

# Dimethyl fumarate for treating moderate to severe plaque psoriasis

Technology appraisal guidance

Published: 6 September 2017

[www.nice.org.uk/guidance/ta475](https://www.nice.org.uk/guidance/ta475)

## Your responsibility

The recommendations in this guidance represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take this guidance fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this guidance is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the [Yellow Card Scheme](#).

Commissioners and/or providers have a responsibility to provide the funding required to enable the guidance to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should [assess and reduce the environmental impact of implementing NICE recommendations](#) wherever possible.

# Contents

1 Recommendations .....	4
2 The technology.....	6
3 Committee discussion .....	7
Experience of people with psoriasis.....	7
Clinical management.....	7
Position of dimethyl fumarate in the treatment pathway.....	8
Comparators .....	9
Clinical evidence .....	10
Adverse events.....	12
Company's economic model.....	13
Assumptions in the economic model .....	15
Utility values in the economic model .....	16
Costs in the economic model.....	17
Cost-effectiveness estimate.....	17
Other factors .....	20
4 Implementation.....	22
5 Appraisal committee members and NICE project team .....	23
Appraisal committee members .....	23
NICE project team .....	23

# 1 Recommendations

- 1.1 Dimethyl fumarate is recommended as an option for treating plaque psoriasis in adults, only if the disease:
- is severe, as defined by a total Psoriasis Area and Severity Index (PASI) of 10 or more and a Dermatology Life Quality Index (DLQI) of more than 10 and
  - has not responded to other systemic therapies, including, ciclosporin, methotrexate and PUVA (psoralen and long-wave ultraviolet A radiation), or these options are contraindicated or not tolerated.
- 1.2 Stop dimethyl fumarate treatment at 16 weeks if the psoriasis has not responded adequately. An adequate response is defined as:
- a 75% reduction in the PASI score (PASI 75) from when treatment started or
  - a 50% reduction in the PASI score (PASI 50) and a 5-point reduction in DLQI from when treatment started.
- 1.3 When using the PASI, healthcare professionals should take into account skin colour and how this could affect the PASI score, and make the clinical adjustments they consider appropriate.
- 1.4 When using the DLQI, healthcare professionals should take into account any physical, psychological, sensory or learning disabilities, or communication difficulties, that could affect the responses to the DLQI and make any adjustments they consider appropriate.
- 1.5 These recommendations are not intended to affect treatment with dimethyl fumarate that was started in the NHS before this guidance was published. People having treatment outside these recommendations may continue without change to the funding arrangements in place for them before this guidance was published, until they and their NHS clinician consider it appropriate to stop.

## Why the committee made these recommendations

Clinical trial results showed that dimethyl fumarate improves severe psoriasis more than placebo but, when compared indirectly, it is less effective than systemic biological therapies and apremilast. The modelling of treatment sequences was not considered reliable enough for decision-making. However, the cost effectiveness of dimethyl fumarate followed by best supportive care compared with best supportive care alone was comparable with the respective cost-effectiveness estimates in previously published appraisals of the biologicals and apremilast. Also, dimethyl fumarate is less costly than biologicals and apremilast, and would likely provide sufficient savings per quality-adjusted life years lost when compared with these treatments. Some patients might chose to have dimethyl fumarate. Dimethyl fumarate should be used when the psoriasis is severe and has not responded to other systemic non-biological therapies, or when these treatments cannot be taken.

## 2 The technology

<b>Dimethyl fumarate (Skilarence, Almirall)</b>	
<b>Marketing authorisation</b>	Dimethyl fumarate is indicated 'for the treatment of moderate to severe plaque psoriasis in adults in need of systemic medicinal therapy'.
<b>Recommended dose and schedule</b>	The maximum dosage is 240 mg 3 times daily given orally, after an initial titration schedule. In the first week, 30 mg is taken once daily. In the second week, 30 mg is taken twice daily. In the third week, 30 mg is taken 3 times daily. From the fourth week, a single 120-mg daily dose is given and increased weekly for 5 weeks, until the maximum daily dose is reached.
<b>Price</b>	The list price is £89.04 (excluding VAT) for a titration pack (that is, 42 x 30-mg tablets) and £190.80 (excluding VAT) for a pack of 90 x 120-mg tablets. Costs may vary in different settings because of negotiated procurement discounts.

