

# Oral Health

March 1998

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## ORAL HEALTH

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Other bulletins in the series address the following subjects:

- cancers
- cardiovascular diseases
- healthy environments
- healthy living
- injury prevention
- learning disabilities
- maternal and early child health
- mental health
- pain, discomfort and palliative care
- physical disability and discomfort
- respiratory diseases

The format of this bulletin was devised by Dr C Riley and Mrs J Barker of the Clinical Effectiveness Support Unit, Llandough and Dr AL Weightman of the Duthie Library, University of Wales College of Medicine, Cardiff

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## ORAL HEALTH BULLETIN

### Introduction

The planning of publicly funded health care must be based on an understanding of the effectiveness of interventions. Such planning can only happen if information is readily available, reliable and comprehensible, to people who do not necessarily have a medical training.

The original *Protocols for Investment in Health Gain* were written in the early 1990s to suggest areas where the introduction, or more widespread use, of certain practices could lead to worthwhile improvements in health for the people of Wales. The documents also highlighted current practices which were of questionable value. This revision has been prepared by reviewing the earlier *Protocol for Investment in Health Gain: Oral Health*<sup>1</sup> to provide some clear, updated statements with a precise indication of the strength of the evidence and its sources for each statement; and to introduce new statements covering subjects of important current interest.

The statements represent a systematic summary of evidence found through a formal literature search across a wide range of sources<sup>2</sup>. The evidence has been critically appraised using internationally accepted methods<sup>2</sup> compiled into this document under the direction of a consultant in dental public health, and reviewed by a multidisciplinary team who are directly involved in patient care<sup>3</sup>. In addition to this document, the information will be available electronically, via the NHS Cymruweb. Information on the methodology adopted (including a copy of the documentation), the formats in which the document is issued and details of other publications in the series, is available on request<sup>4</sup>.

The convention used in this document to indicate the **type of evidence** is<sup>5</sup>:

**'Type I evidence'** - at least one good systematic review (including at least one randomised controlled trial).  
**'Type II evidence'** - at least one good randomised controlled trial  
**'Type III evidence'** - well designed interventional studies without randomisation  
**'Type IV evidence'** - well designed observational studies  
**'Type V evidence'** - expert opinion; influential reports and studies

Many health issues do not lend themselves to investigation by randomised controlled trial. By valuing evidence from these trials more highly than observational studies there is a danger that interventions with limited effectiveness might be judged to be more worthy than those based on observation. Similarly, those observational studies which clearly prove effectiveness (and make a randomised trial unethical) might be undervalued. Randomised controlled trials are a reliable form of evidence and, when available, they are included. If not, high quality evidence has been sought within the other categories. Information assigned as type V evidence includes important reports or recommendations which should rightly be highly regarded.

The health gain notation (used to indicate the potential **benefit** to health) is<sup>6</sup>:

**'beneficial'** - effectiveness clearly demonstrated (1)  
**'likely to be beneficial'** - effectiveness not so firmly established (2)  
**'trade-off between beneficial and adverse effects'** - effects weighed according to individual circumstances(3)  
**'unknown'**- insufficient/inadequate for recommendation(4)  
**'unlikely to be beneficial'** - ineffectiveness is not as clearly demonstrated as for 6 (5)  
**'likely to be ineffective or harmful'** - ineffectiveness or harm clearly demonstrated (6)

It should be stressed that these gradings, while aiming to be impartial, represent only the best advice of the professionals involved in preparing the Bulletin. Although the statements are deliberately brief, statistically significant quantitative information has been provided where possible. This is usually given as % change, in keeping with the original source of the information. Cost-benefit issues are not considered.

In keeping with the original Protocols, these revised documents are designed to assist Health Authorities in developing local strategies informing the development of Health Improvement Programmes and in purchasing high quality health care. It is anticipated, however, that they will be of value to all health professionals in keeping abreast of the increasing body of dental literature and can provide an

agenda for future action in a wide variety of settings. It should be stressed that the publications will act as a supplement to, not a substitute for, clinical skills and experience. We anticipate that some of the conclusions reached may be controversial. Every effort has been made to include the best evidence within a subject area. Readers who are aware of any important studies that have been overlooked are encouraged to contact the project team<sup>7</sup>.

