Health Technology Assessment Programme

National Institute for Health Research

NETSCC, HTA
07 February 2014

The NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC), based at the University of Southampton, manages evaluation research programmes and activities for the NIHR

Health Technology Assessment Programme
National Institute for Health Research
Evaluation, Trials and Studies Coordinating Centre
University of Southampton, Alpha House
Enterprise Road, Southampton, SO16 7NS

tel: +44(0)23 8059 5586

fax: +44(0)23 8059 5639

email: hta@hta.ac.uk

web: www.hta.ac.uk

Protocol for Technology Assessment Report HTA

Title of project: Educational interventions to improve quality of life in people with chronic inflammatory skin diseases

Name of TAR team and project 'lead'

Southampton Health Technology Assessments Centre (SHTAC)
University of Southampton
First Floor, Epsilon House
Enterprise Road
Southampton Science Park
Southampton
SO16 7NS
www.southampton.ac.uk/shtac

Protocol lead: Geoff Frampton

Other members of the protocol development team: Karen Pickett, Emma Loveman

1. Plain English Summary

A number of different skin conditions such as eczema and psoriasis are considered under a general term of chronic inflammatory skin disease. Some of these are relatively common skin disorders, with a large number of both children and adults experiencing such conditions in the UK. These are most often associated with symptoms including itching (and sometimes pain), dry skin and changes in skin appearance, to varying degrees of severity and bodily involvement. Quality of life is commonly affected and for some people the psychological impact of these diseases can have a negative effect on self-management which is one of the mainstays of treatment.

Research studies have shown that educational interventions may be able to improve the quality of life of patients with chronic inflammatory skin diseases, and treatment guidelines for some skin diseases recommend that patients may benefit from receiving educational support. A wide range of educational types has been explored in research studies, including behavioural and psychological approaches, but

it is currently unclear which approach(es) would be most appropriate and effective if used alongside current NHS treatments for chronic inflammatory skin conditions.

The aim of this project is to systematically review the available studies on the effects of educational interventions to improve quality of life in people with chronic inflammatory skin diseases. The research will provide a comprehensive and up-to-date synthesis of the best quality evidence for the clinical effectiveness and, if sufficient data are available, also the cost effectiveness of educational interventions in order to clarify their relevance for implementation in the NHS.

2. Decision problem

2.1 Research aim and objectives

The aim of this health technology assessment is to undertake a systematic review of the clinical and cost-effectiveness of educational interventions for people with chronic inflammatory skin diseases. If data permit, an economic evaluation of educational interventions for chronic inflammatory skin diseases from the perspective of the NHS will be undertaken.

The main objectives will be as follows:

1) To conduct a systematic review of the clinical and cost effectiveness of educational interventions for improving health-related quality of life (HRQoL) in patients with chronic inflammatory skin diseases.

2) If data permit, to adapt an existing economic model or construct a de novo model for the UK to estimate the cost effectiveness of educational programmes for chronic inflammatory skin diseases.

3) To identify deficiencies in current knowledge and to generate recommendations for future research.

2.2 Background

Inflammatory skin disease is a term used to cover a broad category of disorders of the skin that are associated with skin inflammation. These can range in severity from mild irritation to more serious health complications, and the most commonly recorded conditions are various types of eczema, psoriasis, and acne. Dermatologists in the UK use a disease classification based on aetiology and anatomical site which has been developed by the British Association of Dermatologists.[1] This is a very detailed and comprehensive system and as such is not described here. Working definitions for the key disorders and their epidemiology are summarised below. There is also a wide range of other, less common, types of chronic inflammatory skin disease (not described here) that could be relevant to the decision problem (e.g., among others, rosacea, cutaneous lupus erythematosus, lichen sclerosus, lichen planus, and hidradenitis suppurativa).

Atopic eczema is a common skin condition which presents as red, dry, itchy skin, often on the inside of the elbow, behind the knee or on the face, but sometimes all over the body.[2;3] The predominant symptom is itching. In some the skin can weep or blister and become thickened. In the chronic form there can also be altered skin pigmentation and exaggerated surface markings.[2] Atopic eczema can start at any age but is most common in children. A recent review noted that although there are several studies considering the epidemiology of atopic eczema in children, a wide range of prevalence estimates are available given differences in study populations, the definitions used, and the survey methods applied.[4] It is generally estimated that atopic eczema affects 1 in every 5 children in the UK at some stage[3] and it is also thought to be the most commonly diagnosed dermatological disorder in children and adolescents.[5] The prevalence of atopic eczema appears to be increasing although the reasons for this are unclear.[2;4] Atopic eczema is considered to be caused by a combination of genetic and environmental aetiological factors.[2] Concurrent illness and psychological factors such as stress can also act as a trigger.[4]

Psoriasis is a skin disease that is typically characterised by pink or red lesions which are covered with scales.[6] These lesions are well-delineated and can vary in extent and shape, and the severity of psoriasis typically follows a relapsing and remitting course.[6;7] The most common form, plaque psoriasis, occurs in approximately 90% of people with the condition. Other types include guttate psoriasis and pustular forms.[7] Psoriasis is estimated to affect around 1.3% to 2.2% of the population in the UK, occurring equally in men and women, at any age, although uncommon in children, and can persist for up to 50 years.[6;7] The cause of psoriasis is thought to be a complex interplay between genetic and environmental factors, with the immune system having an important role in the disease process.[8]

