Finding the needle in a haystack

Identifying axial spondyloarthritis in a primary care back pain population

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Act on Axial SpA:
A Gold Standard
Time to Diagnosis

Royal National Hospital for Rheumatic Diseases
Royal United Hospitals Bath NHS

Bath Institute for Rheumatic Diseases

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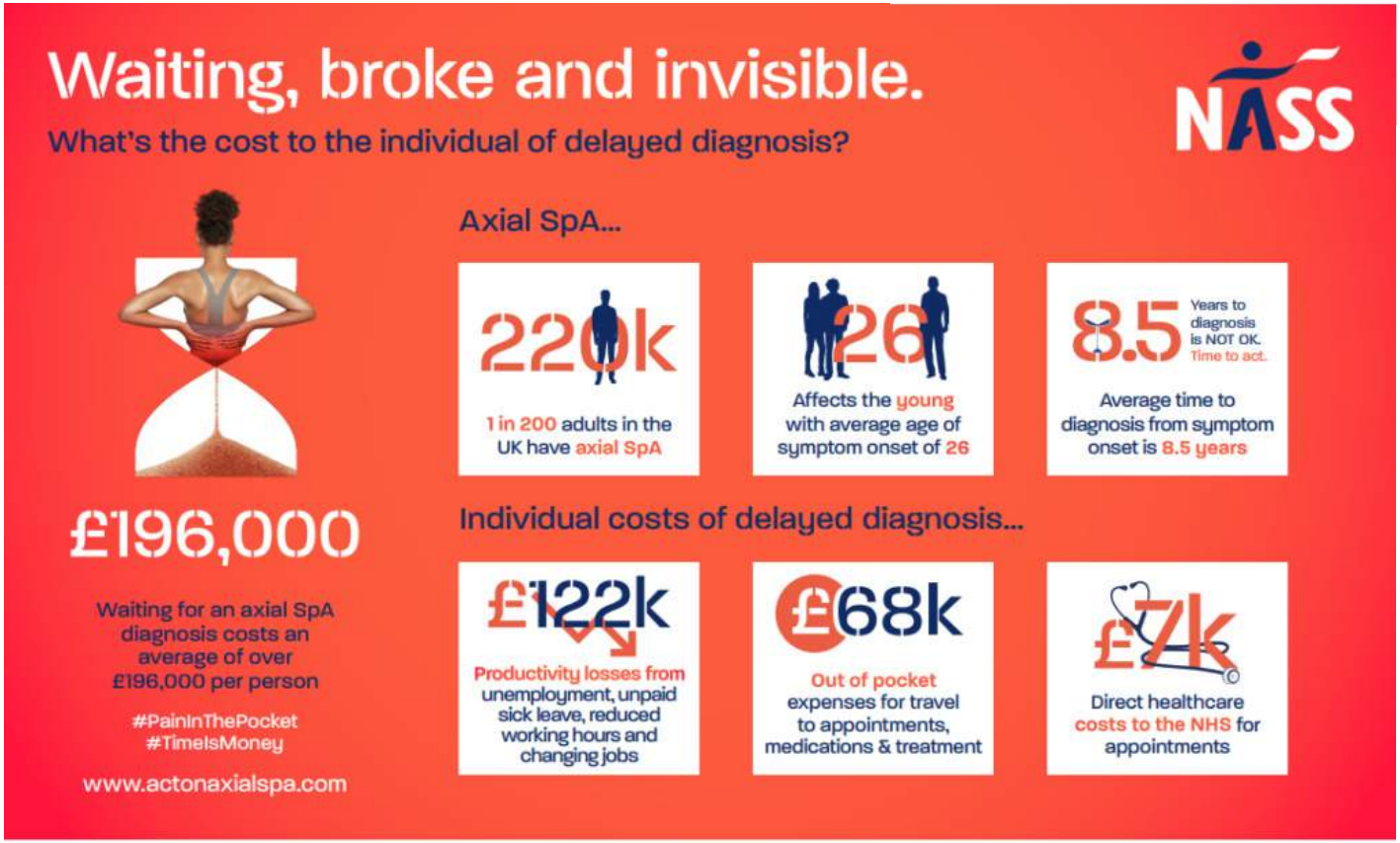
If your surgery looks after a population of 10,000 patients, approximately how many will have axial spondyloarthritis (axSpA)?

ⓘ Start presenting to display the poll results on this slide.

Axial Spondyloarthritis (axSpA): Key Facts

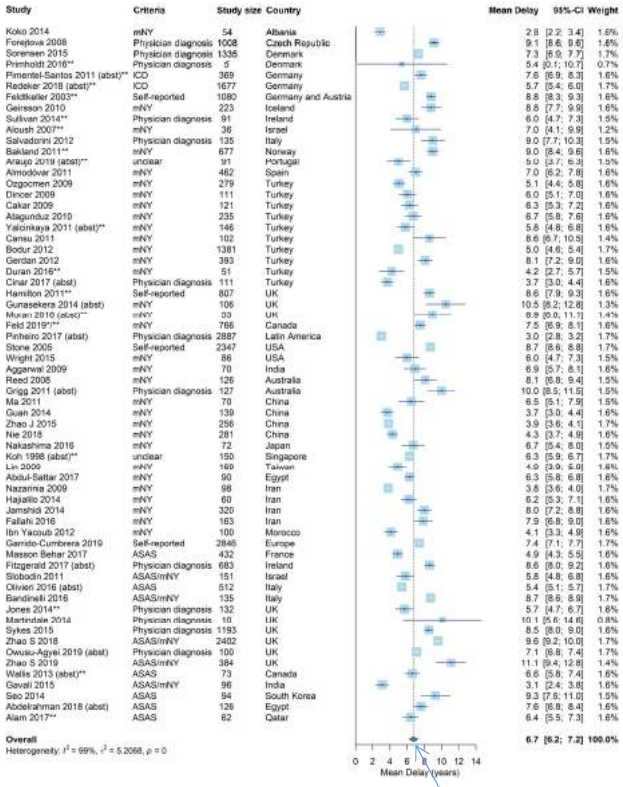
- Affects 220k UK adults (1 in 200 to 300)
  - Greater prevalence than Parkinsons + MS combined
- Average age of symptom onset: mid-20s
  - 95% <45y
- Gender:
  - Ank Spond (or r-axSpA): M 3:1 F
  - nr-axSpA ~ 50:50 (F>M in some cohorts)
- HLA-B27:
  - Present in ~85% of UK patients with axSpA
    - Less strong when SpA associated with psoriasis/IBD
    - Less strong in non-Caucasians
  - Gene present in 8% of white Europeans
    - Only 1 in 15 with gene develop AxSpA