As in the original Protocol for Oral Health, diseases and disorders which compromise oral health have been grouped into subject areas. Eight subject areas were selected for the present exercise:

1. Tooth decay
2. Periodontal diseases
3. Dentofacial anomalies
4. Oral cancer
5. Temporomandibular joint disorders and complex facial pain
6. Tooth wear and hypersensitivity
7. Dental injuries
8. Inherited dental anomalies

Research retrieved via the Project Methodology proved the basis for the new statements. Many of the original Protocol statements lacked evidence which met the defined criteria for this project. Where it was felt, by the expert review group that these statements were still valid and represented accepted good practice, they have been appended to each subject area as type V evidence, citing the original Protocol as the reference. The source of evidence upon which each statement is based has thereby been identified.

The project has served to highlight that much of dentistry carried out today is based on accepted good practice. For much of this practice, further research would be an inappropriate use of resources. However there remain several areas where further research would be extremely valuable. Thus in addition to summarising evidence for dentistry, this document aims to demonstrate the gaps in the evidence base and to highlight opportunities and priorities for future research in this field.

The Review Group hope that the document will be considered a useful starting point for those wishing to review the scientific evidence supporting this important area of health care.

1 Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992

2 Barker J, Weightman AL and Lancaster J. Project for the Enhancement of the Welsh Protocols for Investment in Health Gain: Project Methodology 2. Cardiff: Duthie Library UWCM, 1997

3 See inside front cover.

4 Contact: Protocol Enhancement Project Office, Duthie Library, UWCM, Heath Park, Cardiff CF4 4XN.

5 This table is adapted from the *Bandolier* system (derived from the work at McMaster University, Canada) using the NHS Centre for Reviews and Dissemination criteria for a systematic review. See ref.3 or <http://www.jr2.ox.ac.uk/Bandolier/band6/b6-5.html> and the Database of Abstracts of Reviews of Effectiveness (DARE) in the *Cochrane Library*.

6 This Notation is modified from the tables used in Enkin M, Keirse MJNC, Renfrew M and Neilson J. A guide to effective care in pregnancy and childbirth. 2nd ed. Oxford: Oxford University Press, 1995 pp. 389-390.

7 See 4.

This initiative is funded by the Wales Office of Research and Development for Health and Social Care.

**Project Team**

**March 1998**

## 1 TOOTH DECAY

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

**1a.** An optimal concentration of **fluoride ions in public water** supplies protects teeth against decay, leading to a reduction in dental caries by up to 50% in deciduous and permanent teeth and in the adult dentition. Some water fluoridation schemes have been running for more than 50 years. Despite extensive study, no adverse effects to the human body have been demonstrated<sup>i,iii,iii</sup>.  
(Health gain notation - 1 "beneficial")

**1b.** The use of **fluoride supplementation** in caries prevention would seem to be effective but compliance can be problematic. A reduction in dental caries by up to 50% is observed in individuals at risk of developing dental caries, who can be persuaded to comply<sup>i</sup>.  
(Health gain notation - 2 "likely to be beneficial")  
Dosage for young children should aim to reduce the risk of fluorosis due to this source of fluoride<sup>ii</sup>.

**1c.** Plaque control using **fluoride toothpaste** is effective in the prevention of tooth decay. There are long term clinically significant reductions in dental caries showing a dose - response relationship<sup>i,ii,iii,iv</sup>.  
(Health gain notation - 1 "beneficial")