Acne vulgaris (commonly known as acne) is a common inflammatory skin disease which usually starts during puberty. Acne affects up to 80% of people at some point in their lives, and approximately 14% of people with acne are thought to consult their general practitioner (3.5 million visits annually).[9] It is characterised by a combination of comedones (blackheads and whiteheads), papules, pustules, nodules and scarring.[9]

Impact of inflammatory skin diseases

People with chronic inflammatory skin diseases, such as eczema and psoriasis, experience symptoms including itching (and sometimes pain), dry skin and changes in skin appearance, to varying degrees of severity and bodily involvement.[4;7;10] The symptoms can be distressing for patients and their carers[11;12] and, in some cases, can lead to functional impairments, particularly when conditions affect the face, genitalia, palms or soles.[7] Reduced levels of employment and income have been noted in

psoriasis[7] and more severe acne vulgaris.[9] Patients can feel stigmatised by their condition due to visible skin symptoms and changes in appearance,[11;13;14] which may contribute to distress[15] and impact on their social interactions,[13;14;16] normal activities (e.g. going to a public swimming pool or to the hairdressers) and relationships with people, including sexual relationships.[14] Sleep quality can also be affected due to itching and scratching which can be particularly intense at night-time, and the sleep of carers can be disrupted too through dealing with symptoms at night.[11]

Chronic inflammatory skin conditions are associated with high levels of psychological co-morbidities including depression and anxiety,[11;15;20-22] and reduced HRQoL[9;13;22;23] (which does not always correlate with disease severity[17-19]). Psychological difficulties, along with symptoms, undergoing treatment and concerns about appearance may negatively impact patients' HRQoL.[13;22;23] Self-managing a long-term skin condition, with a relapsing and remitting course, is demanding for patients and their carers, and patients may feel they lack control due to the unpredictability of the disease on a daily or weekly basis.[11] Poor psychological health can lead to a vicious cycle in patients where symptoms can be exacerbated by stress[24] and reduced HRQoL may lead to less adherence to treatment regimens, reducing the effectiveness of treatment and resulting in greater use of health care resources.[25] The need to improve patients' HRQoL and for clinicians to take a holistic approach to managing patients' skin conditions has been advocated in the research literature[14] and clinical guidelines.[4;7] Not only might this benefit patients, but also the NHS through reduced use of health care resources. It was estimated (using 2005/6 data) that 2.23% of the total NHS expenditure (£140m) was spent on diseases of the skin and subcutaneous disease.[1] This included prescribing costs, outpatient and inpatient costs but not primary care consultations which could add another £395m (but does not take into account costs such as specialist clothing). The impact of inflammatory skin diseases can therefore be substantial both to patients and carers, and to the health service.

Current treatment options

A range of treatment options are available for inflammatory skin diseases. While these vary from condition to condition, they typically fall into topical treatments which are applied directly to the skin, systemic pharmacological treatments (which may include intravenous, subcutaneous as well as oral), bandaging techniques, and, for some conditions, phototherapy.[4;7] In addition, patients are encouraged to practise self-care to minimise environmental triggers of their disease, to monitor their condition, maintain adherence to treatments, and to seek support groups. Education is an important way to help individuals manage the symptoms of chronic diseases[26] and in recent years educational intervention for people with inflammatory skin disease has been seen as a useful adjunct to treatment.

2.3 Definition of the intervention

In its simplest sense, education can be thought of as the provision of information that is intended to influence a specified outcome. In general, educational interventions involve encounters between teachers and learners for one or more of the following purposes: to raise awareness; to enhance or improve knowledge; or to change behaviour.[27] Educational interventions for improving health outcomes ideally should include behaviour modification components underpinned by relevant theory.[28] People with chronic skin conditions and their carers have several educational needs. These include an understanding of the condition (typically chronic and relapsing, with no cure at present, but in general manageable); an opportunity to try treatments to find those that suit them best; reassurance that many treatments are generally safe and effective; guidance on how best to apply topical treatments; and motivation to continue treatment when the disease is in remission.[29] Research studies have investigated a wide variety of approaches for educating patients with chronic inflammatory skin diseases, mostly those with eczema and psoriasis, and in some cases also their carers or families.[2;16;26;30] The educational approaches can be categorised in a number of ways, for example according to the theoretical approach employed (educational, behavioural, and/or psychological); who provides the education (e.g. self-help, nurse, dermatologist, multi-professional group, support group), to whom it is delivered (e.g. patient or carer; individual or group), where the education takes place (e.g. at home or in a clinic), how education is delivered (e.g. using booklets, face-to face sessions, lectures, workshops, or the Internet), the intensity of education (number, duration and frequency of sessions), and the duration of follow-up.[2;16;26;30] Where complex educational interventions for chronic skin diseases involve multiple interacting components it may not be possible to identify which intervention components are responsible for observed effects on outcomes.[31;32] However, taxonomies of intervention techniques[33;34] may be used if appropriate to map which intervention components may be related to improved outcomes.

