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Guidelines

Guideline for anti-TNF-α therapy in psoriatic arthritis

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Scope and purpose

Background

Psoriatic arthritis (PsA) is a chronic inflammatory arthropathy with a prevalence between 0.1 and 1% and an equal sex distribution [1]. Psoriasis affects 1–3% of the population, with approximately a third of patients developing PsA [2]. The course of PsA is variable and unpredictable ranging from a mild non-destructive disease to a severe debilitating erosive arthropathy. Erosive and deforming arthritis occurs in 40–60% of PsA patients (followed at hospital clinics), and is progressive from within the first year of diagnosis [3, 4].

The classification of PsA is an area of ongoing international discussion. The five subgroups proposed by Moll and Wright [5] are still frequently used, although considerable overlap between these groups is now recognized. For the purpose of these guidelines we have differentiated between peripheral joint disease in PsA and axial disease alone. Psoriatic spondylitis is similar to ankylosing spondylitis (AS), although it is often less symptomatic, less limiting and radiologically tends to be asymmetrical and less severe [6]. However, despite these differences, until such time as there is evidence that psoriatic spondylitis responds in a different manner from AS to TNF-α blockade, we recommend that AS guidelines for anti-TNF-α treatment are used for the management of psoriatic spondylitis [7].

Much like rheumatoid arthritis (RA), PsA can lead to chronic joint damage, increased disability [8, 9] and increased mortality [10, 11]. Social and financial implications are also important, both in terms of personal loss and the impact of direct (e.g. medical care) and indirect (e.g. inability to work) costs to the state.

It is recognized that psoriasis is associated with an increased risk of non-melanoma skin cancers [12], most probably a result of excessive exposure to sunlight and enhanced by use of psoralen and ultraviolet A (PUVA) therapy [13]. The guidelines recognize that these risks that may be potentiated by anti-TNF-α treatment and specific recommendations have been made accordingly (see sections headed Exclusion criteria and Monitoring and Toxicity).

Need for guideline

Although PsA was once thought to be a benign condition, it is now well recognized as a potentially destructive erosive arthropathy [3, 4, 14]. Traditional standard therapy is aimed at symptomatic relief with the introduction of second-line agents for more severe cases. However, most longitudinal studies of PsA have shown steady progression of the condition despite use of such medication. Disease-modifying anti-rheumatic drugs (DMARDs) used to treat RA are also used in PsA, but there is a serious deficit of therapeutic trials in PsA. A Cochrane systematic review concluded that only two agents had documented efficacy in PsA: sulphasalazine and high-dose parenteral methotrexate [15] (the latter at a dose considered too toxic by today's standards).

Recently there has been interest in the pivotal role that TNF-α, a proinflammatory cytokine, plays in inflammation of skin and synovium [16] and it is a logical target for treatment in RA. Preliminary studies and trials have shown that TNF-α blockade is effective in the treatment of PsA [17, 18]. In 2003 etanercept was licensed for treatment of PsA and it is expected that other TNF-α blockers, such as infliximab, will be licensed for the treatment of PsA.

Cost implications. TNF-α blockers have the potential to provide symptomatic relief and help prevent disease progression in PsA. Although these drugs are relatively expensive, concerns over an increased drug budget must be balanced against the potential long-term cost savings. At the present time there are no health economic studies concerning the role of TNF-α blockade in PsA. However, possible long- term benefits include:

- reduced need for joint replacement surgery
- reduced demand on therapy services
- reduced demands on medical and nursing services
- reduced needs for other medicines
- reduced demands on social services and carers
- improved quality of life
- improved prospect of remaining in work
- increased life expectancy.

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In order to achieve maximum benefit to patients with PsA within a limited health resource, there is a need for evidence-based guidelines in the prescribing of TNF-α blockers for this condition.

Remit

Objectives. These guidelines offer systematic and reviewed recommendations for the prescribing of licensed anti-TNF-α therapies in adult PsA patients with peripheral joint involvement. The guidelines provide a stepwise management plan giving clear inclusion/exclusion and response criteria. The guidelines also set out monitoring requirements.

