SIGN
Scottish Intercollegiate Guidelines Network
Part of NHS Quality Improvement Scotland

NHS
Quality
Improvement
Scotland

Help us to improve SIGN guidelines - click here to complete our survey

121

Diagnosis and management of psoriasis and psoriatic arthritis in adults

A national clinical guideline

October 2010

KEY TO EVIDENCE STATEMENTS AND GRADES OF RECOMMENDATIONS

LEVELS OF EVIDENCE

1++	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1+	Well conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias
1-	Meta-analyses, systematic reviews, or RCTs with a high risk of bias
2++	High quality systematic reviews of case control or cohort studies High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2+	Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2-	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, eg case reports, case series
4	Expert opinion

GRADES OF RECOMMENDATION

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

A	At least one meta-analysis, systematic review, or RCT rated as 1++, and directly applicable to the target population; or A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; *or* Extrapolated evidence from studies rated as 1++ or 1+
C	A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; *or* Extrapolated evidence from studies rated as 2++
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2+

GOOD PRACTICE POINTS

☑	Recommended best practice based on the clinical experience of the guideline development group

NHS Evidence
accredited provider
NHS Evidence - provided by NICE
www.evidence.nhs.uk

NHS Evidence has accredited the process used by **Scottish Intercollegiate Guidelines Network** to produce guidelines. Accreditation is valid for three years from 2009 and is applicable to guidance produced using the processes described in SIGN 50: a guideline developer's handbook, 2008 edition (**www.sign.ac.uk/guidelines/fulltext/50/index.html**). More information on accreditation can be viewed at **www.evidence.nhs.uk**

NHS Quality Improvement Scotland (NHS QIS) is committed to equality and diversity and assesses all its publications for likely impact on the six equality groups defined by age, disability, gender, race, religion/belief and sexual orientation.

SIGN guidelines are produced using a standard methodology that has been **equality impact assessed** to ensure that these equality aims are addressed in every guideline. This methodology is set out in the current version of SIGN 50, our guideline manual, which can be found at **www.sign.ac.uk/guidelines/fulltext/50/index.html.** The EQIA assessment of the manual can be seen at **www.sign.ac.uk/pdf/sign50eqia.pdf.** The full report in paper form and/or alternative format is available on request from the NHS QIS Equality and Diversity Officer.

Every care is taken to ensure that this publication is correct in every detail at the time of publication. However, in the event of errors or omissions corrections will be published in the web version of this document, which is the definitive version at all times. This version can be found on our web site **www.sign.ac.uk.**

This document is produced from elemental chlorine-free material and is sourced from sustainable forests.

Scottish Intercollegiate Guidelines Network

Diagnosis and management of psoriasis and psoriatic arthritis in adults

A national clinical guideline

October 2010

ISBN 978 1 905813 67 4

Published October 2010

Citation text
Scottish Intercollegiate Guidelines Network (SIGN). Diagnosis and management of psoriasis and psoriatic arthritis in adults. Edinburgh: SIGN; 2010. (SIGN publication no. 121). [cited 12 Oct 2010]. Available from URL: http://www.sign.ac.uk

Scottish Intercollegiate Guidelines Network
Elliott House, 8 -10 Hillside Crescent
Edinburgh EH7 5EA

www.sign.ac.uk

Contents

1 Introduction

1.1 THE NEED FOR A GUIDELINE

Psoriasis is a common chronic inflammatory, immune-mediated disease that predominantly affects the skin and joints.[1] Given the estimated population prevalence of psoriasis of 1.5 to 3%, over 100,000 people are affected in Scotland.[1] Approximately 20% of people with psoriasis may also have psoriatic arthritis (PsA), ie 20,000 people in Scotland.[2] Onset may occur at any age but peaks in the second and third decades of life. The course of the disease is characterised by relapses and remissions but the condition tends to persist throughout life. Over the past 20 years there have been many developments in the understanding of the genetic, molecular and cellular mechanisms that underlie these inflammatory processes and many new and effective treatments have been developed.[3]

The negative impact of these diseases on health-related quality of life (QoL) is comparable to that of ischaemic heart disease, diabetes, depression and cancer.[4] In many instances this disability can be reduced by effective treatment. In addition, severe psoriasis and PsA are associated with an increase in the standardised mortality ratio (SMR). In a study comparing patients with and without psoriasis in the United Kingdom General Practice Research Database, men with severe psoriasis died on average 3.5 years younger (95% CI 1.2 to 5.8 years, $p < 0.001$) than controls and women with severe psoriasis 4.4 years younger (95% CI 2.2 to 6.6 years, $p < 0.001$) than controls.[5] The visible nature of psoriasis can create a sense of stigmatisation amongst those affected.[6] Swollen joints, joint deformity, and physical disability in patients with PsA can lead to experiences of stigmatisation.[7]

Psoriasis and PsA vary widely in their severity. In mild psoriasis, topical treatment in primary care can be effective if used appropriately. Severe forms need prompt and intensive treatment, usually in secondary care, with phototherapy, systemic treatment, biologic treatment or inpatient treatment. The varied manifestations of PsA may be difficult to recognise, particularly in the absence of an acute phase response. General practitioners (GPs) may be uncertain when to refer patients to secondary care and may be unaware of the treatments available to their patients locally.[8] In both primary and secondary care, the biological severity of the disease and the resulting disability are not always fully explored and documented.[9] The management of patients with the combination of severe psoriasis and PsA may be particularly challenging and require close collaboration between several specialties. Despite the availability of a variety of treatments, effective and safe control of disease activity is not always easy to achieve and there is no standard therapeutic approach. For these and other reasons there is considerable dissatisfaction amongst patients concerning psoriasis and its treatment.[10]

1.2 REMIT OF THE GUIDELINE

1.2.1 OVERALL OBJECTIVES

This guideline provides recommendations based on current evidence for best practice in the diagnosis and management of psoriasis and PsA in adults. It covers early diagnosis of PsA, screening for comorbidities, assessment of disease severity, non-pharmacological treatment, psychological interventions, occupational health, topical treatment, phototherapy, systemic therapy, biologic treatment, referral pathways and the provision of patient information. It excludes psoriasis and PsA in children. Pregnancy and pre-conception care (eg for patients on systemic therapies) are not addressed. Other inflammatory conditions sometimes associated with psoriasis such as palmoplantar pustulosis are not addressed. The management of chronic pain associated with PsA is outwith the scope of this guideline. A minority of patients with PsA develop inflammatory joint disease prior to the development of cutaneous disease. In most cases such patients will be managed as having an undifferentiated inflammatory arthritis and will follow the care pathway appropriate to such conditions.

1.2.2 TARGET USERS OF THE GUIDELINE

This guideline will be of particular interest to allied health professionals (AHPs), clinical psychologists, dermatologists, GPs, health psychologists, medical physicists, nurses, occupational health professionals, patients and carers, pharmacists, and rheumatologists.

1.3 DEFINITIONS

1.3.1 CONCORDANCE AND RELATED TERMS

Compliance can be defined as the extent to which the patient's behaviour matches the prescriber's recommendations. The term implies lack of patient involvement. Adherence can be defined as the extent to which the patient's behaviour matches agreed recommendations from the prescriber. This term develops the definition of compliance by emphasising the need for agreement.[11] Non-adherence may be intentional or unintentional due to practical problems such as physical difficulty in applying topical treatment.

Concordance is a wider concept which encompasses a range of areas from prescribing communication to patient support in medicine taking. Concordance is an agreement between the patient and practitioner which respects the patient's beliefs as to whether, how or when to take recommended medication.[12]

1.3.2 SEVERITY

The concept of severity relates to many different aspects of disease and of response to treatment. The extent of disease, degree of inflammation, responsiveness to treatment and impact on the individual varies. Severity is a continuous variable without discrete categories. No internationally standard or validated categories are recognised. In this guideline, 'mild' and 'severe' psoriasis have been defined for the purposes of referral and selection of treatments.

Mild psoriasis, which would usually be managed in primary care, is defined as Dermatology Life Quality Index (DLQI) ≤5 (*see Annex 2*).

Severe psoriasis, for which systemic or biological therapy may be appropriate, is defined as Psoriasis Area and Severity Index (PASI) ≥10 (*see Annex 3*) and DLQI ≥10.

The guideline makes no distinctions of severity in PsA.

1.3.3 POTENCY OF CORTICOSTEROIDS

The guideline uses the terminology of the British National Formulary (BNF) to describe potency of corticosteroids. Potency is dependent on the formulation as well as the corticosteroid used. For further explanation and examples, the BNF chapter on corticosteroids should be consulted.[13]

1.4 STATEMENT OF INTENT

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgment must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgment should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

1.4.1 PATIENT VERSION

A patient version of this guideline will be available from the SIGN website, **www.sign.ac.uk**, following the publication of the full guideline.

1.4.2 PRESCRIBING OF LICENSED MEDICINES OUTWITH THEIR MARKETING AUTHORISATION

Recommendations within this guideline are based on the best clinical evidence. Some recommendations may be for medicines prescribed outwith the marketing authorisation (product licence). This is known as 'off label' use. It is not unusual for medicines to be prescribed outwith their product licence and this can be necessary for a variety of reasons.

Generally the unlicensed use of medicines becomes necessary if the clinical need cannot be met by licensed medicines; such use should be supported by appropriate evidence and experience.[14]

Medicines may be prescribed outwith their product licence in the following circumstances:

- for an indication not specified within the marketing authorisation
- for administration via a different route
- for administration of a different dose.

"Prescribing medicines outside the recommendations of their marketing authorisation alters (and probably increases) the prescribers' professional responsibility and potential liability. The prescriber should be able to justify and feel competent in using such medicines."[14]

Any practitioner following a SIGN recommendation and prescribing a licensed medicine outwith the product licence needs to be aware that they are responsible for this decision, and in the event of adverse outcomes, may be required to justify the actions that they have taken.

Prior to prescribing, the licensing status of a medication should be checked in the current version of the BNF.

1.4.3 ADDITIONAL ADVICE TO NHSSCOTLAND FROM NHS QUALITY IMPROVEMENT SCOTLAND AND THE SCOTTISH MEDICINES CONSORTIUM

NHS Quality Improvement Scotland (NHS QIS) processes multiple technology appraisals (MTAs) for NHSScotland that have been produced by the National Institute for Health and Clinical Excellence (NICE) in England and Wales.

The Scottish Medicines Consortium (SMC) provides advice to NHS Boards and their Area Drug and Therapeutics Committees about the status of all newly licensed medicines and any major new indications for established products.

SMC advice and NHS QIS validated NICE MTAs relevant to this guideline are summarised in section 9.4.

2 Key recommendations

The following recommendations were highlighted by the guideline development group as the key clinical recommendations that should be prioritised for implementation. The grade of the recommendation relates to the strength of the supporting evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

Attention is drawn to the care pathway in section 3 as an important tool for supporting the implementation of these recommendations.

D **Patients with erythrodermic or generalised pustular psoriasis must receive emergency referral to dermatology.**

☑ Patients with psoriasis or psoriatic arthritis should have an annual review with their GP involving the following:

- documentation of severity using DLQI
- screening for depression
- assessment of vascular risk (in patients with severe disease)
- assessment of articular symptoms
- optimisation of topical therapy
- consideration for referral to secondary care.

B **All patients suspected as having psoriatic arthritis should be assessed by a rheumatologist so that an early diagnosis can be made and joint damage can be reduced.**

D **Assessment of patients with psoriasis or psoriatic arthritis should include psychosocial measures, with referral to mental health services as appropriate.**

D **Active involvement of patients in managing their care should be encouraged.**

D **Potent to very potent topical corticosteroids are not recommended for regular use over prolonged periods because of concern over long term adverse effects.**

A **For long term topical treatment of plaque psoriasis a vitamin D analogue is recommended.**

D **Patients in primary care who do not respond to topical therapy and who score 6 or above on the DLQI should be offered referral to dermatology.**

B **Patients with psoriasis who do not respond to topical therapy should be offered NBUVB phototherapy.**

B **Patients with severe or refractory psoriasis should be considered for systemic therapy with ciclosporin, methotrexate or acitretin, following discussion of benefits and risks.**

A **Patients with severe psoriasis who fail to respond to, or have a contraindication to, or are intolerant of phototherapy and systemic therapies including ciclosporin and methotrexate, should be offered biologic therapy unless they have contraindications or are at increased risk of hazards from these therapies.**

D **Inpatient treatment on a dermatology ward should be available for patients with severe psoriasis.**

A **Adalimumab, etanercept or infliximab are recommended for treatment of active psoriatic arthritis in patients who have failed to respond to, are intolerant of, or have had contraindications to, at least two disease-modifying therapies.**

☑ In patients with psoriasis and psoriatic arthritis, monotherapy that addresses both skin and joint disease should be used in preference to multiple therapies.

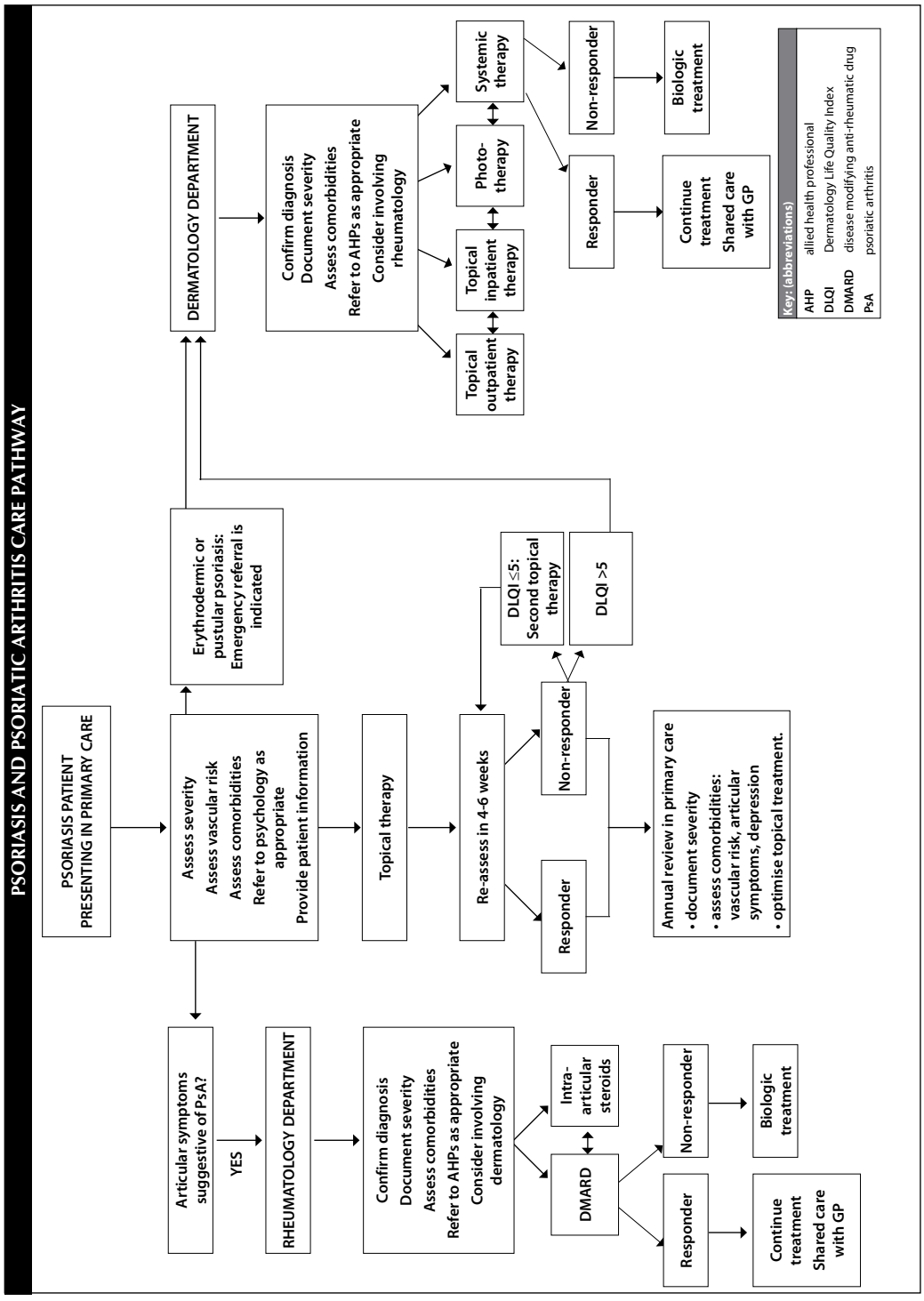
☑ Patients with psoriasis and psoriatic arthritis should have access to appropriate multidisciplinary care, including:

- occupational therapy
- physiotherapy
- podiatry
- psychology
- specialist nursing.

3 Care pathway

Most patients with psoriasis are managed in primary care. Patients with extensive or treatment-resistant skin disease and patients with PsA will need to attend hospital departments of dermatology and rheumatology at various times for diagnosis and treatment. The care pathway encapsulates aspects of the patient journey between primary and secondary care and the assessments and treatments undertaken at each stage (*see Figure 1*). The details of the diagnostic, treatment, and referral activities that constitute this pathway are described in subsequent chapters, along with an explanation of the supporting evidence base.

Figure 1: Care pathway for psoriasis and psoriatic arthritis in primary and secondary care



4 Diagnosis, assessment and monitoring

4.1 DIAGNOSIS

4.1.1 DIAGNOSIS OF PSORIASIS

Diagnosis of cutaneous psoriasis is usually straightforward based on the clinical appearance (see www.dermnetnz.org for representative images). The most frequent presentation is chronic plaque psoriasis (psoriasis vulgaris) and is characterised by well demarcated bright red plaques covered by adherent silvery white scales. These may affect any body site, often symmetrically, especially the scalp and extensor surfaces of limbs. The differential diagnosis includes eczema, tinea, lichen planus and lupus erythematosus. The appearance of the plaques may be modified by emollients and topical treatments, which readily remove the scale. Scaling is reduced at flexural sites, on genital skin and in palmoplantar disease.

Guttate psoriasis describes the rapid development of multiple small papules of psoriasis over wide areas of the body. The differential diagnosis includes pityriasis rosea, viral exanthems and drug eruptions.

Generalised pustular psoriasis is rare and is characterised by the development of multiple sterile non-follicular pustules within plaques of psoriasis or on red tender skin. This may occur acutely and be associated with fever. The differential diagnosis includes pyogenic infection, vasculitis and drug eruptions.

4.1.2 DIAGNOSIS OF PSORIATIC ARTHRITIS

Several clinical patterns of joint involvement in PsA have been identified including distal arthritis, asymmetric oligoarthritis (less than five joints), symmetric polyarthritis, arthritis mutilans, and spondyloarthritis (sacroiliitis and spondylitis). Patients often present with a mixture of subtypes and the pattern of disease may vary over time. The most frequent presentation is polyarthritis, followed by oligoarthritis. Other common features of PsA include enthesitis (inflammation at the tendon/bone interface), tenosynovitis and dactylitis (sausage digit).[15] Inflammatory back pain is an important clinical symptom in patients with axial disease and the Assessment of SpondyloArthritis international Society (ASAS) criteria may be applied to these patients.

The ASAS criteria for inflammatory back pain are:

- age < 40
- insidious onset
- improvement with exercise
- no improvement with rest
- pain at night (with improvement on getting up).

The criteria are fulfilled if four out of five parameters are present in patients who have had chronic back pain for more than three months. The criteria show a sensitivity of 77% and specificity of 91.7%.[16]

4.1.3 EARLY DIAGNOSIS

In the absence of a correct diagnosis, psoriasis and PsA may go untreated and may progress, potentially worsening the patient's quality of life and prognosis.

No studies were identified to show whether early compared to late diagnosis and treatment of psoriasis or PsA alter long term outcome in terms of comorbidities, joint damage and disability.

One study showed that at two years, 47% of patients with PsA demonstrate joint erosions on X-ray.[17] Two RCTs involving a total of 520 patients showed that anti-tumour necrosis factor (TNF) therapy significantly delayed radiographic progression compared to placebo ($p < 0.001$ for adalimumab and $p = 0.0001$ for etanercept).[18,19] 1^+

B **All patients suspected as having psoriatic arthritis should be assessed by a rheumatologist so that an early diagnosis can be made and joint damage can be reduced.**

☑ Annual reassessment for symptoms of arthritis in patients with psoriasis should be considered.

The lack of agreed diagnostic criteria for PsA has hindered the development of instruments for early detection of the disease. The ClASsification criteria for Psoriatic ARthritis (CASPAR criteria) for the classification of PsA amongst patients with inflammatory joint disease have been validated (*see Annex 4*).[20] 2++

B **Patients with inflammatory joint disease should be classified as having psoriatic arthritis based on CASPAR criteria.**

There is now a recognised association of comorbidities with psoriasis and PsA *(see section 4.2)*. Early recognition of these comorbidities with subsequent implementation of strategies that modify lifestyle and in particular cardiovascular risk factors may affect long term outcomes.[21, 22] 4

4.1.4 SCREENING FOR PSORIATIC ARTHRITIS

PsA is frequently undiagnosed. A recent European study of 1,511 patients with plaque type psoriasis attending a dermatologist found that 20.6% (95% CI 18.6 to 22.7%) had PsA. Only 3% of patients had had the diagnosis of PsA established before the study.[2] 3

D **Healthcare professionals who treat patients with psoriasis should be aware of the association between psoriasis and psoriatic arthritis.**

The introduction of a short, patient-administered questionnaire may raise awareness of and assist in the early detection of PsA. Three questionnaire based screening tools have been developed that may assist in the diagnosis of PsA in patients with psoriasis.

The Psoriasis Epidemiology Screening Tool (PEST) was evaluated in a population of 114 English patients with psoriasis in primary care and rheumatology secondary care, 33 of whom had a validated diagnosis of PsA (*see Annex 5*). This 5-item questionnaire had a sensitivity of 92%, specificity of 78% and a positive likelihood ratio of 4.1.[23] PEST requires validation in dermatology clinics. 2+

The Psoriatic Arthritis Screening and Evaluation Tool (PASE) was evaluated in a population of 69 American patients with psoriasis attending a combined dermatology-rheumatology clinic, 17 of whom had a validated diagnosis of PsA. This 15-item questionnaire (seven items relating to diagnosis and eight relating to disease severity) had a sensitivity of 82%, specificity of 73% and a positive likelihood ratio of 3.0.[24] 2++

The Toronto Psoriatic Arthritis Screen (ToPAS) is a questionnaire based screening tool developed to assist in the diagnosis of PsA in individuals who may or may not have psoriasis. In a population of 688 Canadian patients attending a PsA clinic (134), a psoriasis clinic (123), general dermatology clinic (118), general rheumatology clinic (135) or family medicine clinic (178), 169 of whom had a validated diagnosis of PsA, this 14-item questionnaire had an overall sensitivity of 86%, specificity of 93% and a positive likelihood ratio of 12.6. This instrument was designed to detect PsA in any population rather than in those already known to have psoriasis and as such many of the items relate to the diagnosis of psoriasis rather than arthritis.[25] 2++

C **The use of patient-administered screening questionnaires such as PEST should be considered for early detection of psoriatic arthritis in primary care and dermatology clinics.**

No studies concerning laboratory or radiological screening investigations that would be useful in these settings were identified. Two studies involving a total of 484 patients with psoriasis or PsA examined anticyclic citrullinated peptide antibodies for detection of PsA but found the investigation to lack sensitivity.[26, 27] 2++

B **The measurement of serum anticyclic citrullinated peptide antibodies in patients with psoriasis should not be used to screen for psoriatic arthritis.**

4.2 COMORBIDITIES

Patients with psoriasis or PsA have been identified as being at increased risk of a number of comorbid conditions including diabetes mellitus (DM), hypertension (HTN), coronary heart disease (CHD), inflammatory bowel disease (IBD), lymphoma and depression.[28-31] 2+

High body mass index (BMI), smoking and alcohol may influence the onset of disease and, in the case of obesity, its extent.[32-37] In addition, smoking, excessive alcohol consumption and obesity may have an adverse effect on comorbid conditions such as cardiovascular disease and diabetes. 3

Any discussion of comorbidities must be handled sensitively by healthcare professionals (HCPs) to avoid further stigmatisation of patients with psoriasis. The potential benefits of informing patients must be weighed against the potential to cause anxiety.