2.4 Place of the intervention in the treatment pathway(s) and current service provision

Current treatment algorithms for chronic skin diseases acknowledge the impact that the disease can have on a patient's HRQoL and some UK treatment guidelines (e.g. for eczema[4] and psoriasis[35]) recommend that the effect of the condition on HRQoL should be assessed at the patient's initial primary care consultation. Although treatment algorithms for several skin inflammatory conditions also acknowledge the value of educational, behavioural or psychological intervention as an adjunct to conventional therapy for improving patients' HRQoL,[4;7;36] there are currently no specific educational interventions that are recommended or models of delivery. Patients with skin diseases may encounter one or more of four levels of care in the UK (self-management, primary care, secondary care, and tertiary (regional) care[1]) but it is not currently clear at which of these levels educational interventions for improving patients' symptoms and HRQoL should be implemented for optimal clinical and cost

effectiveness. In research studies, educational interventions appear to have potential relevance to several of the care levels. The interventions have included internet-based self-management and sessions or workshops led by nurses, nurse practitioners, specially trained educators, or multi-professional groups of clinicians.[5;37-41] Education may be targeted at individuals or groups[30] and also varies according to whether the target population is the patients themselves or includes the parents or caregivers of children with skin disease.[2] A 2008 UK survey of the care provided for patients with psoriasis from 100 dermatology units demonstrated that 92% of units offer education about how to apply skin treatments and 93% offer written information about treatments and their use.[42] While 100% of units provided written information about psoriasis, only 17% offered access to electronic information and 26% free access to a local patient support group.[42]

2.5 Relevant comparators

Relevant comparators include usual care (sometimes referred to in primary studies as 'treatment as usual' or 'medical care'[2;16;26;30]), a waiting-list control group, or other types of educational intervention (e.g. different modes of delivery).

2.6 Outcomes

The key outcome in this review will be HRQoL. HRQoL is defined as a person's subjective experience and perception of the impact that their health status has on their physical, psychological and social functioning – their ability to live a fulfilling life.[43;44] HRQoL instruments measure various dimensions of these three domains, including physical symptoms, social activity, mental health, ability to carry out normal activities, life satisfaction and perceived health status[14;43;45] – although the exact dimensions measured vary according to the instrument used.[45] A wide range of instruments are available for assessing patients' HRQoL in chronic inflammatory skin conditions and have been employed in research studies evaluating the effects of educational interventions,[2;16;26;30] including the Dermatological Life Quality Index (DLQI)[46] and the Infants' Dermatitis Quality of Life Index (IDQOL).[47] Several secondary outcomes (which would be assessed only in studies that report the primary outcome, HRQoL) are relevant to evaluating the clinical effectiveness of educational interventions aimed at improving HRQoL. These include severity of illness, treatment adherence, scratching behaviour, disease control, medication use, sleep quality, anxiety, coping, depression, mood, self-esteem, self-efficacy, self-consciousness, stress, and impacts on family members, partners or carers.[2;26;30;48] In children, HRQoL outcomes are sometimes assessed using proxy judgements made by someone else, such as the parent or carer.

2.7 Population and relevant sub-groups

Eligible populations would be any adults, young people and children with a chronic inflammatory skin disease, and/or their carers. Clinical expert opinion varies on how to define a 'chronic' skin disease,

which could refer (for example) to a disease of more than three months' duration, or to a long-term incurable, relapsing and remitting disease. Any studies which describe the inflammatory skin disease as being chronic will be considered relevant (in cases of doubt we will seek clinical expert opinion). Clinical experts have suggested that priority subgroups are children with chronic inflammatory skin disease (principally children with atopic eczema, given the scale of the educational support need), and patients who require support with adherence to therapy.

2.8 Existing evidence of clinical and cost effectiveness

Scoping searches conducted in June 2013 identified four systematic reviews that are relevant to the research question. These systematic reviews differed in their specific inclusion criteria, the bibliographic databases that they searched, and the methods they employed to assess study quality. Ersser and colleagues (2007) focused on psychological and educational interventions specifically for childhood atopic eczema.[2] Fordham and colleagues (2012) focused on stress reduction interventions specifically for adult psoriasis.[16] De Bes and colleagues (2011) focused on education for any childhood and adult chronic skin diseases, but in practice their review was limited to atopic dermatitis and psoriasis.[26] Lavda and colleagues (2012) focused on psychological interventions for adult skin conditions, but in practice their review was limited to acne, atopic dermatitis, and psoriasis.[30] The most recent of the searches in these systematic reviews, conducted by Lavda and colleagues, were in November 2010, with some limited updates performed in January 2011.[30] The scoping searches for the current protocol identified at least eight additional randomised controlled trials (RCTs) that appear relevant to the research question that would need to be considered formally for their eligibility. Limited scoping searches identified at least four economic evaluations of potentially relevant interventions for chronic skin diseases [4;49-51] that may be relevant for the proposed systematic review.

3. Report methods for synthesis of evidence of clinical and cost effectiveness

A review of the evidence for clinical effectiveness will be undertaken systematically following the general principles outlined in the Centre for Reviews and Dissemination (CRD) report 'Undertaking Systematic Reviews of Research on Effectiveness' (Third edition)[52] and the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses).[53] A systematic review of cost effectiveness studies will also be conducted.