Current context



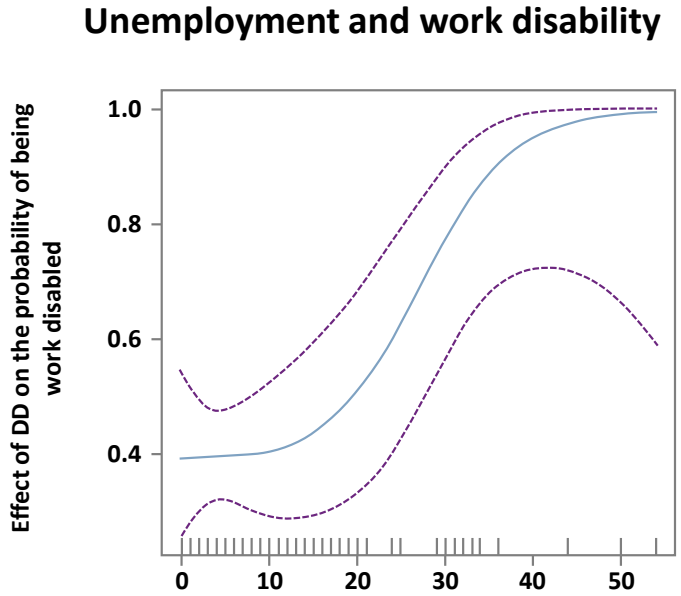
Worldwide delay to diagnosis

- Systematic review: 6.7 years
  - Not improving over time
- Factors associated with longer delay:
  - Lower educational attainment
  - Younger age of onset
  - Absence of extra-musculoskeletal manifestations
- Other papers suggest longer delays if:
  - HLA-B27 negative
  - Female



Zhao S, et al. Diagnostic delay in axial spondyloarthritis: a systematic review and meta-analysis. Rheumatology 2021; 60(4): 1620-8.
Sykes MP, et al. Delay to diagnosis in axial spondyloarthritis: are we improving in the UK? Rheumatology 2015; 54(12): 2283-4.
Barnett R, et al. Axial spondyloarthritis 10 years on: are we still looking for the lost tribe? Rheumatology 2020; 59:iv25-iv37.

Social impact of delayed diagnosis:



Gunasekera W et al 2014:

Risk of becoming work disabled increased by 6.65% for each year of delayed diagnosis

(OR=1.07, 95% CI=1.03–1.11; p=0.001).

Reasons for diagnostic delay in axSpA:

Image taken from Barnett R, Ingram T & Sengupta R. Axial spondyloarthritis 10 years on: still looking for the lost tribe. Rheumatology 2020; 59(4): iv25-iv37.

Inflammatory Back Pain characteristics:

- Persistent > 3 months
  - May have a “flare pattern”
- Age of onset: <45 years
  - Stronger positive predictive value if <35
- Inflammatory character
  - Improves with movement
  - Better response to NSAIDs than other causes of back pain
  - Does not improve with rest
  - Waking from sleep in second half of night
  - Associated morning stiffness >30 minutes
  - Alternating buttock pain: SIJ involvement

Table 1: Inflammatory Back Pain Criteria[2]

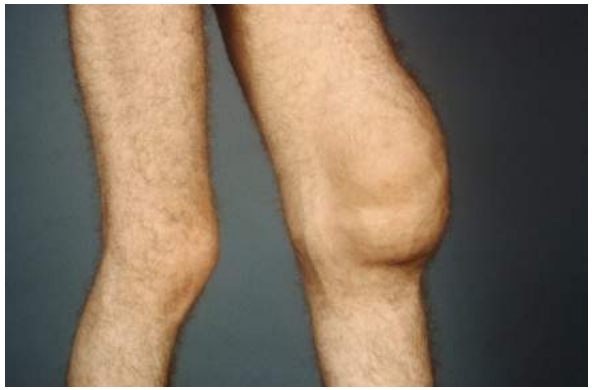
Feature	Odds Ratios
Insidious onset	12.7
Pain at night (with improvement upon getting up)	20.4
Age at onset <40 years	9.9
Improvement with exercise	23.1
No improvement with rest	7.7

Best trade-off if four or more of the above five parameters are fulfilled (Sensitivity 79.6% & Specificity 2.4%)*

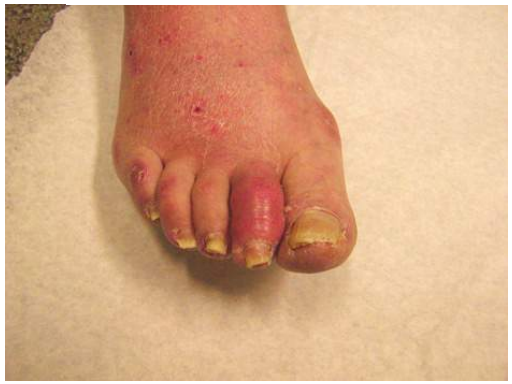
Positive Likelihood Ratio **= 79.6/[100-72.4] = 2.9**

Source: Seiper J, van der Heijde D, Landewé R. et al. New criteria for inflammatory back pain in patients with chronic back pain: A real patient exercise by experts from the Assessment of SpondyloArthritis International Society (ASAS). *Ann Rheum Dis.* 2009;68(6):784–788.