Target audience. The guidelines have been developed to give assistance to rheumatologists and involved prescribing clinicians. They will also assist nurses in the application, assessment and monitoring of the treatment.

The guidelines have been drawn from the evidence base available, and in areas of insufficient evidence consensus opinion has been sought and is clearly documented.

The remit of these guidelines does not include:

- anti-TNF-α therapy for PsA axial-only disease [refer to British Society for Rheumatology (BSR) guideline for prescribing TNF-α blockers in adults with ankylosing spondylitis] [7]
- newer anti-TNF-α therapies (e.g. adalimumab), although the Working Party acknowledges that the guidelines will have to be reviewed and amended regularly as evidence becomes available.
- other biologic therapies
- anti-TNF-α therapies for juvenile idiopathic arthritis (JIA) (please refer to British Paediatric Rheumatology Group (BPRG) protocol for prescribing biologic therapies in children and young people with JIA).
- the use of anti-TNF-α therapies for psoriasis (current NICE appraisal).

Stakeholder involvement

The guidelines have been developed by a multidisciplinary Working Party set up by the BSR. Any conflicts of interest among the Working Party were fully declared.

The guidelines were presented for comment at the 20th BSR Annual Meeting (20–23 April 2004) prior to submission for publication.

Rigour of development

Literature review

The evidence in these guidelines was compiled from a comprehensive literature search, including electronic bibliographic databases (Medline, Embase) and systematic review databases (Cochrane) back to 1990. Key words were the following: psoriasis; arthritis; anti-TNF-α; biologics; etanercept; infliximab; trials.

No related guidelines were found in other guideline databases (e.g. RCP, SIGN, NICE).

Level of evidence

The literature was reviewed and quality of evidence was graded by the Working Party according to the Royal College of Physicians' 'Concise Guidance to Good Practice'. Grading of recommendation was given as follows:

- Grade A: Meta-analysis of randomized controlled trials or randomized controlled trial.
- Grade B: Controlled trial or quasi-experimental study or descriptive study.
- Grade C: Expert committee report.

Updating

The Working Party acknowledges that there is a lack of high-quality evidence on which to base the recommendations.

These guidelines cover a rapidly evolving area of therapeutic intervention.

- The Working Party recognizes that as more evidence becomes available and more anti-TNF-α therapies are licensed, the guidelines will have to be updated. The Working Party recommends that the evidence is reviewed annually and updates are posted on the BSR website: www.rheumatology.org.uk

Guidelines for anti-TNF-α therapy in adults with psoriatic arthritis

Treatment algorithm for psoriatic arthritis (Fig. 1)

Standard therapy. Management of PsA is aimed at suppressing joint, tendon and entheseal inflammation. NSAIDs and corticosteroid injections remain an important initial intervention but current practice is aimed at early diagnosis and early use of potential DMARDs to suppress persistent inflammation. Sulphasalazine or methotrexate is widely used in clinical practice as DMARD therapy. Efficacy has been proven for sulphasalazine, and methotrexate is being further evaluated in a current multicentre UK randomized controlled trial. Patients with a poor clinical response are changed to an alternative DMARD or are commenced on combination therapy.

- The Working Party acknowledges the lack of evidence but proposes the use of sulphasalazine (A) [15]; methotrexate (B) [15]; ciclosporin (B) [19] or leflunomide (A) [20, 21] as DMARD therapies in PsA either individually or in combination.

Failure to respond to therapy. In order to fail standard therapy patients should have active disease and have had adequate therapeutic trials of at least two of the above standard DMARDs individually or in combination. An adequate therapeutic trial is defined as:

- Treatment for at least 6 months, of which at least 2 months is at standard target dose (unless significant intolerance or toxicity limits the dose)
- Treatment for <6 months, where treatment is withdrawn because of drug intolerance or toxicity
- When treatment is withdrawn because of intolerance or toxicity after >2 months therapy, at least 2 months should have been at therapeutic doses.
- Standard target and therapeutic doses of DMARDs are given in Appendix 1 that may be viewed at *Rheumatology* online.
  - These guidelines do not provide a specific treatment response criterion for NSAIDs/intra-articular corticosteroids or DMARDs in PsA patients. The Working Party agreed that this should be a combined patient and physician decision after full clinical assessment (C).
  - Patients who fail to respond to standard therapy and meet the required criteria but satisfy none of the exclusion criteria should be considered for licensed anti-TNF-α therapy.
  - The Working Party emphasizes that patient choice is very important and that anti-TNF-α therapy is not mandatory.