## 3 Committee discussion

The appraisal committee (see [section 5](#)) considered evidence submitted by Almirall and a review of this submission by the evidence review group (ERG). See the [committee papers](#) for full details of the evidence.

### Experience of people with psoriasis

#### Psoriasis can negatively affect all aspects of a person's life

- 3.1 The committee appreciated that psoriasis at any level of severity can be distressing and debilitating, affecting all aspects of life (physical, psychological and social). The committee noted that having treatments that improve the disease and are associated with few or manageable side effects is important to people with psoriasis, as is having a choice of treatments.

### Clinical management

#### Psoriasis can be treated with topical therapies, phototherapy, systemic non-biological therapies and systemic biological therapies

- 3.2 The committee was aware that people with plaque psoriasis have topical therapies as first-line treatment, followed by phototherapy (second line). If these treatments do not adequately control the psoriasis, people may have systemic conventional non-biological therapies third line (such as methotrexate, ciclosporin or acitretin). If the disease does not respond to therapy, people may have systemic biological therapies or apremilast (fourth line), which they continue as long as the drugs work. The committee understood that if the disease no longer responds to a biological therapy, people will be offered another biological therapy. This pattern is likely to be repeated over their lifetime. The committee heard that, for people whose disease does not respond to multiple biological

agents or apremilast, the only remaining treatment option is best supportive care, which usually consists of topical agents and bandaging.

## Position of dimethyl fumarate in the treatment pathway

### **Dimethyl fumarate is considered an alternative to systemic biological therapies and apremilast, and best supportive care**

3.3 The committee noted that the marketing authorisation for dimethyl fumarate is for 'adults in need of systemic medicinal therapy'. It was aware that fumaric acid esters (such as fumaderm) are already used as 'off-label' treatments for psoriasis in the NHS. The committee understood that the marketing authorisation allows dimethyl fumarate to be used at different positions in the treatment pathway:

- As an alternative to systemic non-biological therapies (third-line therapy): the committee heard from the clinical expert that dimethyl fumarate is unlikely to displace non-biologicals (such as methotrexate) because they are well-established, standard treatments. The company did not submit any evidence for dimethyl fumarate compared with these non-biologicals, and therefore the committee did not consider this position further.
- After systemic non-biologicals, but before systemic biologicals and apremilast (between third- and fourth-line therapy): the committee heard from the clinical expert that dimethyl fumarate could be used when a patient's psoriasis does not meet NICE's technology appraisal criteria for severe disease, defined as a total Psoriasis Area and Severity Index (PASI) of 10 or more and a Dermatology Life Quality Index (DLQI) of more than 10. However, the committee understood from the clinical expert that the baseline characteristics of people in the key clinical trial, BRIDGE, were broadly consistent with the severe population as defined in previous NICE technology appraisals for psoriasis (see [section 3.6](#)). The committee concluded that the company's evidence did not reflect the use of dimethyl fumarate for moderate disease at this position and did not consider this further.

- As an alternative to biological therapies and apremilast (fourth-line therapy): the committee heard from the clinical expert and the company that the most likely position for dimethyl fumarate is as an alternative to biologicals and apremilast. The committee agreed that it was appropriate to consider dimethyl fumarate at this position.
- After biologicals or apremilast, as an alternative to best supportive care. The committee understood from the ERG that dimethyl fumarate could be used in this position, although it heard from the clinical expert that it is unlikely to be used after biologicals because these agents are more clinically effective (see [section 3.8](#)). While the committee noted that the evidence from BRIDGE did not reflect a population who had exhausted treatment options with biologicals or apremilast, it understood that there are limited options available to patients at this point in the pathway. Therefore, the committee agreed that it was appropriate to consider dimethyl fumarate at this position.

