NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

QUALITY STANDARDS PROGRAMME

Quality standard topic: Atopic eczema in children

Output: Briefing paper

Introduction

This briefing paper presents a structured evidence review to help determine the suitability of recommendations from the key development sources, listed below, to be developed into a NICE quality standard. The draft quality statements and measures presented in this paper are based on published recommendations from the following key development sources:

Atopic eczema in children: management of atopic eczema in children from birth up to the age of 12 years. NICE clinical guideline 57 (2007, Review decision, 2011).

Structure of the briefing paper

The body of the paper presents supporting evidence for the draft quality standard reviewed against the three dimensions of quality: clinical effectiveness, patient experience and safety. Information is also provided on available cost-effectiveness evidence and current clinical practice for the proposed standard. Where possible, evidence from the clinical guideline is presented. When this is not available, other evidence sources have been used.

1 Assessment at diagnosis

1.1 NICE CG57 Recommendation 1.1.1.1, 1.1.1.2 and 1.4.1.1[KPI]

1.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.1.1.1 To aid management of atopic eczema in children, healthcare professionals should take detailed clinical and drug histories that include questions about: • time of onset, pattern and severity of the atopic eczema • response to previous and current treatments • possible trigger factors (irritant and allergic) • the impact of the atopic eczema on children and their parents or carers • dietary history including any dietary manipulation • growth and development • personal and family history of atopic diseases. 1.1.1.2 Atopic eczema should be diagnosed when a child has an itchy skin condition plus three or more of the following: • visible flexural dermatitis involving the skin creases, such as the bends of the elbows or behind the knees (or visible dermatitis on the cheeks and/or extensor areas in children aged 18 months or under) • personal history of flexural dermatitis (or dermatitis on the cheeks and/or extensor areas in children aged 18 months or under) • personal history of dry skin in the last 12 months • personal history of asthma or allergic rhinitis (or history of atopic disease in a first-degree relative of children aged under 4 years) • onset of signs and symptoms under the age of 2 years (this criterion should not be used in children aged under 4 years). Healthcare professionals should be aware that in Asian, black Caribbean and black African children, atopic eczema can affect the extensor surfaces rather than the flexures, and discoid (circular) or follicular (around hair follicles) patterns may be more common. 1.4.1.1 When clinically assessing children with atopic eczema, healthcare professionals should seek to identify potential trigger factors including: • irritants, for example soaps and detergents (including shampoos, bubble baths, shower gels and washing-up liquids) • skin infections • contact allergens • food allergens • inhalant allergens.

Proposed quality statement	Children with [suspected] atopic eczema have their detailed clinical and drug histories recorded to identify potential trigger factors including allergies.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with [suspected] atopic eczema are offered a detailed clinical and drug history assessment. **Process:** The proportion of children with atopic eczema with a record of a detailed clinical and drug history assessment at diagnosis. Numerator – The number of children in the denominator who have a record of a detailed clinical and drug history assessment at diagnosis. Denominator – The number of children with a clinical diagnosis of atopic eczema.
Definitions	**Clinical and drug history** A detailed clinical and drug history assessment includes questions about: • time of onset, pattern and severity of the atopic eczema • response to previous and current treatments • possible trigger factors (irritant and allergic) • the impact of the atopic eczema on children and their parents or carers • dietary history including any dietary manipulation • growth and development • personal and family history of atopic diseases. **Potential trigger factors** When clinically assessing children with atopic eczema, healthcare professionals should seek to identify potential trigger factors including: • irritants, for example soaps and detergents (including shampoos, bubble baths, shower gels and washing-up liquids) • skin infections • contact allergens • food allergens • inhalant allergens.
Discussion points for TEG	Does the proposed statement align with the recommendations?

1.1.2 Clinical and cost-effectiveness evidence

The diagnosis of atopic eczema relies on the assessment of clinical features because there is no laboratory marker or definitive test that can be used to diagnose the condition. In 1994 a UK Working Party published a minimum list of criteria for atopic dermatitis. The full NICE guideline considered validation studies for these diagnostic criteria; although other diagnostic criteria for atopic eczema have been described, no validation studies were identified for those criteria.

A review of validation studies of the UK Working Party led the GDG to conclude that the use of composite criteria of itch plus another three or more of the five criteria is considered to provide optimal separation of children with or without the condition. The high specificity in all of the validation studies means that the false positive rate is low and therefore a diagnosis of atopic eczema according to the UK Working Party criteria should be believed.

In the absence of outcome data for any diagnostic method, the GDG consensus view was that the UK Working Party's diagnostic criteria would help clinicians with little knowledge or experience of dermatology to diagnose atopic eczema in children. Using the diagnostic criteria may also optimise the use of consultation time.

It was the GDG's view that the proposed diagnostic criteria apply to all ethnic groups, although it was recognised that there are differences in the pattern of atopic eczema among different ethnic groups.

The GDG also believed that taking a thorough history that includes questions about potential trigger factors and the presence of other atopic diseases is an important step in the management of atopic eczema in children.

The potential impact of using the proposed criteria on consultation time for diagnosis was considered by the GDG. The likelihood was that using diagnostic criteria such as these would focus history taking and physical examination compared with not using formal criteria, and therefore would not increase consultation time or cost.

1.1.3 Patient experience

No patient experience information was identified.

1.1.4 Patient safety

There was some evidence in a small number of incidents in the sample to support this statement; the children suffered a reaction to their treatment because the treating clinicians were unaware that the children had eczema.

1.1.5 Current practice

No current practice data was identified.

1.1.6 Current indicators

None identified.