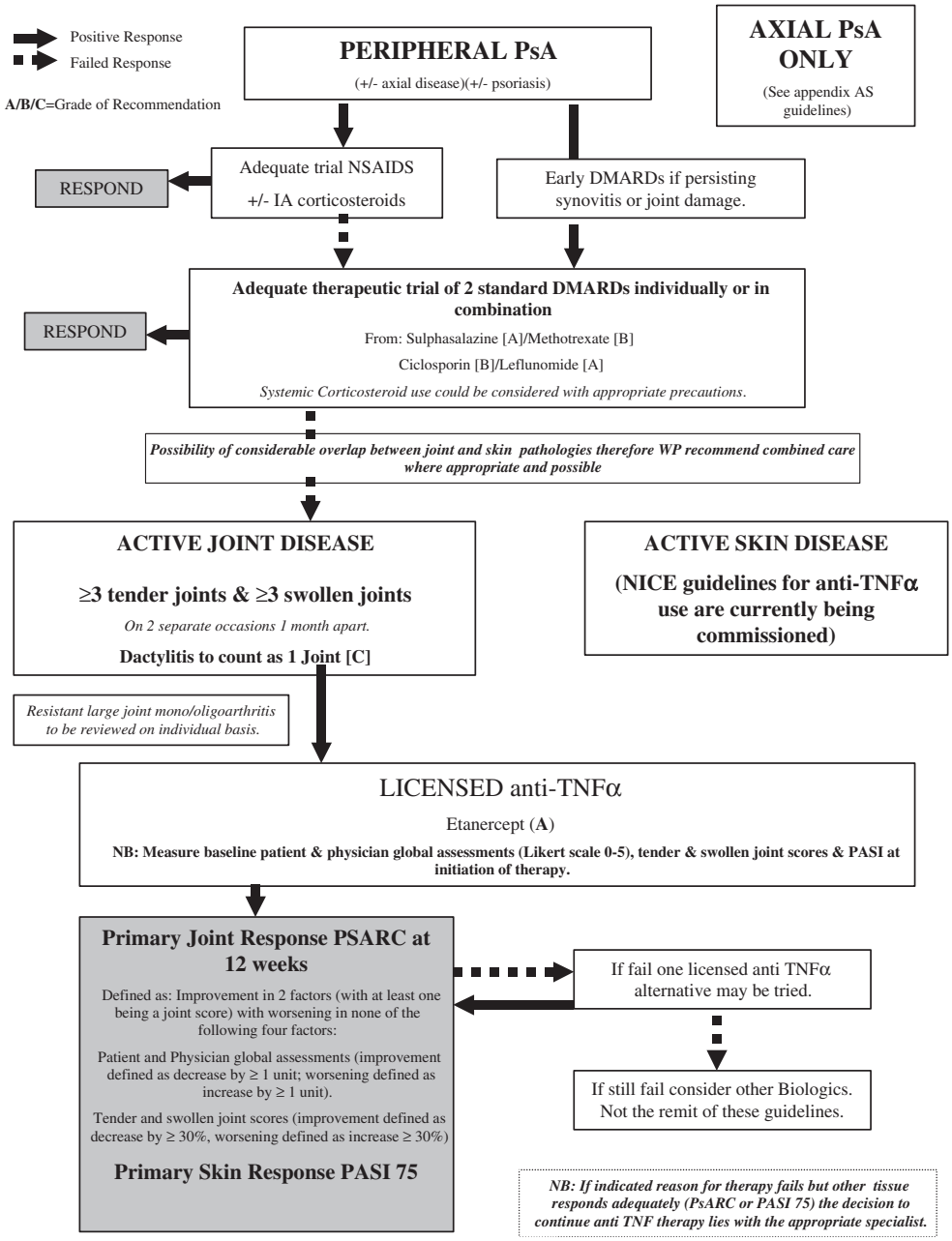

FIG. 1. Treatment algorithm for PsA patients.