The increased risk of developing these conditions may not pertain to all patients with psoriasis as most studies have identified the greatest excess risk in those with the most severe disease. The following lifestyle advice and therapeutic interventions are, therefore, important in those with severe disease but also represent sensible advice for those with mild disease where the link is not as well established.

D **Healthcare professionals should be aware of the need to consider comorbid conditions in patients with psoriasis and psoriatic arthritis. Where necessary, detailed assessment should be carried out to accurately identify and manage comorbid conditions.**

☑ Healthcare professionals should take comorbidities into consideration when selecting treatments.

4.2.1 CARDIOVASCULAR RISK

In a population based study assessing the prevalence of cardiovascular risk factors, patients with psoriasis had higher odds of DM, HTN, hyperlipidaemia, obesity and smoking than controls.[31]

Psoriasis may be an independent risk factor for myocardial infarction (MI) with the greatest relative risk (RR) for young patients with severe disease.[29] A study analysing the cumulative incidence of risk factors for MI over time showed that hazard ratios were increased for incident DM, HTN, obesity and hyperlipidaemia in patients with psoriasis compared to the general population.[30] It was not possible to establish whether or not these associations related to psoriasis in itself or its treatment. 2++

D **Evaluation of patients with severe psoriasis or psoriatic arthritis should include annual BMI, DM screening, blood pressure measurement, and lipid profile.**

D **Consider advising patients with severe psoriasis or psoriatic arthritis that they may be at increased risk of cardiovascular disease and diabetes.**

4.2.2 OBESITY

Several studies have shown an association between severity of psoriasis and obesity. It remains unclear whether or not obesity is a cause or effect of psoriasis.[38] 4

4.2.3 METABOLIC SYNDROME

Patients with psoriasis have an increased risk of metabolic syndrome and its individual components. The increased frequency of smoking, OR 2.96 (95% CI 2.27 to 3.84), and alcohol consumption, OR 3.61 (95% CI 1.85 to 7.07), observed in patients with psoriasis does not seem to account for the increased risk.[39] 3

4.2.4 SMOKING

An increased prevalence of smoking has been noted in UK cohorts of patients with psoriasis.[31, 40] An American study, Nurses' Health Study II, identified current and past smoking as a risk factor for the development of psoriasis in women.[36] 3

4.2.5 ALCOHOL CONSUMPTION

Most studies show an association between alcohol consumption and psoriasis but do not demonstrate causality.[41] Heavy alcohol consumption may affect severity of disease, choice of treatment and response to treatment.[34,35,37] 3

D **All patients with psoriasis or psoriatic arthritis should be encouraged to adopt a healthy lifestyle, including:**

- **regular exercise**
- **weight management, aiming for BMI 18.5-24.9**
- **moderation of alcohol consumption**
- **cessation of smoking.**

4.2.6 IMPACT ON PSYCHOLOGICAL WELL-BEING

Psoriasis and PsA affect all aspects of QoL with potentially profound psychosocial implications.[42] The impact of psoriasis on mental and physical well-being is comparable to that of other chronic conditions such as cancer and diabetes.[4] Psychosocial comorbidities experienced by patients are not always proportional to or predicted by disease severity.[10,43] Long term psychological distress can lead to depression and anxiety.

A systematic review of psychiatric morbidity in psoriasis found that psoriasis can have an adverse effect on self image, self esteem and emotional stability. Aspects of QoL affected by psoriasis include physical, psychological, sexual, social and occupational well-being.[42] Depressive symptomatology is more common in people with psoriasis than in controls.[22] Patients report mental health concerns such as anxiety and depression and a wide range of emotional reactions such as shame, embarrassment, anger and helplessness.[44,45] The most difficult aspect is the visibility of psoriasis.[46,47] 2+ 3

NICE has produced guidance on screening for depression that recommends asking two questions:

During the last month, have you often been bothered by:

- *feeling down, depressed or hopeless?*
- *having little interest or pleasure in doing things?*

A 'yes' to either question should result in further assessment or referral. NICE recommends asking three further questions to improve the accuracy of assessment in people with chronic physical health problems: 4

During the last month, have you often been bothered by:

- *feelings of worthlessness?*
- *poor concentration?*
- *thoughts of death?*[48]

The 9-item Patient Health Questionnaire (PHQ-9) for diagnosis of depression has been validated in UK primary care with a sensitivity of 91.7% (95% CI 77.5 to 98.3%) and specificity of 78.3% (95% CI 65.8 to 87.9%) using a cut off of ≥10. In the same study, the 34-item Clinical Outcomes in Routine Evaluation - Outcome Measure (CORE-OM) was validated with a sensitivity of 91.7% (95% CI 77.5 to 98.2%) and specificity of 76.7% (95% CI 64.0 to 86.6%) with cut off of ≥13. Both instruments are freely available. The CORE-OM takes longer to complete, but measures a broader range of common mental health problems (including depression) as well as functional ability and risk.[49] 3

The Hospital Anxiety and Depression Scale (HADS) is commonly used in primary care and has been tested in the measurement of psychosocial disability in psoriasis.[50]

Many studies highlight the need for psychosocial support for patients with psoriasis.[43-45, 47, 51-55] Psychosocial support is often lacking.[56]

D **Assessment of patients with psoriasis or psoriatic arthritis should include psychosocial measures, with referral to mental health services as appropriate.**

There is a lack of good quality evidence on whether stress is associated with risk of psoriasis flare or reduced efficacy of treatment. One study of the effects of psychological distress on time to clearance in psoriasis patients treated with psoralen ultraviolet A phototherapy (PUVA) (n = 112) found that the group with pathological levels of worrying, defined as Penn State Worry Questionnaire (PSWQ) >60, achieved clearance 1.8 times slower than the low level worriers.[57] A study of the effect of daily stressors (measured with the Everyday Problem Checklist) on patients with psoriasis (n = 76) found a significant correlation between self reported daily stressors and an increase in itch and Psoriasis Area and Severity Index (PASI) four weeks later.[58] The implications for clinical management are unclear. 3

No good quality studies on the effectiveness of psychological therapies, stress management or peer support groups in psoriasis or PsA were identified.

4.2.7 MALIGNANCY

A prospective cohort study of patients with PsA found that the incidence of malignancy (all cancers) was not different from that in the general population.[59] In a UK retrospective cohort study comparing patients with a history of psoriasis and those without psoriasis, the overall rate of internal malignancy was not increased.[60] Two reviews identified an increased RR of cancers of the liver, colon, oesophagus, oral cavity, larynx, lung, bladder, breast and non-melanoma skin cancer in patients with psoriasis.[22,38] An increased risk of squamous cell carcinoma (SCC) of the skin in psoriasis patients treated with PUVA has been demonstrated.[61,62] Smoking, alcohol consumption and treatments such as immunosuppressive drugs may be important confounding factors. 3 4

A UK cohort study comparing patients with (n = 153,197) and without (n = 765,950) psoriasis identified an association between psoriasis and increased risk of lymphoma. The association was strongest for cutaneous T-cell lymphoma and Hodgkin's lymphoma.[63] Lymphoma is a rare disease, the magnitude of the association is modest, and the absolute risk attributable to psoriasis is low. Several other studies do not support an association between psoriasis and lymphoma.[61,64,65] 2++ 3

4.2.8 OTHER COMORBIDITIES

Crohn's disease is found more often in patients with psoriasis than in controls.[66,67]

In a case control study using an Israeli healthcare provider database, the adjusted OR of chronic obstructive pulmonary disease after controlling for confounders including smoking and obesity was 1.27 (95% CI 1.13 to 1.42).[68]

A systematic review found that the mean prevalence of uveitis in 10 studies of patients with PsA (n = 1,341) was 25.1%.[69] 2++

4.3 MONITORING DISEASE ACTIVITY AND RESPONSE TO TREATMENT

4.3.1 ASSESSMENT TOOLS FOR PSORIASIS

In the past, assessments of psoriasis severity have depended on the ability of the observer to rate the visible signs of the disease including the extent of disease together with an assessment of the erythema, thickness and scaling and some subjective account of the effect psoriasis has on the individual. A number of tools have been introduced to assess both the clinical severity of psoriasis and to assess the impact of psoriasis on the patient's QoL. These have been mainly used in the context of clinical trials but have also been increasingly used within the clinic.

The clinical assessment tools include the PASI, Body Surface Area (BSA), Dermatology Index of Disease Severity (DIDS), and the Physician's Global Assessment (PGA). The measures most commonly used in clinical practice to monitor disease activity in the skin (eg PASI, PGA, Salford Psoriasis Index) have not been validated as a measure of clinical response in routine practice. The PASI is the most widely used clinical assessment instrument in the UK.[70]

The patient assessment methods are mainly QoL questionnaires developed using generic, dermatological or disease-specific tools. The main tools used in studies include the generic SF-36® Health Survey, Dermatology Life Quality Index (DLQI) and the Psoriasis Disability Index (PDI).[7] Other scoring tools include the EuroQoL score, the Psoriasis Symptom Assessment score (PSA) and the Dermatology Quality of Life Scale (DQOLS). In the UK, the DLQI is the assessment method most used in clinical practice. It is a simple, reliable test that is sensitive to changes in quality of life following treatment.[71,72] It can be used without specific training and is well suited to use in primary care.

Introduced mainly in the context of clinical trials of biologic agents, the DLQI (*see Annex 2*) and the PASI (*see Annex 3*) are the most used instruments. As they measure different aspects of the severity of the disease, PASI and DLQI do not directly correlate with each other in an individual.

NICE guidance for eligibility for biologic therapy in psoriasis is dependent on fulfilling disease severity criteria based on PASI and DLQI.[73-75]

4

D **Healthcare professionals should be aware that the PASI and DLQI are part of the eligibility criteria for biologic therapy in psoriasis and must be used to assess the efficacy of these agents over time.**

D **The DLQI should be measured as part of the global assessment of patients with psoriasis.**

☑ In secondary care, the PASI and DLQI should be taken at baseline and then measured serially to aid assessment of efficacy of systemic and biologic interventions.

☑ Healthcare professionals should have training in the use of the assessment tools.

4.3.2 ASSESSMENT TOOLS FOR PSORIATIC ARTHRITIS

PsA is a heterogeneous disorder affecting peripheral and axial joints as well as having other features such as dactylitis and enthesitis. The commonly used tools to assess peripheral joint disease are the American College of Rheumatology (ACR) joint count and the Ritchie Index. Measures of clinical response in PsA include the PsA Response Criteria (PsARC); the ACR 20, 50 and 70 improvement response; and the European League Against Rheumatism response criteria (EULAR).[76,77] PsARC was specifically designed for PsA (*see Annex 6*). Improvement is recorded in at least two of four criteria: 20% or greater improvement in physician global assessment of disease, 20% or greater improvement in patient assessment of disease activity, 30% or greater improvement in tender joint count and 30% or greater improvement in swollen joint count. Improvement in either tender or swollen joint score is mandatory and there should be no worsening of any component. The PsARC discriminates well between effective treatment and placebo but focuses only on peripheral manifestations.[77]

Measures of function and disability include the Health Assessment Questionnaire (HAQ), SF-36 and the Psoriatic Arthropathy Quality of Life Index (PsAQoL). Of the QoL measures only PsAQoL has been validated in PsA.[78]

Assessment tools used in ankylosing spondylitis (AS) can be used in the assessment of patients with psoriatic spondyloarthropathy. The BASDAI (Bath Ankylosing Spondylitis Disease Activity Index) consists of 10 cm visual analogue scales used to answer questions pertaining to the five major symptoms of AS: fatigue, spinal pain, joint pain and swelling, areas of localised tenderness and morning stiffness (*see Annex 7*).[79] The BASFI (Bath Ankylosing Spondylitis Functional Index) measures functional abilities in 10 activities of daily living on a 10 cm visual analogue scale (*see Annex 8*).[80]

Adequate response to biologic treatments in PsA has been defined as an improvement in at least two of the four PsARC criteria, one of which has to be joint tenderness or swelling score, with no worsening in any of the four criteria.[81] Adequate response to biologic treatments has been defined in AS as:

4

- reduction of BASDAI to 50% of the pre-treatment value or a fall of ≥ 2 units
- *and* reduction of the spinal pain visual analogue score (in previous week) by ≥ 2 cm.[82]

D **PsARC should be used to monitor response to biologic agents in patients with peripheral psoriatic arthritis.**

D **BASDAI and spinal pain visual analogue score should be used to monitor response to biologic agents in patients with axial disease.**

Patients with both peripheral and axial disease should be assessed for biologic treatment eligibility and response using both PsARC and BSR ankylosing spondylitis guidance. Some patients may not respond to treatment for peripheral disease but respond for axial disease, and vice versa.

5 Treatment in primary care

5.1 TOPICAL THERAPY

Topical therapies remain the mainstay of treatment for mild psoriasis. Patients with severe psoriasis often use topical therapies (at least for selected body areas). The main groups of topical therapies for psoriasis are emollients, vitamin D and its analogues (abbreviated to 'vitamin D analogues'), topical corticosteroids (including combination preparations), coal tar preparations, dithranol, and tazarotene (a topical retinoid). As well as differences in efficacy and side effects (most frequently local irritation) some of these preparations are easier to use than others for different patterns of psoriasis. A wide choice of therapies is useful.

A good quality Cochrane review found that potent topical corticosteroids (alone and in combined preparations with salicylic acid or with calcipotriol) are, in short term use, more effective than placebo and similarly effective to calcipotriol and other vitamin D analogues. A potent topical corticosteroid plus calcipotriol preparation was moderately more effective than the same potent topical corticosteroid in a formulation without calcipotriol. Regimens involving potent and very potent topical corticosteroids (whether combined with calcipotriol or not) followed by calcipotriol were more effective than regimens not including short term use of a potent to very potent topical corticosteroid.[83] 1++

A **Short term intermittent use of a potent topical corticosteroid or a combined potent corticosteroid plus calcipotriol ointment is recommended to gain rapid improvement in plaque psoriasis.**

One systematic review was identified on adverse effects of topical treatments for psoriasis.[84] These adverse effects include development of striae, skin fragility and easy bruising; rebound, persistent or unstable psoriasis; and systemic adverse effects. These adverse effects were uncommon in the reported studies, but most studies were short term (none involving topical corticosteroid use for more than one year). Because monitoring in studies is close, participants will be less likely to continue to more serious side effects than in standard treatment outwith a study. Rare but serious (sometimes fatal) side effects such as systemic hypothalamic-pituitary-axis suppression and generalised pustular psoriasis need to be considered. 1+

D **Potent to very potent topical corticosteroids are not recommended for regular use over prolonged periods because of concern over long term adverse effects.**

A good quality Cochrane review found that topical vitamin D analogues (calcipotriol, tacalcitol and calcitriol) are more effective than placebo and more effective than coal tar.[83] 1++

A **For long term topical treatment of plaque psoriasis a vitamin D analogue is recommended.**

A good quality Cochrane review found that dithranol and tazarotene are more effective than placebo.[83] 1++

A 1% coal tar solution lotion proved moderately more effective than a 5% coal tar solution lotion in one randomised study, possibly due to differences in its vehicle.[85] 1+

Dithranol irritates perilesional skin so is more suitable for 30 minute exposure ('short contact') in patients with a small number of relatively large plaques of psoriasis than for widespread small lesions. Refined tars are well tolerated by patients and suitable for outpatient use. Crude coal tar is generally reserved for supervised outpatient treatment in secondary care or inpatient care because of its odour and cosmetic effects.

B **If a vitamin D analogue is ineffective or not tolerated then short contact dithranol, coal tar solution, cream or lotion or tazarotene gel should be considered in appropriate patients.**

Most available evidence concerned short term efficacy. None of the studies included in the systematic reviews involved long term (> 52 weeks) treatment or follow up. The time at which the efficacy outcome was determined varied between studies. Most studies of topical corticosteroids involved treatment for between two and eight weeks, with the main efficacy outcome assessment often being at four weeks. Few studies addressed safety and patient acceptability. Few studies were conducted in primary care.

No studies of the effectiveness of emollients were identified.

☑ Regular emollient use may be considered to reduce fall of scales and help with other symptoms, including itch.

A systematic review of treatments for guttate psoriasis, including topical therapy, identified no relevant published studies.[86] 1++

☑ For guttate psoriasis consider early referral for consideration of phototherapy in those who do not respond to topical therapy.

Table 1 represents a comparative overview of the efficacy and tolerability of commonly used topical treatments for psoriasis.

Table 1: comparison of topical therapies for psoriasis

Therapy	Efficacy	Suitability in inducing remission	Suitability as maintenance treatment	Patient acceptability
Coal tar	✓	✓	-	-
Corticosteroids [1]	✓✓✓✓	✓✓✓	✓	✓✓
Dithranol	✓✓	✓✓	-	- [2]
Tazarotene	✓✓	✓✓	✓✓	✓✓
Vitamin D analogues	✓✓✓	✓✓✓	✓✓✓	✓✓

[1] Potent or very potent corticosteroid. Also applies to fixed combinations with a vitamin D analogue

[2] More suitable for inpatient setting

5.2 SCALP, NAIL, FACIAL AND FLEXURAL PSORIASIS

Scalp and nail involvement is a common but therapeutically challenging aspect of psoriasis management. When present, facial, flexural or intertriginous psoriasis can be similarly difficult to manage. In severe disease, systemic therapy (*see section 7.3.1*) or biologic therapy (*see section 7.3.2*) may be considered.

5.2.1 SCALP

Eight RCTs compared topical corticosteroids, calcipotriol and combination products for the treatment of scalp psoriasis.[87-94] Potent topical corticosteroid preparations have superior efficacy over calcipotriol and a combination of calcipotriol and a potent topical corticosteroid is more effective than either agent alone ($p = 0.011$ for comparison with betamethasone dipropionate alone, $p < 0.0001$ for calcipotriene alone).[91] The choice of vehicle used to deliver topical corticosteroids did not alter the outcome. Patient preference may affect the choice of vehicle. 1+

Tar shampoo was of reduced efficacy compared to calcipotriol solution. No evidence was identified to recommend any one tar preparation over another. 1-

☑ For patients with thick scaling of the scalp, initial treatment with overnight application of salicylic acid, tar preparations, or oil preparations (eg olive oil, coconut oil) to remove thick scale is recommended.

B **Short term intermittent use of potent topical corticosteroids or a combination of a potent corticosteroid and a vitamin D analogue is recommended in scalp psoriasis.**

☑ A very potent topical corticosteroid is recommended in refractory cases.

5.2.2 NAILS

Psoriasis that affects the nails is generally refractory to topical treatment. One systematic review concluded that there was no evidence to recommend one treatment above another.[95] Published trials of topical treatments for nail psoriasis were generally of poor quality due to small numbers studied, lack of an adequate control group and/or lack of standard outcome measures. 1-

☑ In nail disease, topical corticosteroids, salicylic acid, calcipotriol, or tazarotene used alone or in combination can be considered.

5.2.3 FACE AND FLEXURES

These sites are more easily irritated by topical therapies and are more prone to cutaneous atrophy with potent topical corticosteroids. One systematic review of treatments for flexural involvement (axilliary, inguinal, umbilical, genital skin) identified 21 studies.[96] The review demonstrated that moderate potency topical corticosteroids have superior efficacy to calcipotriol and pimecrolimus, and that tacrolimus and pimecrolimus are superior to placebo. The review found anecdotal evidence for the use of coal tar. 1+

B **Moderate potency topical corticosteroids are recommended for short term use in facial and flexural psoriasis.**

B **If moderate potency topical corticosteroids are ineffective in facial and flexural psoriasis, then vitamin D analogues or tacrolimus ointment are recommended for intermittent use.**

☑ Coal tar may be considered for intermittent use in flexural psoriasis.

☑ Treatments with irritant properties (dithranol, topical retinoids) should not generally be used in facial or flexural sites.

5.3 CONCORDANCE-RELATED ISSUES

Evidence suggests that lack of treatment effect is as much to do with a lack of adherence as to efficacy.[97]

In an observational study (n = 30) adherence to topical therapy decreased from 84.6% to 51% ($p < 0.001$) over an eight week period.[98] In another study (n = 38), mean adherence to acitretin therapy decreased from 93.6% to 54.4% over 12 weeks, although mean adherence to home phototherapy remained steady.[99] A study of 17 first-time outpatients in dermatology found that only one patient used the topical therapy as prescribed.[100] 3

In a time series analysis (n = 29), adherence increased for two days before and after a follow-up visit ($p = 0.45$) and application according to directions increased from 0.72 per day (10 days before a visit) to 1.4 per day (one day after a visit).[101] Poor cosmetic characteristics of the treatments are a reason for non-adherence.[53]

D **Patients should be offered a follow-up appointment within six weeks of initiating or changing topical therapy to assess treatment efficacy and acceptability.**

One study found increased mean adherence for once daily compared to twice daily medication regimens ($p < 0.001$).[102] 3

D **To improve adherence, the number of treatments per day should be kept to a minimum.**

5.3.1 COMMUNICATION WITH PATIENTS

To reach concordance, patients need to have a positive perception of care, have confidence in the HCP's knowledge about psoriasis and treatments, and be optimistic about the treatment process.[103,104] The most important aspect of patient-doctor communication is the patient's perception of the doctor's interpersonal skills and their expression of empathy for the difficulties faced by the patient as a result of living with psoriasis.[103]

When patients are actively involved in the decisions related to the management of their psoriasis, adherence increases. In a time series study (n = 330), at baseline 74% patients considered themselves to be adhering to medication regimens, compared to an assessment by HCPs of 49%. Following the education intervention, this changed to 98% (patients) and 90% (HCPs), $p < 0.001$.[105] For long term treatment, interventions should include more convenient care, information, reminders, self monitoring, reinforcement, counselling, family therapy, psychological therapy, crisis intervention, telephone follow up, and supportive care.[97] 3

D **Healthcare professionals should express empathy, acknowledge day to day difficulties, and recognise and manage psychosocial needs related to having psoriasis.**

D **Treatment options, risks and benefits should be discussed with the patient, allowing them to be involved in decision making.**

5.4 OTHER INTERVENTIONS

5.4.1 ANTISTREPTOCOCCAL INTERVENTIONS INCLUDING TONSILLECTOMY

A Cochrane review of the evidence in relation to antistreptococcal interventions and tonsillectomy for the treatment of guttate psoriasis identified no RCTs for tonsillectomy and only one trial (n = 20) of antistreptococcal therapy.[106] 1^+

Two further RCTs demonstrated no benefit of antibiotic treatment in guttate psoriasis.[107,108]

The evidence is insufficient to support a recommendation concerning antistreptococcal interventions for the treatment of guttate psoriasis.