2 Holistic assessment of severity, psychological and psychosocial wellbeing and quality of life

2.1 NICE CG57 Recommendation 1.2.1.1[KPI]

2.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.2.1.1 Healthcare professionals should adopt a holistic approach when assessing a child's atopic eczema at each consultation, taking into account the severity of the atopic eczema and the child's quality of life, including everyday activities and sleep, and psychosocial wellbeing (see table 1). There is not necessarily a direct relationship between the severity of the atopic eczema and the impact of the atopic eczema on quality of life.
Proposed quality statement	Children with atopic eczema are offered a holistic assessment of severity and psychological and psychosocial wellbeing at each consultation.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with atopic eczema are offered a holistic assessment at diagnosis of severity, psychological and psychosocial wellbeing **Process**: The proportion of children with atopic eczema who receive a holistic assessment at diagnosis of severity, psychological and psychosocial wellbeing. Numerator – The number of children in the denominator receiving a holistic assessment at diagnosis of severity, psychological and psychosocial wellbeing at the last consultation. Denominator – The number of children with a clinical diagnosis of atopic eczema.

<table>
<tr><td>Definitions</td><td>
Holistic assessment
Holistic assessment at each consultation is defined in CG57 as taking into account the severity of atopic eczema and the child’s quality of life:
<table>
<tr><th colspan="2">Skin/physical severity</th><th colspan="2">Impact of quality of life and psychosocial wellbeing</th></tr>
<tr><td>Clear</td><td>Normal skin, no evidence of active atopic eczema</td><td>None</td><td>No impact on quality of life</td></tr>
<tr><td>Mild</td><td>Areas of dry skin, infrequent itching (with or without small areas of redness)</td><td>Mild</td><td>Little impact on everyday activities, sleep and psychosocial wellbeing</td></tr>
<tr><td>Moderate</td><td>Areas of dry skin, frequent itching, redness (with or without excoriation and localised skin thickening)</td><td>Moderate</td><td>Moderate impact on everyday activities and psychosocial wellbeing, frequently disturbed sleep</td></tr>
<tr><td>Severe</td><td>Widespread areas of dry skin, incessant itching, redness (with or without excoriation, extensive skin thickening, bleeding, oozing, cracking and alteration of pigmentation)</td><td>Severe</td><td>Severe limitation of everyday activities and psychosocial functioning, nightly loss of sleep</td></tr>
</table>
</td></tr>
<tr><td>Discussion points for TEG</td><td></td></tr>
</table>

2.1.2 Clinical and cost-effectiveness evidence

None of the clinical studies considered by the GDG addressed the usefulness of measuring severity of atopic eczema in routine clinical practice. While the purpose of assessing severity is to inform clinical management, there is no evidence of how this assessment improves the management of atopic eczema or leads to better health outcomes for the children. However the GDG believed that assessing the severity of atopic eczema and the quality of life of children and their families/carers allows more effective treatment decisions to be made. It was the view of the GDG that the perception of the child and/or parent/carer of the severity of their condition can be obtained by asking questions about the skin and quality of life, including psychosocial wellbeing. The GDG believed that structured, validated tools can provide additional useful information in certain circumstances, for example in prompting children or their parents/carers for information regarding their condition, thereby improving communication and, ultimately, treatment decisions. The full NICE guideline presents a review of evidence on assessment tools and measurement instruments on severity, psychological and psychosocial wellbeing and quality of life.

The treatment of atopic eczema revolves around alleviating symptoms. It is the GDG's view that children and their parents/carers should also be asked specifically about itch and sleep because they appear to be the most important parameters to be considered when measuring disease severity.

In the absence of standardised definitions of clear, mild, moderate and severe atopic eczema, definitions of these terms were agreed by GDG consensus. Active atopic eczema is taken to mean evidence of the signs and symptoms associated with mild, moderate and/or severe atopic eczema. The GDG also proposed categories for the impact that atopic eczema has on quality of life and psychosocial wellbeing. The GDG believes that it is possible for a child's skin to be classified as mild atopic eczema yet have a severe impact on quality of life, and vice versa. The consensus view of the GDG is that it is helpful for children with atopic eczema and their parents or carers to know the overall severity of the disease and so this information should be communicated to them.

The GDG considered psychological factors to be an important aspect of atopic eczema. Studies tended to focus on adults, but there was also evidence that atopic eczema causes considerable distress for children and their parents. There is evidence that preschool children with atopic eczema have higher rates of behavioural difficulties and show greater fearfulness and dependency on their parents than unaffected children. For schoolchildren, problems include time away from school, impaired performance because of sleep deprivation, social restrictions, teasing and bullying. Psychological problems have been found to be twice those of normal schoolchildren among children attending outpatient dermatology clinics with moderate or severe eczema.

Atopic eczema can be associated with poor self-image and lack of self-confidence that can impair social development. It has been shown that children with atopic eczema may be more difficult to parent than unaffected children, and that relationships between children and their parents can be affected by atopic eczema. Children with atopic eczema are often more irritable and uncomfortable than unaffected children because of their skin condition and this can directly affect their behaviour. Sleep disturbance is very common among young children with eczema and many parents find it very difficult to cope with repeated nights of broken sleep. In addition, many parents find it difficult to manage scratching behaviour, which can lead to problems because the scratching can then become a way of controlling parental attention. There is some evidence to suggest that mothers of children with atopic eczema feel less able to discipline their children than mothers of unaffected children.

Limited data from questionnaire studies show that children with atopic eczema are at increased risk of developing psychological problems compared with children who do not have the condition. There is some evidence that the psychological impact is greater in those with moderate to severe disease compared with mild disease.

