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Welcome to the training module on the Dentine Hypersensitivity Experience Questionnaire (DHEQ). This module will explore the impact of Dentine Hypersensitivity (DH) on your patients and their quality of life as well as the development and the applications of the DHEQ.

For years, GSK has been at the forefront of consumer research and studies have shown that DH impacts on patients in a number of ways – from eating habits to avoiding brushing. GSK were also first to make the link between DH and quality of life – noting the impact the condition has on patients’ quality of life and psychological wellbeing. However, until the creation of the DHEQ, we have not had significant and standardised clinical measures.

The DHEQ allows us to evaluate the extent and the severity of a patient’s DH. It also allows us to measure quality of life improvements when using a product such as Sensodyne Repair & Protect.

This module can contribute 1.5h towards your verifiable Continuing Professional Development (CPD) allowance.

In order to qualify for CPD, you will need to complete the multiple choice questions at the end of the module. You will need to have a registered account and be logged in to complete the CPD questions.

We hope you find this module useful, and that it gives you an insight into the constant process of research and development carried out by GSK in order to continue to champion better understanding of DH as well as provide innovative and effective treatments for the condition.

Module Objectives:

- ▶ To highlight the impact of DH on patients’ everyday realities
- ▶ To demonstrate the importance of communicating effectively with patients in order to detect and address the condition
- ▶ To raise awareness of GSK’s involvement in the research and development process of the DHEQ and the provision of effective solutions for sufferers

Learning Outcomes

- ▶ Understand the importance of communicating effectively with patients and addressing issues of DH
- ▶ Have an awareness of why there was a need to develop DHEQ and why it is a highly effective tool
- ▶ Develop an understanding of the impact DH can have on patients’ lives
- ▶ Appreciate the evidence showing that Sensodyne Repair & Protect toothpaste delivers effective long-term relief from DH



The Sensodyne® mouthwash is specifically designed for people with sensitive teeth. It contains fluoride to help remineralise enamel and is available in two mint flavours for fresh breath

Introduction: An introduction to the DHEQ and quality of life measures

The practice of dentistry is based on both the treatment and prevention of oral disease and enabling patients to eat, drink and socialise without pain and embarrassment, thereby improving their quality of life.¹

Originally, however, measures of oral health focussed entirely on the biological and pathological aspects of oral disease.¹

The situation changed with the introduction of the oral health related quality of life (OHQoL) measures and DHEQ was developed by GSK and a team of scientists specifically to address the gap of knowledge that exists in the profession's understanding of DH.¹ This development is reflective of GSK's commitment to patients with DH and represents a shift to the study of patient impact in addition to clinical impact of the condition.

Watch the video below about placing the patient at the centre of the diagnosis.



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Section 1: What is the DHEQ?

The DHEQ is a questionnaire that was developed by researchers at the University of Sheffield to assess the subjective impact of Dentine Hypersensitivity (DH) on five areas of a patient's life:²⁻⁵

- ▶ **Daily functional restrictions** – how sensitivity changes a patient's ability to carry out daily activities like eating and drinking (e.g. slower eating)
- ▶ **Coping behaviours** – the steps patients take to cope with and prevent sensitivity (e.g. warming foods and drinks)
- ▶ **Personal identity** – the impact sensitivity has on a patient's sense of who they are (e.g. feeling old)
- ▶ **Social impact** – the impact sensitivity has on a patient's interactions with other people (e.g. difficulty conversing or feeling embarrassment)
- ▶ **Emotional impact** – the impact sensitivity has on the way a patient feels (e.g. annoyance)

Watch this video to see Peter Robinson explain the Dentine Hypersensitivity Experience Questionnaire (DHEQ).



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Section 1: What is the DHEQ? (continued)

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Background – why was the DHEQ developed?