5.4.2 COMPLEMENTARY AND ALTERNATIVE THERAPIES

There were no high quality systematic reviews of the effectiveness of complementary therapies. Numerous individual trials of the effectiveness of a variety of complementary therapies, primarily for the treatment of psoriasis, were reviewed.[109-157] In general the studies were of poor methodological quality. The majority had small sample sizes, recorded high drop-out rates (especially in control groups), and typically did not use intention to treat analyses. Inadequate blinding of assessors was evident and the type and quality of outcome measures varied.

Evidence for balneotherapy was inconsistent. Some studies show a benefit from salt water plus ultraviolet B (UVB) exposure compared to UVB exposure alone but others show no benefit. Some studies that showed benefit involved unblinding of assessors by patients. There is some evidence of a benefit from soaking in either salt or tap water prior to UVB exposure; however, these were unblinded studies with a high drop-out rate. Unregulated exposure to ultraviolet radiation is not recommended (*see section 7.2*). 1^-

There is insufficient evidence to support recommendations concerning any complementary therapy for the treatment of psoriasis or PsA.

5.4.3 BEHAVIOURAL AND LIFESTYLE MODIFICATIONS

No good quality studies specific to Pso/PsA were identified on the effect of behavioural change or lifestyle modifications in the areas of smoking, alcohol consumption, weight, diet, exercise, or employment. Good quality studies are required to determine the benefits and possible harmful effects of these interventions.

5.5 REFERRAL TO SECONDARY CARE

5.5.1 REFERRAL TO DERMATOLOGY

Psoriasis is one of the easier skin diseases to diagnose in primary care but referral to dermatology may be necessary when there is diagnostic uncertainty. For patients with extensive or treatment refractory cutaneous disease, referral to a dermatology department will be necessary. The Centre for Change and Innovation for NHSScotland (CCI) formulated criteria for referral to a dermatology consultant and criteria for emergency referral.[158] 4

D **Referral to a consultant dermatologist should be considered if any of the following apply:**

- **diagnostic uncertainty**
- **extensive disease**
- **occupational disability or excessive time lost from work or school**
- **involvement of sites which are difficult to treat, eg the face, palms or genitalia**
- **failure of appropriate topical treatment after two or three months' use**
- **adverse reactions to topical treatment**
- **severe or recalcitrant disease.**

D **Patients with erythrodermic or generalised pustular psoriasis must receive emergency referral to dermatology.**

The impact of psoriasis on QoL does not correlate strongly with the extent or severity of visible psoriasis.[159] QoL assessments such as the DLQI *(see section 4.3.1)* may help to select appropriate patients for referral to secondary care. 3

D **Patients in primary care who do not respond to topical therapy and who score 6 or above on the DLQI should be offered referral to dermatology.**

The CCI also identified criteria for referral to a dermatology nurse specialist or nurse-led clinic (where these are available).[158] 4

D **Referral to a dermatology nurse specialist or nurse-led clinic should be considered in patients in whom a diagnosis of psoriasis has previously been established in secondary care if any of the following apply:**

- **relapse following topical therapy**
- **refractory scalp psoriasis**
- **request for further counselling and/or education, including demonstration of topical treatment**
- **topical therapy/phototherapy according to protocols, nurse competencies and local arrangements.**

5.5.2 REFERRAL TO RHEUMATOLOGY

Referral to rheumatology is necessary for diagnosis (*see section 4.1.3*) and treatment (*see section 6.2*) of PsA. No referral criteria for use in primary care were identified.

☑ Referral for a rheumatology opinion is appropriate in psoriasis if joint swelling or dactylitis is present, or when spinal pain with significant early morning stiffness is present.

5.5.3 REFERRAL TO OCCUPATIONAL HEALTH SERVICES

The physical, psychological and social impacts of psoriasis and PsA are also felt in employment. Patients whose hands are affected may experience difficulties in occupations such as hairdressing and cleaning because some chemicals, solvents, and detergents can cause flare-ups. People whose psoriasis affects the feet may be unable to wear protective shoes. Stress may be associated with exacerbations of disease (*see section 4.2.6*). PsA can affect mobility. Associated pain and distress can increase sickness absence.[160]

Patients may wish to seek advice from their GP and/or occupational health service about the suitability of work when considering starting a course or taking up a certain career. Caution is urged in making statements that certain occupations should be avoided because this is dependent on the severity of the individual's psoriasis, the exact nature of the job and whether any modifications can be made to the job. When people are already in post and experience difficulties in their work related to their condition, such cases have to be managed by occupational health and the treating dermatologist.

☑ Decisions or advice regarding work should involve effective communication between the occupational health professional and the treating physician.

5.6 ANNUAL REVIEW

Psoriasis and PsA are generally lifelong conditions that vary in severity over time. The impact of suboptimal treatment can be profound and psychological morbidity in this context is common. Patients are at increased risk of developing comorbidities that require early and active intervention (*see section 4.2*). The degree of psychological distress and the likelihood of psoriatic arthropathy is not necessarily related to the severity of the skin disease.[10,43,161] Documentation of severity is useful for referral and for identification of suboptimal treatment.

Cardiovascular risk score should be assessed at least every five years in people aged over 40 using contemporary risk scoring tools. Currently UK-specific guidelines taking account of deprivation score based on postcode are likely to give the most accurate estimates of cardiovascular risk.[162]

The ASSIGN cardiovascular risk assessment tool (http://assign-score.com) was designed for use in Scotland. QRISK2 (www.qrisk.org) may be superior in patients with severe psoriasis. Chronic severe psoriasis probably carries similar chronic inflammatory risk to rheumatoid arthritis, which can be included in the QRISK2 assessment. See section 4.2.1 for assessment of cardiovascular risk, section 4.2.6 for screening for depression, and section 4.3.1 for documentation of severity.

☑ Patients with psoriasis or psoriatic arthritis should have an annual review with their GP involving the following:

- documentation of severity using DLQI
- screening for depression
- assessment of vascular risk *(in patients with severe disease)*
- assessment of articular symptoms
- optimisation of topical therapy
- consideration for referral to secondary care.

6 Treatment of psoriatic arthritis in secondary care

PsA can be painful and debilitating and can cause progressive joint damage. Evidence from recent studies of PsA suggests that effective therapy not only reduces joint pain and swelling but can also reduce the progression of joint damage (*see section 4.1.3*), indicating that timely referral of people with suspected PsA is desirable. Treatment may include non-steroidal anti-inflammatory drugs (NSAIDs), disease-modifying anti-rheumatic drugs (DMARDs) and intra-articular steroid injections, depending on the pattern and severity of the arthritis.

Once a diagnosis has been established, therapy should commence promptly. A clear plan of management should be discussed and agreed with the patient. Clear information should be given as to how to manage flare-ups and what to do in the event of drug side effects or failure to respond to therapy. Written information about the condition and drug therapy should be provided (*see section 8*).

6.1 ORGANISATION OF CARE

There is limited evidence concerning organisation of care for PsA. One descriptive audit of a nurse-led clinic found that time to first appointment was shorter than a routine rheumatology appointment.[163] Nurse-led clinics in secondary care may offer patients quicker access to diagnosis and treatment. 3

D **Nurse-led triage clinics should be considered for psoriatic arthritis.**

☑ Patients should have access to appropriate multidisciplinary care, including:

- occupational therapy
- physiotherapy
- podiatry
- psychology
- rheumatology specialist nursing.

☑ Dermatology and rheumatology departments should work closely together to manage patients with severe joint and skin disease.

☑ In patients with psoriasis and psoriatic arthritis, monotherapy that addresses both skin and joint disease should be used in preference to multiple therapies.

6.2 PHARMACOLOGICAL TREATMENT

6.2.1 NSAIDS

One systematic review evaluated the use of NSAIDs in patients with PsA.[164] Three RCTs comparing indometacin to azapropazone, acemetacin and diclofenac were identified. A total of 109 patients were included across the three trials. All three trials showed no significant differences between the drugs. No trials of cyclo-oxygenase-2 selective inhibitors were identified. 1^+

In view of the potential cardiac toxicity of NSAIDs, the BNF recommends "the lowest effective dose of NSAID or cyclo-oxygenase-2 selective inhibitor should be prescribed for the shortest period to control symptoms and that the need for long term treatment should be reviewed periodically".[13]

C **NSAIDs are recommended for short term symptom relief in patients with psoriatic arthritis where not contraindicated.**

6.2.2 CORTICOSTEROIDS

A systematic review found no evidence to support the use of systemic or intra-articular corticosteroids in peripheral PsA.[164] Intra-articular corticosteroids are widely used in clinical practice for the treatment of persistent synovitis in a given joint. 1+

☑ The judicious use of intra-articular corticosteroids to treat persistent synovitis of a given joint is recommended, particularly for mono- or oligoarthritis, or for bridging therapy whilst waiting for systemic therapy to become effective.

6.2.3 DISEASE-MODIFYING ANTI-RHEUMATIC DRUGS

Several good quality systematic reviews relating to disease-modifying therapies in PsA were identified.[164-168] These reviews cover mostly the same studies. Although most of these systematic reviews were of good quality, many of the studies that were captured were of poorer quality and this is reflected in the strength of recommendations given for individual drugs. Although many of the DMARDs in common clinical use for PsA do not have a strong published evidence base, they are widely used.

No good quality systematic reviews or RCTs addressing therapy of enthesitis or axial disease were identified, therefore no recommendations are made. All of the recommendations concerning individual drugs relate to peripheral PsA.

Leflunomide

A double blind RCT of leflunomide 20 mg/day in PsA (n = 190) found a statistically significant difference in the number of patients achieving an ACR 20 improvement response (leflunomide 36% v placebo 20%, $p = 0.0138$) and in the number achieving a PsARC response (58.9% v 29.7%, $p < 0.0001$). The proportion of patients who received concomitant corticosteroids was higher in the treatment group than in the placebo group (15% v 9%). Withdrawals due to toxicity were also higher in the treatment group (10/98 v 2/92).[169] 1++

A **Leflunomide is recommended for the treatment of active peripheral psoriatic arthritis.**

Sulfasalazine

The seven RCTs identified by systematic reviews provide weak evidence for the efficacy of sulfasalazine in PsA. There were weakly positive (but not statistically significant) effects on tender joint count; positive, but statistically significant in only one trial, effects on erythrocyte sedimentation rate (ESR); and no effect on swollen joint counts. There were statistically significant positive effects on patient and physician global assessment of disease activity. In the only study that reported ACR 20 and 50 responses sulfasalazine was statistically significantly superior to placebo.[164,166,167] 1++

Withdrawals from trials because of lack of efficacy or toxicity are high when the modest degree of efficacy (compared with anti-TNF agents, gold salts and leflunomide) is considered, though serious hepatic or haematologic toxicity is uncommon.[167] 1++

C **Sulfasalazine may be considered as an alternative in the treatment of peripheral psoriatic arthritis.**

Methotrexate

Despite its widespread use in clinical practice, there is little evidence to support the use of methotrexate in PsA. In an RCT (n = 37) identified in a high quality systematic review, 7.5 mg weekly of methotrexate had no effect on tender or swollen joint count at 12 weeks, but a statistically significant effect on physician and patient global assessment.[166] 1++

In an RCT (n = 72) of methotrexate plus ciclosporin versus methotrexate plus placebo in patients judged to be unresponsive to methotrexate alone, improvements were seen in both groups with no significant differences for primary or secondary outcome measures.[170] Patients enrolled into the study were required to have active disease despite a minimum treatment period of three months with methotrexate. The fact that both groups improved to a similar extent may reflect ongoing benefit from methotrexate. 1-

C **Methotrexate may be considered in the treatment of psoriatic arthritis.**

The National Patient Safety Agency (NPSA) has made recommendations concerning the safe prescribing and monitoring of methotrexate.[171]

Ciclosporin

An RCT (n = 72) of methotrexate plus ciclosporin versus methotrexate plus placebo showed equivalence for the two drugs in terms of efficacy with no additional benefit on arthritis from combination therapy, but combination therapy demonstrated higher toxicity.[170] 1-

D **The addition of ciclosporin to methotrexate in the treatment of psoriatic arthritis is not recommended for routine therapy.**

Two studies of ciclosporin in PsA were identified. Both were of poor quality. An open label study compared ciclosporin up to 3 g/day (n = 36) versus sulfasalazine up to 3 g/day (n = 32) versus 'symptomatic treatment' with NSAIDs with or without prednisolone (n = 31) at 24 weeks in patients with PsA. Reduction of pain (visual analogue score) was significantly greater in the ciclosporin group ($p < 0.05$). There was no significant difference between the groups for numbers achieving ACR 20 (44% v 44% v 36%), ACR 50 (25% v 13% v 3%) or ACR 70 (14% v 0% v 0%).[172] An RCT compared ciclosporin 3 mg/kg/day escalating to a maximum of 5 mg/kg/day (n = 17) versus methotrexate 7.5 mg/week escalating to a maximum of 15 mg week (n = 18) in patients with PsA. The results showed no significant differences between the groups except that only the methotrexate group demonstrated reduction of ESR ($p < 0.01$).[173] 1-

There is insufficient evidence to support a recommendation. For the use of ciclosporin in severe cutaneous psoriasis, see section 7.3.1.

☑ Patients should not be expected to fail ciclosporin before being eligible for biologic therapy for psoriatic arthritis.

Intramuscular gold salts and oral gold

In a small, placebo-controlled trial of intramuscular (IM) gold salts identified by systematic reviews there was a statistically significant effect on tender joint score, but no effect on ESR or pain. A small case control study (18 treatment, 36 placebo) showed no difference in radiographic progression at 24 weeks. In a further small study of IM gold versus oral gold versus placebo, withdrawal rates for toxicity were very high in the IM gold group (33%). Skin rashes and mucocutaneous reactions are common.[164,167] 1++

Good quality systematic reviews identified a single placebo-controlled trial of oral gold 3 mg/day (93 patients gold, 95 placebo) increasing to 4.5 mg/day after three months. Withdrawal rates at six months for lack of efficacy and toxicity were similar in both arms, suggesting low efficacy and low toxicity. There was no statistically significant effect on swollen joint count or ESR.[164,167] 1++

B **The use of intramuscular or oral gold in the treatment of psoriatic arthritis is not recommended where less toxic treatments are an option.**

Other DMARDs

A good quality systematic review identified only one study (n = 12) of azathioprine in the treatment of PsA.[164] There is insufficient evidence to support a recommendation.

No studies of d-penicillamine in the treatment of PsA were identified, therefore no recommendation is made.

Choice of DMARD

No studies were identified that addressed the comparative efficacy of leflunomide, methotrexate, and sulfasalazine. No studies that addressed optimal sequencing of DMARDs were identified

☑ Choice of DMARD and sequence of DMARD should take into account:
- patient preference
- severity of joint disease
- severity of skin disease
- comorbidities
- risk of adverse reactions.

6.2.4 BIOLOGIC THERAPY

Adalimumab 40 mg every other week is effective in the treatment of moderate to severe peripheral PsA (> 3 tender and swollen joints) after 12 and 24 weeks of therapy. There is a significant difference in numbers achieving ACR 20 (39-58% v 14-16%), 50 (25% v 2%) and 70 (14% v 0%) compared with placebo at week 12. Improvement is maintained at 24 weeks.[74] 1++

An open label extension study showed that improvement with adalimumab was maintained at 48 weeks, and that there is a reduction in radiographic progression compared with patients treated with placebo (mean change in modified total Sharp score 1 v -0.2, $p < 0.001$). The most common adverse effects were upper respiratory tract infecton, nasopharyngitis, and injection site reactions.[174] 1+

Etanercept is effective in the treatment of moderate to severe peripheral PsA (> 3 tender and swollen joints) after 12 weeks of therapy with 65% of patients achieving ACR 20, 45% achieving ACR 50 and 12% achieving ACR 70. A PsARC response was achieved by 85% of treated patients. In open-label extension studies, improvement with etanercept was maintained at week 24 and uncontrolled follow up indicated that improvement may be maintained at up to 50 weeks. Concomitant methotrexate therapy with etanercept does not provide any additional short-term benefit. Injection site reactions are the most common adverse effect with etanercept in these studies. Etanercept may reduce the rate of radiological progression, though these data were analysed at 24 weeks, which is a shorter duration than normally recommended for the analysis of radiographic progression.[168] 1++

Infliximab is effective in the treatment of moderate to severe peripheral PsA (> 3 tender and swollen joints) after 16 weeks of therapy, showing a significant difference in the number of patients achieving ACR 20 (65% v 9.6%), ACR 50 (46.2% v 0%) and ACR 70 (28.8% v 0%). PsARC was achieved by 75% of patients treated. Infusion reactions and antibody formation are the most common adverse effects of infliximab although it is not clear whether these occur more frequently than with placebo.[168] 1++

In open-label extension most improvement with infliximab is maintained at week 24 (ACR 20 54%, ACR 50 41%, ACR 70 27%) and week 54.[175] 1+

Adalimumab, etanercept and infliximab have similar efficacy and adverse effect profiles. Factors affecting choice of product include cost, patient preference and physician preference. Long term pharmacovigilance is required.

A **Adalimumab, etanercept or infliximab are recommended for treatment of active psoriatic arthritis in patients who have failed to respond to, are intolerant of, or have had contraindications to, at least two disease-modifying therapies.**

☑ Appropriate patients on biologic therapies should be offered the opportunity to join the BADBIR long term safety register.

☑ The use of biologic treatments in psoriatic arthritis should conform to British Society for Rheumatology guidelines.

There is insufficient evidence of benefit of any drug in enthesitis, dactylitis or axial disease in psoriatic arthropathy. In treating axial disease, British Society for Rheumatology (BSR) guidelines on ankylosing spondylitis should be followed.[176]

7 Treatment of psoriasis in secondary care

The treatment of psoriasis in secondary care requires the skills of a multidisciplinary team that includes dermatologists, dermatology nurses, pharmacists and AHPs. Facilities should be available to establish the diagnosis (including assessment of comorbidities), provide a timely assessment of those with severe or unstable psoriasis, optimise topical therapy, and deliver and monitor phototherapies and systemic immunomodulatory treatment.

7.1 ORGANISATION OF CARE

Given the relapsing nature of psoriasis and that some treatments are only suitable for intermittent use, provision should be made for patients to re-access secondary dermatology care when required.

Patients with severe or treatment-resistant disease in both skin and joints present a particular challenge. This problem is compounded by the selectivity of some treatments for the cutaneous component or the articular component of the disease.

☑ Patients should have access to appropriate multidisciplinary care, including:
- dermatology specialist nursing
- occupational therapy
- psychology.

☑ Dermatology and rheumatology departments should work closely together to manage patients with severe joint and skin disease.

☑ Monotherapy that addresses both skin and joint disease should be preferred over multiple therapies.

A severe flare-up of psoriasis or erythrodermic or generalised pustular psoriasis may require the management of skin failure and its complications of fluid imbalances, hypothermia and septicaemia. Under these circumstances, emergency access to dermatology is a priority.[158] 4

D **Patients with erythrodermic or generalised pustular psoriasis must receive emergency referral to dermatology.**

7.1.1 INPATIENT CARE

There is limited evidence of the effectiveness of inpatient management of psoriasis. A service review of four UK dermatology centres conducted over nine months and involving 183 patients with psoriasis concluded that inpatient management was effective in improving PASI and DLQI scores for a majority of patients.[177] A prospective study of 22 psoriasis patients admitted to hospital for inpatient treatment showed that patients' QoL and disease severity improved.[178] There is, however, no published evidence to act as a referral guide. 3

D **Inpatient treatment on a dermatology ward should be available for patients with severe psoriasis.**

7.1.2 NURSE-LED CLINICS

Nurse-led dermatology clinics are part of the multidisciplinary approach to health care in Scotland. In an RCT of nurse-led follow-up clinics (n = 66) fewer patients in the intervention group visited the GP in the six weeks following consultation ($p < 0.01$).[179] 1+

Nurse-led clinics have a high satisfaction rating with patients. Nurse-led clinics increase patients' knowledge about their condition, management of everyday problems, treatment, application of treatments, and preventative measures to reduce the severity of exacerbations.[180] 2+

C **Nurse-led clinics for psoriasis should be considered for delivery of services such as follow up of specialist caseload, re-access for patients with recurrent disease, and monitoring of systemic therapies.**

7.1.3 JOINT REPLACEMENT SURGERY

There is a lack of robust data concerning the risk of prosthetic joint infection in patients with cutaneous psoriasis when undergoing joint replacement surgery. Psoriasis plaques are known to express high levels of antibacterial peptides.[181] However *Staphylococcus aureus* and skin commensal organisms may be present at low levels in psoriatic plaques, particularly if treated by occlusion.[182] Retrospective reports suggest that psoriasis may be a risk factor for infection following hip replacement surgery.[183] Consequently, most orthopaedic surgeons do not perform elective surgery in active psoriatic skin believing there is an increased risk of infection and wound healing problems. In contrast some dermatologists think that with proper preoperative dermatologic treatment, surgery can be safely performed through active psoriatic skin.[184]

☑ Dermatologists, rheumatologists and orthopaedic surgeons should work closely together to prepare patients who need joint replacement surgery.

7.2 PHOTOTHERAPY AND PHOTOCHEMOTHERAPY

A systematic review conducted under the NHS Health Technology Assessment Programme reviewed 51 RCTs of phototherapy (controlled exposure to UV radiation) and photochemotherapy (phototherapy with the addition of photosensitising chemicals such as psoralens) for severe psoriasis.[185] It was not possible to pool data because of heterogeneity among the studies. The review concluded that PUVA using oral psoralen, PUVA using topical psoralen ('bath PUVA'), narrow band UVB phototherapy (NBUVB), and broad band UVB phototherapy (BBUVB) were effective in clearing psoriasis. UVA alone does not clear psoriasis. 1++

A systematic review of studies up to 1994 analysed the effectiveness of five systemic treatments (UVB, PUVA, methotrexate, retinoids, and ciclosporin A) to induce remission in patients with severe psoriasis. Only 33% of the studies included were RCTs. The only outcome reported was the proportion reaching clearance. PUVA was associated with the highest proportion of clearance (70%), followed by UVB (44%). Incidence of side effects was highest in the retinoid group and lowest in the phototherapy groups.[186] 2++

The short wavelengths found in BBUVB are more likely to cause burning than NBUVB. A systematic review and meta-analysis addressed the question of efficacy of NBUVB versus BBUVB for the treatment of psoriasis. Ten of eleven studies demonstrated a clear advantage of NBUVB compared to BBUVB. The study concluded that the use of BBUVB for psoriasis is no longer appropriate.[187] 1+

A **BBUVB phototherapy is not recommended.**

☑ All practices that use BBUVB should aim to change to NBUVB as soon as possible.

