>
<td>1.5-2.1</td>
<td>17.1-25.5</td>
<td>40-49.9</td>
</tr>
<tr>
<td>9</td>
<td>34-36.9</td>
<td>1.2-3.2</td>
<td>0.6-1.4</td>
<td>8.6-17</td>
<td>30-39.9</td>
</tr>
<tr>
<td>10</td>
<td>&gt;37</td>
<td>&gt;37</td>
<td>&gt;1.7</td>
<td>&gt;8.5</td>
<td>&lt;30</td>
</tr>
</tbody>
</table>

* Measurement in cm, † measurement in degrees IMD, Intermalleolar distance; TTW, tragus to wall.

Appendix F

BAS-G Questionnaire

The Bath Ankylosing Spondylitis Global Score (BAS-G)

Please read the question below to your patient and circle the box they feel is most appropriate to describe the effect their disease has had on their well being over the last week.

Patient name: ____________________________ Date of birth / hospital number: __________

1. Please use the scale below to indicate the effect your patient’s disease has had on their well being over the last week.

None [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5 [ ] 6 [ ] 7 [ ] 8 [ ] 9 [ ] 10 [ ] Very severe

For clinician use only

The BAS-G is used to calculate the ASDAS (Ankylosing Spondylitis Disease Activity Score). More information on the ASDAS can be found here www.ASAS-group.org/clinical-instruments.php?id=01

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Date of Preparation: November 2017   Job Code: AXHUR150947h(3)

REVIEW

For UK healthcare professionals only

This Back in Focus resource was developed in partnership with NASS for UK healthcare professionals only, organised and funded by AbbVie.
Appendix G

ASQoL Questionnaire

Ankylosing Spondylitis Quality of Life Questionnaire (ASQoL)

Please read this carefully

Score

Date of Preparation: August 2015   Job Code: AXHUR150947i(1)

The following questions ask about the effect of your patient’s axial spondyloarthritis (SpA) on their ability to work and perform regular activities. Please discuss these with your patient and fill in the blanks or circle a number, as indicated.

Patient name:

1. Are you currently employed (working for pay)?

   Yes  No

   If “No”, step to question 5.

The next questions are about the past seven days, not including today.

2. During the past seven days, how many hours did you miss from work because of problems associated with your axial SpA?

   Include hours you missed on sick days, times you went in late, left early, etc., because of your axial SpA.

   Hours

3. During the past seven days, how many hours did you miss from work because of any other reasons, such as vacations, or holidays?

   Hours

4. During the past seven days, how many hours did you actually work?

   If “0”, step to question 5.

   Hours

5. During the past seven days, how much did your axial SpA affect your productivity 

   while you were working?

   Think about days you were limited in the amount or kind of work you could do. Days you accomplished less than you would or should have, or days you could not do your work as carefully as usual. If axial SpA affected your work only a little, choose a low number. Choose a high number if axial SpA affected your work a great deal.

   Consider only how much axial SpA affected your ability to do your regular daily activities, other than work or school.

   Think about days you were limited in the amount or kind of activities you could do and times you accomplished less than you would have if axial SpA did not affect your activities at all. Choose a low number if axial SpA affected your activities a little, choose a medium number. Choose a high number if axial SpA affected your activities a great deal.

   Consider only how much axial SpA affected your ability to do your regular daily activities, other than work or school.

   Circles numbers corresponding to the score that best applies to you

   Score

   1 2 3 4 5 6 7 8 9 10

For calculation instructions please turn over.

Appendix H

WPAI Questionnaire

Work Productivity and Activity Impairment Questionnaire: Specific Health Problem V2.0, Clinical Practice Version (WPAI:SHP, V2.0, CPV)

The following questions ask about the effect of your patient’s axial spondyloarthritis (SpA) on their ability to work and perform regular activities. Please discuss these with your patient and fill in the blanks or circle a number, as indicated.

Patient name:

1. Are you currently employed (working for pay)?

   Yes  No

   If “No”, check “No” and skip to question 6.

The next questions are about the past seven days, not including today.

2. During the past seven days, how many hours did you miss from work because of problems associated with your axial SpA?

   Include hours you missed on sick days, times you went in late, left early, etc., because of your axial SpA.

   Hours

3. During the past seven days, how many hours did you miss from work because of any other reasons, such as vacations, or holidays?

   Hours

4. During the past seven days, how many hours did you actually work?

   If “0”, step to question 5.

   Hours

5. During the past seven days, how much did your axial SpA affect your productivity 

   while you were working?

   Think about days you were limited in the amount or kind of work you could do. Days you accomplished less than you would or should have, or days you could not do your work as carefully as usual. If axial SpA affected your work only a little, choose a low number. Choose a high number if axial SpA affected your work a great deal.

   Consider only how much axial SpA affected your ability to do your regular daily activities, other than work or school.

   Think about days you were limited in the amount or kind of activities you could do and times you accomplished less than you would have if axial SpA did not affect your activities at all. Choose a low number if axial SpA affected your activities a little, choose a medium number. Choose a high number if axial SpA affected your activities a great deal.

   Consider only how much axial SpA affected your ability to do your regular daily activities, other than work or school.

   Circles numbers corresponding to the score that best applies to you

   Score

   1 2 3 4 5 6 7 8 9 10

For calculation instructions please turn over.
Assessing Axial Spondyloarthritis

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References
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