3.1 Search strategy

Comprehensive search strategies will be developed, tested and refined by an experienced information specialist. Separate searches will be conducted to identify studies of clinical effectiveness and cost effectiveness. Searches will also be conducted for information on epidemiology, based in the UK NHS to inform the review team when interpreting the results of data syntheses and writing the final report.

Literature will be identified from several sources including electronic databases, contact with experts in the field, and bibliographies of articles. A comprehensive database of relevant published and unpublished articles will be constructed using Reference Manager software.

Electronic databases to be searched will include:

- General health and biomedical databases – MEDLINE; PreMedline In-Process & Other Non-Indexed Citations; EMBASE; CINAHL; PsycINFO; the Cochrane Central Register of Controlled Trials; and the Science Citation Index.
- Specialist databases – the Global Resource of Eczema Trials (GREAT) Database; Cochrane Database of Systematic Reviews; Database of Abstracts of Reviews of Effectiveness (DARE); Health Technology Assessment database; EconLit; NHS Economic Evaluation Database. Educational databases such as ERIC or the British Education Index will also be considered on the advice of our information specialist.
- Grey literature and research in progress – UK Clinical Research Network Portfolio Database; Conference Proceedings Citation Index – Science (Web of Science); Current Controlled Trials; Clinical Trials.gov; BIOSIS; NIHR Clinical Research Network Portfolio; World Health Organisation International Clinical Trials Registry Platform.

All databases will be searched from inception to the current date and searches will be limited to the English language.

3.2 Inclusion/Exclusion criteria

The criteria for study inclusion in the systematic review are as follows:

- Population: adults, young people and children with a chronic inflammatory skin condition and/or their carers.
- Intervention: Educational interventions that either specifically aim to improve HRQoL, or could improve HRQoL, e.g. by targeting compliance with therapy, or by targeting patients' ability to cope with the negative effects of chronic skin disease. Any type of educational technique would be permitted provided that effects of education on outcomes are isolable from effects of any non-educational intervention components that may also be present in the intervention.
- Comparators: Potentially any comparator will be eligible. This may include treatment as usual, waiting-list controls, or other educational interventions.
- Outcomes: Only studies that measured HRQoL as an outcome, using a validated measure, will be included. Data will also be extracted on the following outcomes where reported in the included studies: disease severity; disease control; scratching behaviour; healthcare utilisation; depression;

anxiety; patient or carer self-efficacy regarding disease management; process evaluations, including adherence to therapy, attitudes, and knowledge; and any other relevant outcomes. Patient assessed subjective outcome measures will be included if assessed by validated tools. For the systematic review of cost effectiveness, studies reporting measures of cost effectiveness (e.g. cost per QALY, cost per life year saved) will be eligible.

- Length of follow up: Studies of any duration of follow up will be eligible.
- Types of studies: For each skin disease, relevant RCTs will be sought. If no RCT evidence exists for a given disease prospective trials with concurrent control group(s) will be eligible. Any systematic reviews identified will be used only as a source of references.
- Studies will be included in the systematic review of cost effectiveness if they are full economic evaluations (cost effectiveness, cost utility or cost benefit analyses) that report both measures of costs and consequences.
- Studies published as abstracts or conference presentations will only be included if sufficient details are presented to allow an appraisal of the methodology and the assessment of results to be undertaken.

3.3 Inclusion, data extraction and quality assessment process

Studies will be selected for inclusion through a two-stage process using predefined and explicit criteria (as specified in section 3.2). The literature search results (titles and abstracts) will be screened by two reviewers to identify all citations that may meet the inclusion criteria. Full manuscripts of relevant studies will be retrieved and assessed by two reviewers using a standardised eligibility form.

Data extraction and quality assessment will be undertaken by one reviewer and checked by a second reviewer using a pre-designed and piloted data extraction form to avoid any errors (an example data extraction form is available in Appendix 1 which shows the information we are likely to extract, including detailed information about the educational interventions employed in studies). At each stage, any disagreements between reviewers will be resolved by consensus or if necessary by arbitration by a third reviewer.

3.4 Quality assessment

Included trials will be assessed in terms of their risk of bias (e.g. selection bias, detection bias, performance bias, attrition bias, and selective reporting bias) using Cochrane Collaboration criteria.[54] Aspects of study quality including statistical procedures, outcome measurement and generalisability will also be assessed. The quality assessment of non-RCTs will be assessed using recognised quality assessment tools; the choice of measure will depend on the types of studies included.

The methodological quality of studies included in the systematic review of cost effectiveness will be assessed using accepted criteria for appraising economic evaluations.[55] Where relevant, this will be supplemented with additional criteria for critical appraisal of model-based evaluations.[56]

3.5 Methods of analysis/synthesis

Studies will be synthesized through a structured narrative review with tabulation of results of included studies. In the data synthesis, studies on the same skin condition will be grouped together and within each skin condition studies will, where appropriate, also be grouped according to the patients' age (e.g. distinguishing studies on children, adolescents and adults). If data on other salient subgroups exists, such as those experiencing a particularly high psychosocial burden from their disease, these will also be explored. Where appropriate and where suitable data are available, meta-analysis will be employed for each skin condition to estimate a summary measure of effect on relevant outcomes. The specific methods for meta-analysis and for the detection and investigation of heterogeneity will depend upon the summary measure selected and will employ standard procedures recommended by the Cochrane Collaboration.[57] Cochrane Review Manager (Revman) software will be used to perform any meta-analyses. Heterogeneity will be explored through consideration of the study populations, methods and interventions, by visualisation of results and, in statistical terms, by the χ^2 test for homogeneity and the I^2 statistic.