Figure 2 shows an algorithm highlighting patient choices and considerations.

Licensed anti-TNF-α therapy. At present only one compound is licensed for use in active PsA in the UK. Etanercept (Enbrel; Wyeth) is a recombinant human TNF receptor:Fc fusion protein consisting of a dimer of the extracellular portion of two p75 receptors fused to the Fc portion of human IgG1. Etanercept is administered subcutaneously at a dose of 25 mg twice weekly.

Infliximab (Remicade; Schering-Plough) is a chimeric human–murine monoclonal antibody usually administered by slow intravenous infusion at weeks 0, 2 and 6 and 8-weekly thereafter at a dose of 5 mg/kg in combination with methotrexate. Despite a supporting body of evidence [22–26], infliximab is not currently licensed for PsA.

NICE is currently undertaking a technology appraisal of etanercept and infliximab in PsA.

Exclusion criteria. Exclusion criteria have been adapted from those used for anti-TNF-α treatment in RA and are shown in Appendix 2 (may be viewed at *Rheumatology* Online).

The Working Party recommends specific caution in:

- Patients with active psoriasis who have received >1000 joules cumulative dosage of PUVA; particularly those patients who have subsequently been treated with ciclosporin for at least 1 yr. Such patients are at high risk (six-fold increase) of non-melanoma skin cancer [12, 13]. It is recommended that annual skin checks be performed by a consultant dermatologist for psoriasis patients receiving anti-TNF therapy (C).
- HIV-positive/AIDS patients. There is an increased incidence of PsA in HIV and AIDS patients [27]. Until data become

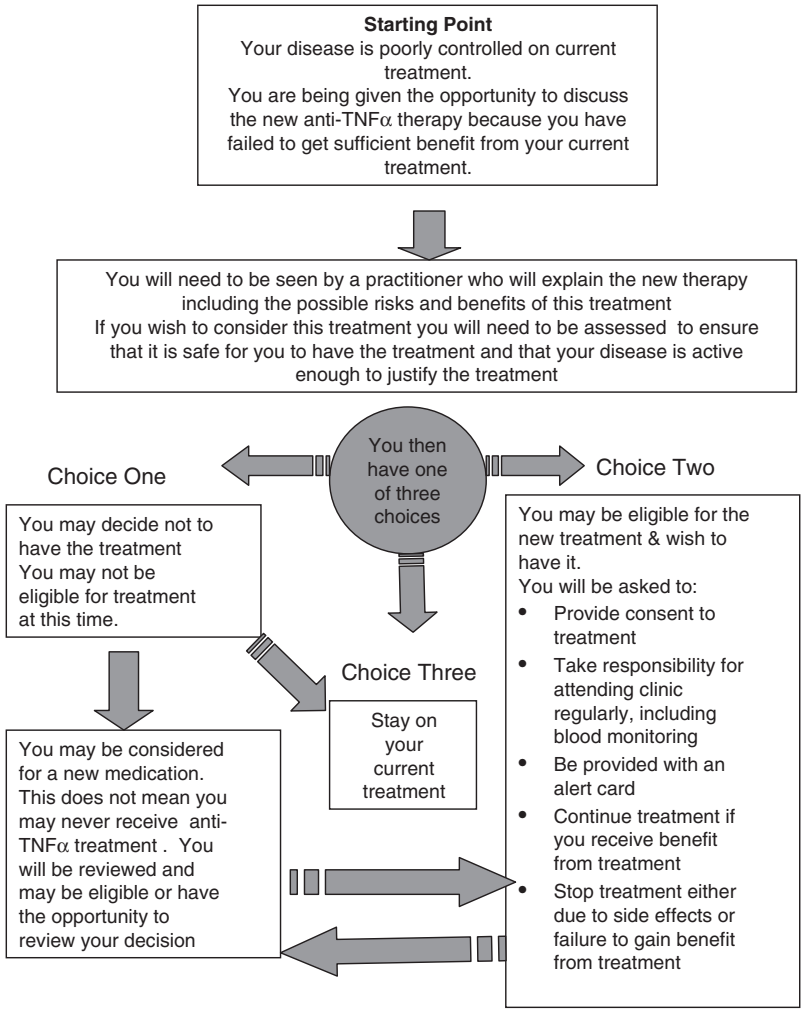

FIG. 2. Algorithm of patient's considerations and choices.

available on the effect of TNF-α blockers under these conditions, caution is suggested.