## Comparators

### **Appropriate comparators for the positioning of dimethyl fumarate are systemic biological therapies, apremilast and fumaderm**

- 3.4 The committee was aware that the company's clinical evidence and economic model compared dimethyl fumarate with biologicals (adalimumab, etanercept, ixekizumab, secukinumab and ustekinumab), apremilast and fumaderm. The committee considered that this was appropriate because it agreed with the company that, in clinical practice, dimethyl fumarate would be offered at the same place in the treatment pathway as the existing biologicals or apremilast (see [section 3.3](#)). The committee therefore concluded that the most appropriate comparators for dimethyl fumarate were biologicals, apremilast and fumaderm.

## Clinical evidence

### Key clinical evidence for dimethyl fumarate came from the BRIDGE trial

- 3.5 The committee noted that the evidence for dimethyl fumarate came from the BRIDGE trial, a randomised double-blind study of 704 people with chronic plaque psoriasis that compared dimethyl fumarate with fumaric acid esters and placebo. The co-primary outcomes were a 75% reduction in the PASI score from when treatment started (PASI 75) and a rating of 'clear' (score of 0) or 'almost clear' (score of 1) on the Physician Global Assessment (PGA), measured at 16 weeks (the end of induction period).

### The population in BRIDGE is generalisable to both patients with previously treated and with untreated severe psoriasis in the NHS

- 3.6 The committee considered the generalisability of the BRIDGE trial to clinical practice in the NHS:
- Severity of disease: the committee acknowledged that BRIDGE included people with a PASI score of 10 or more, an affected body surface area of more than 10% and a rating of at least moderate (score of 3) on the PGA. The committee noted that the study eligibility criteria did not include the DLQI. The committee acknowledged that the definitions of severe and very severe psoriasis used in previous NICE technology appraisals (based on PASI and DLQI) were different to the European Medicines Agency's definition of severity. The committee heard from the clinical expert that the population in BRIDGE is generally aligned to NICE's technology appraisals definition of 'severe'. The committee agreed to consider dimethyl fumarate in the population with a severity similar to those in previous technology appraisals for psoriasis.

- Previous treatment: the committee noted that a post-hoc subgroup analysis of BRIDGE showed differences in treatment responses in PASI 75 and PGA 0 or 1 between patients whose psoriasis had been previously treated with systemic therapy compared with those who had not. Although the company did not test for heterogeneity of treatment effects between the subgroups (see section 3.7), the committee considered that a test for interaction would not have been powered to detect real differences (n=101 not previously treated with systemic therapy compared with n=30 previously treated with systemic therapy). The committee heard from the clinical expert that similar responses in psoriasis regardless of previous systemic therapy were seen in other published research on fumaric acid esters. The committee agreed that it was reasonable to assume a similar treatment response from dimethyl fumarate in psoriasis that had and had not previously been treated with systemic therapy.

## Dimethyl fumarate is as effective as fumaderm and more clinically effective than placebo

- 3.7 The committee noted that, in patients randomised to dimethyl fumarate, there were clinically and statistically significantly higher PASI 75, and PGA 0 or 1 response rates at week 16 compared with placebo. It noted that PASI 75 and PGA response rates were comparable to fumaderm. The risk differences are detailed in table 1. The committee heard from the clinical expert that fumaric acid esters were effective at reducing the symptoms of psoriasis. The committee concluded that dimethyl fumarate was as effective as fumaderm and more clinically effective than placebo.

**Table 1 Risk differences for dimethyl fumarate for PASI 75, and PGA 0 or 1 at week 16**

Outcome	Compared with placebo	Compared with fumaderm
<b>PASI 75</b>	22.2% (99.24% CI 10.7 to 33.7)	-2.8% (99.24% CI -14.0 to 8.4)
<b>PGA 0 or 1</b>	20.0% (99.24% CI 8.0 to 30.0)	-4.0% (99.24% CI -15.0 to 7.0)

Abbreviations: CI, Confidence interval; PASI, Psoriasis Area and Severity Index; PGA, Physician Global Assessment.