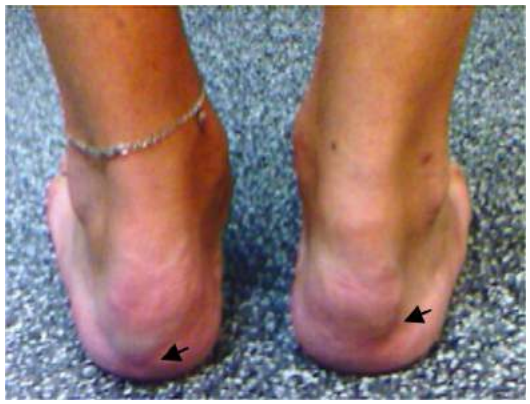
Extra-spinal manifestations



Peripheral arthritis



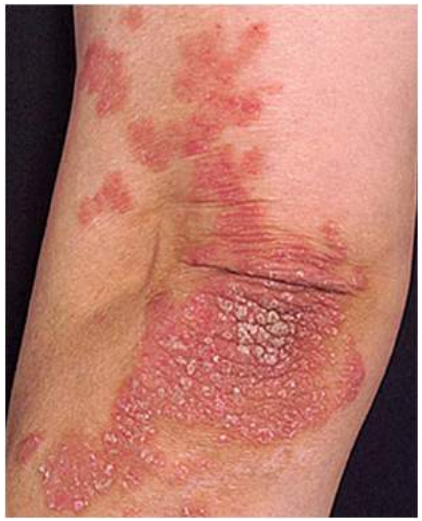
Dactylitis

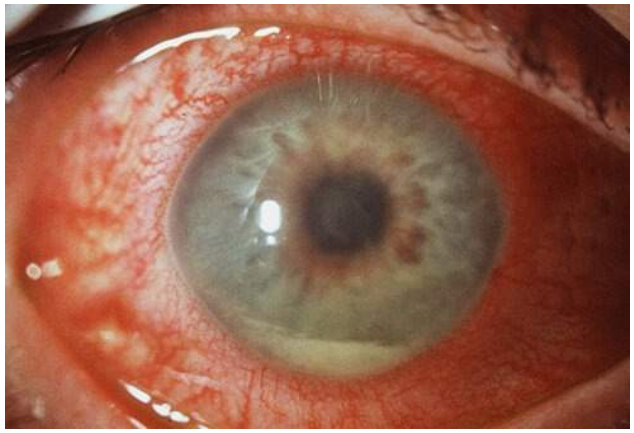


Enthesitis

Extra-musculoskeletal manifestations

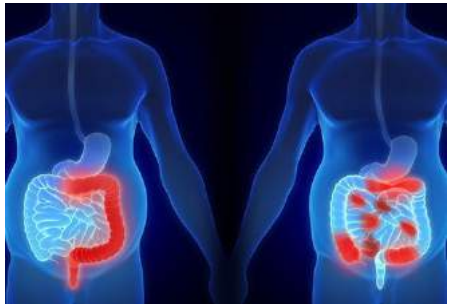
Psoriasis

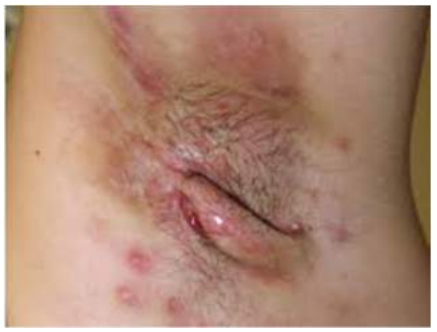




Acute Anterior Uveitis

Inflammatory Bowel Disease





Hidraedenitis Supparativa

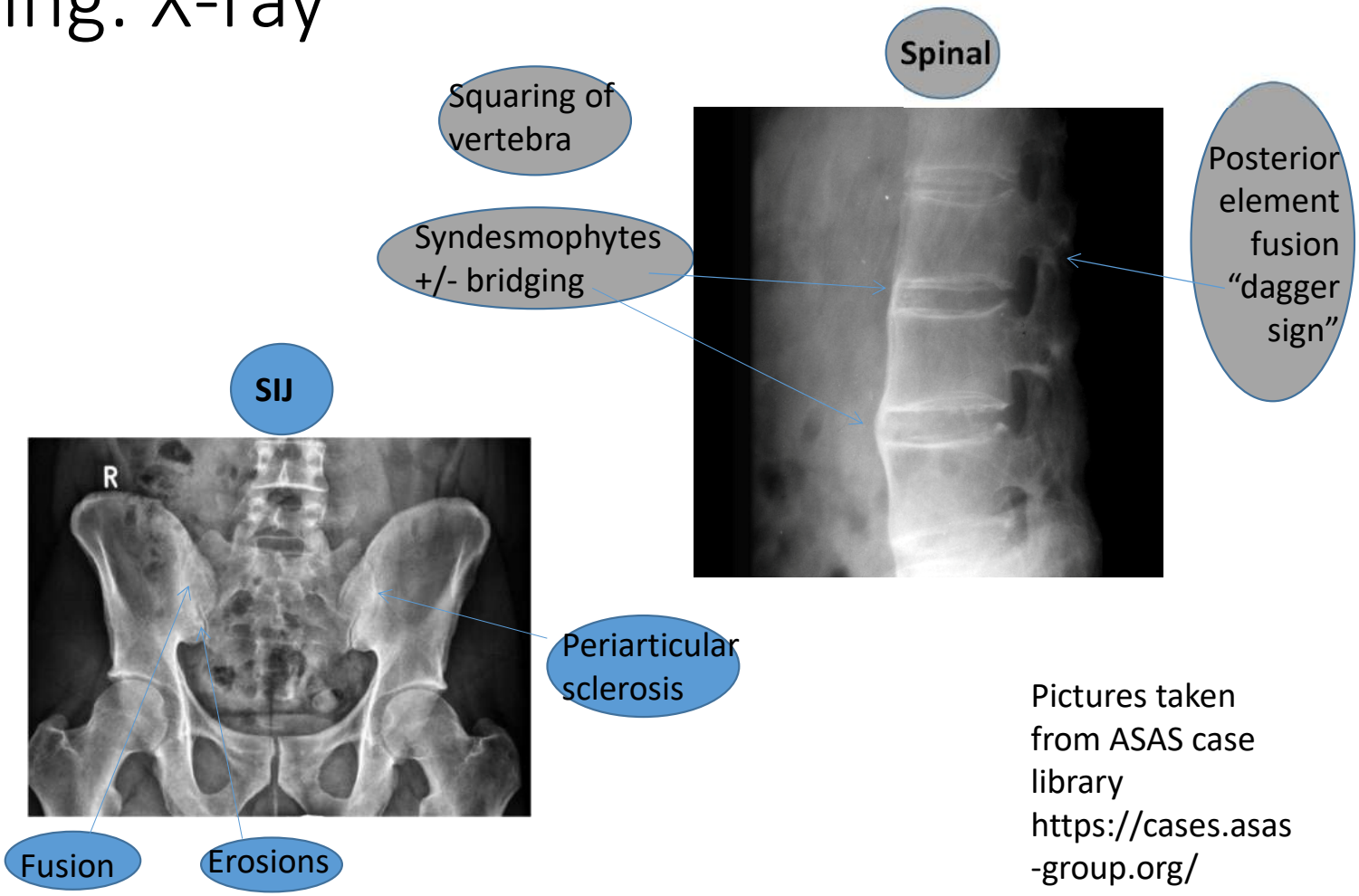
Examination findings

- **Can be normal even with very active disease**
- Main purpose is to assess complications/mimics:
  - Differential diagnoses:
    - Cancer
    - Infection
    - Fracture
    - Degenerative
  - Early hip OA
  - CVS: Aortic regurgitation, heart block
  - Resp: Apical lung fibrosis
  - Neurology: myelopathy/ radiculopathy

Blood tests

- **No single test can rule axSpA in or out**
- FBC/U+E/LFT: particularly important to monitor if patient taking regular NSAIDs
- CRP:
  - Can be normal even with active disease ~30%