### The evidence

- i.** Ripa LW. A half-century of community water fluoridation in the united states: review and commentary. *Journal of Public Health Dentistry* 1993; **53 (1)**: 17-44  
(Type III evidence - well designed non-random trial);
  - ii.** Subcommittee on Health Effects of Ingested Fluoride. Health effects of ingested fluoride. Washington DC: National Academy Press, 1993  
(Type IV evidence - observational studies);
  - iii.** *Community Dental Health*. September 1996; Volume 13, Supplement 2  
(Type IV evidence - observational studies)
- 
- i.** Stephen KW. Systemic fluorides: Drops and tablets. *Caries Research* 1993; **27(suppl.1)**:9-15  
(Type V evidence - expert opinion)
  - ii.** Riordan PJ, Dipodod MPH. The place of fluoride supplements in caries prevention today *Australian Dental Journal* 1996; **41:(5)**:335-342  
(Type V evidence - expert opinion)
- 
- i.** Stephen KW. Dentifrices: recent clinical findings and implications for use. *International Dental Journal* 1993; **43 (6 suppl.1)**: 549-553  
(Type V evidence - expert opinion);
  - ii.** Stephen KW. Fluoride toothpastes, rinses and tablets. *Advances in Dental Research*. 1994;**8 (2)**: 185-189  
(Type V evidence - expert opinion);
  - iii.** Johnson MF. Comparative efficacy of NaF and SMFP dentifrices in caries prevention: a meta-analytic overview. *Caries Research*. 1993; **27**: 328-336  
(Type I evidence - systematic review);
  - iv.** Stookey GK, DePada PF, Featherstone JDB *et al*. A Critical review of the relative anticaries efficacy of sodium fluoride and sodium monofluorophosphate dentifrices. *Caries Research*. 1993; **27**: 337-360  
(Type I evidence - systematic review)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**1d. Sodium fluoride** is recommended for use as the active system in fluoridated dentifrices whenever practically feasible. However, the formulation should include highly compatible abrasive systems, which must be demonstrated by critical evaluation of ionic fluoride within formulations for stability, availability and bioavailability. Over a 2-3 year period, caries reduction by sodium fluoride was 6.4% higher than by sodium monofluorophosphate. The average difference for that period in caries increment was 0.28 surfaces (confidence interval, 0.10 - 0.46)<sup>i,ii</sup>. (Health gain notation - 1 "beneficial")

- i. Johnson MF. Comparative efficacy of NaF and SMFP dentifrices in caries prevention: a meta-analytic overview. *Caries Research* 1993; **27**: 328-336 (Type I evidence - meta-analysis);
- ii. Stookey GK, DePada PF, Featherstone JDB *et al.* A critical review of the relative anticaries efficacy of sodium fluoride and sodium monofluorophosphate dentifrices. *Caries Research* 1993; **27**: 337-360 (Type I evidence - systematic review)

**1e. Fluoride varnishes** reduce dental caries<sup>i</sup> and are particularly recommended for special needs groups<sup>ii</sup>. (Health gain notation - 1 "beneficial")

- i. Helsestein U, Steiner M. Fluoride varnishes (Duraphat): a meta-analysis. *Community Dentistry and Oral Epidemiology* 1994; **22**: 1-5 (Type I evidence - meta-analysis);
- ii. Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992 (Type V evidence - expert opinion)

**1f. Fluoride rinses** reduce dental caries<sup>i</sup> and are recommended for special needs groups<sup>ii</sup>. (Health gain notation - 1 "beneficial")

- i. Stephen KW. Fluoride toothpastes, rinses and tablets. *Advances in Dental Research* 1994; **8** (2): 185-189 (Type V evidence - expert opinion);
- ii. Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992 (Type V evidence - expert opinion);

**1g. A reduction in sugar** in the diet is associated with reduced levels of tooth decay<sup>i</sup>. (Health gain notation - 1 "beneficial")

- i. Rugg-Gunn AJ. Nutrition and dental health. Chapter. 6. Dental caries - the role of dietary sugars. Oxford: Oxford University Press, 1993 pp. 113-193 (Type III evidence - well designed trials)

**1h. To reduce dental caries, bottle feeding** should be discouraged, especially from the age of one year<sup>i</sup>. (Health gain notation - 1 "beneficial")

- i. Committee on Medical Aspects of food Policy. Weaning and the weaning diet. Report of the Working Group on the weaning diet of the Committee on Medical Aspects of Food Policy. Summary. Cardiff: Welsh Office, March 1995 (Type V evidence - expert opinion)

## 1 TOOTH DECAY CONT.

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The *statements*

- 1i.** A reduction in **sugar based medicine** will reduce dental decay<sup>i</sup>.  
(Health gain notation - 2 "likely to be beneficial")
- 1j.** **Sugar substitutes** may be of benefit in reducing dental caries. However, other effects of such substitutes should be understood and taken into account<sup>ii</sup>.  
(Health gain notation - 4 "unknown")
- 1k.** **Dietary control of sugars** aids prevention of root caries<sup>i</sup>.  
(Health gain notation - 1 "beneficial")
- 1l.** The effectiveness of **programmes to modify diet** remains unclear<sup>i</sup>.  
(Health gain notation - 4 "unknown")
- 1m.** **Oral health promotion** is more effective when educational approaches are tailored to clients' needs and when social and physical environments are considered<sup>i</sup>.  
(Health gain notation - 3 "weighted according to individual circumstances")  
*Further research is recommended to evaluate oral health promotion and education, and to link this to health outcomes.*