The starting point of diagnosing DH is the pain that the patient experiences. Unlike other oral diseases, the clinical defects that are associated with DH (like gingival recession or abrasion cavities) are very common and don't necessarily mean the patient suffers from DH.¹

This is also the reason why DH requires a differential diagnosis. To exclude other conditions, a proper history of the nature of the pain, a clinical evaluation and a radiographic examination are needed. Along with these, the use of diagnostic tests (such as percussion, palpation and pulp-vitality testing) allow the clinician to confirm the patient is suffering from DH.⁶

All that puts the person with the condition at the heart of the diagnosis. Equally, only they can tell whether a treatment is effective. This means firstly that assessments of DH must centre on the experiences of the patient and, secondly, that devising an effective way to communicate with patients about their experiences is crucial to the process.¹

The DHEQ was commissioned by GSK and developed by leading academics at the University of Sheffield to fill in this gap. By focusing on the specific impacts of DH, the DHEQ was designed to be very sensitive to differences in DH between people and to respond to any changes brought about by treatment.⁷

Watch the videos below for further insight on why the DHEQ was developed and the benefits to the patient.



Section 2: The results of the DHEQ

Significant Insights

Right from the early stages of developing the DHEQ, it was apparent to the researchers that DH was a much more complex condition than credited before that point. At the same time, it appeared that patients may have been conditioned not to bother their dentists with it.

“Often, clinicians do not hold conversations about DH with their patients or, if they do, they may not go far beyond a product recommendation. Yet the quality of life impact that having a persistent discomfort, such as DH, in the mouth can be very significant. In one extreme case, a participant talked for 1.5 hours about the various impacts DH has on their life, only to dismiss it all as “not important” at the end of the interview.”

Barry Gibson, author of DHEQ

This shows, in short, a large discrepancy between the way DH is perceived by dentists and even patients, and the actual scale of the impact the condition can have on people’s lives.

Elaborate mechanisms for coping with DH include:

- ▶ Avoiding hot drinks, cold drinks, ice cream
- ▶ Eating on a specific side of the mouth
- ▶ Avoiding social situations
- ▶ Becoming angry and frustrated

Peter Robinson elaborates the point in the following video.



What did you
learn during the
development of DHEQ?

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Evaluation Results

In formal evaluations conducted by scientists from the University of Sheffield in collaboration with GSK scientists, DHEQ was shown to have excellent abilities to detect differences between groups with differing levels of DH and to respond to changes brought about by treatment.¹

The DHEQ was able to measure and distinguish:¹

- ▶ The differences in the quality of life between people with mild and those with moderate DH
- ▶ The improvements in the condition when treated

Analysis of the trial data also resulted in the calculation of a value known as the Minimally Important Difference (MID) – a threshold above which a change in a questionnaire score becomes clinically relevant. This value is critically important when evaluating treatments.¹

Using the DHEQ:

- ▶ When evaluating the extent of a patient's DH can prevent them from having to adapt to the condition in ways that might damage their quality of life¹
- ▶ Makes treatments a lot easier to evaluate and can highlight the effectiveness of a treatment and encourage patient compliance¹

The DHEQ has also been used to record fluctuations in impact on a daily basis. This research has identified the factors associated with worse problems from DH and can therefore be used to guide treatment strategies, as well as the underlying psychological mechanisms involved in the experience of the condition.¹



The Sensodyne® mouthwash is specifically designed for people with sensitive teeth. It contains fluoride to help remineralise enamel and is available in two mint flavours for fresh breath

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The Pooled Analysis Study⁷

- ▶ 7 clinical trials
- ▶ 905 participants
- ▶ Age range 18-65 years
- ▶ Across Canada, Europe and USA



The Sensitivity Studies⁸

- ▶ 4 – 24 weeks duration
- ▶ Standard randomised
- ▶ Controlled
- ▶ Examiner blinded
- ▶ 2 or 4 treatment-arm
- ▶ Parallel group

Section 2.2: The Pooled Analysis Study – The DHEQ in numbers (continued)

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The Extent of Suffering^{9,10}

- ▶ 9 out of 10 sufferers had been experiencing the condition for longer than one year
- ▶ Almost 40% of sufferers reported experiencing DH sensations several times a week
- ▶ 1 in 4 sufferers experienced DH sensations several times a day
- ▶ 22.4% of sufferers reported DH sensations lasting ‘about a minute’