Five RCTs compared NBUVB and PUVA.[188-192] The studies were of poor quality and results were inconsistent. One found that both treatments gave comparable results, while two showed a better outcome with PUVA and two with NBUVB. It is not clear whether one treatment is more effective than the other. 1-

NBUVB and PUVA differ in the risk of harm associated with each treatment. Exposure to UV radiation is a recognized risk factor for SCC, basal cell carcinoma (BCC) and malignant melanoma (MM). A US long term prospective study, the Photochemotherapy Follow-up Study (n = 1,380), showed that long term exposure to PUVA increased the risk of SCC, with a standard morbidity ratio of 83 (95% CI 72 to 96) compared to the expected incidence in the general population.[193] A meta-analysis of eight cohort studies other than the Photochemotherapy Follow-up Study assessed the occurrence of non-melanoma skin cancer in patients treated with PUVA. The ratio of SCC to BCC was used as the outcome measure of risk of cancer. Overall, the incidence among patients exposed to high-dose PUVA was 14-fold higher than among patients with low-dose exposure. The conclusion is that PUVA is a risk factor for SCC.[194] | 2+

The carcinogenic risk of NBUVB was studied in a group of 3,867 patients undergoing NBUVB therapy in Scotland. Follow up was up to 22 years. No association was found between NBUVB exposure alone (without PUVA) and BCC, SCC or MM. For all NBUVB patients, including those who had also received PUVA treatment, there was an association with BCC, with 27 BCCs found compared with 14 expected in the matched population. There was no significant association between NBUVB treatment and SCC or MM.[195] | 2+

A systematic review of UVB phototherapy and skin cancer risk found that none of the eleven included studies showed an increased risk associated with treatment, apart from one cohort study that identified an increased rate of genital skin tumours. Genital shielding was recommended.[196] | 2+

B **Patients with psoriasis who do not respond to topical therapy should be offered NBUVB phototherapy.**

B **PUVA photochemotherapy should be considered for those patients who do not respond to NBUVB.**

Although there is no evidence of increased skin cancer with UVB treatment, Photonet (the national managed clinical network for dermatological phototherapy in Scotland) recommends review of patients on long term phototherapy.[197] | 4

D **All patients who have received > 200 whole-body PUVA treatments and/or > 500 whole-body UVB treatments should be invited for annual skin cancer screening review.**

An observer-blinded RCT (n = 113 patients) conducted in Tayside found that three times weekly NBUVB cleared psoriasis significantly faster than twice weekly ($p < 0.0001$) and was preferred by the majority (70%) of patients.[198] | 1+

B **Three times weekly NBUVB phototherapy is recommended where practicable.**

UV treatments are usually carried out in a hospital or clinic with patients attending on an out-patient basis. One RCT compared home versus outpatient UVB phototherapy. There was no significant difference in PASI, total cumulative dose of UVB radiation, or QoL scores. Home phototherapy resulted in a lower burden of treatment to the patient.[199] | 1+

B **Home NBUVB phototherapy under controlled supervision should be considered where practicable for patients who are unable to attend hospital.**

Photonet provides a coordinated system for delivering standardised quality patient care through a single Scottish phototherapy service delivered at many sites.

☑ All centres administering phototherapy in Scotland should enrol in Photonet, the managed clinical network defining quality assurance systems for phototherapy.

The risks associated with sunbed use for treating psoriasis are that the dose is not monitored and there is no dermatological assessment of the patient.

☑ The use of a sunbed as a UV source for treatment of psoriasis must be avoided.

7.3 PHARMACOLOGICAL TREATMENT

7.3.1 SYSTEMIC THERAPY

Despite a large number of RCTs on systemic therapy for psoriasis in the literature, the majority are of poor quality and short in duration (up to three months). There are few studies comparing different interventions. There are few studies of maintenance therapy, long term safety, relative safety, or efficacy in other types of psoriasis such as pustular or erythrodermic psoriasis.

A systematic review of treatments for severe psoriasis identified 18 RCTs of ciclosporin and 33 RCTs of etretinate and acitretin. Ciclosporin 2.5 mg-5 mg/kg was superior to placebo in inducing remission (pooled risk difference 0.38, 95% CI 0.32 to 0.44). Two studies of ciclosporin 3-3.5 mg/kg for maintenance concluded that it was superior to placebo. Doses over 5 mg/kg were associated with more side effects. Intermittent treatment may be safer although relapse is likely and trials comparing intermittent with continuous therapy have not been performed. Acitretin was less effective than ciclosporin. The review identified evidence that acitretin was effective in inducing remission, but trial results could not be combined because of heterogeneity. Two trials demonstrated effectiveness of fumaric acid esters but these have not been compared with other therapies and had a high incidence of side effects when initiated. One poor quality RCT (n = 20) of hydroxycarbamide was identified. One RCT (n = 37) suggested sulfasalazine to be moderately effective but intolerance was common. No RCTs of methotrexate or azathioprine were identified.[185] 1++

A more recent but less inclusive meta-analysis confirmed efficacy of ciclosporin but included only one study to support the efficacy of fumaric acid esters with 56% achieving PASI 75.[200] 1+

In a meta-analysis of 579 patients treated with ciclosporin which did not involve a systematic review, ciclosporin was found more effective than etretinate, even at low doses. High doses of ciclosporin gave a response of 69.8% with 2.5 mg/kg and 71.5% with 5 mg/kg reduction in PASI at 12 weeks.[201] 1+

Two head-to-head trials have compared methotrexate and ciclosporin. The first compared methotrexate at an initial dose of 15 mg/week with ciclosporin 3 mg/kg with 44 patients in each arm. This open-label study found no significant difference between the two treatments. Reduction in mean PASI was greatest with ciclosporin by 1.2 points (PASI 75 in 71% at 16 weeks compared to PASI 75 in 60% with methotrexate). However, more methotrexate patients achieved clearance as assessed by PASI 90 (40% versus ciclosporin 33%).[202] 1+

A second RCT of 84 patients compared ciclosporin 3 mg/kg increasing up to 5 mg/kg with methotrexate at an initial dose of 7.5 mg/week increasing up to 15 mg/week if necessary for 12 weeks. This study found a mean PASI improvement of 72% with ciclosporin compared to 58% with methotrexate (p = 0.0028). More patients achieved PASI 75 (58%) with ciclosporin than with methotrexate (24%) and PASI 90 (29% with ciclosporin and 11% with methotrexate).[203] 1+

Supplementation of folic acid in methotrexate is likely to reduce side effects and improve adherence to therapy.[204] 1+

The choice of therapy will depend on individual factors, comorbidity including the presence of PsA, geographic factors affecting access to phototherapy and considerations of adverse effects.[205] In terms of efficacy, methotrexate and ciclosporin are preferred. Methotrexate has less evidence base for use, potentially causes hepatotoxicity, and is less effective than ciclosporin.[185] However, it is preferred for longer term use and where there is concomitant PsA. Ciclosporin is potentially nephrotoxic and causes hypertension. Hydroxycarbamide is teratogenic and can cause bone marrow suppression. Acitretin is teratogenic.[185] Fumaric acid esters are not licensed in the UK, but are licensed in other European countries.

B **Patients with severe or refractory psoriasis should be considered for systemic therapy with ciclosporin, methotrexate or acitretin, following discussion of benefits and risks.**

B **Methotrexate is recommended for longer term use and where there is concomitant psoriatic arthritis.**

A **Ciclosporin is recommended for short term intermittent use.**

B **Acitretin can be considered as an alternative.**

B **Fumaric acid esters can be considered as an alternative maintenance therapy for patients who are not suitable for other systemic therapies or have failed other therapies.**

C **Hydroxycarbamide can be considered as an alternative maintenance therapy for patients who are not suitable for other systemic therapies or have failed other therapies.**

☑ Women who are or may be pregnant should not be treated with systemic agents.

☑ Acitretin should be avoided in women of childbearing potential.

The comparative long term safety of systemic and biologic treatments for severe psoriasis is currently being investigated in a five-year treatment register, the British Association of Dermatologists Biologic Interventions Register (BADBIR) (www.badbir.org).

☑ Patients who have started or switched systemic therapies should be offered the opportunity to join the long term safety register BADBIR.

The National Patient Safety Agency (NPSA) has made recommendations concerning the safe prescribing and monitoring of methotrexate.[171]

Table 2 represents a comparative overview of the efficacy, safety and tolerability of commonly used systemic treatments for psoriasis.

Table 2: Comparison of phototherapy and systemic monotherapies

Therapy	Efficacy	Suitability in inducing remission	Suitability as maintenance treatment	Patient acceptability	Efficacy in psoriatic arthritis
Acitretin	✓	✓	✓✓	✓	-
Ciclosporin	✓✓✓	✓✓✓	✓	✓✓✓	✓
Fumaric acid esters	✓	✓✓	✓✓✓	✓	-
Hydroxycarbamide	✓	✓	✓✓	✓	-
Methotrexate	✓✓	✓✓	✓✓	✓✓	✓✓
Phototherapy	✓✓✓	✓✓✓	-	✓✓	-

7.3.2 BIOLOGIC THERAPY

Detailed evidence based guidance for the safe and effective prescribing and monitoring of biologic therapies in severe psoriasis has been produced by the British Association of Dermatologists (BAD).[206]

There is a strong and consistent evidence base for the efficacy of infliximab and adalimumab. One meta-analysis calculated the efficacy for achieving PASI 75 relative to placebo. For infliximab 5 mg/kg the risk difference was 0.77 (95% CI 0.72-0.81) and for adalimumab 40 mg every other week the risk difference was 0.64 (95% CI 0.61-0.68).[200] The same meta-analysis calculated a risk difference of 0.30 (95% CI 0.25-0.35) for etanercept 25 mg twice weekly; however, in another meta-analysis the confidence intervals of risk ratios for etanercept and infliximab overlap.[207] According to this meta-analysis, infliximab 5 mg/kg has a number needed to treat (NNT) of 2 and etanercept 25 mg twice weekly has a NNT of 4. 1++

In a head-to-head study comparing adalimumab with methotrexate in 271 patients, 79.6% of patients in the adalimumab arm achieved PASI 75 at 16 weeks compared to 35.5% with methotrexate and 18.0% with placebo.[208] Adalimumab was superior in other outcomes. However, this study had an unexpectedly high placebo response and lower response to methotrexate than in another study.[202] 1+

Ustekinumab at three and six months is similar in efficacy to adalimumab and infliximab. Meta-analysis of results at three and six months shows overlapping confidence intervals for probability of achieving PASI 75 with infliximab, adalimumab and ustekinumab.[206] These exceed those for etanercept 25 mg twice weekly. 1+

An RCT in 903 patients compared 45 or 90 mg of ustekinumab (at weeks 0 and 4) with etanercept 50 mg twice weekly for 12 weeks. Ustekinumab was more effective than etanercept, with 67.5% of patients achieving PASI 75 at week 12 after the 45 mg dose of ustekinumab and 73.8% following ustekinumab 90 mg, compared with 56.8% of those who received etanercept 50 mg twice weekly.[209] Long term safety data following exposure to ustekinumab are limited. 1++

BAD defines an adequate response to biologic treatment as either a 75% reduction from baseline PASI, or a 50% reduction in baseline PASI and a 5 point or greater fall in DLQI.[206] NICE also recommends that response to treatment should be determined using these parameters and that this response should be measured at 10 weeks for infliximab, 12 weeks for etanercept and 16 weeks for adalimumab.[73-75] The SMC recommends that continued treatment with ustekinumab should be restricted to patients who achieve a PASI 75 response within 16 weeks.[210] Treatment should be discontinued if an adequate response has not been achieved.

The crude incidence of adverse events in the systematic reviews did not reveal any significant differences in safety between agents although adverse effects differ. The choice of therapy will depend on individual factors, comorbidity including the presence of PsA and consideration of adverse effects.[205]

A **Patients with severe psoriasis who fail to respond to, or have a contraindication to, or are intolerant of phototherapy and systemic therapies including ciclosporin and methotrexate, should be offered biologic therapy unless they have contraindications or are at increased risk of hazards from these therapies.**

The recommendations below appear in alphabetical order by drug name.

A **Adalimumab loading regimen followed by 40 mg every other week is recommended in the treatment of severe psoriasis.**

A **Etanercept 25 mg twice weekly or 50 mg weekly is recommended in the treatment of severe psoriasis.**

A **Infliximab 5 mg/kg at weeks 0, 2, 6 and repeated as maintenance treatment every two months is recommended in the treatment of severe psoriasis, especially when rapid disease control is required.**

A **Ustekinumab 45 mg for patients weighing under 100 kg and 90 mg for patients weighing over 100 kg given at weeks 0 and 4 then every 12 weeks as maintenance is recommended in the treatment of severe psoriasis.**

☑ Women who are or may be pregnant should not be treated with biologics.

☑ The use of biologic treatments should conform to BAD guidelines.

The comparative long term safety of systemic and biologic treatments for severe psoriasis is currently being investigated in a five-year treatment register, the British Association of Dermatologists Biologic Interventions Register (BADBIR) (www.badbir.org).

☑ Patients on biologic therapies should be offered the opportunity to join the long term safety register BADBIR.

8 Provision of information

8.1 PROVISION OF INFORMATION AND PATIENT EDUCATION

This section reflects the issues likely to be of most concern to patients and their carers. These points are provided for use by health professionals when discussing psoriasis and PsA with patients and carers and in guiding the production of locally produced information materials.

Information giving is an integral part of any consultation. Consistent and comprehensive information is necessary if patients are to understand their condition and participate in treatment decisions. Both psoriasis and PsA are chronic in nature and can change pattern and progress through time, with accompanying alterations in treatment. These changes necessitate ongoing discussion, information and educational input.

No evidence was identified as to who is best suited to educate/inform or what type of information is required at any stage of the patient journey, from the newly diagnosed to long term patients. In a questionnaire study of five online support groups for patients with psoriasis (n = 260), the reported benefits of this information source were availability, convenience, access to good advice, lack of embarrassment and enabling a sense of control.[56]

Many patients indicate a wish to be involved in their care choices but only a minority report actively participating in this process.[104, 211] The evidence suggests they are aware of many unmet needs with respect to their knowledge and treatment of the condition(s).[212] 3

Patients actively involved in their care demonstrated greater satisfaction with that care.[211] A higher level of patient knowledge is associated with greater satisfaction with care.[104] However, it was not necessarily the case that those who had had the condition for many years benefited from a greater knowledge of their condition.[56] In a study of 149 Polish patients with psoriasis, almost a third of participants could not give any recommendation for treatment and care of their psoriasis even though those involved had an average disease duration of 19.6 years.[213]

D **Active involvement of patients in managing their care should be encouraged.**

D **Patients should receive information about their diagnosis, treatment options, and the correct application of topical treatments.**

☑ Information should be given to patients after first consultation and on first use of new treatment.

☑ Verbal information should be reinforced by written material and by further sources of information such as support groups or appropriate websites.

☑ A structured programme of education should be considered to ensure patients receive the information they require regarding their diagnosis, treatment options, and prognosis.

8.2 CHECKLIST FOR PROVISION OF INFORMATION

This section gives examples of the information patients and carers may find helpful at the key stages of the patient journey. The checklist was designed by members of the guideline development group based on their experience and their understanding of the evidence base. The checklist is neither exhaustive nor exclusive. The information given should be proportionate to the severity of the condition.

8.2.1 AFTER INITIAL DIAGNOSIS OF PSORIASIS

- Explain to patients what psoriasis is and how it is diagnosed
- Explain that psoriasis is not infectious and discuss the patient's family history
- Explain the unpredictable but recurring nature of psoriasis and that flare-ups can occur
- Emphasise to patients that psoriasis is a long term, relapsing condition but can be managed with appropriate treatments
- Advise patients that referral to dermatology may be necessary when the diagnosis is unclear or the disease is extensive
- Emphasise the importance of reporting joint pain, swelling or stiffness to the GP for further investigation
- If joint pain is present, explain to patients what PsA is, that it occurs in approximately 1 in 5 people with psoriasis, and that they may be referred on to rheumatology for diagnosis
- Discuss the following quality of life issues whilst reassuring patients that these issues may not be pertinent in every case
  - skin pain and itch
  - employment issues and managing treatments while at work
  - possible stigma and impact on daily activities
  - family life and relationships (including sexual relationships)
  - emotional issues such as depression, anxiety and stress
- Make patients aware of the increased risk of comorbidities, eg cardiovascular disease and the importance of attending check ups when requested to do so
- Discuss the following lifestyle factors in relation to comorbidities of psoriasis
  - smoking and how to contact smoking cessation support
  - blood pressure control
  - weight control
  - alcohol advice
- Provide patients with appropriate written information in a format suited to their needs (*see section 8.3 for sources of leaflets*).
- Ensure patients are aware of where they can go for further information and support (*see section 8.3 for sources of support*).

8.2.2 TREATMENT OF PSORIASIS

- Explain to patients that there are different types of psoriasis and many can be managed with a range of treatments in primary care
- Emphasise to patients that the aim of treatment is to reduce plaque size, thickness and extent of scaling and thereby improve quality of life
- Discuss the various treatment choices and ensure the patient is involved in the decision making process
- Explain the risks, side effects and benefits of treatments to help patients make an informed choice
- Discuss any requirements for monitoring and assessment of ongoing disease activity; explain any results of monitoring/assessment
- Ensure patients are aware of how they can help themselves, eg by making sure they understand how and when to apply topical treatments. Explain the fingertip unit, ie the distance from the tip of the adult index finger to the first crease. One fingertip unit can cover an area twice that of an adult flat palm
- Patients intending to conceive and whose current pharmacological treatment is contraindicated in pregnancy should be encouraged to discuss plans several months in advance in order to fulfil, where necessary, the relevant 'wash-out' period
- Advise patients how to access advice and patient self management courses
- Encourage patients to identify trigger factors if possible and develop coping strategies for flare-ups

- Explain the risks of overexposure to the sun
- Advise patients to be cautious when considering unconventional treatments and encourage them to consult their prescriber
- Explain pathways to care (*see section 3*)
- Advise patients that referral to other services may be appropriate including
  - rheumatology
  - dermatology
  - clinical nurse specialist
  - podiatry
  - occupational health
  - physiotherapy
  - psychology
- Discuss the psychosocial issues including
  - self esteem
  - body image
  - depression and anxiety.

8.2.3 AFTER INITIAL DIAGNOSIS OF PSORIATIC ARTHRITIS

- Explain to patients what PsA is, how it is related to psoriasis, and how it is diagnosed
- Explain the unpredictable but recurring nature of PsA and that flare-ups can occur
- Emphasise to patients that PsA is a long term, progressive condition but can be managed with appropriate treatments
- Discuss the following quality of life issues whilst reassuring patients that these issues may not be pertinent in every case
  - pain and fatigue
  - employment issues and managing treatments while at work
  - possible stigma and impact on daily activities
  - family life and relationships (including sexual relationships)
  - emotional issues such as depression, anxiety and stress
- Make patients aware of the increased risk of comorbidities, eg cardiovascular disease, and the importance of attending check ups when requested to do so
- Discuss the following lifestyle factors in relation to comorbidities of psoriasis and PsA
  - smoking and how to contact smoking cessation support
  - blood pressure control
  - weight control
  - alcohol advice
  - alcohol restrictions associated with certain treatments
- Provide patients with appropriate written information in a format suited to their needs (*see section 8.3 for sources of leaflets*)
- Ensure patients are aware of where they can go for further information and support (*see section 8.3 for sources of support*).

8.2.4 TREATMENT OF PSORIATIC ARTHRITIS

- Emphasise to patients that the aim of treatment is to control joint pain, stiffness and damage and thereby improve quality of life and prevent long term disability
- Discuss the various treatment choices and ensure the patient is involved in the decision making process
- Explain the risks, side effects and benefits of treatments to help patients make an informed choice
- Discuss any requirements for monitoring and assessment of ongoing disease activity; explain any results of monitoring/assessment

- Advise patients that treatments will be managed in partnership with them
- Explain why adherence with the patient's particular treatment regimen is beneficial. Discuss potential barriers to adherence and how these can be overcome
- Patients intending to conceive and whose current pharmacological treatment is contraindicated in pregnancy should be encouraged to discuss plans several months in advance in order to fulfil, where necessary, the relevant 'wash-out' period
- Advise patients how to access advice and patient self management courses
- Encourage patients to identify trigger factors if possible and develop coping strategies for flare-ups
- Advise patients to be cautious when considering unconventional treatments and encourage them to consult their prescriber
- Explain the pathways of care (*see section 3*)
- Advise patients that referral to other services may be appropriate including
  - clinical nurse specialist
  - podiatry
  - occupational health
  - physiotherapy
  - psychology
- Discuss the psychosocial issues including
  - self esteem
  - body image
  - depression and anxiety.

8.3 SOURCES OF FURTHER INFORMATION

Arthritis Care in Scotland
Unit 25A, Anniesland Business Park, Glasgow, G13 1EU
Tel: 0808 800 4050
www.arthritiscare.org.uk
Email: Scotland@arthritiscare.org.uk or helplines@arthritiscare.org.uk

Arthritis Care in Scotland is a voluntary organisation working with and for all people with arthritis. It provides information and support on a range of issues related to living with arthritis and self management of long term conditions.

Arthritis Research UK
Copeman House, St Mary's Court, St Mary's Gate, Chesterfield, Derbyshire, S41 7TD
Tel: 0870 850 5000
www.arc.org.uk • Email: info@arc.org.uk

Arthritis Research UK funds research into the causes and treatment of arthritis. They provide a range of information leaflets for people with arthritis.

British Association of Dermatologists (BAD)
Willan House, 4 Fitzroy Square, London, W1T 5HQ
Tel: 0207 383 0266
www.bad.org.uk • Email: admin@bad.org.uk

One of the aims of the British Association of Dermatologists is to raise awareness of all facets of skin disease. This charity provides a range of patient information leaflets.

British Skin Foundation
4 Fitzroy Square, London, W1T 5HQ
www.britishskinfoundation.org.uk

The British Skin Foundation supports research into skin conditions and provides a range of information on the treatment of psoriasis and psoriatic arthritis.

British Society for Rheumatology (BSR)
Bride House, 18-20 Bride Lane, London, EC4Y 8EE
Tel: 020 7842 0900
www.rheumatology.org.uk

The British Society for Rheumatology is a registered charity in England and Wales. It promotes education, training and innovation in those working in the field of rheumatology. It has over 1,500 members including rheumatologists, scientists and other allied health professionals.