### The *evidence*

- i.** Maguire A, Rugg-Gunn AJ, Butler TJ. Dental health of children taking antimicrobial and non-antimicrobial liquid oral medication long-term. *Caries Research*. 1996; **30(1)**: 16-21  
(Type III/IV evidence - well designed experimental and observational studies)
- i.** Birkhed D. Cariologic aspects of xylitol and its use in chewing gum: A review. *Acta Odontologica Scandinavica* 1994; **52**: 116 - 127  
(Type III evidence - well designed trial; not randomised controlled);
- ii.** Isogangas P, M(kinen KK, Tiekso J, Alanen P. Long-term effect of xylitol chewing gum in the prevention of dental caries: a follow-up 5 years after termination of a prevention program. *Caries Research*. 1993; **27**: 495 - 498  
(Type III evidence - well designed trial : not randomised controlled)
- i.** Papas AS, Joshi A, Belanger AJ, Kent Jr RL, Palmer CA, DePaola PF. Dietary models for root caries. *American Journal of Clinical Nutrition* 1995; **61(suppl)**: 417S-422S  
(Type IV evidence - observational studies)
- i.** Kay EJ, Locker D. Is dental health education effective? a systematic review of current evidence. *Community Dentistry and Oral Epidemiology*. 1996; **24(4)**: 231-235  
(Type I evidence - systematic review using MEDLINE only)
- i.** Sprod AJ, Anderson R, Treasure ET. Effective Oral Health Promotion. Literature review. Technical Report 20. Cardiff: Health Promotion Wales, 1996  
(Type I evidence - systematic review)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**1n. Resin based fissure sealants** are effective in preventing dental caries<sup>i,ii</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Llodra JC, Bravo M, Delgado-Rodriguez M, Baca P, Galvez R. Factors influencing the effectiveness of sealants - a meta-analysis. *Community Dentistry and Oral Epidemiology*. 1993; **21(5)**: 261-8  
(Type I evidence - systematic review);
- ii.** Ripa LW Sealants revisited: an update of the effectiveness of pit-and-fissure sealants. *Caries Research* 1993;**27 (Suppl 1)**: 77-82  
(Type V evidence - expert opinion)

**1o. Guidelines on the prevention of dental caries in children** are available<sup>1</sup>.

- i.** Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997  
(Recommendations classified according to type of evidence)

**1p. Regular clinical examination** is recommended for the early detection of tooth decay, with **radiographs (x-rays)** to detect caries not visible on examination. The interval between successive clinical and radiographic examinations should vary according to the caries susceptibility of the individual<sup>i,ii</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Angmar-Mansson B, ten Bosch JJ. Advances in methods for diagnosing coronal caries - a review. *Advances in Dental Research* 1993; **7(2)**: 70-79  
(Type V evidence - expert opinion);
- ii.** Jendresen MD, Allen EP, Bayne SC, Donovan TE, Hansson TL, Klooster J, John CK. Annual review of selected dental literature: report of the Committee on Scientific Investigation of the American Academy of Restorative Dentistry. *Journal of Prosthetic Dentistry*. 1994; **72**: 39-77  
(Type IV evidence - observational studies)

**1q. Regular clinical examination and radiographs (x-rays)** are recommended for the continuing care of the restored dentition<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

The ideal interval between examination and radiography is affected by the oral health of the individual.

- i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

**1r.** Part of the diagnostic process for dental caries is **visual and gentle tactile examination** of teeth<sup>i</sup>.

(Health gain notation - 1 "beneficial")

**New methods of diagnosing caries** are under development but all require clinical testing<sup>ii</sup>.

(Health gain notation - 4 "unknown")

**1s.** Diagnosis of **approximal caries** can be assisted by using **fiber-optic transillumination**<sup>i,ii</sup>.

(Health gain notation - 4 "unknown")

**1t. Dental amalgam** is an effective filling material. Amalgam restorations do not appear to be hazardous to the general health of the population<sup>i,ii,iii</sup>.