The majority of patients in this analysis had experienced sensitivity for between 1 and 20 years and felt sensations on a daily or weekly basis. The main triggers of these sensations were cold drinks, foods, cold air or ice cream.⁸ All 5 areas of life assessed by the DHEQ were shown to be impacted by DH.⁸

Discover the moments of impact that patients like yours experience



* Pooled analysis¹⁰ of 7 clinical studies involving 905 participants aged 15-65 (mean 39.7 years) in Canada, Europe and USA before treatment. All participants who gave ratings of 5, 6 or 7 (agree a little, agree, strongly agree) on a 7-point impact scale were considered to have the impact in question

Section 2.2: The Pooled Analysis Study – The DHEQ in numbers (continued)

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	N=905	%
Duration of condition (n=97)		
≤ 1 year	97	10.8
1-5 years	393	43.4
5-20 years	374	41.3
> 20 years	33	3.6
Part of mouth affected		
Top front	604	66.7
Top back	523	57.8
Bottom front	533	58.9
Bottom back	530	58.6
Frequency of sensation (n=900)		
Monthly	152	18.8
Weekly	384	42.5
Daily	364	40.3

Adapted from RH02026, GSK Data on File; Sufi F and Baker S. The subjective experience of dentine hypersensitivity – a pooled analysis. Presented at 93rd General Session & Exhibition of the IADR. 2015.

Section 2.3: Measuring responsiveness to treatment

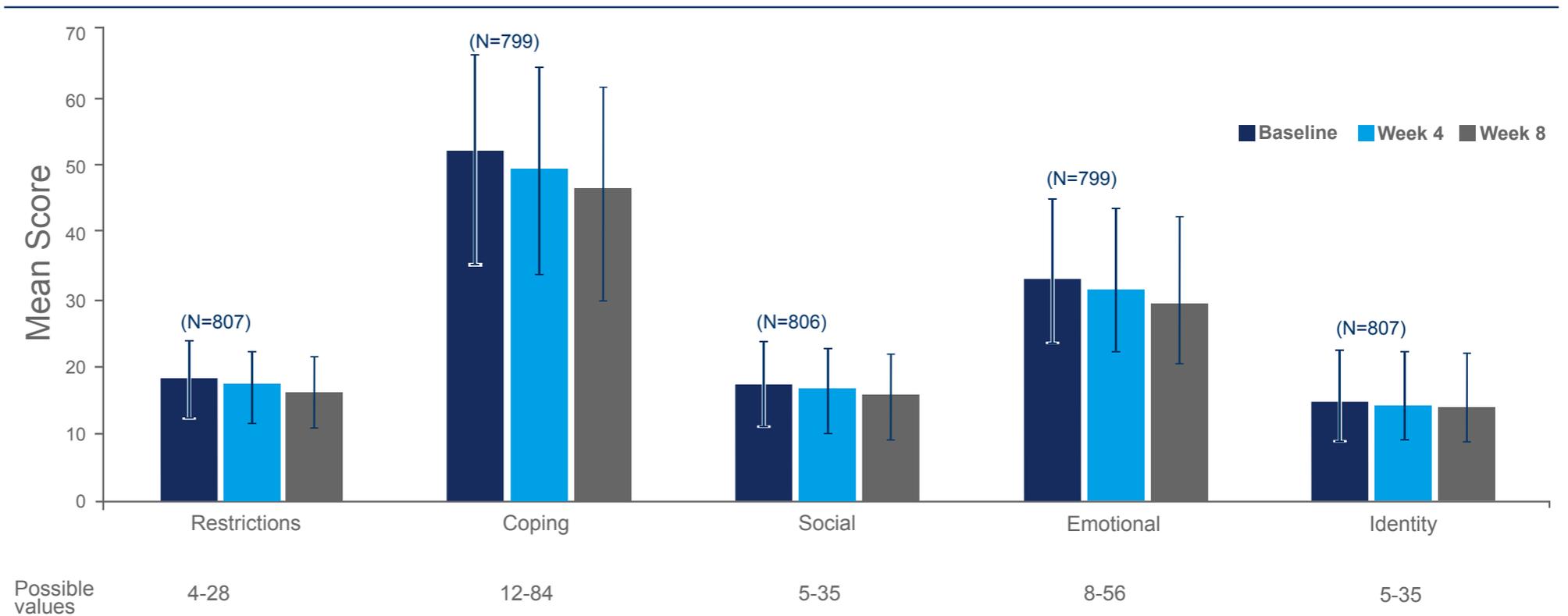
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In order to assess its validity as a tool for the measurement of DH, the DHEQ has been used to test the clinical efficacy of a range of products, including GSK Dentine Hypersensitivity products, active competitor products, and controls.