Validated quality of life scales have been used to assess the quality of life of children with atopic eczema and of their parents. The children’s quality of life scales rate symptoms and signs (itching and scratching), feelings (mood change), involvement in sport, sleep and treatment effects as the most important factors of living with atopic eczema. The quality of life scales for parents/families/caregivers suggest that

the psychological burden of care is related to the children's atopic eczema directly and indirectly (e.g. through sleep disturbance).

There was no evidence examining the usefulness of quality of life measures in guiding treatment decisions and clinical practice. In studies in which both severity and quality of life have been measured, a significant correlation has been shown between severity of atopic eczema and impact on quality of life. It has also been shown that atopic eczema has a greater impact on quality of life than many other chronic conditions, including asthma and type 1 diabetes.

No cost-effectiveness evidence of assessing severity, psychological and psychosocial wellbeing was identified. In the absence of evidence on the benefits of the measurement of severity in routine clinical practice, it was not possible to assess the cost-effectiveness of this type of assessment in routine clinical practice. (One study of quality of life was undertaken for use in cost-effectiveness research of children with atopic eczema and to calculate the quality-adjusted life years (QALYs) associated with the disease in children. QALYs value health states from 0 (states as bad as death) to 1 (perfect health). The worst health state for atopic eczema was valued at 0.36 of a QALY (SD 0.36), and the best heath state at 0.84 (SD 0.19), which can be interpreted as a 16% loss in quality of life.)

2.1.3 Patient experience

No patient experience information was identified.

2.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

2.1.5 Current practice

No current practice data identified

2.1.6 Current indicators

None identified.

3 Stepped approach to management

3.1 NICE CG57 Recommendation 1.5.1.1 [KPI]

3.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.5.1.1 Healthcare professionals should use a stepped approach for managing atopic eczema in children. This means tailoring the treatment step to the severity of the atopic eczema. Emollients should form the basis of atopic eczema management and should always be used, even when the atopic eczema is clear. Management can then be stepped up or down, according to the severity of symptoms, with the addition of the other treatments listed in table 2. 1.5.3.2 The potency of topical corticosteroids should be tailored to the severity of the child's atopic eczema, which may vary according to body site. They should be used as follows: • use mild potency for mild atopic eczema • use moderate potency for moderate atopic eczema • use potent for severe atopic eczema • use mild potency for the face and neck, except for short-term (3–5 days) use of moderate potency for severe flares • use moderate or potent preparations for short periods only (7–14 days) for flares in vulnerable sites such as axillae and groin • do not use very potent preparations in children without specialist dermatological advice.
Proposed quality statement	Children with atopic eczema are offered a stepped approach to management [to achieve condition control].
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with atopic eczema are offered a stepped approach to management **Process:** The proportion of children with atopic eczema who receive a stepped approach to management Numerator – The number of children in the denominator receiving a stepped approach to management Denominator – The number of children with a clinical diagnosis of atopic eczema.

<table>
<tr><td>Definitions</td><td>Stepped approach to management
Stepped approach is defined in CG57: management can be stepped up or down according to the level of severity of symptoms:<table>
<tr><th>Mild atopic eczema</th><th>Moderate atopic eczema</th><th>Severe atopic eczema</th></tr>
<tr><td>Emollients</td><td>Emollients</td><td>Emollients</td></tr>
<tr><td>Mild potency topical corticosteroids</td><td>Moderate potency topical corticosteroids</td><td>Potent topical corticosteroids</td></tr>
<tr><td></td><td>Topical calcineurin inhibitors</td><td>Topical calcineurin inhibitors</td></tr>
<tr><td></td><td>Bandages</td><td>Bandages</td></tr>
<tr><td></td><td></td><td>Phototherapy</td></tr>
<tr><td></td><td></td><td>Systemic therapy</td></tr>
</table></td></tr>
<tr><td>Discussion points for TEG</td><td></td></tr>
</table>

3.1.2 Clinical and cost-effectiveness evidence

Atopic eczema is usually an episodic disease of exacerbation (flares) and remissions, except for severe cases where it may be continuous (2–6% of cases). Flares may occur as frequently as two or three times per month and have a very negative effect on quality of life. They are time-consuming and expensive to treat.

In clinical trials a flare has been defined in a variety of ways, predominantly involving severity or Investigator's Global Assessment (IGA). A minority of studies defined a flare in terms of the need to use certain additional treatments, which does not inform when to use these treatments. There was no published consensus on how to define or identify a flare.

There were some data showing that topical corticosteroids are effective when used specifically to treat a flare. RCTs showed that pimecrolimus 1% cream reduced the progression to flare compared with vehicle when used at the first sign or symptom of atopic eczema. No conclusions could be drawn from one small study of poor quality that considered the use of silk versus cotton clothing for 1 week in children who experienced a flare of atopic eczema. When used following the stabilisation of a

flare, maintenance treatment with fluticasone propionate (0.05% cream or 0.005% ointment) applied twice weekly for 16–20 weeks was more effective than its vehicle base in reducing the relapse rate in children.

Comparative data on outcomes were not available to support economic evaluation, and therefore it was not possible for the GDG to reach any meaningful consensus as to the likely comparative advantage of one combination of treatments over another.

No published evidence to evaluate the optimal combination or sequence of treatments for atopic eczema in children was identified. There was also a lack of published evidence relating to the effectiveness of combinations of treatment and consequently no evidence of the cost-effectiveness of these treatments was identified.

3.1.3 Patient experience

No patient experience information was identified.

3.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

3.1.5 Current practice

No current practice data identified

3.1.6 Current indicators

None identified.