Pain Association Scotland
Cramond House, Cramond Glebe Road, Edinburgh, EH4 6NS
Tel: 0131 312 7955 • Freephone: 08007836059
www.chronicpaininfo.org

The Pain Association Scotland offers support for people with chronic pain in the community. They provide self management groups offering pain management training and exercise.

Psoriasis and Psoriatic Arthritis Alliance (PAPAA)
PO Box 111, St Albans, Hertfordshire, AL2 3JQ
Tel: 01923 672 837
www.papaa.org • Email: info@papaa.org

PAPAA is a charity registered in England and Wales. PAPAA provides free access to an extensive range of patient information and education on all aspects of psoriasis and psoriatic arthritis. PAPAA produces a journal which is available on subscription.

Psoriasis Association
Dick Coles House, 2 Queensbridge, Bedford Road, Northampton, NN4 7BF
Helpline: 0845 6 760 076 • Tel: 01604 251 620
www.psoriasis-association.org.uk • Email: mail@psoriasis-association.org.uk

The Psoriasis Association is a UK-wide membership organisation for people affected by psoriasis, including patients, families, carers and health professionals. The Association's aims are to support people who have psoriasis, to raise awareness about psoriasis, and to fund research into the causes, treatments and care of psoriasis. The Psoriasis Association publishes information booklets on a range of topics including psoriasis, PsA, scalp psoriasis, sensitive areas, and ultraviolet light therapy.

Psoriasis Scotland Arthritis Link Volunteers (PSALV)
Tel: 0131 556 4117
www.psoriasisscotland.org.uk • Email: janice.johnson5@btinternet.com

PSALV is a Scottish patient-led membership charity working in and for the people of Scotland to improve the lives of psoriasis and psoriatic arthritis sufferers. It works with healthcare professionals and other organisations to raise awareness of the conditions and offers a range of information and support. PSALV produces information leaflets on psoriasis, PsA, nail and scalp psoriasis.

Other useful publications

A booklet called "Psoriasis in the workplace" is available to download from:
www.unitetheunion.org/member_services/health_and_safety/health_and_safety_resources/skin.aspx

9 Implementing the guideline

This section provides advice on the resource implications associated with implementing the key clinical recommendations, and advice on audit as a tool to aid implementation.

Implementation of national clinical guidelines is the responsibility of each NHS Board and is an essential part of clinical governance. Mechanisms should be in place to review care provided against the guideline recommendations. The reasons for any differences should be assessed and addressed where appropriate. Local arrangements should then be made to implement the national guideline in individual hospitals, units and practices.

9.1 RESOURCE IMPLICATIONS OF KEY RECOMMENDATIONS

No recommendations are considered likely to reach the £5 million threshold which warrants full cost impact analysis. Consideration has been given as to the potential impact of the recommendation that patients with psoriasis receive an annual review in primary care.

Given the estimated population prevalence of psoriasis of 1.5 to 3%, over 100,000 people are affected in Scotland.[1] Annual Scottish estimates of the number of psoriasis patients assessed in primary care are based on data obtained from a sample of practices. In 2008/09, there were an estimated 54,000 consultations in Scotland with a GP or practice nurse, or 9.9/1,000 of population. Approximately 37,000 psoriasis patients consulted a GP or practice nurse at least once, or 6.8/1,000 of population.[214] Therefore, there could be additional demand for primary care consultations from about 63,000 people with psoriasis who do not presently consult a GP or practice nurse. The unit cost of a primary care consultation in the UK in 2008-09 was £35.[215]

Although the impact at the national level would not be significant, it would translate to a relatively modest average increase of approximately 63 additional consultations per general practice per year. The impact could be either partially or fully offset if the planned annual health check for people over 40 years were used to undertake the recommended annual review for patients with psoriasis.[216] Even if this were not the case, the total cost of addressing any unmet need would not approach the resource threshold required to undertake a full cost impact analysis.

9.2 AUDITING CURRENT PRACTICE

A first step in implementing a clinical practice guideline is to gain an understanding of current clinical practice. Audit tools designed around guideline recommendations can assist in this process. Audit tools should be comprehensive but not time consuming to use. Successful implementation and audit of guideline recommendations require good communication between staff and multidisciplinary team working.

The following are key points to audit to assist with the implementation of this guideline in primary care.

Guideline section	Key point to audit
4.1.3	% of patients with psoriasis referred to rheumatology for assessment and diagnosis of suspected PsA
4.1.4	% of patients with psoriasis asked to complete PsA screening questionnaire such as PEST
5.5.2	% of referral letters for patients with psoriasis to rheumatology citing joint swelling, dactylitis, or spinal pain with significant early morning stiffness
4.2.1, 4.2.3	% of patients with severe psoriasis informed of increased risk of cardiovascular and metabolic disorders
4.2.6	% of patients with psoriasis or PsA screened for depression
4.2.6	% of patients with psoriasis or PsA referred to mental health services
4.3.1	% of patients with psoriasis receiving annual measurement of DLQI
5.5.1	% of referral letters to dermatology citing DLQI score
5.1	number (average and range) of repeat prescriptions for potent corticosteroids
5.3	% of patients receiving new topical therapy then receiving six-week follow-up appointment
5.3	% of patients receiving >1 concurrent prescription for psoriasis
5.6	% of patients with psoriasis contacted to offer annual review

9.3 IMPLEMENTATION STRATEGY

Implementation of this guideline will be encouraged and supported by SIGN, NHS QIS and other stakeholder organisations. The implementation strategy for this guideline encompasses dissemination, provision of tools such as PowerPoint slide sets, education and awareness-raising activities. The detailed strategy is available from **www.sign.ac.uk**.

9.4 ADDITIONAL ADVICE TO NHSSCOTLAND FROM NHS QUALITY IMPROVEMENT SCOTLAND AND THE SCOTTISH MEDICINES CONSORTIUM

9.4.1 SCOTTISH MEDICINES CONSORTIUM ADVICE

The Scottish Medicines Consortium (SMC) has issued the following advice pertaining to drug indications for psoriasis or PsA. This information was current at the time of publication. Updates and full details of the advice are available on the website, www.scottishmedicines.org.uk.

Date issued	Drug name	Summary of advice
8 February 2010	Ustekinumab (Stelara)	Accepted for restricted use within NHSScotland for the treatment of moderate to severe plaque psoriasis in adults who failed to respond to, or who have a contraindication to, or are intolerant to other systemic therapies including ciclosporin, methotrexate and psoralen and UVA treatment (PUVA). Continued treatment should be restricted to patients who achieve a PASI 75 response within 16 weeks.
10 August 2009	calcipotriol 50 mcg/g / betamethasone 05 mg/g (Xamiol Gel®)	Accepted for use within NHSScotland for the topical treatment of scalp psoriasis
11 August 2008	clobetasol propionate (Etrivex Shampoo)	Accepted for use for the topical treatment of moderate scalp psoriasis in adults
09 June 2008	adalimumab (Humira®)	Accepted for restricted use for treatment of chronic plaque psoriasis in adult patients who failed to respond to, or have a contraindication to, or are intolerant to other systemic therapy including ciclosporin, methotrexate or PUVA.
07 May 2007	infliximab 100 mg powder for intravenous infusion (Remicade)	Accepted for restricted use for the treatment of severe plaque psoriasis in adults who failed to respond to, or who have a contraindication to, or are intolerant of other systemic therapy including ciclosporin, methotrexate or psoralen ultraviolet A (PUVA).

11 September 2006	etanercept 50 mg subcutaneous injection (Enbrel)	Accepted for use within NHSScotland for the treatment of active and progressive psoriatic arthritis in adults when the response to previous disease-modifying anti-rheumatic drug therapy has been inadequate.
12 December 2005	adalimumab 40 mg pre-filled syringe for subcutaneous injection (Humira®)	Accepted for use within NHSScotland for the treatment of active and progressive psoriatic arthritis in adults when the response to previous disease-modifying anti-rheumatic drug therapy has been inadequate.
12 December 2005	Calcipotriol and betamethasone ointment (Dovobet®)	Accepted for restricted use within NHSScotland for the initial topical treatment of stable plaque psoriasis. Its use is restricted to physicians experienced in treating inflammatory skin disease. Dovobet contains a potent steroid, the use of which carries risks of destabilising psoriasis and side effects from prolonged use. The duration of treatment should not exceed four weeks.
12 July 2004	Etanercept (Enbrel®)	Accepted for use within NHSScotland for the treatment of active and progressive psoriatic arthritis in adults.
09 May 2003	Calcitriol 3ug/g for psoriasis (Silkis Ointment®)	Recommended for general use within NHSScotland in the treatment of mild to moderate plaque psoriasis.

9.4.2 NHS QUALITY IMPROVEMENT SCOTLAND ADVICE

NHS QIS has advised that the recommendations of NICE (Multiple) Technology Appraisal Guidance No 199, Etanercept, infliximab and adalimumab for the treatment of psoriatic arthritis (review of Technology Appraisal Guidance 104 and 125), are as valid for Scotland as for England and Wales.

10 The evidence base

10.1 SYSTEMATIC LITERATURE REVIEW

The evidence base for this guideline was synthesised in accordance with SIGN methodology. A systematic review of the literature was carried out using an explicit search strategy devised by a SIGN Information Officer. Databases searched include Medline, Embase, Cinahl, PsycINFO and the Cochrane Library. Full details of the searches, including date ranges and search strategies, are available on the SIGN website. Internet searches were carried out on various websites including the US National Guidelines Clearinghouse and Guidelines International Network. The main searches were supplemented by material identified by individual members of the development group. Each of the selected papers was critically appraised by two members of the group using standard SIGN methodological checklists before conclusions were considered as evidence.

10.1.1 LITERATURE SEARCH FOR PATIENT ISSUES

At the start of the guideline development process, a SIGN Information Officer conducted a literature search for qualitative and quantitative studies that addressed patient issues of relevance. Databases searched include Medline, Embase, Cinahl and PsycINFO. The results were summarised and presented to the guideline development group. A copy of the Medline version of the patient search strategy is available on the SIGN website.

10.2 RECOMMENDATIONS FOR RESEARCH

The guideline development group was not able to identify sufficient evidence to answer all of the key questions asked in this guideline *(see Annex 1)*. The following areas for further research have been identified.

Assessment

- Development and validation of an assessment tool for psoriasis and PsA that takes into account the needs of patients and clinicians, incorporates both objective and subjective measures, and is able to reflect the range of impact of the disease

Pso/PsA and CHD

- Cost effectiveness of CHD risk factor measurement for all patients with psoriasis (of any severity)
- Quantification of the true risk for CHD in patients with psoriasis stratified by psoriasis severity and whether the risk varies by gender, race, or other concomitant risk factors
- Long term follow up of cardiovascular safety of NSAIDs in Pso/PsA

Topical therapy

- Evaluation of the effect of non-medical HCP (nurses and pharmacists) consultation on PASI and further healthcare resource use (eg medical consultations) of patients who use topical therapies
- Long term follow up of patients treated with potent to very potent topical corticosteroids, recording adverse effects, including exacerbations of psoriasis
- Comparison of short contact dithranol and coal tar solution
- Comparison of two compound betamethasone dipropionate 0.05% plus calcipotriol ointment with clobetasol propionate 0.05% ointment
- Comparison of alternate day (once daily) calcipotriol 50 mcg/g ointment and either clobetasol propionate 0.05% ointment or betamethasone dipropionate 0.05% ointment with once daily two compound (calcipotriol 50 mcg/g combined with betamethasone dipropionate 0.05%) ointment

Concordance

- Qualitative study to investigate patient beliefs regarding concordance with prescribed treatments and complementary therapies
- Study of factors influencing adherence to treatments for PsA
- Research into adherence to treatment for psoriasis carried out with GP recruitment, as the majority of patients are treated from primary care and current evidence may not be generalisable to these patients

Psychosocial interventions and support

- Effectiveness of psychological therapies and peer support groups in Pso/PsA
- Qualitative and quantitative studies to determine the impacts of psychological distress including depression and anxiety on disease severity and flare-ups

Phototherapy

- Development of LED and other new technologies for phototherapy
- Maintenance of a good quality cancer register for patients undergoing phototherapy
- Investigation of effective models of home phototherapy
- Determination of the phototherapy action spectrum in psoriasis

Sy*stemic and biologic* therapies

- Effect of early intervention in psoriasis and PsA with DMARDs on incidence of comorbidity, joint damage and disability, compared to late intervention
- Comparative efficacy and safety of leflunomide, sulfasalazine and methotrexate for PsA, in doses regularly used in current practice

Patient information and quality of life

- Information needs of patients with psoriasis and PsA in terms of timing (at initial diagnosis, when changing from one treatment to another), method (one-to-one session, written information booklet, online), and setting (GP consultation, practice nurse consultation dermatology/rheumatology consultation, nurse specialist consultation, occupational health consultation)
- Needs of PsA patients in terms of information and education, QoL issues, psychosocial support, involvement in care and patient satisfaction
- Identification of the different impacts of PsA in relation to activities of daily living
- Qualitative study of the healthcare preferences and unmet needs of people with Pso/PsA in Scotland.

10.3 REVIEW AND UPDATING

This guideline was issued in 2010 and will be considered for review in three years. Any updates to the guideline in the interim period will be noted on the SIGN website: **www.sign.ac.uk**.

11 Development of the guideline

11.1 INTRODUCTION

SIGN is a collaborative network of clinicians, other healthcare professionals and patient organisations and is part of NHS Quality Improvement Scotland. SIGN guidelines are developed by multidisciplinary groups of practising clinicians using a standard methodology based on a systematic review of the evidence. Further details about SIGN and the guideline development methodology are contained in 'SIGN 50: A Guideline Developer's Handbook', available at **www.sign.ac.uk**.

11.2 THE GUIDELINE DEVELOPMENT GROUP

Dr David Burden *(Chair)*	*Consultant Dermatologist, The Alan Lyell Centre for Dermatology, Western Infirmary, Glasgow*
Mrs Rosemary Beaton	*Patient Representative, Glasgow*
Dr David Bilsland	*Consultant Dermatologist, Southern General Hospital, Glasgow*
Mr Stewart Campbell	*Patient Representative, Psoriasis Association*
Dr Robert Dawe	*Consultant Dermatologist, Ninewells Hospital, Dundee*
Dr Diane Dixon	*Senior Lecturer, School of Psychological Sciences and Health, University of Strathclyde*
Dr Linda Grimmond	*Consultant Occupational Physician, Occupational Health and Safety Advisory Services, Dundee*
Mrs Sandra Hanlon	*Dermatology Liaison Sister, Inverclyde Royal Hospital, Greenock*
Dr Iain Henderson	*General Practitioner, Kingsway Medical Practice, Glasgow*
Ms Michele Hilton Boon	*Programme Manager, SIGN*
Mrs Janice Johnson	*Patient Representative; Director, PSALV - Psoriasis Scotland, Arthritis Link Volunteers, Edinburgh*
Dr Alan Jones	*General Practitioner, Newton Stewart*
Dr Danny Kemmett	*Consultant Dermatologist, Royal Infirmary of Edinburgh*
Dr Joyce Leman	*Consultant Dermatologist, Western Infirmary, Glasgow*
Dr Ayyakkannu Manivannan	*Laser Protection Advisor and Clinical Scientist, NHS Grampian and University of Aberdeen*
Dr Lorna McHattie	*Lecturer, School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen*
Dr David McKay	*Consultant Dermatologist, Royal Infirmary of Edinburgh*
Professor Harry Moseley	*Consultant Clinical Scientist, Photobiology Unit, Ninewells Hospital and Medical School, Dundee*
Dr Tony Ormerod	*Reader in Dermatology, Department of Applied Medicine, University of Aberdeen and Honorary Consultant Dermatologist, Aberdeen Royal Infirmary*
Dr Gozde Ozakinci	*Lecturer in Health Psychology, University of St Andrews*
Dr Ruth Richmond	*Consultant Rheumatologist, Borders General Hospital, Melrose*
Mrs Lynne Smith	*Information Officer, SIGN*
Dr Derek Stewart	*Reader in Pharmacy Practice, Robert Gordon University, Aberdeen*
Anne Thorrat	*Psoriasis/Research Nurse, Western Infirmary, Glasgow*
Dr Hilary Wilson	*Consultant Rheumatologist, Stobhill Hospital, Glasgow*

The membership of the guideline development group was confirmed following consultation with the member organisations of SIGN. All members of the guideline development group made declarations of interest and further details of these are available on request from the SIGN Executive.

Guideline development and literature review expertise, support and facilitation were provided by the SIGN Executive. In particular, the following staff are thanked for their involvement.

Mr Euan Bremner	*Guideline Coordinator*
Ms Mary Deas	*Distribution and Office Coordinator*
Mrs Lesley Forsyth	*Events Coordinator and Executive Secretary to SIGN Council*
Mrs Karen Graham	*Patient Involvement Officer*
Miss Siân McCarthy	*Patient Involvement Officer*
Mr Stuart Neville	*Publications Designer*
Miss Katie Kerr	*Administrative Assistant*

11.3 ACKNOWLEDGMENTS

SIGN is grateful to the following former members of the guideline development group who contributed to the development of this guideline.

Professor Scott M Bryson	Lead Specialist in Pharmaceutical Public Health, Pharmacy and Prescribing Unit, Glasgow
Dr John Harvie	*Consultant Rheumatologist and Physician, Raigmore Hospital, Inverness*

SIGN would also like to thank Mrs Angela Stather for her contribution as a speaker at the national open meeting. SIGN is grateful to Dr Annemarie van Heelsum, Mr Murray Bell and Mr David Scott of ISD, NHS National Services Scotland, for providing data on Pso/PsA in primary care in Scotland. SIGN thanks Dr Susan Myles and Miss Hilda Emengo of NHS QIS for the analysis and interpretation of data on Pso/PsA in primary care in Scotland.

11.4 CONSULTATION AND PEER REVIEW

11.4.1 NATIONAL OPEN MEETING

A national open meeting is the main consultative phase of SIGN guideline development, at which the guideline development group presents its draft recommendations for the first time. The national open meeting for this guideline was held on 1 October 2009 and was attended by 157 representatives of all the key specialties relevant to the guideline and members of the public. The draft guideline was also available on the SIGN website for a limited period at this stage to allow those unable to attend the meeting to contribute to the development of the guideline.

11.4.2 SPECIALIST REVIEW

This guideline was also reviewed in draft form by the following independent expert referees, who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline. The guideline group addresses every comment made by an external reviewer, and must justify any disagreement with the reviewers' comments.

SIGN is very grateful to all of these experts for their contribution to the guideline.

Dr Andrew Affleck	*Consultant Dermatologist and Dermatological Surgeon, Ninewells Hospital, Dundee, for the Scottish Dermatological Society*
Dr Vera Araujo-Soares	*Senior Lecturer in Health Psychology, Institute of Health and Society, Faculty of Medical Sciences, Newcastle University*

Professor Scott M Bryson	*Lead Specialist in Pharmaceutical Public Health, Pharmacy and Prescribing Unit, Glasgow*
Mr David Chandler	*Chief Executive, The Psoriasis and Psoriatic Arthritis Alliance (PAPAA), St Albans*
Mrs Maureen Cox	*Clinical Nurse Specialist in Rheumatology, Nuffield Orthopaedic Centre, Oxford and Chair, RCN Rheumatology Forum*
Ms Ann Davies	*Dermatology Clinical Nurse Specialist, Welsh Institute of Dermatology, University Hospital of Wales, Cardiff, for the British Dermatological Nursing Group*
Dr Val Doherty	*Specialty Medical Advisor in Dermatology, Royal Infirmary of Edinburgh*
Dr Stewart Douglas	*Retired Consultant Dermatologist, Monklands Hospital, Airdrie*
Professor James Ferguson	*Head of Photobiology Unit/Consultant Dermatologist, Ninewells Hospital and Medical School, Dundee*
Ms Katy Green	*Area Development Manager, South Scotland, Arthritis Care in Scotland, Glasgow*
Dr Diana Harcourt	*Reader in Health Psychology and Co-Director of the University of West of England Centre for Appearance Research, Bristol, for the British Psychological Society*
Dr Khalid Hassan	*Associate Specialist in Dermatology, Vale of Leven Hospital, Alexandria*
Dr Phillip Helliwell	*Senior Lecturer in Rheumatology, Leeds Institute of Molecular Medicine, University of Leeds*
Sister Donna Hood	*Rheumatology Clinical Nurse Specialist, New Victoria Hospital, Glasgow*
Professor Neil McHugh	*Professor in Rheumatology, Royal National Hospital for Rheumatic Diseases, Bath*
Dr Jon Norris	*Consultant Dermatologist, Dumfries and Galloway Royal Infirmary*
Mrs Sharon Pfleger	*Consultant in Pharmaceutical Public Health, NHS Highland*
Dr Thomas Pullar	*Consultant Rheumatologist, Ninewells Hospital, Dundee*
Professor David Reid	*President, Scottish Society for Rheumatology/Head of Division of Applied Medicine and Interim Co-Director of the Institute of Medical Sciences, School of Medicine and Dentistry, University of Aberdeen*
Professor Nichola Rumsey	*Co-Director of the University of West of England Centre for Appearance Research, Bristol, for the British Psychological Society*
Ms Sheila Robertson	*Dermatology Liaison Nurse Specialist, Victoria Hospital, Kirkcaldy, for the British Dermatology Nursing Group*
Dr Catherine Smith	*Consultant Dermatologist, St John's Institute of Dermatology, for the British Association of Dermatologists*
Dr Julia Schofield	*Principal Lecturer, School of Postgraduate Medicine, University of Hertfordshire*
Dr Malcolm Steven	*Consultant Physician, Department of Medicine – Rheumatology, Raigmore Hospital, Inverness*
Dr Richard Warren	*Senior Lecturer and Honorary Consultant Dermatologist, The Dermatology Centre, The University of Manchester*

11.4.3 SIGN EDITORIAL GROUP

As a final quality control check, the guideline is reviewed by an editorial group comprising the relevant specialty representatives on SIGN Council to ensure that the specialist reviewers' comments have been addressed adequately and that any risk of bias in the guideline development process as a whole has been minimised. The editorial group for this guideline was as follows.