## **The network meta-analysis may have underestimated the clinical effectiveness of dimethyl fumarate**

- 3.8 The committee discussed the company's network meta-analysis, which indirectly compared dimethyl fumarate with fumaderm, apremilast, adalimumab, etanercept, ixekizumab, secukinumab and ustekinumab. The results showed that dimethyl fumarate had the lowest probability of achieving a PASI 75 response compared with all the other active treatments, but was better than placebo. The committee was concerned that the estimated absolute probability of achieving a PASI 75 response in the company's network meta-analysis for dimethyl fumarate (18%) was almost half that seen in BRIDGE (38%). The company explained that this could be because the analysis used estimates of the placebo response from other trials. The committee agreed that the company's network meta-analysis was conservative and likely to underestimate the relative effectiveness of dimethyl fumarate. Although it was concerned by the company's network meta-analysis, the committee concluded that it was likely that dimethyl fumarate was less effective than apremilast and other biologicals.

## **Adverse events**

### **Short-term safety and tolerability of dimethyl fumarate and fumaderm are similar**

- 3.9 The committee heard that the most common side effects that lead patients to stop treatment with dimethyl fumarate are gastrointestinal. It noted that the adverse effects leading to treatment being stopped were similar in type and frequency for dimethyl fumarate compared with fumaderm. The committee was aware that cases of progressive multifocal leukoencephalopathy have been reported in people who have psoriasis and prolonged lymphopenia and are taking dimethyl fumarate. It noted that the company did not provide long-term adverse-event data for dimethyl fumarate compared with other biologicals and apremilast. The committee concluded that the safety and tolerability of dimethyl fumarate were similar to that of fumaderm, and that the long-term safety of dimethyl fumarate compared with biologicals and apremilast was

uncertain.

## Company's economic model

### Model structure

3.10 The committee considered the Markov state transition model that the company used to assess the cost effectiveness of dimethyl fumarate. It modelled treatments in sequence, with each sequence having up to 4 active treatments and induction periods. The model contained 4 health states:

- Induction: all patients started in this health state and had treatment in the induction period. Moving from induction to maintenance occurred when the patient's condition responded to treatment if they had a PASI 75 at the end of induction. Patients who did not have a PASI 75 moved onto the next treatment in the sequence.
- Maintenance: this state was only for patients whose condition responded to treatment in the induction period. The company assumed in its model that 20% of patients would stop treatment every year for any reason and move onto the next treatment in the sequence.
- Best supportive care: patients moved into this health state in between trialling new treatments in the sequence and when their psoriasis did not respond to the last active treatment in the sequence.
- Death: all patients could move into this state at any time. The company used age-specific mortality rates from the general UK population.

### The company modelled 6 treatment sequences

3.11 The committee noted that the company presented 6 pairwise comparisons of different treatment sequences:

- Dimethyl fumarate before biologicals compared with no dimethyl fumarate before biologicals in the following sequences:
  - adalimumab, ustekinumab, best supportive care (base case)
  - etanercept, adalimumab, ustekinumab, best supportive care
  - adalimumab, secukinumab, best supportive care.
- Dimethyl fumarate compared with apremilast before biologicals in the following sequences:
  - adalimumab, ustekinumab, best supportive care
  - adalimumab, secukinumab, best supportive care.
- Dimethyl fumarate before biologicals compared with dimethyl fumarate after biologicals:
  - dimethyl fumarate, adalimumab, ustekinumab, best supportive care compared with adalimumab, ustekinumab, dimethyl fumarate, best supportive care.