4 Information about infections

4.1 NICE CG57 Recommendation 1.5.7.1 [KPI] and 1.5.7.12 [KPI]

4.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.5.7.1 Children with atopic eczema and their parents or carers should be offered information on how to recognise the symptoms and signs of bacterial infection with staphylococcus and/or streptococcus (weeping, pustules, crusts, atopic eczema failing to respond to therapy, rapidly worsening atopic eczema, fever and malaise).Healthcare professionals should provide clear information on how to access appropriate treatment when a child's atopic eczema becomes infected. 1.5.7.12 Children with atopic eczema and their parents or carers should be offered information on how to recognise eczema herpeticum. Signs of eczema herpeticum are: • areas of rapidly worsening, painful eczema • clustered blisters consistent with early-stage cold sores • punched-out erosions (circular, depressed, ulcerated lesions) usually 1–3 mm that are uniform in appearance (these may coalesce to form larger areas of erosion with crusting) • possible fever, lethargy or distress.
Proposed quality statement	Children with atopic eczema and their parents or carers are offered information on how to recognise the symptoms and signs of bacterial and viral infection [at annual review].
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with atopic eczema and their parents and carers are offered information on how to recognise the symptoms and signs of bacterial and viral infection **Process:** The proportion of children with atopic eczema and their parents or carers who receive information on how to recognise the symptoms and signs of bacterial and viral infection. Numerator – The number of children and their parents or carers receiving information [at their last annual review] on how to recognise the symptoms and signs of bacterial and viral infection. Denominator – The number of children with a clinical diagnosis of atopic eczema.
Definitions	
Discussion points for TEG	Frequency of information-giving – is 'annual review' the appropriate reference for the statement?

4.1.2 Clinical and cost-effectiveness evidence

Effective therapy improves quality of life for children with atopic eczema and their parents and carers, and can be provided for over 80% of children with atopic eczema in a primary care setting. It is known that a lack of education about therapy leads to poor adherence, and consequently to treatment failure.

Educational interventions offered to children with atopic eczema are designed to enhance understanding and management of the disease, to improve concordance with and adherence to treatment and, as a consequence, to improve short- and long-term health outcomes. Education covers everything from basic written information for children with atopic eczema to providing intensive support to engage children and their families/caregivers in managing the condition. All of these interventions require additional scarce healthcare resources. Therefore it is necessary to consider whether the additional costs of education are 'worth' the additional improvements in health outcomes associated with educational interventions in order to persuade providers that they should commit their healthcare resources to such programmes. However, the effectiveness and cost-effectiveness of these interventions have not yet been fully evaluated in the NHS setting.

There were very few empirical data on the effectiveness of educational interventions for children with atopic eczema. No studies that compared different educational models were identified and therefore there is a lack of knowledge about what type of educational model (if any) would be optimal. The clinical evidence that was identified came from one high-quality German RCT. However, no economic analysis was undertaken as part of that study. A cost-effectiveness analysis was undertaken by the GDG using the outcome data from the German RCT and data from a UK study on the QALY values associated with mild, moderate and severe atopic eczema in children. Using 2005/06 UK cost data for NHS staff time and estimating the additional costs of training, the GDG calculated the additional cost per QALY of providing an intensive educational programme for children with atopic eczema in secondary care in the NHS. The baseline data indicated that, if an educational programme similar to that described in the German RCT could be provided at a cost of less than around £800 per child, then it would be highly likely to be cost-effective.

Sensitivity analyses were performed by varying costs and outcome values (SCORAD scores and QALYs) and considering different assumptions. This resulted in cost-effectiveness ratios that were favourable to educational interventions. Furthermore, even though an educational programme such as that described in the German RCT would be unlikely to be implemented in the NHS in the near future, a less resource-intensive and less effective programme that could be implemented in the NHS would probably be cost-effective, based on the sensitivity analysis results and GDG expert opinion that the more resource-intensive multidisciplinary approach would yield little additional benefit in the 85% of patients with mild to moderate eczema compared with a similar but less resource-intensive programme delivered in the NHS.

Although education is a non-clinical intervention, it appears to be both effective and good value for money; it could be a worthwhile area of focus for services for children with atopic eczema in secondary care. Empirical evidence of its value in NHS secondary care settings and for children managed in primary care settings would strengthen this conclusion.

4.1.3 Patient experience

No patient experience information was identified.

4.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

4.1.5 Current practice

No current practice data identified

4.1.6 Current indicators

None identified.

5 Treatment of infections and specialist dermatological advice

5.1 NICE CG57 Recommendation 1.5.7.10 and 1.7.1.1

5.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.5.7.10 If eczema herpeticum (widespread herpes simplex virus) is suspected in a child with atopic eczema, treatment with systemic aciclovir should be started immediately and the child should be referred for same-day specialist dermatological advice. If secondary bacterial infection is also suspected, treatment with appropriate systemic antibiotics should also be started. 1.7.1.1. Immediate (same-day) referral for specialist dermatological advice is recommended if eczema herpeticum is suspected (see 1.5.7.10 and 1.5.7.11 for details).
Proposed quality statement	Children with atopic eczema who have suspected eczema herpeticum are offered immediate treatment with systemic aciclovir and are referred for same-day specialist dermatological advice.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with atopic eczema who have suspected eczema herpeticum receive immediate treatment with systemic aciclovir and are referred for same-day specialist dermatological advice **Process:** (a) The proportion of children with atopic eczema with suspected eczema herpeticum receiving immediate treatment with systemic aciclovir. Numerator – The number of children in the denominator receiving immediate treatment with systemic aciclovir Denominator – The number of children with a clinical diagnosis of atopic eczema with suspected eczema herpeticum (b)The proportion of children with atopic eczema with suspected eczema herpeticum receiving same-day referral for specialist dermatological advice. Numerator- The number of children in the denominator receiving a same-day referral for specialist dermatological advice Denominator – The number of children with a clinical diagnosis of atopic eczema with suspected eczema herpeticum

Definitions	
Discussion points for TEG	

5.1.2 Clinical and cost-effectiveness evidence

Eczema herpeticum can be life-threatening. Eczema herpeticum (Kaposi's varicelliform eruption) is a generalised vesicular eruption caused by the herpes simplex (cold sore) virus (usually type 1). It is relatively uncommon, considering that both atopic eczema and recurrent herpes simplex occur in about 20% of the population. It has been suggested that children with atopic eczema are no more likely to acquire herpes simplex infections than are children unaffected by atopic eczema. However, another study reported that adults who had had atopic eczema between the ages of 0 and 14 years had a greater incidence of recurrent herpes simplex infections than did non-atopic controls.