Dr Keith Brown	*Chair of SIGN; Co-Editor*
Dr Sara Twaddle	*Director of SIGN; Co-Editor*
Dr Roberta James	*Acting Programme Director of SIGN*
Ms Beatrice Cant	*Programme Manager, SIGN*
Dr Niall Hyndman	*RCGP-Scotland*

Abbreviations

ACR	American College of Rheumatology
AHP	allied health professional
AS	ankylosing spondylitis
ASAS	Assessment of SpondyloArthritis international Society
BAD	British Association of Dermatologists
BADBIR	British Association of Dermatologists Biologic Interventions Register
BASDAI	Bath Ankylosing Spondylitis Disease Activity Index
BASFI	Bath Ankylosing Spondylitis Functional Index
BBUVB	broad band ultraviolet B phototherapy
BCC	basal cell carcinoma
BMI	body mass index
BNF	British National Formulary
BSA	Body Surface Area
BSR	British Society for Rheumatology
CASPAR	ClASsification criteria for Psoriatic ARthritis
CCI	Centre for Change and Innovation
CHD	coronary heart disease
CI	confidence interval
CORE-OM	Clinical Outcomes in Routine Evaluation – Outcome Measure
DIDS	Dermatology Index of Disease Severity
DLQI	Dermatology Life Quality Index
DM	diabetes mellitus
DMARD	disease-modifying anti-rheumatic drug
DQOLS	Dermatology Quality of Life Scale
ESR	erythrocyte sedimentation rate
EULAR	European League Against Rheumatism
GP	general practitioner
HADS	Hospital Anxiety and Depression Scale
HAQ	Health Assessment Questionnaire
HCP	healthcare professional
HR	hazard ratio
HTN	hypertension
IBD	inflammatory bowel disease
IM	intramuscular
IRR	incidence rate ratio
MI	myocardial infarction

MM	malignant melanoma
MRA	minimal residual activity
MTA	multiple technology appraisal
NBUVB	narrow band ultraviolet B phototherapy
NHS QIS	NHS Quality Improvement Scotland
NICE	National Institute for Health and Clinical Excellence
NNT	number needed to treat
NPSA	National Patient Safety Agency
NSAID	non-steroidal anti-inflammatory drug
OR	odds ratio
PASE	Psoriatic Arthritis Screening and Evaluation Tool
PASI	Psoriasis Area and Severity Index
PDI	Psoriasis Disability Index
PEST	Psoriasis Epidemiology Screening Tool
PGA	Physician's Global Assessment
PHQ-9	Patient Health Questionnaire
PsA	psoriatic arthritis
PSA	Psoriasis Symptom Assessment
PsARC	Psoriatic Arthritis Response Criteria
PsAQoL	Psoriatic Arthropathy Quality of Life Index
Pso/PsA	psoriasis or psoriatic arthritis
PSWQ	Penn State Worry Questionnaire
PUVA	psoralen ultraviolet A photochemotherapy
QoL	quality of life
RCT	randomised controlled trial
RR	relative risk
SCC	squamous cell carcinoma
SIGN	Scottish Intercollegiate Guidelines Network
SMC	Scottish Medicines Consortium
SMR	standardised mortality ratio
SPC	summary of product characteristics
STA	single technology appraisal
TMP	trimethyl psoralen
TNF	tumour necrosis factor
ToPAS	Toronto Psoriatic Arthritis Screen
UV	ultraviolet
UVA	ultraviolet A
UVB	ultraviolet B

Annex 1

Key questions used to develop the guideline

KQ	Diagnosis	See guideline section
1	Is there a validated screening tool that can be applied in primary care or dermatology secondary care for early detection of PsA amongst patients with psoriasis?	4.1.2
2	What are the most significant comorbidities of psoriasis and PsA? Consider: substance abuse, alcohol misuse/dependency, smoking, psychological well-being, depression, vascular disease, hypertension, obesity, metabolic syndrome, malignancy, lymphoma, liver disease, IBD, Crohn's disease	4.2
Principles of Treatment		
3	Does early diagnosis and treatment of psoriasis or psoriatic arthropathy compared to late diagnosis and treatment alter long term outcome in terms of comorbidities, joint damage and disability? Consider: vascular risk, psychological distress, depression, malignancy	4.1.3
4	Which criteria are most suitable to use in clinical practice for monitoring disease activity and response to treatment in psoriasis and PsA? Consider: for psoriasis - PASI , QoL scores, severity scores, PS disability index; for PsA – DA Index, radiological scoring systems	4.3
Non-pharmacological management		
5	In patients with Pso/PsA what is the effectiveness of the following in terms of skin and joint lesions, QoL, pain, disability, psychological distress/well-being, anxiety and depression: a. complementary and alternative therapies (including dead sea salts, balneotherapy, homeopathy, acupuncture, seaweed, reiki, N3 fatty acids (omega-3), vitamin supplements, high-dose vitamin D) b. physiotherapy c. occupational therapy d. tonsillectomy or antistreptococcal interventions for guttate psoriasis	5.4 and 5.5.3
6	a. In patients with Pso/PsA does behavioural change or lifestyle modification in the areas of smoking, alcohol, weight, diet, exercise, employment affect skin and joint lesions, QoL, pain, psychological distress/well-being, anxiety and depression? b. In patients with Pso/PsA do psychological therapy (CBT, psychoeducation) and peer support groups affect skin and joint lesions, QoL, pain, disability, psychological distress/well-being, anxiety and depression?	5.4.3 4.2.6

Pharmacological Management		
7	In patients with psoriasis is there any evidence that one topical therapy is better than another in terms of efficacy, safety and patient acceptability? Consider: corticosteroids, vitamin D analogues, tar preparations, retinoids, emollients, dithranol, tacrolimus, topical immune modulators Consider: whether agents are used for remission or maintenance; outcomes - clearance, rate of clearance, safety in both short and long term use	5.1
8	What are the risks and benefits associated with phototherapy/photochemotherapy treatment for patients with psoriasis? Consider: UVB narrowband, PUVA - Psoralen + UVA, broadband UVB), excimer laser, sunbed use Risks: skin cancer, nausea, burning Benefits (outcomes): clearance, minimal disease activity, duration of remission	7.2
9	In patients with psoriasis is there any evidence that one systemic therapy is better than another in terms of efficacy, safety and patient acceptability? Consider: methotrexate, ciclosporin, acitretin, hydroxycarbamide, hydroxyurea, fumaric acid (not etretinate) Drug class names: immunosuppressants, retinoids	7.3.1
10	In patients with psoriasis is there any evidence that one biologic therapy is better than another in terms of efficacy, safety and patient acceptability? Consider: etanercept, infliximab, adalimumab, ustekinumab	7.3.2
11	What evidence is there for the efficacy and safety of specific therapies for PsA? Consider: NSAIDS and corticosteroids, DMARDs (auranofin, azathioprine, ciclosporin, D-penicillamine, hydroxychloroquine, leflunomide, methotrexate, mycophenolate mofetil, sulfasalazine), biologic therapies, combination therapies (MTX + biologic) Consider: peripheral PsA, axial PsA, enthesitis, dactylitis	6.2
12	What is the evidence for effective treatment of psoriasis at specific body sites? Consider: scalp, flexural, facial, nail, hand and foot, genital	5.2

Pathways of Care		
13	What information do patients with Pso/PsA need or want? Consider: support groups, FAQs, health-seeking behaviour, information on treatment duration and follow up	8.1 and 8.2
14	What can be done to improve concordance with treatments for Pso/PsA? (including what issues affect concordance) Consider: compliance, adherence, illness perceptions, medications use, patient beliefs/perceptions, adverse effects	5.3
15	Which patients with Pso/PsA should be referred and when: (a) from primary to secondary care, (b) to tertiary care/ specialist clinic/combined clinic, (c) to inpatient care?	5.5
16	Which shared care models are suitable for Pso/PsA patients? Consider: GP-led clinics, nurse-led clinics, consultant-led clinics, joint dermatology/rheumatology clinics, pharmacy-led clinics, physiotherapy-led clinics, psychologist-led clinics, referral to pain clinics, access to services for patients in rural areas	6.1 and 7.1
17	What is the patient experience of Pso/PsA and what can we learn from it? Consider qualitative studies, patient narratives, quality of life, patient satisfaction, patient journey	4.2.6 and 8.1

Annex 2

Dermatology Life Quality Index (DLQI)

DERMATOLOGY LIFE QUALITY INDEX

DLQI

Hospital No: Date:
Name: Score:
Address: Diagnosis:

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please tick one box for each question.

1.	Over the last week, how **itchy**, **sore**, **painful** or **stinging** has your skin been?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	
2.	Over the last week, how **embarrassed** or **self conscious** have you been because of your skin?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	
3.	Over the last week, how much has your skin interfered with you going **shopping** or looking after your **home** or **garden**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒
4.	Over the last week, how much has your skin influenced the **clothes** you wear?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒
5.	Over the last week, how much has your skin affected any **social** or **leisure** activities?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒
6.	Over the last week, how much has your skin made it difficult for you to do any **sport**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒
7.	Over the last week, has your skin prevented you from **working** or **studying**?	Yes No	❒ ❒	 Not relevant ❒
	If "No", over the last week how much has your skin been a problem at **work** or **studying**?	A lot A little Not at all	❒ ❒ ❒	
8.	Over the last week, how much has your skin created problems with your **partner** or any of your **close friends** or **relatives**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒
9.	Over the last week, how much has your skin caused any **sexual difficulties**?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒
10.	Over the last week, how much of a problem has the **treatment** for your skin been, for example by making your home messy, or by taking up time?	Very much A lot A little Not at all	❒ ❒ ❒ ❒	 Not relevant ❒

Please check you have answered EVERY question. Thank you.

Reproduced with permission

Annex 2

Dermatology Life Quality Index (DLQI) (continued)

Instructions for use

The Dermatology Life Quality Index questionnaire is designed for use in adults, ie patients over the age of 16. It is self explanatory and can be simply handed to the patient who is asked to fill it in without the need for detailed explanation. It is usually completed in one to two minutes.

Scoring

The scoring of each question is as follows:

Very much scored	3
A lot scored	2
A little scored	1
Not at all scored	0
Not relevant scored	0
Question unanswered scored	0
Question 7: "prevented work or studying" scored	3

The DLQI is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more quality of life is impaired. The DLQI can also be expressed as a percentage of the maximum possible score of 30.

Please Note: the scores associated with the different answers should not be printed on the DLQI itself, as this might cause bias

Meaning of DLQI Scores

0-1 = no effect at all on patient's life

2-5 = small effect on patient's life

6-10 = moderate effect on patient's life

11-20 = very large effect on patient's life

21-30 = extremely large effect on patient's life

Interpretation of incorrectly completed questionnaires

There is a very high success rate of accurate completion of the DLQI. However, sometimes subjects do make mistakes.

1. If one question is left unanswered this is scored 0 and the scores are summed and expressed as usual out of a maximum of 30.
2. If two or more questions are left unanswered the questionnaire is not scored.
3. If question 7 is answered 'yes' this is scored 3. If question 7 is answered 'no' or 'not relevant' but then either 'a lot' or 'a little' is ticked this is then scored 2 or 1.
4. If two or more response options are ticked, the response option with the highest score should be recorded.
5. If there is a response between two tick boxes, the lower of the two score options should be recorded.
6. The DLQI can be analysed by calculating the score for each of its six sub-scales (see above). When using sub-scales, if the answer to one question in a sub-scale is missing, that sub-scale should not be scored.

Annex 3

PASI calculator

	Thickness 0-4	Scaling 0-4	Erythema 0-4	x Area 0-6		Total
Head					X 0.1	
Upper limb					X 0.2	
Trunk					X 0.3	
Lower limb					X 0.4	
					PASI	

Severity 0 = no involvement 1 = mild 2 = moderate 3 = severe 4 = very severe	Area 0 = no involvement 1 = 0 – 9% 2 = 10 – 29% 3 = 30 – 49% 4 = 50 – 69% 5 = 70 – 89% 6 = 90 – 100% neck / buttocks = trunk axillae = upper limb genitofemoral = lower limb
PASI ≥ 10 = severe disease	

Source: Psoriasis Clinic, Western Infirmary, Glasgow

Calculation of PASI

	Thickness 0-4	**Scaling 0-4**	**Erythema 0-4**	**x Area 0-6**		**Total**
Head	a	b	c	d (a + b + c)	x 0.1	A
Upper limb	e	f	g	h (e + f + g)	x 0.2	B
Trunk	i	j	k	l (i + j + k)	x 0.3	C
Lower limb	m	n	o	p (m + n + o)	x 0.4	D
					PASI	A + B + C + D

An online calculator is available at http://pasi.corti.li/

Annex 4

The ClASsification Criteria for Psoriatic ARthritis (CASPAR)

To meet the CASPAR criteria*, a patient must have inflammatory articular disease (joint, spine, or entheseal) with ≥3 points from the following 5 categories:

1. Evidence of current psoriasis, a personal history of psoriasis, or a family history of psoriasis.

   Current psoriasis is defined as psoriatic skin or scalp disease present today as judged by a rheumatologist or dermatologist.†

   A personal history of psoriasis is defined as a history of psoriasis that may be obtained from a patient, family physician, dermatologist, rheumatologist, or other qualified healthcare provider.

   A family history of psoriasis is defined as a history of psoriasis in a first- or second-degree relative according to patient report.

2. Typical psoriatic nail dystrophy including onycholysis, pitting, and hyperkeratosis observed on current physical examination3. A negative test result for the presence of rheumatoid factor by any method except latex but preferably by enzyme-linked immunosorbent assay or nephelometry, according to the local laboratory reference range.

4. Either current dactylitis, defined as swelling of an entire digit, or a history of dactylitis recorded by a rheumatologist.

5. Radiographic evidence of juxtaarticular new bone formation, appearing as ill-defined ossification near joint margins (but excluding osteophyte formation) on plain radiographs of the hand or foot.

---

* The CASPAR criteria have specificity of 98.7% and sensitivity of 91.4%.

† Current psoriasis is assigned a score of 2; all other features are assigned a score of 1.

Reproduced with permission.

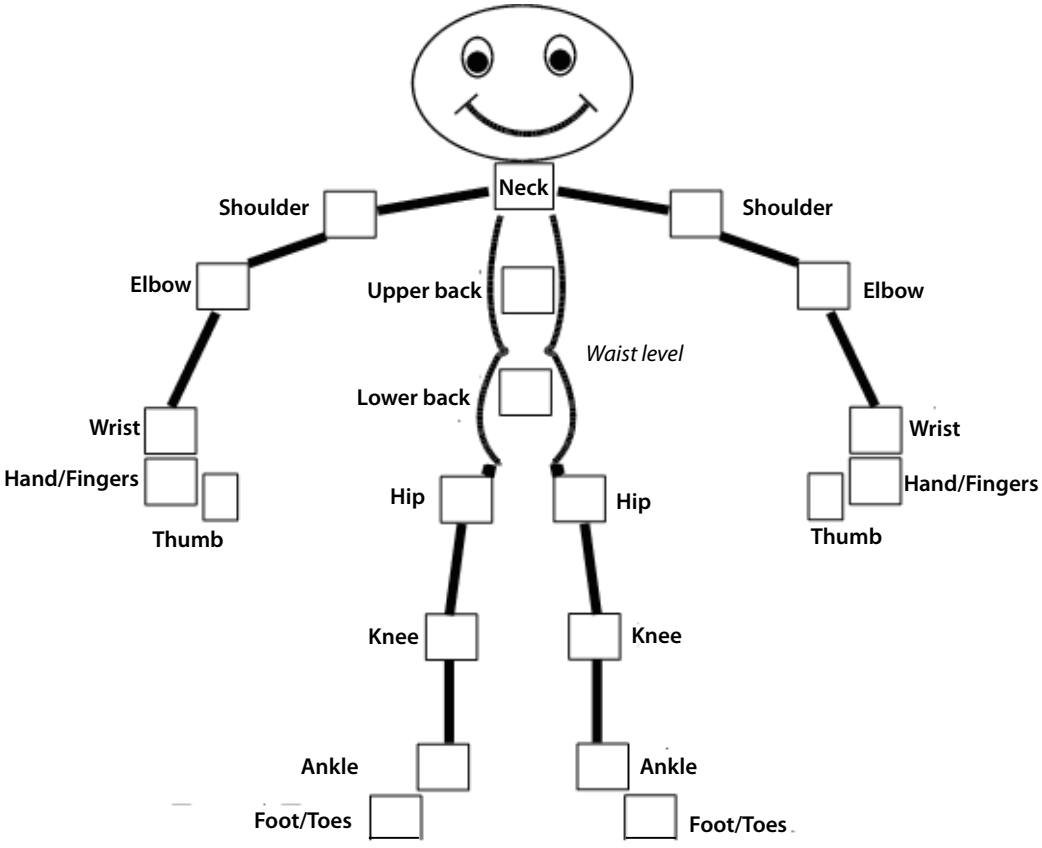
Annex 5

PEST screening questionnaire for psoriatic arthritis (in people with psoriasis)

Score 1 point for each question answered in the affirmative. A total score of 3 or more is indicative of psoriatic arthritis (sensitivity 0.92, specificity 0.78, positive predictive value 0.61, negative predictive value 0.95).

	NO	YES
Have you ever had a swollen joint (or joints)?		
Has a doctor ever told you that you have arthritis?		
Do your finger nails or toenails have holes or pits?		
Have you had pain in your heel?		
Have you had a finger or toe that was completely swollen and painful for no apparent reason?		

In the drawing below, please tick the joints that have caused you discomfort (i.e. stiff, swollen or painful joints).



Reproduced with permission of Philip Helliwell, University of Leeds

Annex 6

PsARC

A PsARC response is defined as an improvement in at least two of the following four measures, one of which must be the joint tenderness or swelling score, with no worsening in any of the four measures.[217]

1. patient global self assessment (on a 0–5 Likert scale);
2. physician global assessment (on a 0–5 Likert scale);

   with improvement defined as a decrease by at least 1 unit, and worsening defined as an increase by at least 1 unit

3. tender joint score;
4. swollen joint score

   with improvement defined as a decrease of at least 30%, and worsening defined as an increase of at least 30%.

Annex 7

Bath Ankylosing Spondylitis Disease Activity Index (BASDAI)

This tool can also be completed by patients online at http://basdai.com/BASDAI.php

Please place a mark on each line below to indicate your answer to each question relating to **the past week**

1. How would you describe the overall level of **fatigue/tiredness** you have experienced?

   NONE _____ VERY SEVERE

2. How would you describe the overall level of AS **neck, back or hip pain** you have had?

   NONE _____ VERY SEVERE

3. How would you describe the overall level of pain/swelling in joints other than **neck, back, hips** you have had?

   NONE _____ VERY SEVERE

4. How would you describe the overall level of **discomfort** you have had from any areas tender to touch or pressure?

   NONE _____ VERY SEVERE

5. How would you describe the overall level of **morning stiffness** you have had **from the time you wake up?**

   NONE _____ VERY SEVERE

6. How long does your morning stiffness last from the time you wake up?

   _____

   0 hrs ½ 1 1½ 2 or more hours

Annex 8

Bath Ankylosing Spondylitis Functional Index (BASFI)

This tool can also be completed by patients online at http://basdai.com/BASFI.php

Date_____ Patient Name_____

Please draw a mark on each line below to indicate your ability with each of the following activities, during the <u>past week:</u>