4. Evaluation of costs and cost effectiveness

If data from the searches referred to in Section 3 above are sufficient to evaluate the costs and cost effectiveness of educational programmes for inflammatory skin diseases an economic evaluation will be conducted. The requirements in terms of data include evidence of the clinical effectiveness of educational programmes from comparative studies in terms of patient-relevant outcomes, evidence of HRQoL in people with inflammatory skin diseases, and appropriate costs and resources of such programmes. Any existing economic models will be assessed for their quality, relevance and suitability for adoption. If a relevant and valid model is identified it will be adapted and populated with updated UK-practice-relevant clinical and cost parameter values. If no relevant high quality economic evaluations are identified a *de novo* decision analytic model will be developed.

Current guidelines for good practice in decision-analytic modelling and the general principles outlined in the NICE 'reference case' will be followed.[55;56;58] Development of the structure and parameters of the model would be informed by several sources including any previous models identified in the systematic review of cost effectiveness, evidence from our systematic review of clinical effectiveness, and guidance from clinical and methodological advisors. In the scoping searches for the protocol four existing cost effectiveness analyses were identified, one of which focused on eczema[4] and the other

three on different models of nursing which included elements of education.[49-51] Additional targeted literature searches would be required to populate other parameters in the model as necessary. The model would be validated through discussion with expert advisors.

The model will adopt a UK NHS and PSS perspective with costs and outcomes discounted at an annual rate of 3.5%. The interventions included in the systematic reviews are likely to be heterogeneous and therefore careful consideration of the costs of the components of the interventions will be required, in consultation with the expert advisory group. The model would present estimates of the cost effectiveness of educational programmes for chronic inflammatory skin diseases. The model would also provide an analysis reporting the costs of alternative interventions and their consequences in terms of outcome measures specified above (including disease severity, symptom reduction, and HRQoL, where relevant).

Sensitivity analyses and scenario analyses will be conducted with respect to variables for which there is greatest uncertainty. Deterministic sensitivity analyses will focus on variables with the greatest uncertainty over their methods of derivation or where choices or judgments have had to be made between alternative data sources. The importance of the underlying model assumptions will be assessed through an analysis of different scenarios, particularly where evidence to populate the model is inadequate or conflicting (for example if the model uses data derived using expert opinion). Probabilistic sensitivity analyses will also be conducted, and the results presented in cost effectiveness acceptability curves (CEACs).

5. Expertise in the TAR team

SHTAC is one of nine academic research teams in the UK contracted to the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Programme to assess the clinical and cost effectiveness of health technologies. Our research supports several key decision making bodies within the UK, including the National Institute for Health and Care Excellence (NICE). With expertise in evidence synthesis, health economics, statistical modelling and epidemiology, SHTAC is involved in research addressing major policy questions on the use of drugs, devices, procedures, screening programmes, health promotion and public health, and other interventions. SHTAC has recently conducted research into treatments for hepatitis C, implantable defibrillator devices, educational interventions for preventing catheter-related bloodstream infections in critical care, behavioural interventions for prevention of sexually transmitted infections, and training for teachers to promote health in schools.

For a Technology Assessment Report of this nature at least two researchers with expertise in systematic review methodology (for clinical and cost effectiveness evidence) and two researches with

expertise in economic evaluation will be part of the project team. In addition, an experienced information specialist will be involved in the development and application of the search strategy, and a senior member of the SHTAC team will act as the guarantor to the project. The project will be coordinated by one researcher with experience in the project management of research of this type.

Advisory group

An advisory group has been recruited comprising experts in clinical dermatology, clinical and research nursing in dermatology care, and clinical and health psychology. The group has commented on the draft protocol and will comment on the draft final report. The group will be consulted during the course of the project for advice as necessary. The current members of the group are:

- Professor Eugene Healy, Consultant Dermatologist, University Hospital Southampton NHS Foundation Trust;
- Karina Jackson, Consultant Nurse (Dermatology), Guy's and St. Thomas' NHS Foundation Trust;
- Professor Steven Ersser, Professor of Nursing and Dermatology Care and Dean of the Faculty of Health and Social Care, University of Hull;
- Dr Andrew Thompson, Reader in Clinical Psychology, Department of Psychology, University of Sheffield.
- Professor Jennifer Cleland, Division of Medical and Dental Education (DMDE), University of Aberdeen
- Mr Raymond David Edwards, Patient Representative, Psoriasis Association

In addition, the Eczema Society has agreed to identify a member to represent a service user perspective. A general practitioner with an interest in skin diseases will also be recruited to the advisory group. The Primary Care Dermatology Society has been contacted for details of possible nominees.

6. Competing interests of authors

None

7. Timetable/milestones

If successfully commissioned we would anticipate the following milestones:

Months 1-2: finalise advisory group, undertake the literature searches

Months 2-4: screen studies for inclusion, data extract and quality assess studies

Months 3-5: synthesise studies and undertake any economic evaluation

Months 4-5: draft the final report and submit to the advisory group for comments

Months 5-6: finalise the report and submit to the HTA programme.

