FACT SHEET

FOR NON-ORAL HEALTH PROFESSIONALS

Dentine Hypersensitivity

Objectives

The aim of this fact sheet is to provide non-oral health professionals with an understanding of Dentine Hypersensitivity (DH) to include its:

- background
- aetiology and predisposing factors
- diagnosis
- management

Background

Dentine is the mineralized dental tissue layer that makes up the bulk of a tooth. It lies beneath the hard enamel of the tooth's crown and extends below the gum line, encasing the roots of the tooth. A bone-like vital tissue, it has the capacity to respond to physiologic and pathologic stimuli.

Dentine hypersensitivity (DH), also referred to as tooth sensitivity, occurs when dentine becomes exposed to the oral environment, either due to enamel being lost on the tooth crown, and/or the result of gum recession. DH is a frequently encountered oral condition affecting up to half of the population[1], causing pain and discomfort. In some cases, it can lead to impaired quality of life[2,3]. DH is characterized by a sharp, arresting, transient pain arising from exposed dentine, usually at the cervical margin of the tooth, just above the gum line. It is most commonly a response to cold drinks and foods, cold windy weather or, less commonly, sweet/sour and tactile stimuli[2,4,5].

It is believed that DH is caused by increased fluid movement inside microscopic dentinal tubules in healthy dentine, stimulating pain from tooth pulpal nerve endings; this is known as the hydrodynamic theory[6].

There is a wide range of reported DH prevalence as a result of differing data capture methodology: a systematic review[7] capturing data from questionnaires both with and without clinically diagnosed dentine hypersensitivity indicates 11.5% prevalence. Large recent general dental practice epidemiological studies with clinically diagnosed DH shows higher prevalence of up to 50% in adults populations[1,8,9]. DH peaks between 38-47 years of age[1], with more females presenting with this oral condition than males[10].

Aetiology and predisposing factors

DH occurs (Figure 1) when tooth dentine is exposed on the tooth root due to gingival recession (gum shrinkage)[11]. This is caused by multifactorial aetiological associations, including combinations of periodontal (gum) diseases and their treatment, thin gingival phenotype, the position of the tooth in the bone and lack of bone covering the tooth root, oral piercings, smoking and traumatic toothbrushing[4,11]. The other main associated aetiological agent is erosive tooth wear[12], removing enamel from the tooth crown and/or dentine from the root, due to frequent acid insult (intrinsic and extrinsic acids), often in combination with synergistic, abrasive tooth wear (traumatic toothbrushing). The dentinal tubules must be patent from the oral environment to the pulp tissues, erosive challenges being predominantly responsible for patency of dentinal tubules.

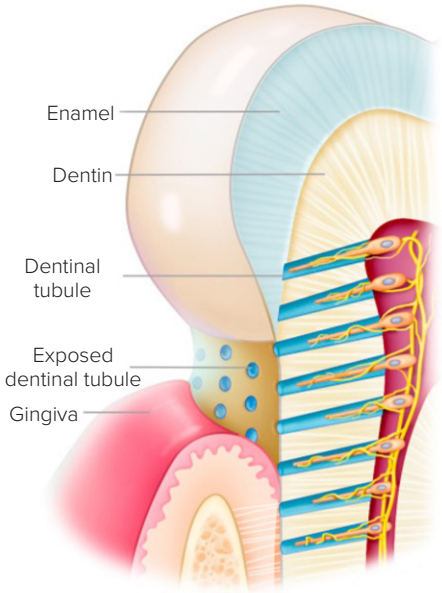

Figure 1: Cause of dentine hypersensitivity: dentinal tubules open to the oral environment due to enamel loss or gingival recession[11].

If the aetiological factors are not addressed and treatment not implemented, DH can become a long-term oral health problem, with most people experiencing DH for over two years[2]. Symptoms often impact negatively on daily activities such as speaking, eating, drinking, and toothbrushing[3].

Determining a diagnosis

DH is difficult to diagnose (Figure 2) because only a very small amount of dentine needs to be exposed to cause pain. Oral health professionals will want to exclude other conditions with similar pain symptoms such as gum disease, tooth decay, a cracked tooth or teeth, inadequate restorations, vital tooth bleaching, atypical facial pain, bruxism and poorly developed enamel and other enamel and dentine defects for example molar incisor hypomineralization (MIH)[4].

It is important to note that pain associated with DH always occurs after exposure to an external stimulus, is transient in nature and is not a continuous or spontaneous pain[2]. DH frequently occurs after an acidic drink or food stuff, with 85% of people with erosive tooth wear experiencing DH[10]. Conversations about DH do not routinely take place in dental surgeries which can lead to fewer diagnoses[13]. Patients felt that oral healthcare professionals only have a limited time available and that DH was subjective and less important than other conditions, therefore not worthy of discussion with the dental team[13]. Understanding the barriers to DH conversations and how to facilitate them will, for most people, lead to successful treatment to alleviate DH pain[2].