## Modelling all plausible sequences in a fully incremental analysis is preferred

3.12 The committee understood that the company chose its base-case treatment sequence based on clinical advice. However, it heard from the clinical expert that, although the sequence was reasonable, clinical practice and guidance constantly change and biologicals are likely to be used interchangeably. The committee appreciated that the company tried to model the most clinically relevant comparisons for the base case and scenario analyses, but was concerned that the limited number of selected treatment sequences modelled in pairwise comparisons provided narrow and potentially misleading estimates of the cost effectiveness of dimethyl fumarate. It understood that the cost effectiveness of any new treatment included early in a sequence would likely be driven by avoiding more expensive (and apparently cost-ineffective) subsequent treatments and best supportive care (see [section 3.19](#)). The committee noted that it would have preferred it if the company had modelled all plausible sequences in a fully incremental

analysis taking into account the different treatment lengths and positions.

## Assumptions in the economic model

### A lifetime horizon captures all resource use and costs

3.13 The committee was aware that the company applied a 10-year time horizon in its modelled base case, similar to some previous NICE technology appraisals on psoriasis. It heard from the ERG that a longer time horizon is necessary to allow the model to estimate the full impact of treatment sequences and that a 10-year horizon improves the cost effectiveness of dimethyl fumarate. The committee agreed that a lifetime horizon was appropriate.

### Treatment-specific stopping rates are preferred to a 20% constant yearly rate

3.14 The committee was aware that the company model applied a constant 20% yearly treatment stopping rate (for adverse events, patient choice and lack of effectiveness) similar to previous NICE technology appraisals on psoriasis. The committee was concerned that the same rate was applied for all treatments given that 24% of patients having dimethyl fumarate in BRIDGE had stopped treatment because of adverse effects over 16 weeks. The committee heard from the company that a sensitivity analysis was done using treatment-specific stopping rates from Arnold et al. (2016). The committee noted that the annual stopping rate for dimethyl fumarate was lower in this analysis, at 14%, which it considered too low to reflect NHS clinical practice. The committee agreed that different treatment-specific stopping rates were preferable for modelling, but was concerned that the values the company derived from Arnold et al. were not valid. In the absence of other evidence, the committee agreed that the company's approach was acceptable for decision-making.

## Utility values in the economic model

### Generic preference-based quality-of-life evidence comparing dimethyl fumarate with biologicals and apremilast is not available

3.15 The committee understood that the company used the quality-of-life increments from all patients regardless of disease severity from the previous NICE technology appraisal guidance on [etanercept](#) and the PASI response rates from its network meta-analyses to estimate utility benefit. The committee was concerned that the company took the quality-of-life increments from data for a biological (etanercept) and that these values may not reflect those for dimethyl fumarate. The committee heard from the company that the increments in quality of life mapped from DLQI values taken in BRIDGE were similar to those in the NICE technology appraisal guidance on etanercept. The committee was also concerned that there was no data on quality of life for dimethyl fumarate from direct comparisons between dimethyl fumarate and biologicals or apremilast. In the absence of generic preference-based quality-of-life evidence from BRIDGE, the committee concluded that the evidence submitted by the company was sufficient for decision-making.

### Assuming that the same quality-of-life increment is applied regardless of the position of the treatment in a sequence is appropriate

3.16 The committee was aware that, in its model, the company did not apply a quality-of-life increment for a treatment if it was first in the sequence, but applied the increment if the treatment was later in the sequence. It noted the ERG's concern that this would result in greater quality-of-life gains for longer treatment sequences. The committee noted that, in its exploratory analyses, the ERG assumed that all treatments during the induction period have the same baseline quality-of-life values, irrespective of position in a sequence. The committee agreed that the ERG's exploratory analysis was appropriate.

## Costs in the economic model

### **The ERG's estimate of costs for 'non-responders' during induction of £121 is more appropriate than the company's estimate of £225**

3.17 The committee was aware that the company used the cost estimates from NICE's technology appraisal guidance on [apremilast](#) for people whose disease does not respond to treatment and who then go on to get another treatment during induction ('non-responder' costs). The committee understood from the ERG that this was a significant driver of cost-effectiveness results because the company had not considered that the model in the apremilast appraisal applied a 28-day cycle compared with the company's 14-day cycle in this appraisal. The committee agreed that the ERG's £121 was more appropriate than the company's £225 estimate for 'non-responder' costs.