References

(1) Schofield J, Grindlay D, Williams H. Skin Conditions in the UK: a Health Care Needs Assessment. 2009. Nottingham, Centre of Evidence Based Dermatology, University of Nottingham.

(2) Ersser SJ, Latter S, Sibley A, Satherley PA, Welbourne S. Psychological and educational interventions for atopic eczema in children. *Cochrane Database of Systematic Reviews* 2007;(3).

(3) British Association of Dermatologists. Eczema. http://www.bad.org.uk/site/864/default.aspx [accessed 17th June 2013]

(4) National Collaborating Centre for Women's and Children's Health. Atopic eczema in children. Clinical guideline. CG57, 1. 2007. Royal College of Obstetricians and Gynaecologists.

(5) Schuttelaar MLA, Vermeulen KM, Drukker N, Coenraads PJ. A randomized controlled trial in children with eczema: nurse practitioner vs. dermatologist. *British Journal of Dermatology* 2010; 162:162-170.

(6) British Association of Dermatologists. Psoriasis - an overview. http://www.bad.org.uk/site/864/default.aspx [accessed 17th June 2013]

(7) National Institute for Health and Clinical Excellence. Psoriasis. NICE clinical guideline 153. CG153, 1-61. 2012.

(8) Nestle FO, Kaplan DH, Barker J. Mechanisms of Disease: Psoriasis. *N Engl J Med* 2009; 361:496-509.

(9) Purdy S, de Berker D. Clinical review: Acne. *BMJ* 2006; 333:949-53.

(10) Neill SM, Tatnall FM, Cox NH. Guidelines for the managment of lichen sclerosus. *British Journal of Dermatology* 2002; 147:640-649.

(11) Carroll CL, Balkrishnan R, Feldman SR, Fleischer AB, Manuel JC. The burden of atopic dermatitis: impact on the patient, family, and society. *Pediatric Dermatology* 2005; 22(3):192-199.

(12) Evers AWM, Lu Y, Duller P, van der Valk PGM, Kraaimaat FW, van de Kerkhof PCM. Common burden of chronic skin diseases? Contributers to psychological distress in adults with psoriasis and atopic dermatitis. *British Journal of Dermatology* 2005; 152:1175-1281.

(13) Bhosle MJ, Kulkarni A, Feldman SR, Balkrishnan R. Quality of life in patients with psoriasis. *Health and Quality of Life Outcomes* 2006; 4(35).

(14) Schmid-Ott G, Steen T. Skin disorders and quality of life. International Encyclopedia of Rehabilitation. Buffalo, NY, USA: The State University of New York; 2010.

(15) Richards HL, Fortune DG, Griffiths CEM, Main CJ. The contributions of perceptions of stigmatisation to disability in patients with psoriasis. *Journal of psychosomatic research* 2013; 50:11-15.

(16) Fordham B, Griffiths CEM, Bundy C. Can stress reduction interventions improve psoriasis? A review. *Psychology, Health and Medicine* 2012; e-pub ahead of print.

(17) Kierbert G, Sorenson SV, Revicki D, Fagan SC, Doyle JJ, Cohen J et al. Atopic dermatitis is associated with a decrement in health-related quality of life. *International Journal of Dermatology* 2002; 41:151-58.

(18) de Jager MEA, van de Kerkhof PCM, de Jong EMGJ, Seyger MMB. A cross-sectional study using the Children's Dermatology Life Quality Index (CDLQI) in childhood psoriasis: negative effect on quality of life and moderate correlation of CDLQI with severity scores. *British Journal of Dermatology* 2010; 163:1099-1101.

(19) Sampogna F, Sera F, Abeni D, IDI Multipurpose psoriasis resaearch on vital experiences investigators. Measures of Clinical Severity, Quality of Life, and Psychological Distress in Patients with Psoriasis: A Cluster Analysis. *J Invest Dermatol* 2004; 122:602-7.

(20) Devrimci-Ozguven H, Kundakci N, Kumbaser H, Boyvat A. The depression, anxiety, life satisfaction and affective expression levels in psoriasis patients. *Journal of the European Academy of Dermatology and Venereology* 2000; 14:267-271.

(21) Kohli Kurd S, Troxel AB, Crits-Christoph P, Gelfand JM. The risk of depression, anxiety and suicidality in patients with psoriasis: A population-based cohort study. *Archives of dermatology* 2010; 146(8):891-895.

(22) Wittkowski A, Richards HL, Griffiths CEM, Main CJ. The impact of psychological and clinical factors on quality of life in individuals with atopic dermatitis. *Journal of Psychosomatic Medicine* 2004; 57:195-200.

(23) Ben-Gashir MA, Seed PT, Hay RJ. Quality of life and disease severity are correlated in children with atopic dermatitis. *British Journal of Dermatology* 2004; 150:284-290.

(24) Arck P, Paus R. From the brain-skin connection: the neuroendocrine-immune misalliance of stress and itch. *Neuroimmunomodulation* 2006; 13(5-6):347-356.

(25) Feldman SR, Horn EJ, Balkrishnan R, Basra MK, Finlay AY, McCoy D et al. Psoriasis: improving adherence to topical therapy. *Journal of the American Academy of Dermatology* 2008; 59(6):1009-1016.