Dentine Hypersensitivity: Clinical manifestations and symptoms

Tooth structure	Exposed Dentine (can be very small area) Usually acj-amelocemental junction, rarely 1 tooth Buccal or lingual aspect (2:1)
Trigger	Cold/windy stimuli are worst
Pain	Short, sharp, transient pain on stimulation Not spontaneous pain, ceases on stimulus removal
Duration	Episodic, seasonal, majority of cases > 2 yrs, often takes many years to resolve
Prevalence	Variable, increasing in young and old age groups
Pulp status	Thought to be no pulpal pathology, 2min refractory period Transient pulpal inflammation
Exacerbates pain	Erosive challenge 85% patients with erosive tooth wear > DH Main DH risk factor is timing of intake of acid (increased sensitivty straight after acidic challenages)

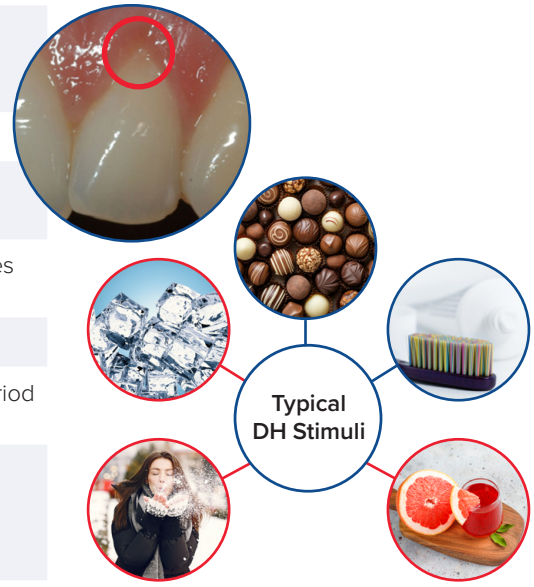

Figure 2: Clinical Manifestations and Symptoms.

Management by non-oral healthcare professionals

- If the pain is thought to be dental in origin, that is short, sharp and only for the duration of the stimulus, which is usually a cold stimulus, refer to an oral healthcare professional.
- An efficacious desensitising toothpaste could be recommended in the first instance (proven agents include stannous and arginine followed by calcium sodium phosphosilicates, nanohydroxyapatite, oxalate, potassium formulations).

Management by oral healthcare professional

- Start a conversation about DH.
- Identify main aetiological and predisposing factors with risk analysis.
- Give prevention advice to raise awareness of DH, empower the patient to modify aetiological factors, giving reassurance that most DH cases are treatable.
- Recommend regular, long-term application of proven, anti-sensitivity, home-use fluoride toothpaste[14-16].
- If application of proven anti-sensitivity home use treatment is not effective, in-office professional treatment is available from an oral healthcare professional, e.g. prophylaxis pastes, varnishes and precipitants, resin-based materials for restorations, periodontal (gum) plastic surgery to cover the exposed root dentine, laser therapy[14,17,18].
- Follow up on regular basis.

Oral healthcare delivery framework and oral cancer

Ask

- Patient's complaint, pain history and impact on everyday life, pain characteristics and factors that trigger the pain.
- Medical history.
- Dental history.
- Dietary history, to check for frequent acidic food and beverage consumption.
- Toothbrushing habits, to check for aggressive or incorrect brushing technique.

Look

- Patient's response to cold stimulus on teeth, ask patient to identify teeth with pain and look for tooth wear and gum shrinkage.

Decide

- If the patient should be referred to an oral healthcare professional to determine the diagnosis and most appropriate treatment.

Act

- Once DH is diagnosed by an oral healthcare professional, reiterate oral hygiene education, encourage associated factor prevention and self-care in particular tooth wear from frequent erosive challenge and gum recession from traumatic toothbrushing, removal of oral piercings, stop smoking.
- Empower the patient to act, giving reassurance that most DH is treatable.
- Recommend regular long-term application of proven anti-sensitivity home use fluoride toothpaste for alleviation of DH.
- Encourage follow up on regular basis with oral healthcare professional.

Document

- Pain history, symptoms, stimulating and relieving factors.
- Medical history.
- Dental history.
- Risk factors such as consumption of acidic foods and drinks, vomiting/reflux habit, oral hygiene habits and bruxism.
- Advice given to patient.
- Referral to an oral healthcare professional.

This factsheet is supported by:

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Other Resources

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FDI World Dental Federation. Dentine Hypersensitivity (https://www.fdiworlddental.org/dentin-hypersensitivity# (Accessed February 9, 2025)

Disclaimer:

The provided fact sheet offers general information and may require adaptation to suit the unique scope of work and regulations governing non-dental healthcare professionals in each country.

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