The DHEQ showed responsiveness to change within individuals over time and in response to treatment with twice-daily DH toothpaste.

The DHEQ captured significant decreases in all impact domains and total scores over time, with the largest effect seen at week 8.

Change in DHEQ domain scores over time



Adapted from RH02026, GSK Data on File; Sufi F and Baker S. The subjective experience of dentine hypersensitivity – a pooled analysis. Presented at 93rd General Session & Exhibition of the IADR. 2015.

Section 2.3: Measuring responsiveness to treatment (continued)

Sensodyne Repair & Protect – clinically proven to improve patients’ oral health-related quality of life with twice-daily use

The pooled analysis also clearly showed for the first time the clinical benefits of using Sensodyne Repair & Protect on a patient’s quality of life.

Explore the real-life benefits of using a specialist sensitivity toothpaste, as revealed by the DHEQ²

RESTRICTION

More than

x2

improvement in daily functional restrictions

ADAPTATION

More than

x1³/₄

improvement in coping impact

IDENTITY

More than

x1¹/₂

improvement in personal identity impact

SOCIAL

More than

x2¹/₂

improvement in social impact

EMOTIONAL

More than

x2

improvement in emotional impact

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Section 2.3: Measuring responsiveness to treatment (continued)

Impact items that showed the greatest improvements after 8 weeks of treatment were:

- ▶ Taking a lot of the pleasure out of eating and drinking
- ▶ Taking longer to finish some foods and drinks
- ▶ Problems with eating ice-cream
- ▶ Having to make modifications to eating and drinking
- ▶ Avoiding cold foods or drinks
- ▶ Avoiding contact with certain teeth when eating
- ▶ Anxious that eating or drinking may cause hypersensitivity
- ▶ Sensations are irritating
- ▶ Annoyed with self for doing something that causes hypersensitivity
- ▶ Sensations are annoying

This pooled analysis confirms the longitudinal validity and reliability of the DHEQ as a subjective measure of the everyday impact of DH. It also illustrates the considerable impact DH has on different areas of patients' lives and the effectiveness of sensitivity products in improving oral health-related quality of life.¹⁰

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Section 3: The DHEQ15 and addressing DH in your practice

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In research, with the 48 question version of the DHEQ, groups of people were studied and so any errors of measurement could be averaged out across the sample.¹

In clinical practice however, when dentists are concerned with individual patients, more concise yet accurate measures must be in place.¹

As a result, a 15 question version (DHEQ15) was developed for use in general dental practices. The DHEQ15 could be used to detect and monitor changes in response to treatment, which can serve as an invaluable aid to clinical care in combatting this complex condition.³

Learning activities:

Introduce the DHEQ15 to patients you know have suffered from DH and find out what they think about it.

Talk to your colleagues and discuss how best you can apply it in your everyday practice.

Peter Robinson explains how addressing DH and using the DHEQ15 can benefit your practice:



How might the
development of
DHEQ affect clinical practice?

Section 4: The (short) Dentine Hypersensitivity Experience Questionnaire (DHEQ-15)³

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The (short) Dentine Hypersensitivity Experience Questionnaire (DHEQ-15)³

Thinking about yourself over the last month, to what extent would you agree or disagree with the following statements (please check only one response for each question):

To print this document [click here](#).