Eczema herpeticum may arise in normal-looking skin without evidence of active atopic eczema and sometimes in people who have not had active atopic eczema for many years. Lesions are all at the same stage of evolution. They start as small, grouped, circular blisters which often show a central depression (umbilication). They are all remarkably similar in size and appearance but quickly become eroded and crusted and often confluent in some areas. Transmission is by direct contact with infected secretions. The severity of eczema herpeticum ranges from localised disease to widespread dissemination and very rarely herpetic encephalitis and death. Mortality rates for untreated eczema herpeticum have been reported to be 6–10%. The cause of death, though not always clear, may have been an undetected immune deficiency state such as Wiskott–Aldrich syndrome or a secondary bacterial infection with S. aureus and streptococcus species. Repeated attacks do occasionally occur and should prompt a search for underlying immune deficiency.

Eczema herpeticum (due to herpes simplex virus) is under-recognised and, if not diagnosed promptly, the child's condition may deteriorate rapidly. Eczema herpeticum should, therefore, be an indication for urgent referral. Varicella may exacerbate atopic eczema and present as widespread varicella resembling eczema

herpeticum or lead to secondary impetiginisation. Molluscum contagiosum can be more extensive in children with atopic eczema than in other children because of spread from scratching, and it often seems to worsen atopic eczema locally at the site of lesions.

Eczema herpeticum was described in six case series and nine case reports in the full NICE guideline.

The GDG believed that owing to the potential dangers of herpes simplex virus and eczema herpeticum treatment should be started with oral aciclovir at the first suspicion of herpes simplex virus in a child with atopic eczema in order to control the infection and prevent the development of eczema herpeticum. If eczema herpeticum is suspected, oral or intravenous aciclovir can be given depending on the clinical situation.

No cost-effectiveness evidence of infection treatment was identified.

5.1.3 Patient experience

No patient experience information was identified.

5.1.4 Patient safety

There were a number of examples of delay or omission in drug treatment. For this quality standard systems must be in place to ensure availability of medication and associated advice.

5.1.5 Current practice

No current practice data identified

5.1.6 Current indicators

None identified.

6 Referral for specialist dermatological advice for children with uncontrolled, non-responsive or recurring atopic eczema

6.1 NICE CG57 Recommendation 1.7.1.3 [KPI]

6.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.7.1.3 Referral for specialist dermatological advice is recommended for children with atopic eczema if: • the diagnosis is, or has become, uncertain • management has not controlled the atopic eczema satisfactorily based on a subjective assessment by the child, parent or carer (for example, the child is having 1–2 weeks of flares per month or is reacting adversely to many emollients) • atopic eczema on the face has not responded to appropriate treatment • the child or parent/carer may benefit from specialist advice on treatment application (for example, bandaging techniques) • contact allergic dermatitis is suspected (for example, persistent atopic eczema or facial, eyelid or hand atopic eczema) • the atopic eczema is giving rise to significant social or psychological problems for the child or parent/carer (for example, sleep disturbance, poor school attendance) • atopic eczema is associated with severe and recurrent infections, especially deep abscesses or pneumonia.
Proposed quality statement	Children with uncontrolled, unresponsive or recurring atopic eczema are offered referral for specialist dermatological advice.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with uncontrolled, unresponsive and recurring atopic eczema receive referral for specialist dermatological advice **Process:** The proportion of children with atopic eczema who receive referral for specialist dermatological advice Numerator – The number of children in the denominator who receive referral for specialist dermatological advice Denominator – The number of children with a clinical diagnosis of atopic eczema
Definitions	
Discussion points for TEG	

6.1.2 Clinical and cost-effectiveness evidence

No clinical or cost-effectiveness evidence was identified in relation to referral and treatment outcomes in children with atopic eczema. In the absence of such evidence, the GDG members drew on referral advice in other guidance (including NICE referral advice11), and GDG consensus to determine indications for referral for children with atopic eczema. The main clinical situations that the GDG used to identify indications for referral for specialist advice included:

- optimal topical treatment has not controlled the condition (as indicated by frequency of flares and/or potency of treatment) or the next step of treatment requires specialist knowledge (for example, bandaging)
- other complications that warrant further investigation and/or management are suspected (such as food allergy, contact dermatitis or bacterially infected atopic eczema that has failed to respond to treatment).

The type of specialist advice required for each indication was specified when developing the recommendations, but because of geographical variations in service configuration it was not possible to state which service children should be referred to. For example, referral for specialist dermatological advice could mean referral to a dermatology specialist nurse, a GP with a special interest in dermatology, or a dermatologist, depending on local circumstances.

The GDG believed that referral when indicated would be cost-effective, as it should increase appropriate treatment for those who require it and decrease inappropriate or unnecessary treatment for those who do not. Also, the recommendations distinguish between immediate (same-day) referral, urgent referral (within 2 weeks) and non-urgent (routine) referral, and it was the GDG's view that this will lead to more cost-effective referral practice. Furthermore, the GDG believed that its referral recommendations would not have significant resource impacts for the NHS since the majority of its recommendations reflect existing clinical guidance and practice.