1. Putting on your socks or tights without help or aids (e.g. sock aids)?

EASY —————————————— **IMPOSSIBLE**
0 10

2. Bending forward from the waist to pick up a pen from the floor without an aid?

EASY —————————————— **IMPOSSIBLE**
0 10

3. Reaching up to a high shelf without help or aids (e.g. helping hand)?

EASY —————————————— **IMPOSSIBLE**
0 10

4. Getting up out of an armless dining room chair without using your hands or any other help?

EASY —————————————— **IMPOSSIBLE**
0 10

5. Getting up off the floor without any help from lying on your back?

EASY —————————————— **IMPOSSIBLE**
0 10

6. Standing unsupported for 10 minutes without discomfort?

EASY —————————————— **IMPOSSIBLE**
0 10

7. Climbing 12-15 steps without using a handrail or walking aid (one foot on each step)?

EASY —————————————— **IMPOSSIBLE**
0 10

8. Looking over your shoulder without turning your body?

EASY —————————————— **IMPOSSIBLE**
0 10

9. Doing physically demanding activities (e.g. physiotherapy exercises, gardening or sports)?

EASY —————————————— **IMPOSSIBLE**
0 10

10. Doing a full day activities whether it be at home or work?

EASY —————————————— **IMPOSSIBLE**
0 10

References

1. Griffiths CE, Barker JN. Pathogenesis and clinical features of psoriasis. Lancet 2007;370(9583):263-71.
2. Reich K, Kruger K, Mossner R, Augustin M. Epidemiology and clinical pattern of psoriatic arthritis in Germany: a prospective interdisciplinary epidemiological study of 1511 patients with plaque-type psoriasis. Br J Dermatol 2009;160:1040-7.
3. Menter A, Griffiths CE. Current and future management of psoriasis. Lancet 2007;370(9583):272-84.
4. Rapp SR, Feldman SR, Exum ML, Fleischer AB, Jr., Reboussin DM. Psoriasis causes as much disability as other major medical diseases. J Am Acad Dermatol 1999;41(3 Pt 1):401-7.
5. Gelfand JM, Troxel AB, Lewis JD, Kurd SK, Shin DB, Wang X, et al. The risk of mortality in patients with psoriasis: results from a population-based study. Arch Dermatol 2007;143(12):1493-9.
6. Ginsburg IH, Link BG. Feelings of stigmatization in patients with psoriasis. J Am Acad Dermatol 1989;20(1):53-63.
7. Mease PJ, Menter MA. Quality-of-life issues in psoriasis and psoriatic arthritis: outcome measures and therapies from a dermatological perspective. J Am Acad Dermatol 2006;54(4):685-704.
8. Scottish Skincare Conditions Industry Group. Skincare Conditions in Scotland: What the healthcare professionals think. 2008. [cited 20 Sep 2010]. Available from url: http://www.abpi.org.uk/Scotland/pdf/SSCIGSurveyFinalReportOct08.pdf
9. Eedy D, Burge S, Potter J, Ingham J, Lowe D. An audit of the provision of dermatology services in secondary care in the United Kingdom with a focus on the care of people with psoriasis. British Association of Dermatologists; 2008. [cited 20 Sep 2010]. Available from url: http://www.bad.org.uk/Portals/_Bad/Audits/BAD%20Psoriasis%20Audit%2018.02.08.pdf
10. Stern RS, Nijsten T, Feldman SR, Margolis DJ, Rolstad T. Psoriasis is common, carries a substantial burden even when not extensive, and is associated with widespread treatment dissatisfaction. J Investig Dermatol Symp Proc 2004;9(2):136-9.
11. Horne R, J. W, Barber N, R. E, Morgan M, Cribb A, et al. Concordance, adherence and compliance in medicine taking. London: National Co-ordinating Centre for NHS Service Delivery and Organisation R&D (NCCSDO); 2005. [cited 20 Sep 2010]. Available from url: http://www.medslearning.leeds.ac.uk/pages/documents/useful_docs/76-final-report%5B1%5D.pdf
12. Kaufman G, Birks Y. Strategies to improve patients' adherence to medication. Nurs Stand 2009;23(49):51-7.
13. British Medical Association and Royal Pharmaceutical Society of Great Britain. British National Formulary. [cited 20 Sep 2010]. Available from url: www.bnf.org
14. Guidance on prescribing. In: British National Formulary No. 60. London: British Medical Association and Royal Pharmaceutical Society of Great Britain; 2010.
15. Gladman DD, Antoni C, Mease P, Clegg DO, Nash O. Psoriatic arthritis: Epidemiology, clinical features, course, and outcome. Ann Rheum Dis 2005;64(SUPPL. 2):ii14-7.
16. Sieper J, van der Heijde D, Landewé R, Brandt J, Burgos-Vagas R, Collantes-Estevez E, 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):784-8.
17. Kane D, Stafford L, Bresnihan B, Fitzgerald O. A prospective, clinical and radiological study of early psoriatic arthritis: an early synovitis clinic experience. Rheumatology 2003;42(12):1460-8.
18. Mease PJ, Gladman DD, Ritchlin CT, Ruderman EM, Steinfeld SD, Choy EH, et al. Adalimumab for the treatment of patients with moderately to severely active psoriatic arthritis: results of a double-blind, randomized, placebo-controlled trial. Arthritis Rheum 2005;52(10):3279-89.
19. Mease PJ, Kivitz AJ, Burch FX, Siegel EL, Cohen SB, Ory P, et al. Etanercept treatment of psoriatic arthritis: safety, efficacy, and effect on disease progression. Arthritis Rheum 2004;50(7):2264-72.
20. Taylor W, Gladman D, Helliwell P, Marchesoni A, Mease P, Mielants H. Classification criteria for psoriatic arthritis: Development of new criteria from a large international study. Arthritis Rheum 2006;54(8):2665-73.
21. Gulliver W. Long-term prognosis in patients with psoriasis. Br J Dermatol 2008;159(Suppl. 2):2-9.
22. Kimball AB, Gladman D, Gelfand JM, Gordon K, Horn EJ, Korman NJ, et al. National Psoriasis Foundation clinical consensus on psoriasis comorbidities and recommendations for screening. J Am Acad Dermatol 2008;58(6):1031-42.
23. Ibrahim G, Buch M, Lawson C, Waxman R, Helliwell PS. Evaluation of an existing screening tool for psoriatic arthritis in people with psoriasis and development of a new instrument: the Psoriasis Epidemiology Screening Tool (PEST) questionnaire. Clin Exp Rheumatol 2009;27(3):469-74.
24. Husni ME, Meyer KH, Cohen DS, Mody E, Qureshi AA. The PASE questionnaire: pilot-testing a psoriatic arthritis screening and evaluation tool. J Am Acad Dermatol 2007;57(4):581-7.
25. Gladman D, Schentag C, Tom B, Chandran V, Brockbank J, Rosen C, et al. Development and initial validation of a screening questionnaire for psoriatic arthritis: The Toronto Psoriatic Arthritis Screen (ToPAS). Ann Rheum Dis 2008;68(4):497-501.
26. Alenius GM, Berglin E, Rantapaa Dahlqvist S. Antibodies against cyclic citrullinated peptide (CCP) in psoriatic patients with or without joint inflammation. Ann Rheum Dis 2006;65(3):398-400.
27. Candia L, Marquez J, Gonzalez C, Santos AM, Londono J, Valle R, et al. Low frequency of anticyclic citrullinated peptide antibodies in psoriatic arthritis but not in cutaneous psoriasis. J Clin Rheumatol 2006;12(5):226-9.
28. Dreiher J, Weitzman D, Davidovici B, Shapiro J, Cohen AD. Psoriasis and dyslipidaemia: A population-based study. Acta Derm Venereol 2008;88(6):561-5.
29. Gelfand JM, Neimann AL, Shin DB, Wang X, Margolis DJ, Troxel AB. Risk of myocardial infarction in patients with psoriasis. JAMA 2006;296(14):1735-41.
30. Kaye JA, Li L, Jick SS. Incidence of risk factors for myocardial infarction and other vascular diseases in patients with psoriasis. Br J Dermatol 2008;159(4):895-902.
31. Neimann AL, Shin DB, Wang X, Margolis DJ, Troxel AB, Gelfand JM. Prevalence of cardiovascular risk factors in patients with psoriasis. J Am Acad Dermatol 2006;55(5):829-35.
32. Huerta C, Rivero E, Rodriguez LA. Incidence and risk factors for psoriasis in the general population. Arch Dermatol 2007;143(12):1559-65.
33. Naldi L, Chatenoud L, Linder D, Belloni Fortina A, Peserico A, Virgili AR, et al. Cigarette smoking, body mass index, and stressful life events as risk factors for psoriasis: results from an Italian case-control study. J Invest Dermatol 2005;125(1):61-7.
34. Naldi L, Peli L, Parazzini F. Association of early-stage psoriasis with smoking and male alcohol consumption: evidence from an Italian case-control study. Arch Dermatol 1999;135(12):1479-84.
35. Poikolainen K, Reunala T, Karvonen J. Smoking, alcohol and life events related to psoriasis among women. Br J Dermatol 1994;130(4):473-7.
36. Setty AR, Curhan G, Choi HK. Smoking and the risk of psoriasis in women: Nurses' Health Study II. Am J Med 2007;120(11):953-9.
37. Wolk K, Mallbris L, Larsson P, Rosenblad A, Vingard E, Stahle M. Excessive body weight and smoking associates with a high risk of onset of plaque psoriasis. Acta Derm Venereol 2009;89(5):492-7.
38. Gottlieb AB, Chao C, Dann F. Psoriasis comorbidities. J Dermatolog Treat 2008;19(1):5-21.
39. Sommer DM, Jenisch S, Suchan M, Christophers E, Weichenthal M. Increased prevalence of the metabolic syndrome in patients with moderate to severe psoriasis. Arch Dermatol Res 2006;298(7):321-8.
40. Mills CM, Srivastava ED, Harvey IM, Swift GL, Newcombe RG, Holt PJ, et al. Smoking habits in psoriasis: a case control study. Br J Dermatol 1992;127(1):18-21.
41. Higgins EM, Peters TJ, du Vivier AWP. Smoking, drinking and psoriasis. Br J Dermatol 1993;129:749-50.
42. Russo PA, Ilchef R, Cooper AJ. Psychiatric morbidity in psoriasis: a review. Australas J Dermatol 2004;45(3):155-9.
43. Kimball AB, Jacobson C, Weiss S, Vreeland MG, Wu Y. The psychosocial burden of psoriasis. Am J Clin Dermatol 2005;6(6):383-92.
44. de Korte J, Sprangers MA, Mombers FM, Bos JD. Quality of life in patients with psoriasis: a systematic literature review. J Investig Dermatol Symp Proc 2004;9(2):140-7.
45. Wahl AK, Gjengedal E, Hanestad BR. The bodily suffering of living with severe psoriasis: In-depth interviews with 22 hospitalized patients with psoriasis. Qual Health Res 2002;12(2):250-61.
46. Fox FE, Rumsey N, Morris M. «Ur skin is the thing that everyone sees and you cant change it!»: Exploring the appearance-related concerns of young people with psoriasis. Dev Neurorehabil 2007;10(2):133-41.
47. Uttjek M, Nygren L, Stenberg B, Dufaker M. Marked by visibility of psoriasis in everyday life. Qual Health Res 2007;17(3):364-72.
48. National Collaborating Centre for Mental Health. Depression: The treatment and management of depression in adults. London: NICE; 2009. (NICE guideline CG90). [cited 17 Sep 2010]. Available from url: http://www.nice.org.uk/nicemedia/live/12329/45888/45888.pdf

49. Gilbody S, Richards D, Barkham M. Diagnosing depression in primary care using self-completed instruments: UK validation of PHQ–9 and CORE–OM. Br J Gen Pract 2007;57(541):650-2.
50. Kirby B, Richards H, Woo P, Hindle E, Main CJ, Griffiths CE. Physical and psychologic measures are necessary to assess overall psoriasis severity. J Am Acad Dermatol 2001;45(1):72-6.
51. Borman P, Toy GG, Babaoglu S, Bodur H, Ciliz D, Alli N. A comparative evaluation of quality of life and life satisfaction in patients with psoriatic and rheumatoid arthritis. Clin Rheumatol 2007;26(3):330-4.
52. Finzi A, Colombo D, Caputo A, Andreassi L, Chimenti S, Vena G, et al. Psychological distress and coping strategies in patients with psoriasis: The PSYCHAE Study. J Eur Acad Dermatol Venereol 2007;21(9):1161-9.
53. Fouere S, Adjadj L, Pawin H. How patients experience psoriasis: results from a European survey. J Eur Acad Dermatol Venereol 2005;19(Suppl 3):2-6.
54. Richards HL, Fortune DG, Griffiths CEM, Main CJ. The contribution of perceptions of stigmatisation to disability in patients with psoriasis. J Psychosom Res 2001;50(1):11-5.
55. Young M. The psychological and social burdens of psoriasis. Dermatol Nurs 2005;17(1):15-9.
56. Idriss SZ, Kvedar JC, Watson AJ. The role of online support communities. Benefits of expanded social networks to patients with psoriasis. Arch Dermatol 2009;145(1):46-51.
57. Fortune DG, Richards HL, Kirby B, McElhone K, Markham T, Rogers S, et al. Psychological distress impairs clearance of psoriasis in patients treated with photochemotherapy. Arch Dermatol 2003;139(6):752-6.
58. Verhoeven EW, Kraaimaat FW, de Jong EM, Schalkwijk J, van de Kerkhof PC, Evers AW. Individual differences in the effect of daily stressors on psoriasis: a prospective study. Br J Dermatol 2009;161(2):295-9.
59. Rohekar S, Tom BD, Hassa A, Schentag CT, Farewell VT, Gladman DD. Prevalence of malignancy in psoriatic arthritis. Arthritis Rheum 2008;58(1):82-7.
60. Gelfand JM, Berlin J, Van Voorhees A, Margolis DJ. Lymphoma rates are low but increased in patients with psoriasis: results from a population-based cohort study in the United Kingdom. Arch Dermatol 2003;139(11):1425-9.
61. Hannuksela A, Pukkala E, Hannuksela M, Karvonen J. Cancer incidence among Finnish patients with psoriasis treated with trioxsalen bath PUVA. J Am Acad Dermatol 1996;35(5 Pt 1):685-9.
62. Margolis D, Bilker W, Hennessy S, Vittorio C, Santanna J, Strom BL. The risk of malignancy associated with psoriasis. Arch Dermatol 2001;137(6):778-83.
63. Gelfand JM, Shin DB, Neimann AL, Wang X, Margolis DJ, Troxel AB. The risk of lymphoma in patients with psoriasis. J Invest Dermatol 2006;126(10):2194-201.
64. Stern RS. Lymphoma risk in psoriasis: Results of the PUVA follow-up study. Arch Dermatol 2006;142(9):1132-5.
65. Stern RS, Vakeva LH, Bauer E, Koo J, Epstein JH, Wolf J, et al. Noncutaneous malignant tumors in the PUVA follow-up study: 1975-1996. J Invest Dermatol 1997;108(6):897-900.
66. Lee FI, Bellary SV, Francis C. Increased occurrence of psoriasis in patients with Crohn's disease and their relatives. Am J Gastroenterol 1990;85(8):962-3.
67. Yates VM, Watkinson G, Kelman A. Further evidence for an association between psoriasis, Crohn's disease and ulcerative colitis. Br J Dermatol 1982;106(3):323-30.
68. Dreiher J, Weitzman D, Shapiro J, Davidovici B, Cohen AD. Psoriasis and chronic obstructive pulmonary disease: a case-control study. Br J Dermatol 2008;159(4):956-60.
69. Zeboulon N, Dougados M, Gossec L. Prevalence and characteristics of uveitis in the spondyloarthropathies: a systematic literature review. Ann Rheum Dis 2008;67(7):955-9.
70. Ashcroft DM, Wan Po AL, Williams HC, Griffiths CE. Clinical measures of disease severity and outcome in psoriasis: a critical appraisal of their quality. Br J Dermatol 1999;141(2):185-91.
71. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)--a simple practical measure for routine clinical use. Clin Exp Dermatol 1994;19(3):210-6.
72. Basra MK, Fenech R, Gatt RM, Salek MS, Finlay AY. The Dermatology Life Quality Index 1994-2007: a comprehensive review of validation data and clinical results. Br J Dermatol 2008;159(5):997-1035.
73. National Institute for Health and Clinical Excellence. Etanercept and efalizumab for the treatment of adults with psoriasis. London: NICE; 2006. (NICE technology appraisal guidance 103). [cited 17 Sep 2010]. Available from url: http://www.nice.org.uk/nicemedia/live/11580/33376/33376.pdf
74. National Institute for Health and Clinical Excellence. Adalimumab for the treatment of adults with psoriasis. London: NICE; 2008. (NICE technology appraisal guidance 146). [cited 17 Sep 2010]. Available from url: http://www.nice.org.uk/nicemedia/pdf/TA146Guidance.pdf
75. National Institute for Health and Clinical Excellence. Infliximab for the treatment of adults with psoriasis. London: NICE; 2008. (NICE technology appraisal guidance 134). [cited 17 Sep 2010]. Available from url: http://www.nice.org.uk/nicemedia/pdf/TA134Guidance.pdf
76. Gladman DD, Helliwell P, Mease PJ, Nash P, Ritchlin C, Taylor W. Assessment of patients with psoriatic arthritis: a review of currently available measures. Arthritis Rheum 2004;50(1):24-35.
77. Mease PJ, Antoni CE, Gladman DD, Taylor WJ. Psoriatic arthritis assessment tools in clinical trials. Ann Rheum Dis 2005;64(Suppl 2):ii49-54.
78. Healy PJ, Helliwell PS. Psoriatic arthritis quality of life instrument: an assessment of sensitivity and response to change. J Rheumatol 2008;35(7):1359-61.
79. Garrett S, Jenkinson T, Kennedy LG, Whitelock H, Gaisford P, Calin A. A new approach to defining disease status in ankylosing spondylitis: the Bath Ankylosing Spondylitis Disease Activity Index. J Rheumatol 1994;21(12):2286-91.
80. Calin A, Garrett S, Whitelock H, Kennedy LG, O'Hea J, Mallorie P, et al. A new approach to defining functional ability in ankylosing spondylitis: the development of the Bath Ankylosing Spondylitis Functional Index. J Rheumatol 1994;21(12):2281-5.
81. National Institute for Health and Clinical Excellence. Etanercept and infliximab for the treatment of psoriatic arthritis. London: NICE; 2006. (NICE technology appraisal guidance104). [cited 17 Sep 2010]. Available from url: http://www.nice.org.uk/nicemedia/pdf/TA104guidance.pdf
82. British Society for Rheumatology. BSR guideline for prescribing TNFα blockers in adults with ankylosing spondylitis. London: British Society for Rheumatology; 2004. [cited 20 Sep 2010]. Available from url: http://www.rheumatology.org.uk/includes/documents/cm_docs/2009/p/prescribing_tnf_alpha_blockers_in_adults_with_ankylosing_spondylitis.pdf
83. Mason AR, Mason J, Cork M, Dooley G, Edwards G. Topical treatments for chronic plaque psoriasis. Cochrane Database of Systematic Reviews 2009, Issue 2.
84. Bruner CR, Feldman SR, Ventrapragada M, Fleischer Jr AB. A systematic review of adverse effects associated with topical treatments for psoriasis. Dermatol Online J 2003;9(1):2.
85. Goodfield M, Kownacki S, Berth-Jones J. Double-blind, randomised, multicentre, parallel group study comparing a 1% coal tar preparation (Exorex) with a 5% coal tar preparation (Alphosyl) in chronic plaque psoriasis. J Dermatolog Treat 2004;15(1):14-22.
86. Chalmers RJ, O'Sullivan T, Owen CM, Griffiths CE. A systematic review of treatments for guttate psoriasis. Br J Dermatol 2001;145(6):891-4.
87. Andreassi L, Giannetti A, Milani M. Efficacy of betamethasone valerate mousse in comparison with standard therapies on scalp psoriasis: An open, multicentre, randomized, controlled, cross-over study on 241 patients. Br J Dermatol 2003;148(1):134-8.
88. Breneman DL, Davis M, Berger V, Chaney R. A double-blind trial comparing the efficacy and safety of augmented betamethasone dipropionate lotion with fluocinonide solution in the treatment of severe scalp psoriasis. J Dermatolog Treat 1992;3(1):19-21.
89. Ellis CN, Menter MA. A randomized, blinded comparison of amcinonide lotion and fluocinonide solution in patients with psoriasis of the scalp. Curr Ther Res Clin Exp 1989;46(3):471-7.
90. Griffiths CEM, Finlay AY, Fleming CJ, Barker JNWN, Mizzi F, Arsonnaud S. A randomized, investigator-masked clinical evaluation of the efficacy and safety of clobetasol propionate 0.05% shampoo and tar blend 1% shampoo in the treatment of moderate to severe scalp psoriasis. J Dermatolog Treat 2006;17(2):90-5.
91. Jemec GB, Ganslandt C, Ortonne JP, Poulin Y, Burden AD, de Unamuno P, et al. A new scalp formulation of calcipotriene plus betamethasone compared with its active ingredients and the vehicle in the treatment of scalp psoriasis: a randomized, double-blind, controlled trial. J Am Acad Dermatol 2008;59(3):455-63.
92. Klaber MR, Hutchinson PE, Pedvis-Leftick A, Kragballe K, Reunala TL, Van de Kerkhof PC, et al. Comparative effects of calcipotriol solution (50 micrograms/ml) and betamethasone 17-valerate solution (1 mg/ml) in the treatment of scalp psoriasis. Br J Dermatol 1994;131(5):678-83.
93. Reygagne P, Mrowietz U, Decroix J, de Waard-van der Spek FB, Acebes LO, Figueiredo A, et al. Clobetasol propionate shampoo 0.05% and calcipotriol solution 0.005%: a randomized comparison of efficacy and safety in subjects with scalp psoriasis. J Dermatolog Treat 2005;16(1):31-6.

94. Van De Kerkhof PCM, Hoffmann V, Anstey A, Barnes L, Bolduc C, Reich K, et al. A new scalp formulation of calcipotriol plus betamethasone dipropionate compared with each of its active ingredients in the same vehicle for the treatment of scalp psoriasis: A randomized, double-blind, controlled trial. Br J Dermatol 2009;160(1):170-6.
95. Cassell S, Kavanaugh AF. Therapies for psoriatic nail disease. A systematic review. J Rheumatol 2006;33(7):1452-6.
96. Kalb RE, Bagel J, Korman NJ, Lebwohl MG, Young M, al e. Treatment of intertriginous psoriasis: From the Medical Board of the National Psoriasis Foundation. J Am Acad Dermatol 2009;60(1):120-4.
97. Haynes RB, Ackloo E, Sahota N, McDonald HP, Yao X. Interventions for enhancing medication adherence. Cochrane Database of Systematic Reviews 2008, Issue 2.
98. Carroll CL, Feldman SR, Camacho FT, Manuel JC, Balkrishnan R. Adherence to topical therapy decreases during the course of an 8-week psoriasis clinical trial: commonly used methods of measuring adherence to topical therapy overestimate actual use. J Am Acad Dermatol 2004;51(2):212-6.
99. Yentzer BA, Yelverton CB, Pearce DJ, Camacho FT, Makhzoumi Z, Clark A, et al. Adherence to acitretin and home narrowband ultraviolet B phototherapy in patients with psoriasis. J Am Acad Dermatol 2008;59(4):577-81.
100. Storm A, Benfeldt E, Andersen SE, Serup J. A prospective study of patient adherence to topical treatments: 95% of patients underdose. J Am Acad Dermatol 2008;59(6):975-80.
101. Feldman SR, Camacho FT, Krejci-Manwaring J, Carroll CL, Balkrishnan R. Adherence to topical therapy increases around the time of office visits. J Am Acad Dermatol 2007;57(1):81-3.
102. Zaghloul SS, Goodfield MJ. Objective assessment of compliance with psoriasis treatment. Arch Dermatol 2004;140(4):408-14.
103. Dowell J, Hudson H. A qualitative study of medication-taking behaviour in primary care. Fam Pract 1997;14(5):369-75.
104. Renzi C, Di Pietro C, Gisondi P, Chinni LM, Fazio M, Ianni A, et al. Insufficient knowledge among psoriasis patients can represent a barrier to participation in decision-making. Acta Derm Venereol 2006;86(6):528-34.
105. de Korte J, Van Onselen J, Kownacki S, Sprangers MA, Bos JD. Quality of care in patients with psoriasis: an initial clinical study of an international disease management programme. J Eur Acad Dermatol Venereol 2005;19(1):35-41.
106. Owen CM, Chalmers RJ, O'Sullivan T, Griffiths CE. Antistreptococcal interventions for guttate and chronic plaque psoriasis. Cochrane Database of Systematic Reviews 2000, Issue 2.
107. Caca-Biljanovska NG, V'Ickova-Laskoska MT. Management of guttate and generalized psoriasis vulgaris: Prospective randomized study. Croat Med J 2002;43(6):707-12.
108. Dogan B, Karabudak O, Harmanyeri Y. Antistreptococcal treatment of guttate psoriasis: A controlled study. Int J Dermatol 2008;47(9):950-2.
109. Bacle I, Meges S, Lauze C, Macleod P, Dupuy P. Sensory analysis of four medical spa spring waters containing various mineral concentrations. Int J Dermatol 1999;38(10):784-6.
110. Bernstein S, Donsky H, Gulliver W, Hamilton D, Nobel S, Norman R. Treatment of mild to moderate psoriasis with Relieva, a Mahonia aquifolium extract--a double-blind, placebo-controlled study. Am J Ther 2006;13(2):121-6.
111. Bittiner SB, Tucker WF, Cartwright I, Bleehen SS. A double-blind, randomised, placebo-controlled trial of fish oil in psoriasis. Lancet 1988;1(8582):378-80.
112. Bjørneboe A, Smith AK, Bjørneboe GE, Thune PO, Drevon CA. Effect of dietary supplementation with n-3 fatty acids on clinical manifestations of psoriasis. Br J Dermatol 1988;118(1):77-83.
113. Brockow T, Schiener R, Franke A, Resch KL, Peter RU. A pragmatic randomized controlled trial on the effectiveness of highly concentrated saline spa water baths followed by UVB compared to UVB only in moderate to severe psoriasis. J Altern Complement Med 2007;13(7):725-32.
114. Brockow T, Schiener R, Franke A, Resch KL, Peter RU. A pragmatic randomized controlled trial on the effectiveness of low concentrated saline spa water baths followed by ultraviolet B (UVB) compared to UVB only in moderate to severe psoriasis. J Eur Acad Dermatol Venereol 2007;21(8):1027-37.
115. Brown AC, Koett J, Johnson DW, Semaskvich NM, Holck P, Lally D, et al. Effectiveness of kukui nut oil as a topical treatment for psoriasis. Int J Dermatol 2005;44(8):684-7.
116. Cheesbrough MJ. Treatment of psoriasis with 30% Dead Sea salt lotion. J Dermatolog Treat 1992;3(4):201-3.
117. Collier PM, Ursell A, Zaremba K, Payne CM, Staughton RC, Sanders T. Effect of regular consumption of oily fish compared with white fish on chronic plaque psoriasis. Eur J Clin Nutr 1993;47(4):251-4.
118. Costantino M, Nappi G, Contaldi E, Lampa E. Effectiveness of sulphur spatherapy in psoriasis: Clinical-experimental study. Med Clin Term 2005;18(58):127-37.
119. David M, Tsukrov B, Adler B, Hershko K, Pavlotski F, Rozenman D, et al. Actinic damage among patients with psoriasis treated by climatotherapy at the Dead Sea. J Am Acad Dermatol 2005;52(3 Pt 1):445-50.
120. Dawe RS, Yule S, Cameron H, Moseley H, Ibbotson SH, Ferguson J. A randomized controlled comparison of the efficacy of Dead Sea salt balneophototherapy vs. narrowband ultraviolet B monotherapy for chronic plaque psoriasis. Br J Dermatol 2005;153(3):613-9.
121. El-Azhary RA, Peters MS, Pittelkow MR, Kao PC, Muller SA. Efficacy of vitamin D3 derivatives in the treatment of psoriasis vulgaris: A preliminary report. Mayo Clin Proc 1993;68(9):835-41.
122. Elkayam O, Ophir J, Brener S, Paran D, Wigler I, Efron D, et al. Immediate and delayed effects of treatment at the Dead Sea in patients with psoriatic arthritis. Rheumatol Int 2000;19(3):77-82.
123. Escobar SO, Achenbach R, Iannantuono R, Torem V. Topical fish oil in psoriasis--a controlled and blind study. Clin Exp Dermatol 1992;17(3):159-62.
124. Even-Paz Z, Efron D, Kipnis V, Abels DJ. How much Dead Sea sun for psoriasis? J Dermatolog Treat 1996;7(1):17-9.
125. Even-Paz Z, Gumon R, Kipnis V, Abels DJ, Efron D. Dead Sea sun versus Dead Sea water in the treatment of psoriasis. J Dermatolog Treat 1996;7(2):83-6.
126. Fairris GM, Lloyd B, Hinks L, Perkins PJ, Clayton BE. The effect of supplementation with selenium and vitamin E in psoriasis. Ann Clin Biochem 1989;26(Pt 1):83-8.
127. Gambichler T, Rapp S, Senger E, Altmeyer P, Hoffmann K. Balneophototherapy of psoriasis: highly concentrated salt water versus tap water--a randomized, one-blind, right/left comparative study. Photodermatol Photoimmunol Photomed 2001;17(1):22-5.
128. Grimaldi FF, Florio M, Satriano RA, Ruocco V. Treatment of psoriasis with eicosapentaenoic acid: A double-blind, randomized, placebo-controlled trial. Ann Ital Dermatol Clin Sper 1989;43(2):131-9.
129. Grimminger F, Mayser P, Papavassilis C, Thomas M, Schlotzer E, Heuer KU, et al. A double-blind, randomized, placebo-controlled trial of n-3 fatty acid based lipid infusion in acute, extended guttate psoriasis. Rapid improvement of clinical manifestations and changes in neutrophil leukotriene profile. Clin Investig 1993;71(8):634-43.
130. Gulliver WP, Donsky HJ. A report on three recent clinical trials using Mahonia aquifolium 10% topical cream and a review of the worldwide clinical experience with Mahonia aquifolium for the treatment of plaque psoriasis. Am J Ther 2005;12(5):398-406.
131. Gupta AK, Ellis CN, Tellner DC, Anderson TF, Voorhees JJ. Double-blind, placebo-controlled study to evaluate the efficacy of fish oil and low-dose UVB in the treatment of psoriasis. Br J Dermatol 1989;120(6):801-7.
132. Habermann Neto T, De Castro Pupo Nogueira Neto J. Efficacy of omega-3 fatty acids in the treatment of psoriasis. Rev Bras Med 1994;51(6):779-83.
133. Halevy S, Giryes H, Friger M, Grossman N, Karpas Z, Sarov B, et al. The role of trace elements in psoriatic patients undergoing balneotherapy with Dead Sea bath salt. Isr Med Assoc J 2001;3(11):828-32.
134. Halevy S, Giryes H, Friger M, Sukenik H. Dead sea bath salt for the treatment of psoriasis vulgaris: A double-blind controlled study. J Eur Acad Dermatol Venereol 1997;9(3):237-42.