In accordance with the updated BSR guidelines for prescribing TNF-α blockers in adults with RA [28], caution is recommended in:

- Congestive cardiac failure (CCF)/cardiovascular disease [29]. Etanercept should only be used with extreme caution in patients with New York Heart Association (NYHA) grade 3/4CCF [30]. As other anti-TNF-α therapies become licensed, please refer to RA guidelines for recommendations.

Clinical efficacy

Active disease. The most widely used method for assessing peripheral joint disease activity in PsA is the American College of Rheumatology (ACR) joint count, which in some studies has been modified for PsA [17, 18]. There has been some validation of the ACR joint count when applied to patients with PsA [31]. The DAS 28 is an instrument used for assessing the severity of RA but may not be appropriate for PsA as it does not include some of the joints that are frequently involved (e.g. distal interphalangeal joints). Published evidence has used tender and swollen joint counts as a marker of disease activity.

Table 1 shows the eligibility criteria for entry into clinical trials and the median or mean scores for baseline tender and swollen joints.

All clinical trials show a far higher mean or median tender and swollen joint count than the required inclusion criteria. However, setting a high threshold for involved joint count as an inclusion criterion for anti-TNF-α treatment would exclude a large number of patients with PsA from effective treatment, including those patients with resistant oligoarthritis. At present there is no evidence to differentiate between treatment options for mono/oligo-arthritis or polyarthritis in PsA patients.

- The Working Party elected to use three or more tender joints and three or more swollen joints on two separate occasions at least 1 month apart as a marker of active joint disease, based on a 78-tender and 76-swollen joint count (A) [17, 18] (Appendix 3; may be viewed at *Rheumatology* Online).
- The Working Party accepts there will be patients with severe symptoms and disability who do not fulfil the guideline criteria. These patients will have to be put forward for anti-TNF-α treatment on a named basis until further evidence becomes available (C).

Two specific clinical features of PsA, dactylitis and enthesitis, proved an area of debate. How could these entities be included in a PsA activity score? At present there is no validated measure for clinical assessment of dactylitis. Although scoring indices exist for

Table 1. Eligibility criteria for entry into PsA trials and the median or mean baseline tender and swollen joint scores

Drug	No. of patients	Inclusion criteria TJC/SJC	Total joint count TJC/SJC	Median baseline	Mean baseline
Etanercept 25 mg twice weekly [17]	60	≥3 TJC and ≥3 SJC	78 TJC, 76 SJC	20 T/14 S	
Etanercept 25 mg twice weekly [18]	205	≥3 TJC and ≥3 SJC	78 TJC, 76 SJC		
Infliximab 5 mg/kg 0, 2, 6 [22]	10	≥6 TJC and ≥6 SJC	68 TJC, 66 SJ		20.6 T 14.1 S
Infliximab 5 mg/kg 0, 2, 6 [23]	16	≥6 actively inflamed	68 TJC, 66 SJC		22.6 T 9.1 S
Infliximab 3 mg/kg [24]	9		68 TJC, 66 SJC		17.8 T 5.33 S
Infliximab 3 mg/kg 0, 2, 6, 14 [25]	16	≥5 TJC and≥5 SJC			10.0 T 6.5 S
Infliximab 5 mg/kg 0, 2, 6, 12 [26]	12	1 SJ or active tendonitis/dactylitis			31.7 T 9.9 S
Sulphasalazine 2 g/day [34]	221	3 joints active arthritis			36.2 T 26.1 S
Leflunomide 20 mg/day [21]	190	≥3 TJC and ≥3 SJC	76 TJC, 74 SJC		20.1 T 11.6 S