  - If raised:
    - More likely to respond to treatment
    - Higher risk of radiographic progression if not suppressed
  - If very high consider wider differential diagnosis
- HLA-B27:
  - Not a rule in or out test
  - If positive: higher risk of radiographic progression

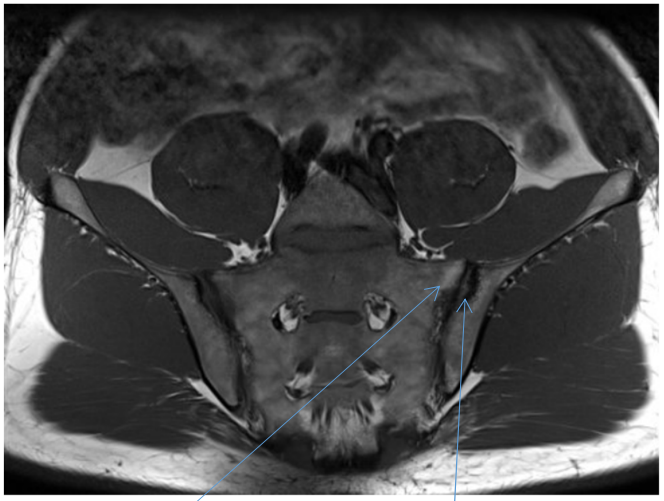
Imaging: X-ray



Pictures taken from ASAS case library https://cases.asas-group.org/

MRI SIJs

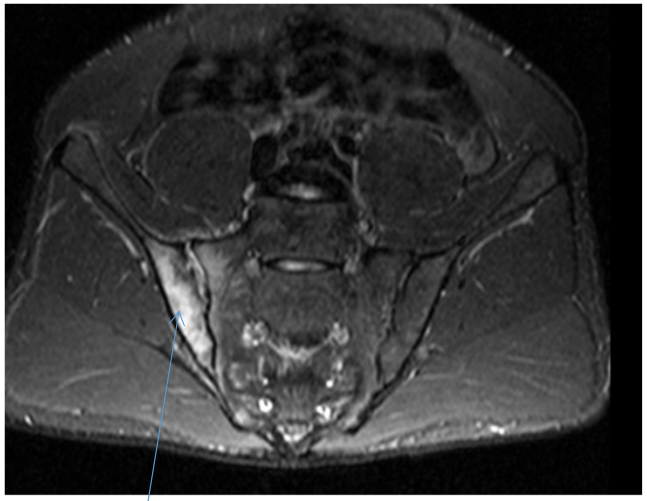
T1: structural lesions



Fat metaplasia

Erosions

STIR: active disease

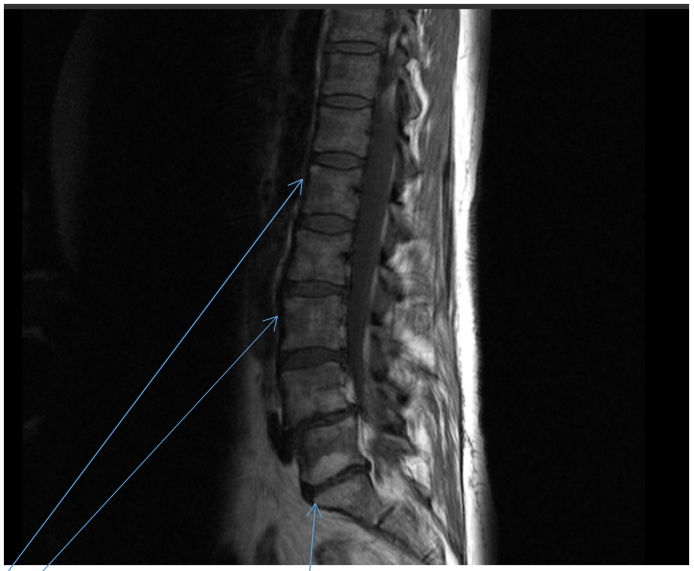


Bone marrow oedema

Pictures taken from ASAS case library
https://cases.asas-group.org/

MRI spine

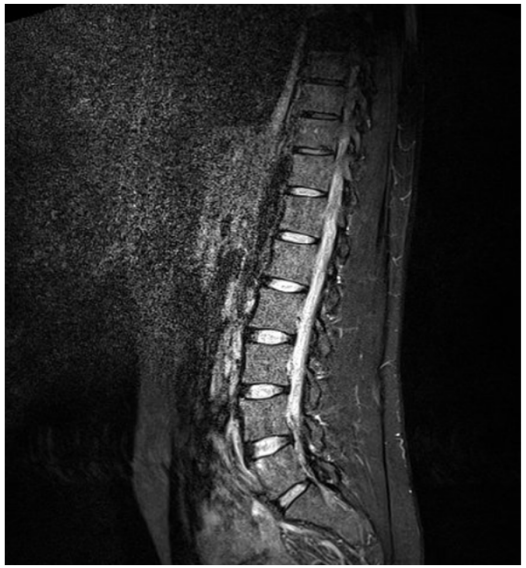
T1: structural lesions



Anterior corner lesions

Vertebral end-plate lesions

STIR: active disease



Pictures taken from ASAS case library
https://cases.asas-group.org/

British Society for SpondyloArthritis

SOUTH WEST SWAG AXIAL SPONDYLOARTHRITIS GROUP

Recommendations for MRI:

- Areas to be imaged:
  - SIJs
  - Spine (can be thoraco-lumbar or whole)
- Minimum images needed:
  - T1 and fat-suppressed/fluid-sensitive eg STIR sequences
  - Sagittal image of spine with extended lateral coverage
  - Coronal-oblique view of SIJs

Bray T, et al. Recommendations for the acquisition and interpretation of MRI of the spine and sacro-iliac joints in the diagnosis of axial spondyloarthritis in the UK. Rheumatology 2019; 58: 1831-8.

MRI requesting for ?axSpA: Local policy

- Can only be requested after review in RNHRD
- Why?:
  - Manages MRI demand
  - Ensures correct sequences performed
  - Even a negative MRI can't exclude axSpA if very strong clinical suspicion
- What to do: if suspect axSpA clinically – refer to EBP clinic +/- A+G

Case 1:

- 42yM
- Several years episodic joint and spinal pain, flares lasting up to week at a time
- Presents with 2 yrs worsening lower back and pelvic pain
- Woken from sleep at 3am
- Better with physical activity and NSAIDs, worse in mornings
- Left tennis elbow repeatedly
- No psoriasis / IBD/ iritis
- Bloods: normal FBC/U+E/LFT/CRP; Rh F 20

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What would you do next?:

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Referral for suspected axial spondyloarthritis

1.1.5 If a person has low back pain that started before the age of 45 years and has lasted for longer than 3 months, refer the person to a rheumatologist for a spondyloarthritis assessment if **4 or more** of the following additional criteria are also present:

- low back pain that started before the age of 35 years (this further increases the likelihood that back pain is due to spondyloarthritis compared with low back pain that started between 35 and 44 years)
- waking during the second half of the night because of symptoms
- buttock pain
- improvement with movement
- improvement within 48 hours of taking non-steroidal anti-inflammatory drugs (NSAIDs)
- a first-degree relative wit
- current or past arthritis
- current or past enthesitis
- current or past psoriasis.

If exactly **3** of the additional criteria are present, perform an HLA-B27 test. If the test is positive, refer the person to a rheumatologist for a spondyloarthritis assessment.

1.1.5 If a person has low back pain that started before the age of 45 years and has lasted for longer than 3 months, refer the person to a rheumatologist for a spondyloarthritis assessment if **4 or more** of the following additional criteria are also present:

Case 2

- 26yF
- UC: difficult to control, recently switched ADA to VEDO
- Long-standing widespread joint pain – sounded mostly mechanical
  - Worse since medication switch
- Keen dancer, always hyper-extended knees
- Alternate buttock pain since pregnancy 2 yrs ago
  - Attempting to conceive again
- O/E hyper-flexible elbows, lumbar spine
- Bloods: B27 negative, persistent thrombocytosis, CRP <1
- MRI: consistent with axSpA

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What treatment could she be offered?

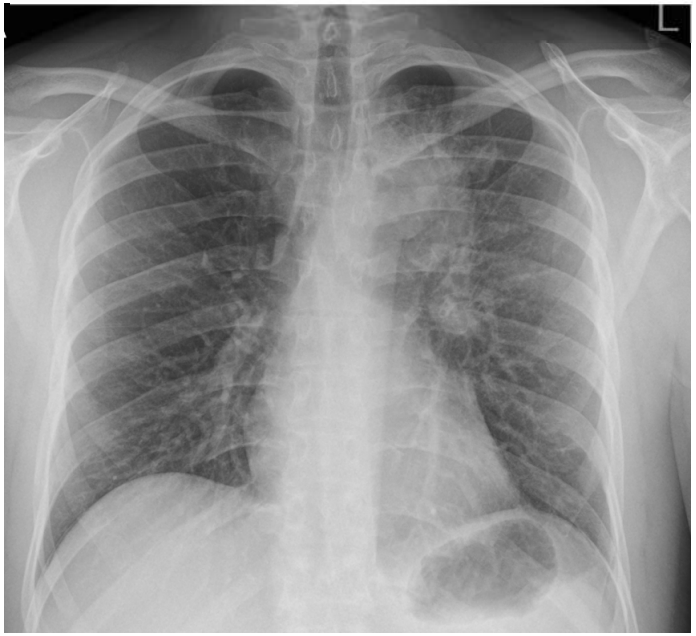
ⓘ Start presenting to display the poll results on this slide.