	Strongly agree (7)	Agree (6)	Agree a little (5)	Neither agree or disagree (4)	Disagree a little (3)	Disagree (2)	Strongly disagree (1)
1. Having sensations in my teeth takes a lot of the pleasure out of eating and drinking							
2. It takes a long time to finish some foods and drinks because of sensations in my teeth.							
3. There have been times when i have had problems eating ice cream because of these sensations.							
4. I have to change the way I eat or drink certain things							
5. I have to be careful how I breathe on a cold day.							
6. When eating some foods I have made sure they don't touch certain teeth.							
7. Because of the sensations I take longer than others to finish a meal.							
8. I have to be carefull what I eat when I am with others because of the sensations in my teeth.							

	Strongly agree (7)	Agree (6)	Agree a little (5)	Neither agree or disagree (4)	Disagree a little (3)	Disagree (2)	Strongly disagree (1)
9. Going to the dentist is hard for me because I know it is going to be painful as a result of sensations in my teeth.							
10. I've been anxious that something I eat or Drink might cause sensations in my teeth.							
11. The sensations in my teeth have been irritating.							
12. The sensations in my teeth have been annoying.							
13. Having these sensations in my teeth makes me feel old.							
14. Having these sensations in my teeth makes me feel damaged.							
15. Having these sensations in my teeth makes me feel damaged.							

Section 5: How was the DHEQ developed?⁷

The major hurdle that the DHEQ is designed to overcome is the perception of DH as ‘just an irritation’ as its importance is often played down by dental professionals and clinicians. Yet during the process of creating the DHEQ, the team discovered that the impacts of DH can be so extensive as to prompt some participants to talk about their experiences for over an hour.

In order to be a robust measure of those impacts, the study was designed in seven stages based on a golden standard multistage impact approach.

Peter Robinson describes the process.



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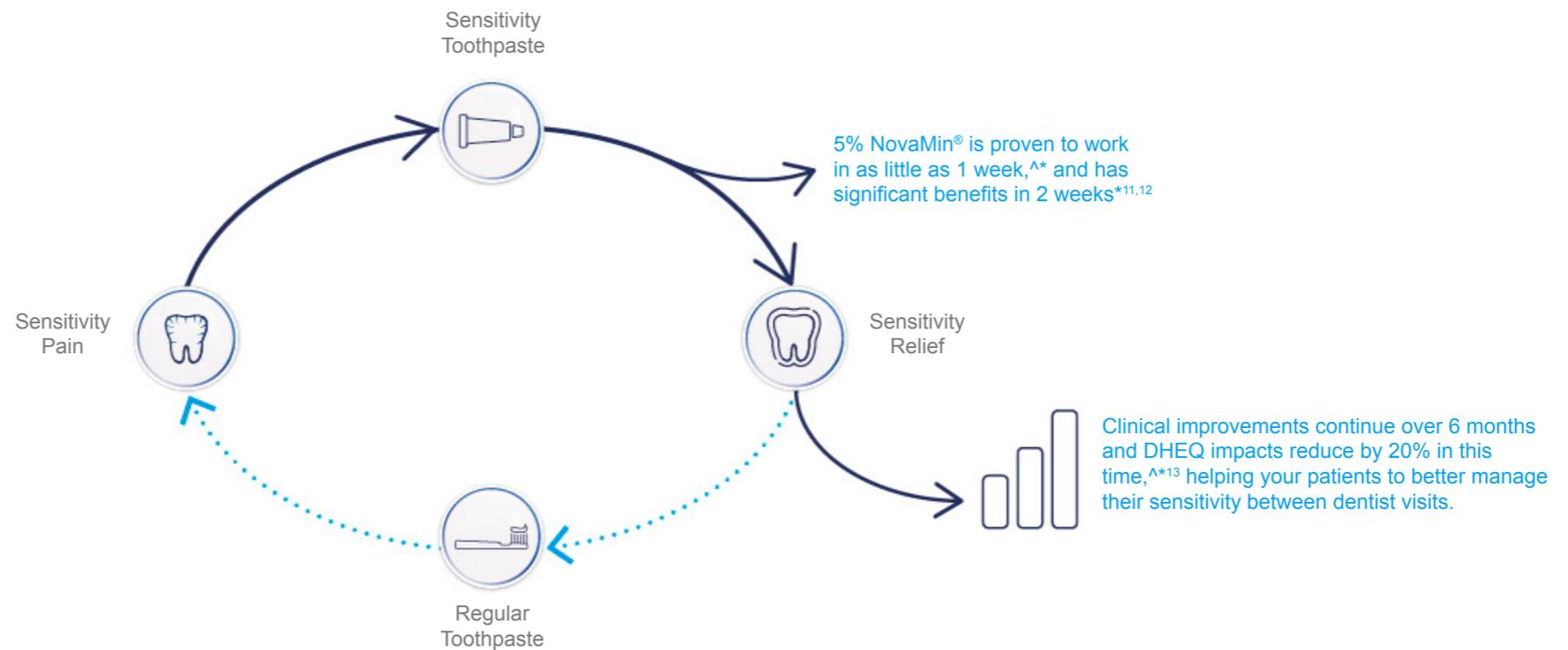
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Section 6: Repair & Protect – helping your patients manage the impacts of DH