135. Henneicke-von ZHH, Mrowietz U, Färber L, Bruck-Borchers K, Schober C, Huber J, et al. Highly purified omega-3-polyunsaturated fatty acids for topical treatment of psoriasis. Results of a double-blind, placebo-controlled multicentre study. Br J Dermatol 1993;129(6):713-7.
136. Jerner B, Skogh M, Vahlquist A. A controlled trial of acupuncture in psoriasis: no convincing effect. Acta Derm Venereol 1997;77(2):154-6.
137. Lassus A. Colloidal silicic acid for the treatment of psoriatic skin lesions, arthropathy and onychopathy. A pilot study. J Int Med Res 1997;25(4):206-9.
138. Lassus A, Forsström S. A double-blind study comparing oleum horwathiensis with placebo in the treatment of psoriasis. J Int Med Res 1991;19(2):137-46.
139. Léauté-Labrèze C, Saillour F, Chêne G, Cazenave C, Luxey-Bellocq ML, Sanciaume C, et al. Saline spa water or combined water and UV-B for psoriasis vs conventional UV-B: lessons from the Salies de Béarn randomized study. Arch Dermatol 2001;137(8):1035-9.
140. Lee I, Maibach H. Sea water salts: Effect on inflammatory skin disease - An overview. Dermatol Beruf Umwelt 2004;52(2):62-6.
141. Madland TM, Bjorkkjaer T, Brunborg LA, Froyland L, Berstad A, Brun JG. Subjective improvement in patients with psoriatic arthritis after short-term oral treatment with seal oil. A pilot study with double blind comparison to soy oil. J Rheumatol 2006;33(2):307-10.
142. Mayser P, Grimm H, Grimminger F. n-3 fatty acids in psoriasis. Br J Nutr 2002;87(Suppl 1):S77-82.
143. Mayser P, Mrowietz U, Arenberger P, Bartak P, Buchvald J, Christophers E, et al. Omega-3 fatty acid-based lipid infusion in patients with chronic plaque psoriasis: results of a double-blind, randomized, placebo-controlled, multicenter trial. J Am Acad Dermatol 1998;38(4):539-47.
144. Oliwiecki S, Burton JL. Evening primrose oil and marine oil in the treatment of psoriasis. Clin Exp Dermatol 1994;19(2):127-9.
145. Pandey SS, Jha AK, Kaur V. Aqueous extract of Neem leaves in treatment of psoriasis vulgaris. Indian J Dermatol Venereol Leprol 1994;60(2):63-7.
146. Pehr K, Forsey RR. Why don't we use vitamin E in dermatology? CMAJ 1993;149(9):1247-53.
147. Schiener R, Brockow T, Franke A, Salzer B, Peter RU, Resch KL. Bath PUVA and saltwater baths followed by UV-B phototherapy as treatments for psoriasis: a randomized controlled trial. Arch Dermatol 2007;143(5):586-96.
148. Schiffner R, Schiffner-Rohe J, Wolfl G, Landthaler M, Glassl A, Walther T, et al. Evaluation of a multicentre study of synchronous application of narrowband ultraviolet B phototherapy (TL-01) and bathing in Dead Sea salt solution for psoriasis vulgaris. Br J Dermatol 2000;142(4):740-7.
149. Serwin AB, Mysliwiec H, Hukalowicz K, Porebski P, Borawska M, Chodynicka B. Soluble tumor necrosis factor-a receptor type 1 during selenium supplementation in psoriasis patients. Nutrition 2003;19(10):847-50.
150. Serwin AB, Wasowicz W, Chodynicka B. Selenium supplementation, soluble tumor necrosis factor-alpha receptor type 1, and C-reactive protein during psoriasis therapy with narrowband ultraviolet B. Nutrition 2006;22(9):860-4.
151. Siddiqui MA, Al-Khawajah MM. Vitamin D3 and psoriasis: A randomized double-blind placebo-controlled study. J Dermatol Treat 1990;1(5):243-5.
152. Søyland E, Funk J, Rajka G, Sandberg M, Thune P, Rustad L, et al. Effect of dietary supplementation with very-long-chain n-3 fatty acids in patients with psoriasis. N Engl J Med 1993;328(25):1812-6.
153. Stücker M, Memmel U, Hoffmann M, Hartung J, Altmeyer P. Vitamin B(12) cream containing avocado oil in the therapy of plaque psoriasis. Dermatology 2001;203(2):141-7.
154. Tsoureli-Nikita E, Menchini G, Ghersetich I, Hercogova J. Alternative treatment of psoriasis with balneotherapy using Leopoldine spa water. J Eur Acad Dermatol Venereol 2002;16(3):260-2.
155. Verdolini R, Bugatti L, Filosa G, Mannello B, Lawlor F, Cerio RR. Old fashioned sodium bicarbonate baths for the treatment of psoriasis in the era of futuristic biologics: an old ally to be rescued. J Dermatolog Treat 2005;16(1):26-30.
156. Vogler BK, Ernst E. Aloe vera: a systematic review of its clinical effectiveness. Br J Gen Pract 1999;49(447):823-8.
157. Zulfakar MH, Edwards M, Heard CM. Is there a role for topically delivered eicosapentaenoic acid in the treatment of psoriasis? Eur J Dermatol 2007;17(4):284-91.
158. Centre for Change and Innovation for NHSScotland. CCI Patient Pathways Dermatology Psoriasis. [cited 20 Sep 2010]. Available from url: http://www.pathways.scot.nhs.uk/Dermatology/Dermatology%20Psoriasis%2023Sep05.htm
159. Augustin M, Krüger K, Radtke MA, Schwippl I, Reich K. Disease severity, quality of life and health care in plaque-type psoriasis: a multicenter cross-sectional study in Germany. Dermatology 2008;216(4):366-72.
160. Palmer KT, Cox RAF, Brown I. Fitness for work: the medical aspects. 4th ed. Oxford University Press; 2007.
161. Brockbank J, Gladman D. Diagnosis and management of psoriatic arthritis. Drugs 2002;62(17):2447-57.
162. Scottish Intercollegiate Guidelines Network. Risk estimation and the prevention of cardiovascular disease. Edinburgh: SIGN; 2007. (SIGN guideline No. 97). [cited 20 Sep 2010]. Available from url: http://www.sign.ac.uk/pdf/sign97.pdf
163. El Miedany Y, Palmer D, El Gaafary M. Diagnosis of early arthritis: outcomes of a nurse-led clinic. Br J Nurs 2006;15(7):394-9.
164. Soriano ER, McHugh NJ. Therapies for peripheral joint disease in psoriatic arthritis. A systematic review. J Rheumatol 2006;33(7):1422-30.
165. Helliwell PS. Therapies for dactylitis in psoriatic arthritis. A systematic review. J Rheumatol 2006;33(7):1439-41.
166. Jones G, Crotty M, Brooks P. Interventions for psoriatic arthritis. Cochrane Database of Systematic Reviews 2000, Issue 3.
167. Ravindran V, Scott DL, Choy EH. A systematic review and meta-analysis of efficacy and toxicity of disease modifying anti-rheumatic drugs and biological agents for psoriatic arthritis. Ann Rheum Dis 2008;67(6):855-9.
168. Woolacott N, Bravo Vergel Y, Hawkins N, Kainth A, Khadjesari Z, Misso K, et al. Etanercept and infliximab for the treatment of psoriatic arthritis: a systematic review and economic evaluation. Health Technol Assess 2006;10(31):1-239.
169. Kaltwasser JP, Nash P, Gladman D, Rosen CF, Behrens F, Jones P, et al. Efficacy and safety of leflunomide in the treatment of psoriatic arthritis and psoriasis: a multinational, double-blind, randomized, placebo-controlled clinical trial. Arthritis Rheum 2004;50(6):1939-50.
170. Fraser AD, Van Kuijk AWR, Westhovens R, Karim Z, Wakefield R, Gerards AH, et al. A randomised, double blind, placebo controlled, multicentre trial of combination therapy with methotrexate plus ciclosporin in patients with active psoriatic arthritis. Ann Rheum Dis 2005;64(6):859-64.
171. National Patient Safety Agency. Improving compliance with oral methotrexate guidelines. [cited 20 Sep 2010]. Available from url: http://www.npsa.nhs.uk/nrls/alerts-and-directives/alerts/methotrexate/
172. Salvarani C, Macchioni P, Olivieri I, Marchesoni A, Cutolo M, Ferraccioli G, et al. A comparison of cyclosporine, sulfasalazine, and symptomatic therapy in the treatment of psoriatic arthritis. J Rheumatol 2001;28(10):2274-82.
173. Spadaro A, Riccieri V, Sili-Scavalli A, Sensi F, Taccari E, Zoppini A. Comparison of cyclosporin A and methotrexate in the treatment of psoriatic arthritis: a one-year prospective study. Clin Exp Rheumatol 1995;13(5):589-93.
174. Gladman DD, Mease PJ, Ritchlin CT, Choy EH, Sharp JT, Ory PA, et al. Adalimumab for long-term treatment of psoriatic arthritis: forty-eight week data from the adalimumab effectiveness in psoriatic arthritis trial. Arthritis Rheum 2007;56(2):476-88.
175. Kavanaugh A, Krueger GG, Beutler A, Guzzo C, B. Z, Dooley LT, et al. Infliximab maintains a high degree of clinical response in patients with active psoriatic arthritis through 1 year of treatment: results from the IMPACT 2 trial. Ann Rheum Dis 2007;66(4):498-505.
176. British Society for Rheumatology. Clinical Guidelines: Ankylosing spondylitis. London: British Society of Rheumatology. [cited 17 Sep 2009]. Available from url: http://www.rheumatology.org.uk/guidelines/guidelines_as
177. Woods AL, Rutter KJ, Gardner LS, Lewis VJ, Saxena S, George SA, et al. Inpatient management of psoriasis: A multicentre service review to establish national admission standards. Br J Dermatol 2008;158(2):266-72.

178. Schmitt J, Heese E, Wozel G, Meurer M. Effectiveness of inpatient treatment on quality of life and clinical disease severity in atopic dermatitis and psoriasis vulgaris - a prospective study. Dermatology 2007;214(1):68-76.
179. Gradwell C, Thomas KS, English JS, Williams HC. A randomized controlled trial of nurse follow-up clinics: do they help patients and do they free up consultants' time? Br J Dermatol 2002;147(3):513-7.
180. Courtenay M, Carey N. Nurse-led care in dermatology: a review of the literature. Br J Dermatol 2006;154(1):1-6.
181. Ong PY, Ohtake T, Brandt C, Strickland I, Boguniewicz M, Ganz T, et al. Endogenous antimicrobial peptides and skin infections in atopic dermatitis. N Eng J Med 2002;347(15):1151-60.
182. Marples RP, Heaton CL, Kligman AM. Staphylococcus aureus in psoriasis. Arch Dermatol 1973;107(4):568-70.
183. Drancourt M, Argenson J-N, Dupont HT, Aubaniac J-M, Raoult D. Psoriasis is a risk factor for hip-prosthesis infection. Eur J Epidemiol 1997;13(2):205-7.
184. Saini R, Shupack JL. Psoriasis: To cut or not to cut, what say you? Dermatol Surg 2003;29(7):735-40.
185. Griffiths CEM, Clark CM, Chalmers RJG, Li Wan Po A, Williams HC. A systematic review of treatments for severe psoriasis. Health Technol Assess 2000;4(40):1-125.
186. Spuls PI, Witkamp L, Bossuyt PM, Bos JD. A systematic review of five systemic treatments for severe psoriasis. Br J Dermatol 1997;137(6):943-9.
187. Dawe RS. A quantitative review of studies comparing the efficacy of narrow-band and broad-band ultraviolet B for psoriasis. Br J Dermatol 2003;149(3):669-72.
188. Dawe RS, Cameron H, Yule S, Man I, Wainwright NJ, Ibbotson SH, et al. A randomized controlled trial of narrowband ultraviolet B vs bath-psoralen plus ultraviolet A photochemotherapy for psoriasis. Br J Dermatol 2003;148(6):1194-204.
189. Gordon PM, Diffey BL, Matthews JN, Farr PM. A randomized comparison of narrow-band TL-01 phototherapy and PUVA photochemotherapy for psoriasis. J Am Acad Dermatol 1999;41(5 Pt 1):728-32.
190. Snellman E, Klimenko T, Rantanen T. Randomized half-side comparison of narrowband UVB and trimethylpsoralen bath plus UVA treatments for psoriasis. Acta Derm Venereol 2004;84(2):132-7.
191. Van Weelden H, Baart de la Faille H, Young E, van der Leun JC. Comparison of narrow-band UV-B phototherapy and PUVA photochemotherapy in the treatment of psoriasis. Acta Derm Venereol 1990;70(3):212-5.
192. Yones SS, Palmer RA, Garibaldinos TT, Hawk JLM. Randomized double-blind trial of the treatment of chronic plaque psoriasis: Efficacy of psoralen-UV-A therapy vs narrowband UV-B therapy. Arch Dermatol 2006;142(7):836-42.
193. Stern RS, Laird N. The carcinogenic risk of treatments for severe psoriasis. Photochemotherapy Follow-up Study. Cancer 1994;73(11):2759-64.
194. Stern RS, Lunder EJ. Risk of squamous cell carcinoma and methoxsalen (psoralen) and UV-A radiation (PUVA). A meta-analysis. Arch Dermatol 1998;134(12):1582-5.
195. Hearn RM, Kerr AC, Rahim KF, Ferguson J, Dawe RS. Incidence of skin cancers in 3867 patients treated with narrow-band ultraviolet B phototherapy. Br J Dermatol 2008;159(4):931-5.
196. Lee E, Koo J, Berger T. UVB phototherapy and skin cancer risk: a review of the literature. Int J Dermatol 2005;44(5):355-60.
197. Photonet National Managed Clinical Network for Phototherapy. Quality Assurance Framework. 2007.
198. Cameron H, Dawe RS, Yule S, Murphy J, Ibbotson SH, Ferguson J. A randomized, observer-blinded trial of twice vs three times weekly narrowband ultraviolet B phototherapy for chronic plaque psoriasis. Br J Dermatol 2002;147(5):973-8.
199. Koek MBK, Buskens E, van Weelden H, Steegmans PHA, Bruijnzeel-Koomen CAFM, V. S. Home versus outpatient ultraviolet B phototherapy for mild to severe psoriasis: pragmatic multicentre randomised controlled non-inferiority trial (PLUTO) study. Br Med J 2009;338(b1542).
200. Schmitt J, Zhang Z, Wozel G, Meurer M, Kirch W. Efficacy and tolerability of biologic and nonbiologic systemic treatments for moderate-to-severe psoriasis: Meta-analysis of randomized controlled trials. Br J Dermatol 2008;159(3):513-26.
201. Faerber L, Braeutigam M, Weidinger G, Mrowietz U, Christophers E, Schulze HJ, et al. Cyclosporine in severe psoriasis. Results of a meta-analysis in 579 patients. Am J Clin Dermatol 2001;2(1):41-7.
202. Heydendael VM, Spuls PI, Opmeer BC, de Borgie CA, Reitsma JB, Goldschmidt WF, et al. Methotrexate versus cyclosporine in moderate-to-severe chronic plaque psoriasis. N Engl J Med 2003;349(7):658-65.
203. Flytstrom I, Stenberg B, Svensson A, Bergbrant IM. Methotrexate vs. ciclosporin in psoriasis: effectiveness, quality of life and safety. A randomized controlled trial. Br J Dermatol 2008;158(1):116-21.
204. Prey S, Paul C. Effect of folic or folinic acid supplementation on methotrexate-associated safety and efficacy in inflammatory disease: a systematic review. Br J Dermatol 2009;160(3):622-8.
205. Leon A, Nguyen A, Letsinger J, Koo J. An attempt to formulate an evidence-based strategy in the management of moderate-to-severe psoriasis: a review of the efficacy and safety of biologics and prebiologic options. Expert Opin Pharmacother 2007;8(5):617-32.
206. Smith CH, Anstey AV, Barker JN, Burden AD, Chalmers RJ, Chandler DA, et al. British Association of Dermatologists' guidelines for biologic interventions for psoriasis 2009. Br J Dermatol 2009;161(5):987-1019.
207. Brimhall AK, King LN, Licciardone JC, Jacobe H, Menter A. Safety and efficacy of alefacept, efalizumab, etanercept and infliximab in treating moderate to severe plaque psoriasis: A meta-analysis of randomized controlled trials. Br J Dermatol 2008;159(2):274-85.
208. Saurat JH, Stingl G, Dubertret L, Papp K, Langley RG, Ortonne JP, et al. Efficacy and safety results from the randomized controlled comparative study of adalimumab vs. methotrexate vs. placebo in patients with psoriasis (CHAMPION). Br J Dermatol 2008;158(3):558-66.
209. Griffiths C, Strober BE, van de Kerkhof P, Ho V, Fidelus-Gort R, Yeilding N, et al. Comparison of Ustekinumab and Etanercept for Moderate to Severe Psoriasis. N Engl J Med 2010;362(2):118-28.
210. Scottish Medicines Consortium. Ustekinumab (Stelara). [cited 20 Sep 2010]. Available from url: http://www.scottishmedicines.org.uk/smc/6999.html
211. Leung YY, Tam LS, Lee KW, Leung MH, Kun EW, Li EK. Involvement, satisfaction and unmet health care needs in patients with psoriatic arthritis. Rheumatology 2009;48(1):53-6.
212. Jankowiak B, Krajewska-Kulak E, Van Damme-Ostapowicz K, Wronska I, Lukaszuk C, Niczyporuk W, et al. The need for health education among patients with psoriasis. Dermatol Nurs 2004;16(5):439-44.
213. Jankowiak B, Krajewska-Kulak E, Baranowska A, Krajewska K, Rolka H, Sierakowska M, et al. The importance of the health education in life quality improvement in patients with psoriasis. Rocz Akad Med Bialymst 2005;50(Suppl 1):145-7.
214. NHS National Services Scotland, Information Services Division (ISD) Scotland, Practice Team Information. Psoriatic arthropathy and psoriasis. IR2010-01840. Excel spreadsheet emailed to SIGN, 26 July 2010.
215. Curtis L. Unit costs of health and social care. Canterbury: Personal Social Services Research Unit; 2009. [cited 20 Sep 2010]. Available from url: http://www.pssru.ac.uk/pdf/uc/uc2009/uc2009.pdf
216. Scottish Government. Universal health checks planned. [cited 20 Sep 2010]. Available from url: http://www.scotland.gov.uk/News/Releases/2010/03/22081937
217. Mease PJ, Goffe BS, Metz J, VanderStoep A, Finck B, Burge DJ. Etanercept in the treatment of psoriatic arthritis and psoriasis: a randomised trial. Lancet 2000;356(9227):385-90.

ISBN 978 1 905813 67 4

Scottish Intercollegiate Guidelines Network
Elliott House
8 -10 Hillside Crescent
Edinburgh EH7 5EA

www.sign.ac.uk