Case 3

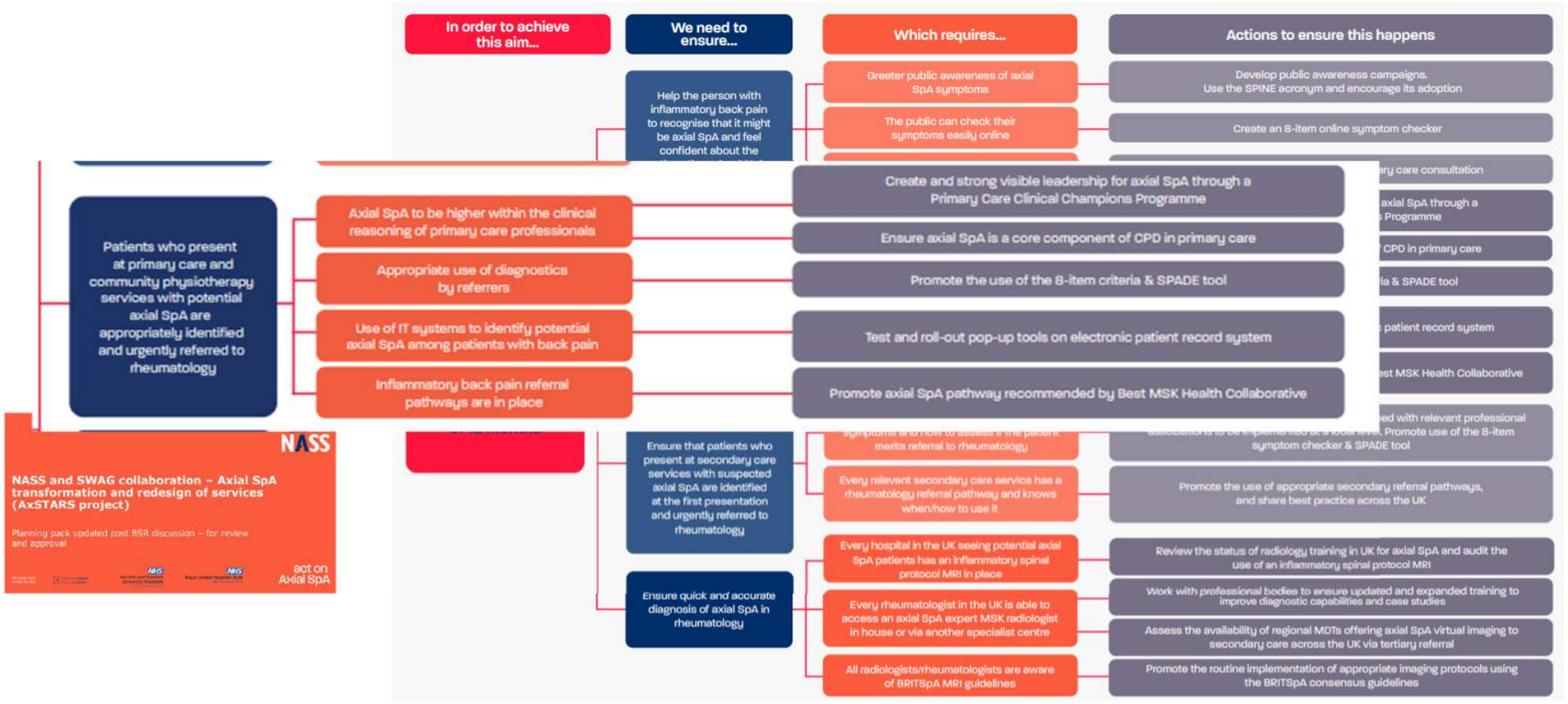
- 25yM
- 3 months thoraco-lumbar spine pain + stiffness, limiting movement
  - Slight improvement with naproxen
- Non-specifically unwell but no other definitive symptoms
- No Psoriasis /IBD/ iritis
- Bloods:
  - CRP 30
  - Alk Phos 313 (normal gamma GT, other LFTs)
  - Normal FBC, U+E, calcium, Vit D
- B27 pending at time of referral to EBP

Case 3

- Attended ED with chest pain
- CT CAP:
  - Lung mass with multiple pulmonary nodules
  - Widespread bony lesions
  - Bilateral adrenal lesions
  - Liver lesions
- Diagnosis: metastatic lung adenocarcinoma
- Seen recently by oncology:
  - On TYKi and Denosumab, well tolerated
  - Stable CT appearances
  - Awaiting RT to a residual bone lesion in arm



What are we doing about diagnostic delay?



Clinical decision aids: real-time pop-ups

PRIMIS
Making clinical data work

University of Nottingham
UK | CHINA | MALAYSIA

PRIMIS case study

Time period:	2020
Themes:	Quality Improvement, Research & Evaluation, Data Specifications & Validation
Partners:	Royal United Hospitals Bath NHS Foundation Trust, Novartis Pharmaceuticals UK Ltd
Project:	axSpA
Title:	**PRIMIS and Novartis target earlier diagnosis of Axial Spondyloarthritis in BaNES CCG**

Overview

Case study on the original axSpA pop-up alert tool project with Dr Raj Sengupta, Consultant Rheumatologist at Royal United Hospitals Bath NHS Foundation Trust and a partnership with Novartis Pharmaceuticals UK Ltd