(26) De Bes J, Legierse CM, Prinsen CAC, De Korte J. Patient education in chronic skin diseases: a systematic review. *Acta Derm Venereol* 2011; 91:12-17.

(27) Griesbach D, Taylor A. Educational interventions to prevent hepatitis C: A review of the literature and expert opinion. 1-87. 2009. Edinburgh, Glasgow, NHS Scotland.

(28) Reed D, Price EG, Windish DM, Wright SM, Gozu A, Hsu EB et al. Challenges in systematic reviews of educational intervention studies. *Annals of Internal Medicine* 2005; 142(12 part 2):1080-1089.

(29) Lapsley P. The double benefits of educational programmes for patients with eczema. *BMJ* 2006; 332:936.

(30) Lavda AC, Webb TL, Thompson AR. A meta-analysis of the effectiveness of psychological interventions for adults with skin condirtions. *British Journal of Dermatology* 2012; 167:970-979.

(31) Williams HC. Educational programmes for young people with eczema. *BMJ* 2006; 332:923-924.

(32) Craig P, Dieppe P, Macintyre S, Mitchie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008; 337:979-983.

(33) Abraham C, Michie S. A taxonomy of behavior change techniques used in interventions. *Health Psychology* 2008; 27(3):379-387.

(34) Schulz R, Czaja SJ, McKay JR, Ory MG, Belle SH. Intervention taxonomy (ITAX): describing essential feastures of interventions (HMC). *American Journal of Health Behaviour* 2010; 34(6):811-821.

(35) National Institute for Health and Clinical Excellence. Psoriasis. NICE clinical guideline 153. CG153, 1-61. 2012.

(36) Gawkrodger DJ, Ormerod AD, Shaw L, Mauri-Sole I, Whitton ME, Watts MJ et al. Guideline for the diagnosis and management of vitiligo. *British Journal of Dermatology* 2008; 159:1051-1076.

(37) van Os-Medendorp H, Koffijberg H, Eland-de Kok PC, Zalm A, Bruin-Weller MS, Pasmans SG et al. E-health in caring for patients with atopic dermatitis: a randomized controlled cost-effectiveness study of internet-guided monitoring and online self-management training. *British Journal of Dermatology* 2012; 166(5):1060-1068.

(38) Ersser SJ, Cowdell FC, Nicholls PG, Latter SM, Healy E. A pilot randomized controlled trial to examine the feasibility and efficacy of an educational nursing intervention to improve self-management practices in patients with mild-moderate psoriasis. *Journal of the European Academy of Dermatology and Venereology* 2012; 26:738-745.

(39) Shaw M, Morrell DS, Goldsmith LA. A study of targeted enhanced patient care for pediatric atopic dermatitis (STEP PAD). *Pediatric Dermatology* 2008; 25(1):19-24.

(40) Moore EJ, Williams A, Manias E, Varigos G, Donath S. Eczema workshops reduce severity of childhood atopic eczema. *Australasian Journal of Dermatology* 2009; 50:100-106.

(41) Bostoen J, Bracke S, De Keyser S, Lambert J. An educational programme for patients with psoriasis and atopic dermatitis: prospective randomized controlled trial. *British Journal of Dermatology* 2012; 167:1025-1031.

(42) Eedy DJ, Griffiths CEM, Chalmers RJG, Ormerod AD, Smith CH, Barker JNWN et al. Care of patients with psoriasis: an audit of U.K. services in secondary care. *British Journal of Dermatology* 2009; 160(557):564.

(43) Crosby RD, Kolotkin RL, Williams GR. Defining clinically meaningful change in health-related quality of life. *Journal of Clinical Epidemiology* 2003; 56(5):395-407.

(44) Bowling A. Measuring Disease. Buckingham: Open University Press; 1995.

(45) Fox-Rusby J, Cairns J. Approaches to measuring health and life. In: Fox-Rushby J, Cairns J, editors. Economic Evaluation. Maidenhead: Open University Press; 2005.

(46) Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. *Clinical and Experimental Dermatology* 1994; 19:210-216.

(47) Lewis-Jones MS, Finlay AY, Dykes PJ. The Infants' Dermatitis Quality of Life Index. *British Journal of Dermatology* 2001; 144:104-110.

(48) Ersser SJ, Farasat H, Jackson K, Dennis H, Sheppard Z, More A. A service evaluation of the Eczema Education Programme: an analysis of child, parent and service impact outcomes. *British Journal of Dermatology* 2013; in press.

(49) Kernick D, Cox A, Powell R, Reinhold D, Sawkins J, Warin A. A cost consequence study of the impact of a dermatology-trained practice nurse on the quality of life of primary care patients with eczema and psoriasis (Structured abstract). *British Journal of General Practice* 2000; 50(2):555-558.

(50) van Os-Medendorp H, Guikers CL, Eland-de Kok PC, Ros WJ, Bruijnzeel-Koomen CA, Buskens E. Costs and cost-effectiveness of the nursing programme 'Coping with itch' for patients with chronic pruritic skin disease (Structured abstract). *British Journal of Dermatology* 2008; 158(5):1013-1021.

(51) Schuttelaar MLA, Vermeulen KM, Coenraads PJ. Costs and cost-effectiveness analysis of treatment in children with eczema by nurse practitioner vs. dermatologist: results of a randomized, controlled trial and a review of international costs. *British Journal of Dermatology* 2011; 165:600-611.