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With twice-daily brushing, Sensodyne Repair & Protect offers long lasting protection from DH.

Recommend Sensodyne Repair & Protect as a daily use toothpaste to help your patients break the DH cycle.



The single formulation of 5% NovaMin and 1450 ppm sodium fluoride forms a hydroxyapatite-like layer, which is robust to dietary acid, providing strong repair*¹⁴⁻¹⁸

(*Vs. previous formulation. Forms a protective layer over the sensitive areas of the teeth. Brush twice a day for lasting sensitive protection.)

Evidence from clinical studies demonstrates that clinical improvements continue over 6 months and DHEQ impacts reduce in this time.¹³

Section 6: Repair & Protect – helping your patients manage the impacts of DH (continued)

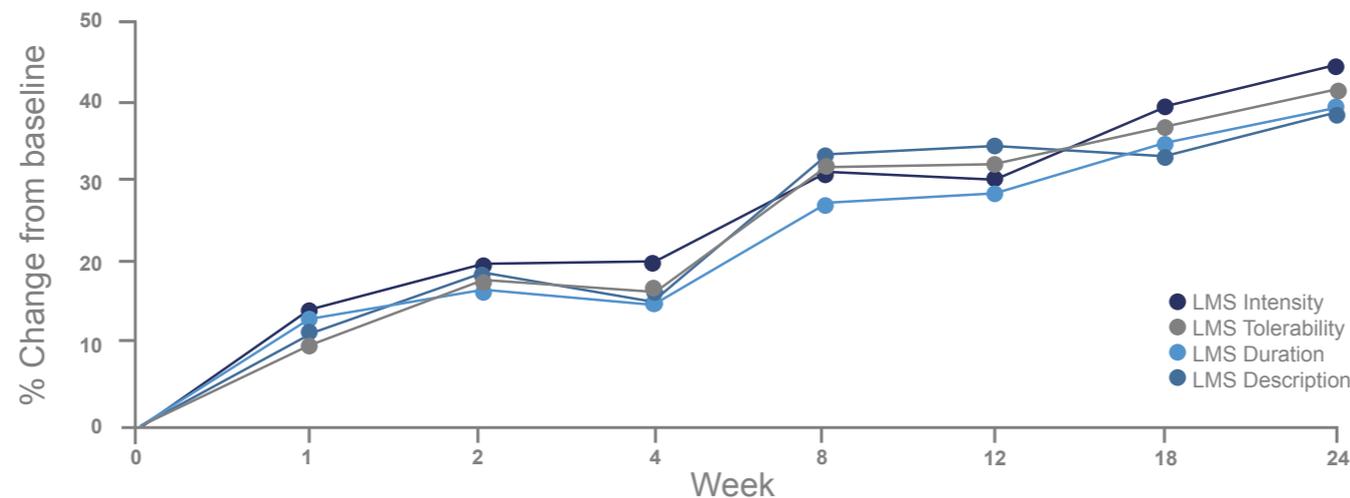
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Clinically proven sensitivity relief

Labelled magnitude scales (LMS)

Subjective response following evaporative air stimulus

39-44% improvements in LMS responses after 24 weeks*



Monadic study with continued twice-daily use of 5% NovaMin[®] toothpaste demonstrated a reduction in sensitivity from week 1¹³.