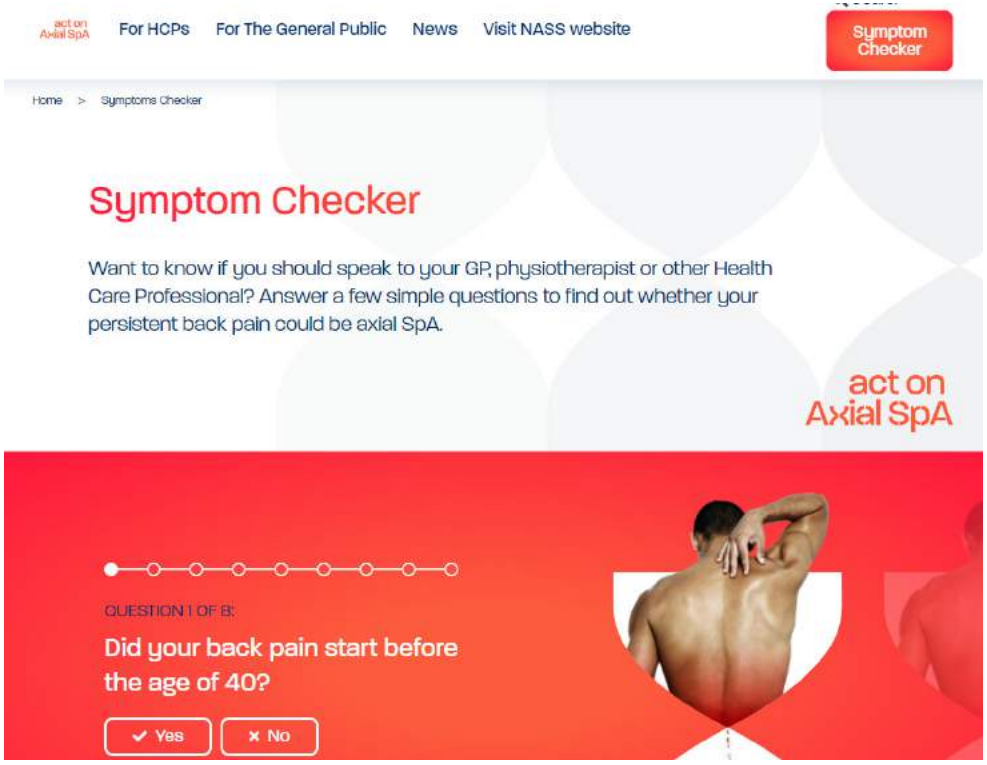
Full case

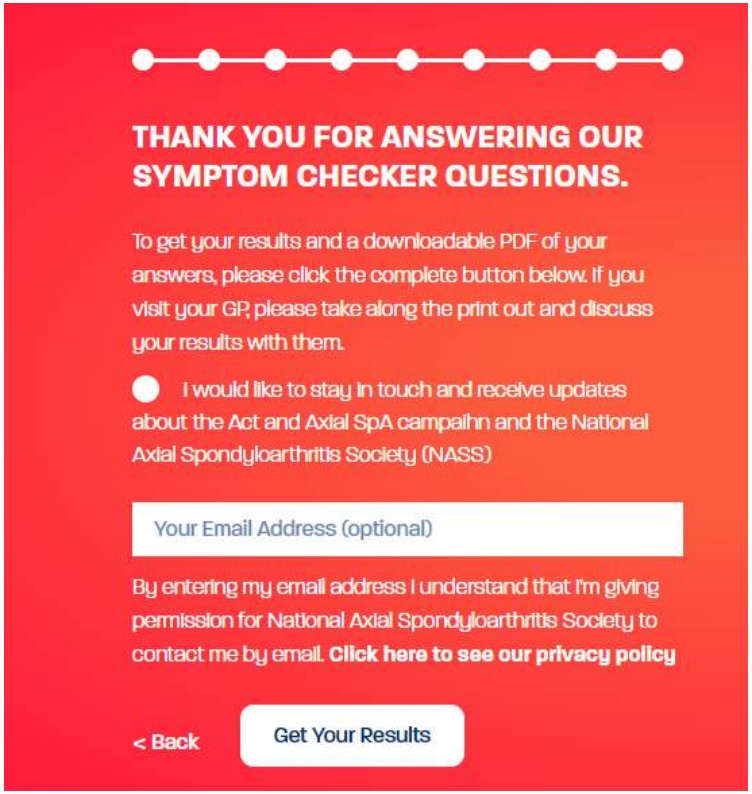
PRIMIS in collaboration with Raj Sengupta, Consultant Rheumatologist at the Royal National Hospital for

Rheumatic Diseases, Bath has developed a clinical system protocol and alert which runs in both EMIS Web and TPP SystmOne GP IT systems thanks to sponsorship from Novartis UK Ltd1. This tool has been designed to be used as a decision aid for clinicians managing patients with chronic back pain and includes prompts and pop-up messages to help with earlier diagnosis of axial Spondyloarthritis (axSpA)2.

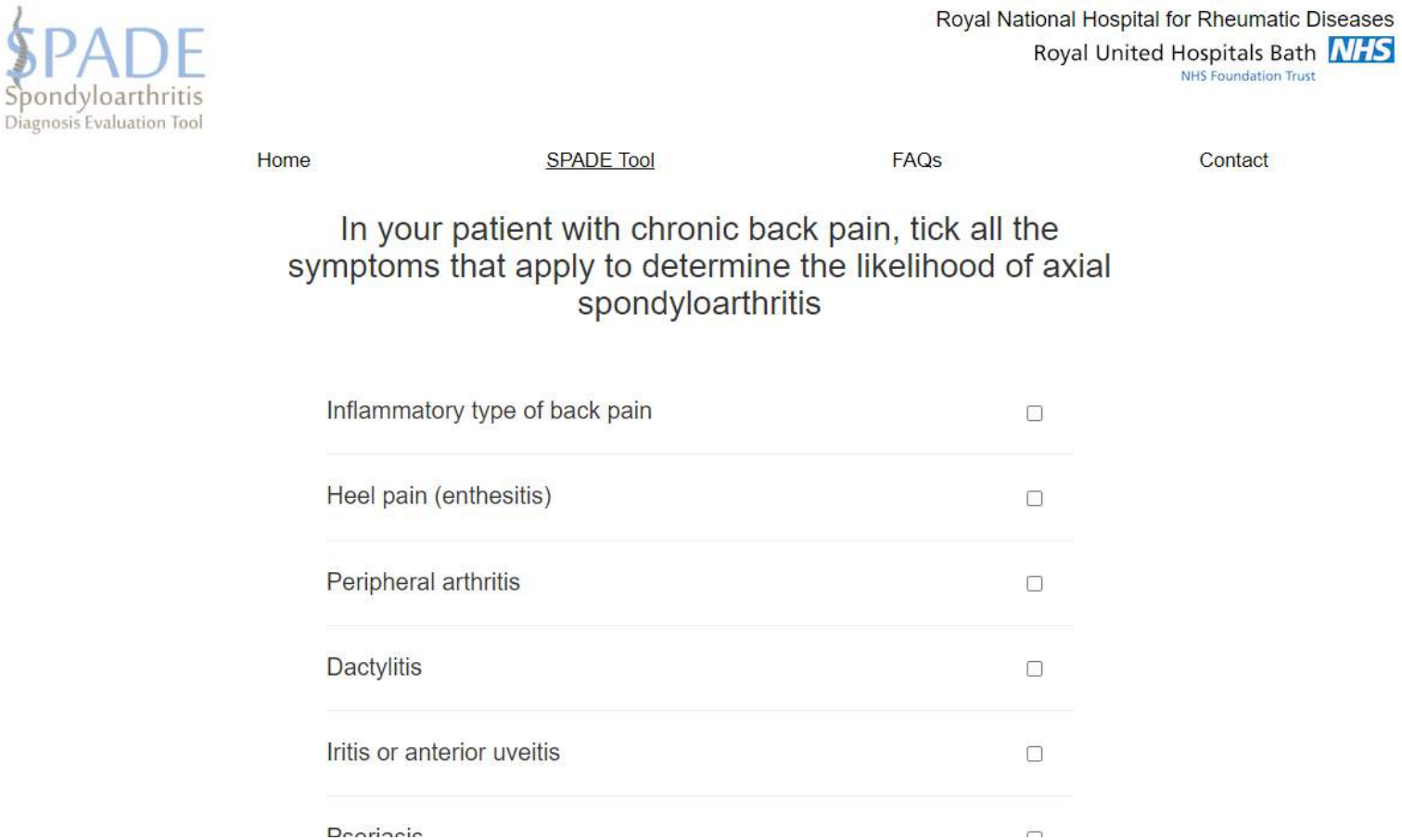
The protocol is activated when patients under 45 years old present with recurring back pain. A pop-up message appears on-screen, prompting the GP to consider axSpA as a possible diagnosis. The fundamental aim of the project is to improve both screening and time to diagnosis of axSpA in general practice. Delay in diagnosis of axSpA is associated with worse outcomes for patients3. One of the reasons for any delay in diagnosis is due to the small proportion of axSpA patients within the vast number of patients presenting with back pain to primary care. [LF1]