6.1.3 Patient experience

No patient experience information was identified.

6.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

6.1.5 Current practice

No current practice data identified

6.1.6 Current indicators

None identified.

7 Referral for psychological advice

7.1 NICE CG57 Recommendation 1.7.1.3 [KPI] and 1.7.1.4

7.1.1 Relevant NICE clinical guideline recommendations and proposed

Guideline recommendations	1.7.1.4 Children with atopic eczema that has responded to optimum management but for whom the impact of the atopic eczema on quality of life and psychosocial wellbeing has not improved should be referred for psychological advice. 1.7.1.3 Referral for specialist dermatological advice is recommended for children with atopic eczema if: • the diagnosis is, or has become, uncertain management has not controlled the atopic eczema satisfactorily based on a subjective assessment by the child, parent or carer (for example, the child is having 1–2 weeks of flares per month or is reacting adversely to many emollients) • atopic eczema on the face has not responded to appropriate treatment • the child or parent/carer may benefit from specialist advice on treatment application (for example, bandaging techniques) • contact allergic dermatitis is suspected (for example, persistent atopic eczema or facial, eyelid or hand atopic eczema) • the atopic eczema is giving rise to significant social or psychological problems for the child or parent/carer (for example, sleep disturbance, poor school attendance) • atopic eczema is associated with severe and recurrent
Proposed quality statement	Children with atopic eczema [that have responded to treatment but] for whom the impact on quality of life and psychosocial wellbeing has not improved should be offered referral for psychological advice.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with atopic eczema who have unimproved quality of life and psychosocial wellbeing are offered referral for psychological advice. (a) **Process:** The proportion of children with atopic eczema who have unimproved quality of life and psychosocial wellbeing. Numerator – The number of children in the denominator who have unimproved quality of life and psychosocial wellbeing Denominator – The number of children with atopic eczema (b) **Process:** The proportion of children with atopic eczema and unimproved quality of life and psychosocial wellbeing who receive a referral for psychological advice. Numerator- The number of children in the denominator who receive referral for psychological advice

	Denominator – The number of children with atopic eczema and who have unimproved quality of life and psychosocial wellbeing
Definitions	[Definition of psychological advice]
Discussion points for TEG	

7.1.2 Clinical and cost-effectiveness evidence

The GDG considered psychological factors to be an important aspect of atopic eczema. Studies tended to focus on adults, but there was also evidence that atopic eczema causes considerable distress for children and their parents. There is evidence that preschool children with atopic eczema have higher rates of behavioural difficulties and show greater fearfulness and dependency on their parents than unaffected children. For schoolchildren, problems include time away from school, impaired performance because of sleep deprivation, social restrictions, teasing and bullying. Psychological problems have been found to be twice those of normal schoolchildren among children attending outpatient dermatology clinics with moderate or severe eczema.

Seven studies described the measurement of psychological and psychosocial effects in children with atopic eczema and their families/carers (four case–control studies and two cohort studies and a case series). Severity of the atopic eczema varied in these studies. The studies either used assessment scales to measure the psychological effects of atopic eczema in children and their parents/carers or investigated attitudes and beliefs of children with atopic eczema and their parents/carers. The questionnaires were used once with no follow-up.

Limited data from questionnaire studies show that children with atopic eczema are at increased risk of developing psychological problems compared with children who do not have the condition. There is some evidence that the psychological impact is greater in those with moderate to severe disease compared with mild disease.

No published evidence relating to the cost-effectiveness of psychological advice was identified.

7.1.3 Patient experience

No patient experience information was identified.

7.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

7.1.5 Current practice

No current practice data identified.

7.1.6 Current indicators

None identified.

8 Education and adherence to therapy

8.1 NICE CG57 Recommendation 1.5.1.2 [KPI] and 1.6.1.1[KPI]

8.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.5.1.2 Healthcare professionals should offer children with atopic eczema and their parents or carers information on how to recognise flares of atopic eczema (increased dryness, itching, redness, swelling and general irritability). They should give clear instructions on how to manage flares according to the stepped-care plan, and prescribe treatments that allow children and their parents or carers to follow this plan. 1.6.1.1 Healthcare professionals should spend time educating children with atopic eczema and their parents or carers about atopic eczema and its treatment. They should provide information in verbal and written forms, with practical demonstrations, and should cover: • how much of the treatments to use • how often to apply treatments • when and how to step treatment up or down • how to treat infected atopic eczema. This should be reinforced at every consultation, addressing factors that affect adherence.
Proposed quality statement	Children with atopic eczema (or their parents or carers) are offered information on how to recognise and manage flares [at each annual review].
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with atopic eczema and their parents or carers receive annual information on how to recognise and manage flares. **Process:** The proportion of children with atopic eczema (or their parents or carers) who receive annual information on how to recognise and manage flares. Numerator – The number of children (or their parents or carers) in the denominator who received information on how to recognise and manage flares [at their last annual review]. Denominator – The number of children with a clinical diagnosis of atopic eczema.
Definitions	
Discussion points for TEG	Frequency of information-giving – is ‘annual review’ the appropriate reference for the statement?

8.1.2 Clinical and cost-effectiveness evidence

Effective therapy improves quality of life for children with atopic eczema and their parents and carers, and can be provided for over 80% of children with atopic eczema in a primary care setting. It is known that a lack of education about therapy leads to poor adherence, and consequently to treatment failure.