Table 2. Clinical responses in anti-TNF-α trials

Drug	No. of patients	Disease duration	Assessment	PsARC	ACR20	ACR50	ACR70	PASI75
Etanercept 25 mg [17]	60	9 yr	12 weeks	87%	73%	50%	13%	26%
Etanercept 25 mg [18]	205	9 yr	12 weeks	72%	59%	38%	11%	
			24 weeks	70%	50%	37%	9%	23%
Infliximab 5 mg/kg [35]	102	8.5 yr	16 weeks	78%	70.6%	52.9%	25.7%	70%
Infliximab 5 mg/kg [22]	10		54 weeks				60%	
Infliximab 3 mg/kg [24]	9	17.2 yr	22 weeks		89%	56%	22%	
Infliximab 3 mg/kg [25]	16	142 months	30 weeks		64%	57%	57%	
Infliximab 5 mg/kg [26]	12		26 weeks		83%	50%	33%	

enthesitis [32, 33] none have been proven for PsA. The Working Party came to the following consensus opinions:

- Dactylitis, where present, should be counted as one active joint (C).
- Enthesitis should be treated as a separate entity (not covered by these guidelines). Until such time as further trial data become available, anti-TNF-α therapy in PsA entheseal disease will be on a named patient basis only (C).
- Until such time as more validated instruments are available for assessing PsA, the Working Party proposes that a maximum amount of peripheral joints are assessed in order that a data set is derived to facilitate further studies.

Response to therapy

Joint response. Two main instruments have been used for measuring clinical response in PsA, the PsARC and the ACR20 (including ACR50 and ACR70).

The PsARC is a response criterion adapted from the Veterans Affairs Cooperative Study of sulphasalazine [34].

Response is defined as improvement in two factors (with at least one being a joint score) with worsening of none of the following four factors:

- patient global assessment (on a 0–5 Likert scale)
- physician global assessment (as above) (improvement defined as decrease by at least 1 unit; worsening defined as increase by at least 1 unit)
- tender joint score
- swollen joint score (improvement defined as decrease of at least 30%; worsening defined as an increase of at least 30%).

Although a large placebo response is often seen in trials of therapies for PsA, trials of anti-TNF-α treatment have shown a statistically significant difference in the numbers achieving the PsARC and ACR 20 compared with placebo (Table 2).

- The Working Party elected to use the PsARC as the primary joint response to anti-TNF-α therapy until a validated responder index becomes available (A) [17, 18, 35].
- Although the PsARC will be the primary joint response, the Working Party advocate some extra data collection. An ESR or CRP, a patient pain assessment (visual analogue score 0–10 cm) and a patient self-assessed disability (Health Assessment Questionnaire, HAQ) will enable an ACR20 and a DAS28 to be calculated. These data can then be used for direct comparison with RA data.

Skin response. From the patient's perspective, PsA and psoriasis are seen as different manifestations of the same condition. Therefore, the impact of any treatment for PsA should include a skin assessment. The psoriasis area and severity index (PASI) is a scoring system to evaluate baseline and response to therapy in psoriasis (Appendix 4; may be viewed at *Rheumatology* Online). In the clinical trials of biologic therapies in PsA it has been proved to be a reliable measure of improvement in psoriasis [31].

- The Working Party recommend using PASI at baseline and a PASI 75 for primary response of psoriasis (A) [17, 36, 37].
- Due to the complexity of the PASI scoring system, adequate teaching must be given to those performing the scores, with active collaboration of a dermatologist.
- Where possible the PASI scores should be performed by the same health professional to prevent inter-observer bias.
- Due to the significant overlap of benefit to both skin and joints, the Working Party recommend combined care (rheumatologist and dermatologist) of patients with PsA who have concomitant psoriasis whenever appropriate and possible (C).
- The Working Party proposes that a nail score should be obtained where possible. Suggested nail scores include the Nail Psoriasis Severity Index (NAPSI) [38] or the Bath Nail Score [39]. The Working Party acknowledges this will complicate and lengthen assessments but long-term benefits for data collection and local audit must be considered.