NASS Symptom Checker

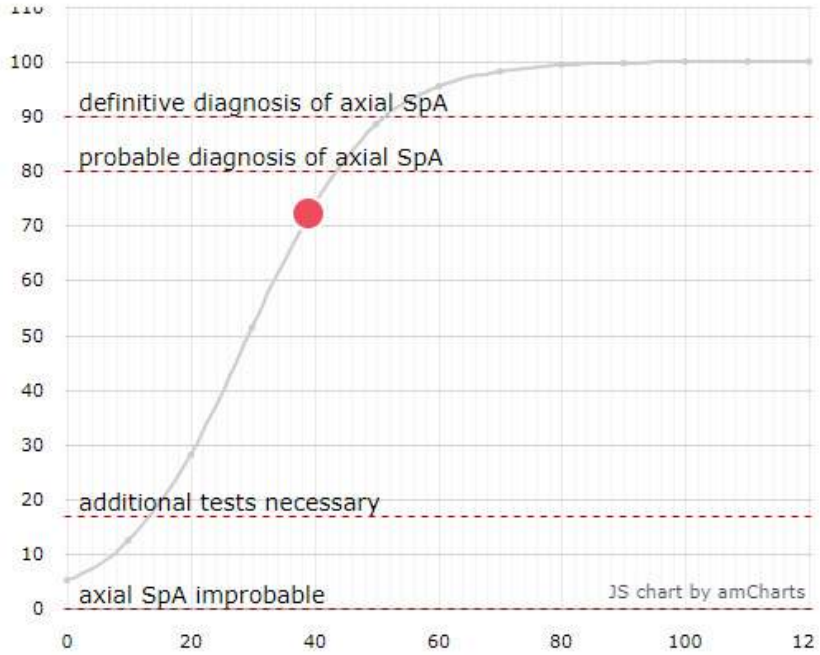




SPADE tool: www.spadetool.co.uk



SHOW RESULTS

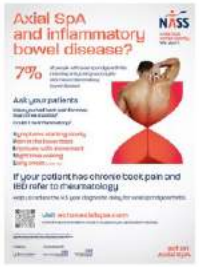


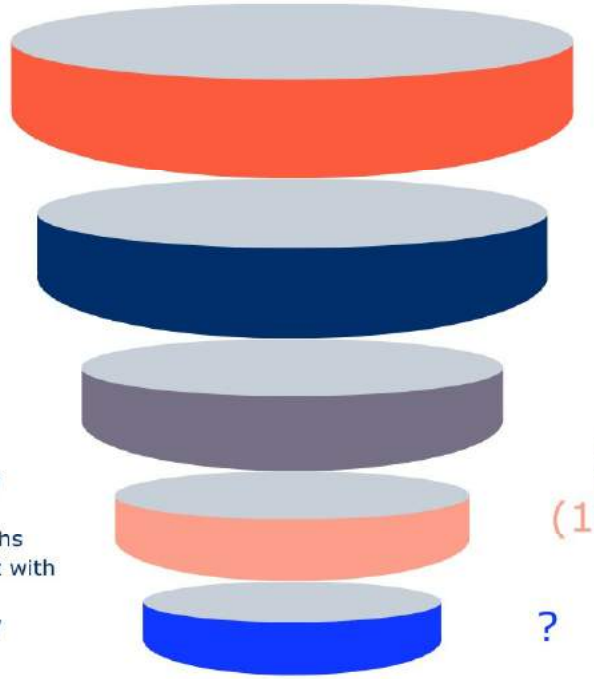
Additional tests necessary

This patient may have Axial SpA but further tests are necessary – assessment by a rheumatologist is recommended

If you would like to let us know the outcome of the diagnosis, please do this via the Contact page.

AxSTARS project - Patient audit of IBD patients with back pain





104 Responses
So far 104 patients with IBD have responded to the mailings and given consent

27 (26%) Screening
26% passed the screening question that they have chronic back pain alongside their IBD

27 (100%) Symptom checker
All 27 with CBP completed the symptom checker for assessing if IBP

16 (15%) Suspected axial SpA
16 in total (15%) had positive symptom checker results and would warant a referral to rheumatology

? Known to rheumatology
A next step is to establish if these patients are known to rheumatology or already have a diagnosis to fully know the unmet need

The biggest factors in these 27 patients were:

- 27 had back pain > 3 months
- 20 do not see improvement with rest
- 19 had developed gradually
- 18 had onset before 40
- 16 have morning stiffness

So far this indicates that 16% or approximately 1 in 6 would require referral to rheumatology

Note the data is as at 10th July 2023

Royal United Hospitals Bath NHS Foundation Trust

Resources for clinicans

https://www.actonaxialspa.com/peer-to-peer-network-and-hcp-toolkit/

- SPADE tool www.spadetool.co.uk
- ASAS/EULAR updated guidelines https://ard.bmj.com/content/early/2022/10/21/ard-2022-223296
- NICE guidelines https://www.nice.org.uk/guidance/ng65
- MRI recommendations (UK)
- https://doi.org/10.1093/rheumatology/kez172
- https://doi.org/10.1093/rheumatology/kez173

Act on Axial SpA resources for clinicians

- www.actonaxialspa.com
- Posters
- Symptom checker
- Videos
- Podcasts
- National guidelines and protocols

Identifying axial spondyloarthritis in a primary care back pain population: key messages

- It's challenging!
- There is no single test or finding that can rule in or out
- Clinical decision aids may help:
  - Consider SPADE tool for younger patients presenting with repeat episodes of back pain
- Chronic back pain + extra-musculoskeletal manifestations: consider axSpA