## Cost-effectiveness estimate

### **The ERG's base case and sensitivity analysis are preferred for decision-making**

3.18 The committee had concluded that a lifetime horizon was appropriate (see [section 3.13](#)), that the same quality-of-life increment should be applied to treatments during the induction period (see [section 3.16](#)) and that the 'non-responder' cost estimates should be corrected to account for the company's 14-day cycle (see [section 3.17](#)); the ERG included all these assumptions in its base-case analysis. The ERG also made additional adjustments in the company's model. It:

- applied a cost for an apremilast induction pack (cost £10 less)
- used low doses for etanercept and ustekinumab
- assumed indivisible vials for infliximab and applied administrative costs
- updated best supportive care costs (£4 more)

- applied 14 days of drug wastage for dimethyl fumarate, fumaderm and apremilast
- applied additional GP monitoring costs for blood tests for people having dimethyl fumarate (cost £36 more).

The committee agreed that these changes were appropriate. In addition, the company had confirmed that, in the summary of product characteristics for dimethyl fumarate, the recommended frequency of monitoring was 4 full blood counts per year rather than 12 per year, as in its base case. The ERG used 4 full blood counts per year in its sensitivity analysis. The committee concluded that the most plausible analysis was the ERG's exploratory analysis including the lower monitoring frequency.

## **Treatment sequences with comparators that are not cost effective may result in biased ICERs that are not appropriate for decision-making**

3.19 The committee noted that the ERG's incremental cost-effectiveness ratios (ICERs) for each biological and apremilast alone (that is, not in a sequence with other treatments) compared with best supportive care were more than £30,000 per quality-adjusted life-year (QALY) gained. The committee was aware that previous NICE technology appraisals considered biologicals and apremilast to be a cost-effective use of NHS resources. The committee was concerned that a model with apparently cost-ineffective comparators within treatment sequences could result in misleading ICERs. It understood that this was because the cost effectiveness of any new treatment included early in these sequences would likely be driven by avoiding more expensive (and apparently cost-ineffective) subsequent treatments and best supportive care. In addition, it recalled that the company's and ERG's approach included a limited number of selected treatment sequences (see [section 3.11](#)). Therefore, the committee agreed that the most reliable ICER for decision-making in this appraisal was from the comparison of dimethyl fumarate with best supportive care without a treatment sequence.

## **Dimethyl fumarate is cost effective in people for whom best**

## supportive care is the only option

- 3.20 The ICER for dimethyl fumarate followed by best supportive care compared with best supportive care alone was £23,115 per QALY gained. The committee agreed that dimethyl fumarate followed by best supportive care is cost effective compared with best supportive care alone. It concluded that dimethyl fumarate is a cost-effective use of NHS resources for people for whom best supportive care is the only option, that is, if biologicals and apremilast are not effective or not tolerated.

## Dimethyl fumarate is cost effective for people with severe psoriasis

- 3.21 The committee considered whether dimethyl fumarate was a cost-effective use of NHS resources for people with severe psoriasis for whom treatment with biologicals or apremilast is an option. It considered that the analyses including treatment sequences of biologicals or apremilast were potentially misleading (see [section 3.19](#)). However, it appreciated that the cost effectiveness of dimethyl fumarate followed by best supportive care compared with best supportive care alone was comparable with the respective cost-effectiveness estimates in the previously published appraisals of the biologicals and apremilast. These drugs are currently recommended as options for treating severe chronic plaque psoriasis that has not responded to other systemic therapies, or when systemic therapy is contraindicated or not tolerated. The committee was also aware that dimethyl fumarate was less costly than biologicals and apremilast, and considered that dimethyl fumarate would likely provide sufficient savings per QALY lost compared with biologicals and apremilast. The committee appreciated that the positioning of dimethyl fumarate would be driven largely by patient choice and understood that patients value having a range of treatment options. The committee concluded that it could recommend dimethyl fumarate as an option for treating severe chronic plaque psoriasis that has not responded to other systemic therapies, including ciclosporin, methotrexate and PUVA (psoralen and long-wave ultraviolet A radiation), or when these options are contraindicated or not tolerated.