Quality of life. The Working Party felt further information on quality of life should be obtained using the SF-36 General Health Survey. These data can be adjusted to Quality-Adjusted Life Years, a useful outcome for the required health economic studies in PsA.

Radiological outcome. Despite evidence that radiographic progression was inhibited by etanercept at 12 months in patients with PsA (A) [18], the Working Party believes that the measures for assessing radiographic progression in PsA need further validation and are beyond the scope of these guidelines and should be reserved for clinical trials only.

Withdrawal of therapy. As for the anti-TNF-α for RA guidelines treatment will be withdrawn in the event of adverse events:

- malignancy
- severe drug related toxicity
- pregnancy (temporary withdrawal)
- severe intercurrent infection (temporary withdrawal)
- temporary withdrawal for surgical procedures in accordance with updated BSR guidelines for TNF-α blockers in adults with RA.
- inefficacy: patients who fail to achieve the PsARC response within 3 months of treatment.

Assessment. Assessment of PsA patients for anti-TNF-α treatment will be based on those used for RA and should include a full musculoskeletal history and examination, a clinical assessment of cardiopulmonary status and further investigations if required, as well as the following salient points (specific recommendations for PsA patients are in italics).

- *Fulfils BSR eligibility criteria for PsA (Moll and Wright: inflammatory arthritis documented by a physician in the presence of psoriasis and, usually, negative rheumatoid factor). For patients who have been selected for treatment and do not fulfil the BSR criteria, documentary evidence should be provided to identify clinical indications for treatment.*
- Smoking history (pack years).
- *Alcohol intake units/week*; if co-prescribed methotrexate reduces alcohol consumption according to BSR monitoring guidelines for Disease Modifying Drugs (2000).
- Tuberculosis screening (refer to BSR recommendations for assessing risk and for managing *M. tuberculosis* infection and disease in adult patients due to start anti-TNF-α treatment).
- Symptoms that might indicate demyelinating disease.
- History of malignancies should be reviewed prior to consideration of treatment. *Previous cumulative PUVA treatment should not exceed 1000 joules. Previous/current psoralen or ciclosporin use.*

Table 3. Required data collection at baseline, 3 months, 6 months and thereafter 6-monthly

PsARC response
Tender joint count
Swollen joint count
Patient global health (0–5)
Physician global health (0–5)
Blood tests
FBC
LFTs
U&Es
ESR or CRP (can be used to calculate ACR20 and DAS28)
*ANA
*dsDNA
Patient disability (in accordance with BSR Biologics Register)
HAQ
SF-36
Patient pain assessment (optional for calculating ACR20)
VAS (0–10 cm)
Skin assessment
PASI
Clinical assessment for
*Tuberculosis
*Congestive heart failure
*Infections
*Demyelination
Also screen for
Alcohol (units/week)
Use of contraception
Accumulative PUVA dose (joules)
*Previous ciclosporin/psoralen use

*Data collection required at baseline only unless clinical symptoms change.

- *Patients with skin involvement should be assessed by a practitioner competent in the assessment of skin disorders. Psoriasis severity should be recorded using the PASI system.*

Monitoring and toxicity. Table 3 shows a full list of required data collection at baseline, 3 months, 3 months and thereafter at 3-monthly intervals. After the first 6 months monitoring data can be collected simultaneously with that required for a register.

Table 4 shows the currently required data collection for the BSR Biologics Register.

Data collection

- A full review of treatment benefit should be undertaken initially at 3 months then at 3 months and thereafter at 3-monthly intervals. This should include:
  - joint assessment and response (PsARC)
  - skin assessment (PASI) and response (PASI75).

Blood tests (Table 3)

- Although no specific monitoring is required, the Working Party recommend that patients prescribed a TNF-α blocker without a DMARD should have blood monitoring. The monitoring includes full blood count, urea and electrolytes and liver function tests at baseline, 3 months and 6 months and thereafter at 6-monthly intervals in accordance with good clinical practice (C).
- If a DMARD is co-prescribed with anti-TNF-α, monitoring should adhere to BSR guidelines for the relevant DMARD.
- If the patient develops lupus-like symptoms, repeat blood tests for ANA and DNA binding before considering further treatment. Treatment should be stopped if the patient develops any 'lupus like' symptoms.