Educational interventions offered to children with atopic eczema are designed to enhance understanding and management of the disease, to improve concordance with and adherence to treatment and, as a consequence, to improve short- and long-term health outcomes. Education covers everything from basic written information for children with atopic eczema to providing intensive support to engage children and their families/caregivers in managing the condition. All of these interventions require additional scarce healthcare resources. Therefore it is necessary to consider whether the additional costs of education are 'worth' the additional improvements in health outcomes associated with educational interventions in order to persuade providers that they should commit their healthcare resources to such programmes. However, the effectiveness and cost-effectiveness of these interventions have not yet been fully evaluated in the NHS setting.

There were very few empirical data on the effectiveness of educational interventions for children with atopic eczema. No studies that compared different educational models were identified and therefore there is a lack of knowledge about what type of educational model (if any) would be optimal. The clinical evidence that was identified came from one high-quality German RCT. However, no economic analysis was undertaken as part of that study. A cost-effectiveness analysis was undertaken by the GDG using the outcome data from the German RCT and data from a UK study on the QALY values associated with mild, moderate and severe atopic eczema in children. Using 2005/06 UK cost data for NHS staff time and estimating the additional costs of training, the GDG calculated the additional cost per QALY of providing an intensive educational programme for children with atopic eczema in secondary care in the NHS. The baseline data indicated that, if an educational programme similar to that described in the German RCT could be provided at a cost of less than around £800 per child, then it would be highly likely to be cost-effective. Sensitivity analyses were performed by varying costs and outcome values (SCORAD

scores and QALYs) and considering different assumptions. This resulted in cost-effectiveness ratios that were favourable to educational interventions. Furthermore, even though an educational programme such as that described in the German RCT would be unlikely to be implemented in the NHS in the near future, a less resource-intensive and less effective programme that could be implemented in the NHS would probably be cost-effective, based on the sensitivity analysis results and GDG expert opinion that the more resource-intensive multidisciplinary approach would yield little additional benefit in the 85% of patients with mild to moderate eczema compared with a similar but less resource-intensive programme delivered in the NHS.

Although education is a non-clinical intervention, it appears to be both effective and good value for money; it could be a worthwhile area of focus for services for children with atopic eczema in secondary care. Empirical evidence of its value in NHS secondary care settings and for children managed in primary care settings would strengthen this conclusion.

8.1.3 Patient experience

No patient experience information was identified.

8.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

8.1.5 Current practice

No current practice data identified.

8.1.6 Current indicators

None identified.

9 Addressing potential trigger factors

9.1 NICE CG57 Recommendation 1.7.1.5 and 1.4.1.2 [KPI]

9.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.7.1.5 Children with moderate or severe atopic eczema and suspected food allergy should be referred for specialist investigation and management of the atopic eczema and allergy. 1.4.1.2 Healthcare professionals should consider a diagnosis of food allergy in children with atopic eczema who have reacted previously to a food with immediate symptoms, or in infants and young children with moderate or severe atopic eczema that has not been controlled by optimum management, particularly if associated with gut dysmotility (colic, vomiting, altered bowel habit) or failure to thrive.
Proposed quality statement	Children with moderate or severe atopic eczema should be offered referral for specialist investigation if food allergy is suspected.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with moderate or severe atopic eczema receive referral for specialist investigation if food allergy is suspected **Process:** The proportion of children with moderate and severe atopic eczema who receive referral for specialist investigation for food allergy Numerator – The number of children in the denominator who receive referral for specialist investigation for food allergy Denominator – The number of children with moderate or severe atopic eczema and suspected food allergy.
Definitions	
Discussion points for TEG	

9.1.2 Clinical and cost-effectiveness evidence

Potential trigger factors

A plethora of potential triggering factors for atopic eczema has been documented in the scientific literature, including irritants, contact allergens, food and dietary factors, inhalant allergens, microbial colonisation of skin, climate, environmental factors and familial factors. Many of these have been considered only in the context of primary causes/prevention of atopic eczema (which were outside the scope of the NICE guideline), rather than in terms of triggering exacerbations of established atopic eczema. Most data in relation to the identification and management of trigger factors relate to testing for food allergies and elimination diets, and avoidance strategies for inhalant allergens.

Identification of trigger factors

There has been little consistency among the studies that have considered the accuracy of atopy patch tests, skin prick tests and specific immunoglobulin E (IgE) for identifying food allergy in children with atopic eczema. The studies varied in the age of the study populations, the foods tested, the standard against which results were compared (DBPCFC or open food challenge), and in the way the tests were undertaken (the types of foods used and the criteria used to define positive test results). There was evidence that changing the definition of a positive test result for the atopy patch test, the skin prick test and specific IgE changed the diagnostic accuracy of the tests.

Only a minority of studies focused on delayed reactions (in which the suspected food caused exacerbation of atopic eczema). The studies varied in whether they reported diagnostic accuracy of a test for a specific allergen or for all allergens together, and whether they considered accuracy for detecting immediate and/or delayed reactions.

There was no published evidence on the cost-effectiveness of any of the tests for diagnosing trigger factors. A cost-effectiveness model to assess the comparative advantage of alternative means of diagnosing trigger factors was not feasible owing to the complexity of the data required (which would require assessment of all the consequences of true and false positive and negative diagnoses of a range of trigger

factors on the management and subsequent outcomes of atopic eczema in children) and was not identified as a priority for the guideline.

No clinical or cost-effectiveness evidence was identified in relation to referral and treatment outcomes in children with atopic eczema.

In the absence of such evidence, the GDG members drew on referral advice in other guidance (including NICE referral advice11), and GDG consensus to determine indications for referral for children with atopic eczema. The main clinical situations that the GDG used to identify indications for referral for specialist advice included:

- other complications that warrant further investigation and/or management are suspected (such as food allergy, contact dermatitis or bacterially infected atopic eczema that has failed to respond to treatment).