(52) Centre for Reviews and Dissemination. Systematic reviews: CRD's guidance for undertaking reviews in health care. Third edition. 2009. York, CRD.

(53) Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). *BMJ* 2009; 339:b2535.

(54) Higgins JPT, Altman DG, Gøetzsche P, Jüni P, Moher D, Oxman AD et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *BMJ* 2011; 343:d5928 (9pp).

(55) Drummond MF, O'Brien B, Stoddart GL, Torrance GW. Methods for the economic evaluation of health care programmes (3rd edition). *Oxford University Press* 2005.

(56) Philips Z, Ginnelly L, Sculpher M, Claxton K, Golder S, Riemsma R et al. Review of guidelines for good practice in decision-analytic modelling in health technology assessment. *Health Technology Assessment* 2004; 8(36):1-158.

(57) Higgins JP, Green S. Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. 2011. The Cochrane Collaboration.

(58) National Institute for Health and Clinical Excellence. Guide to the methods of technology appraisal. *NICE, London* 2008.

Appendix 1: Example data extraction form

Reference and Design	Intervention	Participants	Outcome measures
Author and Year: Study ID: Source: *E.g. published* Country/location: Setting: Trial design: Includes process evaluation: Number of study centres: Funding: Conflicts of interest: Trial/study no.: Study dates:	<u>Treatment intervention</u>: **Overview:** *Brief description, including aim and target group.* **Where delivered:** *E.g. participant's home, primary/secondary care (dermatology/pediatric outpatient clinic), support group, worksite.* **Self-help, individual- and/or group-based? (State group size):** **Mode:** *E.g. face-to-face workshop, telephone, internet.* **Materials:** *E.g. information sheets, CDs/DVDs.* **Provider:** *E.g. dermatologist, nurse, dietician, psychologist, patient/patient representative, multi-disciplinary team.* **Duration and intensity:** *E.g. overall length, number of sessions.* **Scripting (level of detail guiding interaction between interventionist and participants):** *E.g. exact protocol provided, general guidelines provided.* **Sensitivity to participant characteristics:** *E.g. materials in participants' preferred language/reading level.* **Interventionist characteristics and training:** *E.g. qualifications and training, concordance with participant characteristics.* **Content and topics:** *E.g. nature of the disease and its management, healthy lifestyles, stress-management techniques, action planning, provision of information, group discussion, demonstration of treatment use.* **Tailoring:** *Detail aspects that were tailored to participants' needs.* **Ongoing support:** *E.g. booster sessions, follow-up telephone consultation.* **Theory:** *E.g. social cognitive theory, developed based on research findings, hypothesised mechanisms.* <u>Control intervention:</u> **Description:** *E.g. Usual care, waiting list control, other educational intervention – if latter, extract details as above.* **Duration and intensity:** *E.g. dose.*	Skin condition: Diagnostic criteria: Specify if patients, parents and/or carers: Patient general age group (specify if children, young adults and/or adults): Stated target group: *E.g. patients requiring support for adherence, patients with psychosocial needs.* How recruited: *E.g. community, primary/secondary care, combination.* Eligibility criteria: How selected: Numbers involved (randomised): Attrition and reasons: Sample cross-overs: Co-medications/interventions: Duration of disease: Disease severity: Gender (M/F): Average age: Ethnic groups: Socioeconomic characteristics: *E.g. education, stated socioeconomic context.* Baseline measurements of outcome parameters:	Primary outcomes: *E.g. HRQoL.State sub-scales.* Secondary outcomes: *E.g. disease severity, scratching behaviour, sleep quality, depression. State sub-scales.* Adverse events: Individual preferred learning style addressed? Any sub groups: *State if planned/post-hoc.* How outcomes assessed?: S*tate measures and if self-report.* Normal range(s) for outcomes/clinically meaningful improvement defined: Validated?: Timing of outcomes same for both groups: Length of follow up: *State timepoints at which each outcome assessed.*

Methods
Statistical analysis, including how missing data dealt with**:** **Power calculation:** **Study adequately powered?** **ITT used?** **Groups comparable at baseline?** **Process evaluation methods (if relevant):**
Outcome evaluation results

Primary Outcomes	Intervention	Control	P Value/CIs

Comments:

Secondary outcomes	Intervention	Control	P value/CIs

Comments:

Adverse Events	Intervention	Control	P Value/CIs

Comments:
Process evaluation results:
E.g. patient compliance/adherence, fidelity of intervention implementation, perceived barriers and facilitators, perceived value and usefulness of intervention. Indicate perspective (e.g. patients, parents/carers or interventionist/provider).
Comments:
General comments: **Generalisability:** **Inter-centre variability:** **Other:**

Quality criteria (Cochrane Collaboration 'risk of bias' tool) RCTs*

Criteria	Judgement	Support for judgement
Random sequence generation (selection bias)		
Allocation concealment (selection bias)		
Blinding of participants and personnel (performance bias)		
Blinding of outcome assessment (detection bias)		
Incomplete outcome data addressed (attrition bias)		
Selective reporting (reporting bias)		
Other sources of bias		

*For other study designs, an appropriate method for assessing study quality will be used instead of the Cochrane Collaboration criteria.