TABLE 4. Data collection required for register

Baseline
Demographic details
Age
Gender
Postcode
Details of PsA duration and severity
General medical history/co-morbidity
Medication
Current
Previous
Smoking status
Pack year history
Baseline outcome data
HAQ
SF-36
DAS28
The Working Party propose the following amendments for PsA patients
DAS 28 is not required
Alcohol consumption units/week
Previous PUVA dose in joules be documented
Six-monthly
Record of episodes intercurrent illness
Surgery
Serious infection
Malignancy
Hospitalization
Drug toxicity
Cumulative dosage of biologic therapy
Outcome data

Six-monthly returns would continue for 3 yr after treatment starts, regardless of whether or not it is continued. Thereafter returns will be made on an annual basis.

- Maintain a high index of suspicion of infection and screen appropriately.

Central Biologics Register. There is evidence that the background risk of patients with PsA with respect to mortality [10, 11], malignancy [12, 13] and cardiovascular disease is not the same as that of patients with RA. The spectrum of adverse events on biologic therapy may also differ between the two diseases.

A biologics register for patients being prescribed anti-TNF therapies for PsA does not currently exist. However, the working group recommends that such a register is set up for these patients, and the BSR is currently pursuing this. In the meantime, the BSR currently recommends that data collection, including updated dosage, outcome and toxicity information, is conducted at a local level. Adverse incidents/serious side-effects arising whilst on anti-TNF therapy should be notified immediately via the yellow card system.

The information required for PsA patients on the Register will be the same as for RA patients on the BSR Biologics Register, the Working Party suggesting the following amendments:

- a DAS 28 will not be required
- current alcohol consumption units/week
- previous PUVA treatment in joules and prior ciclosporin or psoralen use should be documented.

Audit. Local audit of prescribing and monitoring will be required for adherence to the Register and BSR blood monitoring guidelines. Auditing will also be required when NICE has reviewed and commissioned guidance for anti-TNF-α therapy in PsA patients.

Supplementary information. Supplementary documents downloadable from the BSR website (www.rheumatology.org.uk) which health professionals may find useful include:

- RCN guidelines on assessing, managing and monitoring biologic therapies for inflammatory arthritis
- vaccinations in the immunocompromised person—guidelines for the patient taking immunosuppressants, steroids and the new biologic therapies.

Conflict of interest

The Working Party was set up independently of any input or funding from the manufacturers of the new biologic therapies.

Members of the Working Party were asked to clarify their relationships with the manufacturers of biologic therapies for PsA. Members were asked to declare if they, as individuals, had been sponsored to attend scientific or other meetings in the past 24 months or if they had a direct financial stake in the manufacturing companies. They were also asked if their units had received funding from the manufacturers to take part in clinical trials of the biologic therapies for psoriatic arthritis. Organizations were asked to declare if they had received sponsorship from manufacturers of the biologic therapies for activities related to the new therapies (either educational or promotional) or for activities not related to the new therapies.

The following replies were received.

- The units in which the following Working Party members work have received funding from one or more of the manufacturers of therapies for psoriatic arthritis: N. McHugh, S. Kyle, S. Oliver, D. Symmons, J. Lewis, C. Griffiths.
- The following Working Party members have received funding from pharmaceutical companies involved in producing biologic therapies to attend scientific meetings in the past 24 months: C. Griffiths, I. McInnes, D. Symmons, S. Oliver, P. Helliwell.
- BSR has established a register which is funded by the manufacturers of biologic therapies for RA; training for rheumatologists in data collection has also been funded by these manufacturers.
- The following Working Party members have received honoraria: I. McInnes, C. Griffiths.
- No Working Party members declared a direct financial stake, such as personal shareholding, in companies manufacturing the new biologic therapies.
- The other authors have declared no conflicts of interest.

Supplementary data

Supplementary data are available at *Rheumatology* Online.

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