Mirrors the % reduction in examiner-assessed sensitivity to the same stimulus¹³.

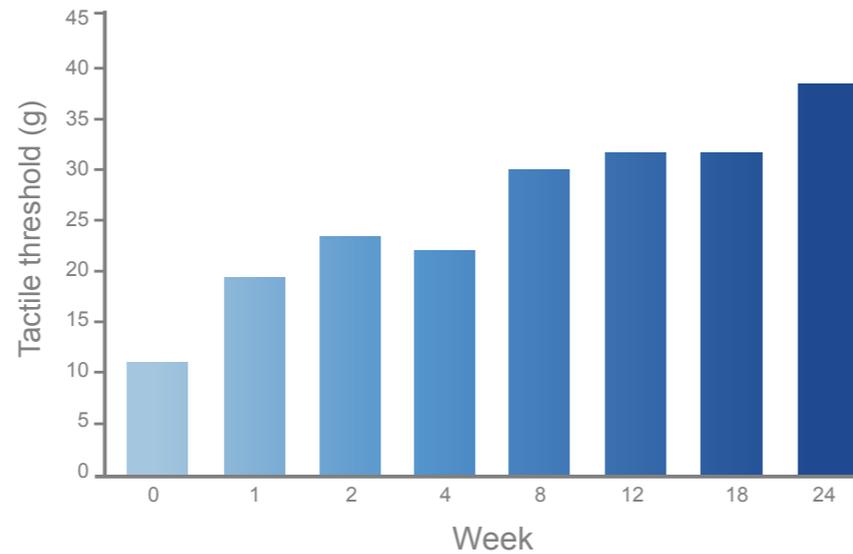
* % changes in response to labelled magnitude scales (LMS), from baseline to week 24. Adapted from GSK Data on File RH0189. Treatment: twice-daily brushing with 5% NovaMin and 1426 ppm fluoride (SMFP) toothpaste, ITT population (n=75). LMS range 0-100mm. Reductions in LMS responses indicate improvements in sensitivity.

Section 6: Repair & Protect – helping your patients manage the impacts of DH (continued)

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Response to pressure

x2.2 greater improvement in response to tactile pressure after 24 weeks**



Monadic study with continued twice-daily use of 5% NovaMin[®] toothpaste demonstrated a reduction in sensitivity from week 1¹³.