## Stopping rule

- 3.22 The committee was aware that previous NICE technology appraisals for treating psoriasis recommended stopping treatment if there was an inadequate response; an adequate response is defined as either a 75% reduction in the PASI score from when treatment started, or a 50% reduction in the PASI score and a 5-point reduction in DLQI from when treatment started. The committee agreed that if there was no response to dimethyl fumarate, the patient should not continue treatment. It noted that PASI 75 was the primary outcome in the trial data used to model the cost effectiveness of dimethyl fumarate. The committee therefore concluded that, for consistency with previous appraisals for treatments in psoriasis, dimethyl fumarate should be stopped if there is an inadequate response at 16 weeks, with an adequate response as defined in previous NICE technology appraisals.

## Other factors

### Equality issues

- 3.23 The committee noted, as in previous NICE technology appraisals on psoriasis, the potential equality issues, that:
- the PASI might underestimate disease severity in people with darker skin
  - the DLQI has limited validity in some people, and may also miss anxiety and depression.

The committee concluded that, when using the PASI, healthcare professionals should take into account skin colour and how this could affect the PASI score, and make the clinical adjustments they consider appropriate. Also, it concluded that, when using the DLQI, healthcare professionals should take into account any physical, psychological, sensory or learning disabilities, or communication difficulties, that could affect the responses to the DLQI and make any adjustments they consider appropriate.

## **Innovation**

- 3.24 The committee heard differing views about whether dimethyl fumarate was innovative in its potential to make a significant and substantial impact on health-related benefits. It agreed that dimethyl fumarate uses an existing mechanism of action in a new formulation, and agreed that it provided an additional oral therapy. However, the committee appreciated that some people with psoriasis prefer less frequent injectable treatments to more frequent oral ones and therefore concluded that, in this respect, there were no additional gains in health-related quality of life over those already included in the QALY calculations.

## **Pharmaceutical Price Regulation Scheme**

- 3.25 The Pharmaceutical Price Regulation Scheme (2014) payment mechanism was not relevant in considering the cost effectiveness of this technology.

## 4 Implementation

- 4.1 Section 7(6) of the National Institute for Health and Care Excellence (Constitution and Functions) and the Health and Social Care Information Centre (Functions) Regulations 2013 requires clinical commissioning groups, NHS England and, with respect to their public health functions, local authorities to comply with the recommendations in this appraisal within 3 months of its date of publication.
- 4.2 The Welsh Ministers have issued directions to the NHS in Wales on implementing NICE technology appraisal guidance. When a NICE technology appraisal recommends the use of a drug or treatment, or other technology, the NHS in Wales must usually provide funding and resources for it within 2 months of the first publication of the final appraisal determination.
- 4.3 When NICE recommends a treatment 'as an option', the NHS must make sure it is available within the period set out in the paragraphs above. This means that, if a patient has plaque psoriasis and the doctor responsible for their care thinks that dimethyl fumarate is the right treatment, it should be available for use, in line with NICE's recommendations.

## 5 Appraisal committee members and NICE project team

### Appraisal committee members

The 4 technology appraisal committees are standing advisory committees of NICE. This topic was considered by [committee B](#).

Committee members are asked to declare any interests in the technology to be appraised. If it is considered there is a conflict of interest, the member is excluded from participating further in that appraisal.

The [minutes](#) of each appraisal committee meeting, which include the names of the members who attended and their declarations of interests, are posted on the NICE website.

### NICE project team

Each technology appraisal is assigned to a team consisting of 1 or more health technology analysts (who act as technical leads for the appraisal), a technical adviser a project manager.

**Sharlene Ting**

Technical Lead

**Jasdeep Hayre**

Technical Adviser

**Jeremy Powell**

Project Manager

ISBN: 978-1-4731-2670-1

## Accreditation