The GDG believed that referral when indicated would be cost-effective, as it should increase appropriate treatment for those who require it and decrease inappropriate / unnecessary treatment for those who do not. Also, the recommendations distinguish between immediate (same-day) referral, urgent referral (within 2 weeks) and non-urgent (routine) referral, and it was the GDG's view that this will lead to more cost-effective referral practice. Furthermore, the GDG believed that its referral recommendations would not have significant resource impacts for the NHS since the majority of its recommendations reflect existing clinical guidance and practice.

The GDG's recommendations for referral are designed to ensure that children who require referral are referred more promptly and that inappropriate referral is minimised. Also, the recommendations distinguish between immediate (same-day) referral, urgent referral (within 2 weeks) and non-urgent (routine) referral. It is the GDG's view that this will lead to more cost-effective referral practice. Furthermore, the GDG believes that its referral recommendations will not have significant resource impacts for the NHS since the majority of its recommendations reflect existing clinical guidance and practice.

9.1.3 Patient experience

No patient experience information was identified.

9.1.4 Patient safety

No patient safety evidence was identified (see full report from the patient safety function at the NHS Commissioning Board for broader themes).

9.1.5 Current practice

No current practice data identified.

9.1.6 Current indicators

None identified.

10 Use of emollients

10.1 NICE CG57 Recommendation 1.5.2.1[KPI]

10.1.1 Relevant NICE clinical guideline recommendations and proposed quality statement

Guideline recommendations	1.5.2.1 Healthcare professionals should offer children with atopic eczema a choice of unperfumed emollients to use every day for moisturising, washing and bathing. This should be suited to the child's needs and preferences, and may include a combination of products or one product for all purposes. Leave-on emollients should be prescribed in large quantities (250–500 g weekly) and easily available to use at nursery, pre-school or school.
Proposed quality statement	Children with atopic eczema should be prescribed unperfumed emollients in large quantities for daily use.
Draft quality measure	**Structure:** Evidence of local arrangements to ensure children with eczema are prescribed sufficient quantities of unperfumed emollients to use everyday. **Process:** The proportion of children with atopic eczema who are prescribed sufficient quantities of unperfumed emollients to use everyday. Numerator – The number of children with atopic eczema prescribed sufficient quantities of unperfumed emollients to use everyday Denominator – The number of children with a clinical diagnosis of atopic eczema.
Definitions	**Large quantities of emollients** NICE clinical guideline CG57 recommends that leave-on emollients should be prescribed in large quantities (250–500g weekly) and easily available to use at nursery, pre-school or school.
Discussion points for TEG	

10.1.2 Clinical and cost-effectiveness evidence

The GDG believed that emollients are the most important treatment for atopic eczema because they restore the defective skin barrier. A complete emollient regimen produces optimum benefit. This involves avoidance of products that may irritate the skin or lead to breakdown of the skin barrier, including soaps, shampoo products and perfumed products obtained over the counter or on prescription. Adherence to an emollient regimen has the potential to reduce the need for more expensive treatments and associated GP consultations.

There was a lack of studies that evaluated the effectiveness of emollients in children with atopic eczema. The available data consisted of isolated case series and case reports, with no controlled studies comparing emollients to placebo/no active intervention. With no control groups, it was not possible to quantify the benefits or harms of emollient therapy. Irritant adverse skin reactions such as stinging were documented to occur with emollients such as aqueous cream and bath oils.

Case series that considered the effects of treatment with emollients containing antimicrobial agents (including bath oils) in children reported subjective global measures of improvement over the short term only (2–6 weeks). In these case series, children received other treatments and thus it was not possible to identify which treatment produced benefit.

Although emollients are widely described as having a steroid-sparing effect, no robust data were identified to confirm or refute this.

No evidence on the cost-effectiveness of the use of emollients were identified.

10.1.3 Patient experience

No patient experience information was identified.

10.1.4 Patient safety

There is evidence of non-professional fraud. Patients should be made aware that non-professionals operate in this environment. It is essential that healthcare

professionals know all the ingredients of products before making any recommendation.

10.1.5 Current practice

No current practice data identified.

10.1.6 Current indicators

None identified.

Appendix A: Definition of patient safety

The National Patient Safety Agency (NPSA) defines patient safety in the following terms:

Every day more than a million people are treated safely and successfully in the NHS, but the evidence tells us that in complex healthcare systems things will and do go wrong, no matter how dedicated and professional the staff. When things go wrong, patients are at risk of harm, and the effects are widespread and often devastating for patients, their families and the staff involved. Safety incidents also incur costs through litigation and extra treatment, and in 2009/10 the NHSLA paid out approximately £827,000,000 in litigation costs and damages. These incidents are often caused by poor system design rather than the error of individuals i.e. 'they are an accident waiting to happen'.

In short patient safety could be summarised as 'The identification and reduction of risk and harm associated with the care provided to patients 'or 'Preventing patients from being harmed by their treatment'. Examples of this might be 'operating on or removing the wrong organ, ten times the dose of an opioid, giving a colonoscopy to the wrong patient with the same name as someone else in the waiting room etc.' These risks are unlikely to be identified through clinical trials or traditional evidence bases and so other evidence sources, such as the National Reporting and Learning System, need to be analysed to highlight the risks and improve system development. This does not however give an accurate picture of prevalence in that way that methods such as casenote review may do.

On 1 June 2012 the key functions and expertise for patient safety developed by the National Patient Safety Agency (NPSA) transferred to the NHS Commissioning Board Special Health Authority. For more information, please see www.commissioningboard.nhs.uk and www.nrls.npsa.nhs.uk.