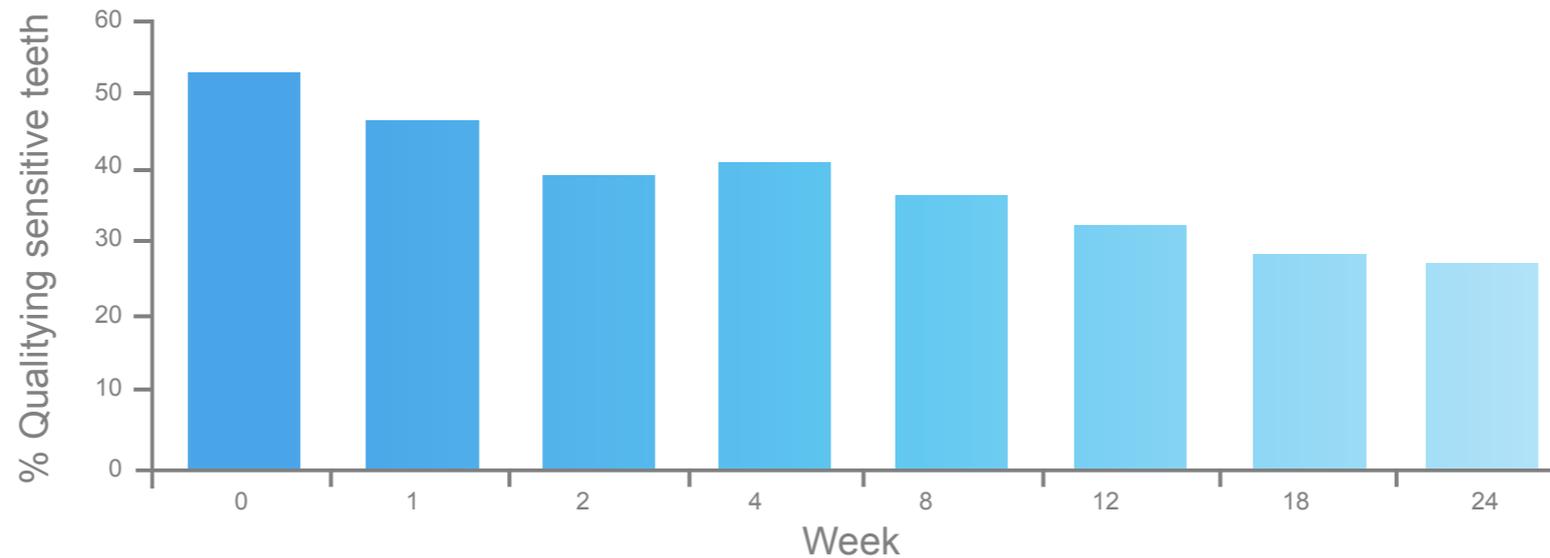
* % changes in response to labelled magnitude scales (LMS), from baseline to week 24. Adapted from GSK Data on File RH01897. Treatment: twice-daily brushing with 5% NovaMin and 1426 ppm fluoride (SMFP) toothpaste, ITT population (n=75). LMS range 0-100mm. Reductions in LMS responses indicate improvements in sensitivity.

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Extent of sensitivity

53% fewer sensitive teeth after 24 weeks***



Monadic study with continued twice-daily use of 5% NovaMin[®] toothpaste demonstrated a reduction in sensitivity from week 1¹³.

*% change in the proportion of teeth that qualified for the study, from baseline to week 24. Adapted from GSK Data on File RH01897. Treatment: twice-daily brushing with 5% NovaMin and 1426 ppm fluoride (SMFP) toothpaste, ITT population (n=75). LMS range 0-100mm. Reductions in LMS responses indicate improvements in sensitivity.

Section 7: The Sensodyne Range

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Powered by NovaMin, Sensodyne Repair & Protect has clinically proven technology for long-lasting protection against dentine hypersensitivity.**15-18



1450 ppm F
(sodium fluoride)

SLS free

Contains
NovaMin®



The Sensodyne® mouthwash is specifically designed for people with sensitive teeth. It contains fluoride to help remineralise enamel and is available in two mint flavours for fresh breath

Section 7: The Sensodyne Range (continued)

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The Sensodyne® Daily Care toothbrush is specially designed for gentle, thorough cleaning of sensitive teeth

Tapered, extra-soft bristle structure to gently clean sensitive teeth and gums

Recommended for patients with sensitive teeth

Sensodyne – the No1 Dentist and Hygienist recommended brand for sensitive teeth¹⁹

*With twice daily brushing

Section 8: Conclusion

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The DHEQ has shown that Dentine Hypersensitivity has a much more profound effect on people’s quality of life than previously estimated.

Your patients may be avoiding favourite foods and drinks and even social events in order to prevent being in pain. They may also be suffering from psychological impacts, such as frustration and anger.

The combined impacts of DH on a patient’s quality of life can be huge without them even realising it, which is why it is so important to initiate conversations about DH and genuinely address the condition.

The DHEQ15 was created to help you determine the nature and extent of your patients’ DH as well as to enable you to track the effectiveness of the treatments you recommend.

Use the DHEQ15 alongside recommending Sensodyne Repair & Protect to help your patients achieve lasting relief and repair* from DH.

To provide relief from Dentine Hypersensitivity, recommend Sensodyne Repair & Protect with NovaMin to your patients.

**forms a protective layer over the sensitive areas of the teeth. Brush twice a day for lasting sensitivity protection.*



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