(Health gain notation - 1 "beneficial")

The *evidence*

- i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion);
- ii.** Angmar-Mansson B, ten Bosch JJ. Advances in methods for diagnosing coronal caries - a review. *Advances in Dental Research* 1993; **7(2)**: 70-79  
(Type V evidence - expert opinion)

- i.** Verdonschot EH, Bronkhorst EM, Wenzel A. Approximal caries diagnosis using fiber-optic transillumination: a mathematical adjustment to improve validity. *Community Dentistry and Oral Epidemiology* 1991; **19**: 329-32  
(Type IV evidence - observational studies);
- ii.** Angmar-Mansson B, ten Bosch JJ. Advances in methods for diagnosing coronal caries - a review. *Advances in Dental Research* 1993; **7(2)**: 70-79  
(Type V evidence - expert opinion)

- i.** Corbin SB, Kohn WG. The benefits and risks of dental amalgam: current findings reviewed. *Journal of the American Dental Association* 1994;**125**: 381-388  
(Type III evidence - well designed trial: not randomised controlled);
- ii.** Eley BM, Cox SW. The release, absorption and possible health effects of mercury from dental amalgam: a review of recent findings (erratum to the original review published on September 11, 1993). *British Dental Journal* 1993; **175(161)**: 355-362  
(Type III/IV evidence - review of non-randomised trials and observational studies);
- iii.** Mjör IA, Pakhomov GN (eds.). Dental amalgam and alternative direct restorative materials. Geneva: World Health Organisation, 1997  
(Type III/IV evidence - review of non-randomised trials and observational studies)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**1u.** Dentists should be cautious when using **dentine bonding agents** because the permanence of the bond in the oral environment has not been extensively studied<sup>1</sup>.  
(Health gain notation - 2 "likely to be beneficial")

**i.** Vadiakas GP, Oulis C. A review of dentine-bonding agents and an account of clinical applications in paediatric dentistry. *International Journal of Paediatric Dentistry* 1994; **4**: 209-216  
(Type V evidence - expert opinion)

**1v.** Further research is recommended to validate the use of **laboratory predictors of clinical performance of filling materials** and to develop an accredited range of products supported by independent research evidence<sup>1</sup>.

**i.** Internal Review Group (see inside front cover)

**1w.** The success of **dentures, bridges and implants** is dependent on patient behaviour (eg plaque control) and operator efficiency; therefore the benefit to the patient must be weighed against the risks<sup>1</sup>.  
(Health gain notation - 3 "weighted according to individual circumstances")

**i.** Internal Review Group (see inside front cover)  
(Type V evidence - expert opinion)

**1x.** Correctly made **resin bonded bridges** are an effective way of replacing missing teeth (survival after 4 years = 74%)<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

**i.** Creugers NHJ, Van't Hof MA. An analysis of clinical studies on resin-bonded bridges. *Journal of Dental Research* 1991; **70 (2)**: 146-149  
(Type I evidence - systematic review)

**1y. Guidelines** are available for **crown and bridgework**<sup>1</sup>.

**i.** Bennett A. Guidelines for crowns and bridgework. London: British Society for Restorative Dentistry, 1997.  
<http://www/derweb.ac.uk/bsrd/bsrdgde.html>  
(Type V evidence - expert opinion)

**1z. Guidelines** are available on the selection of patients to receive treatment with **dental implants** (priorities for the NHS) and on restorative indications for **porcelain veneer restorations**<sup>1</sup>.

**i.** Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997  
(Recommendations classified according to type of evidence)

## 2 PERIODONTAL DISEASES

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

**2a.** There is good evidence on which to recommend correctly conducted **toothbrushing and flossing** in the **prevention of gingivitis** in adults<sup>1</sup>.

(Health gain notation - 1 "beneficial")

**2b.** There is good evidence on which to recommend correctly conducted **toothbrushing** in the **prevention of gingivitis** in children<sup>1</sup>.

(Health gain notation - 1 "beneficial")

**2c.** The primary aetiology of periodontal disease is **bacterial plaque**<sup>1</sup>.

(Health gain notation - 6 "likely to be harmful")

**2d.** There is weak evidence to recommend correctly conducted **toothbrushing and flossing** to **prevent periodontitis** in adults<sup>1</sup>.

(Health gain notation - 2 "likely to be beneficial")

**2e.** A **reduction in smoking** will reduce periodontal disease<sup>1</sup>.

(Health gain notation - 1 "beneficial")

### The evidence

**i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149(10)**: 1409-1422  
(Type I evidence - systematic review using Medline only)

**i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149(10)**: 1409-1422  
(Type I evidence - systematic review using Medline only)

**i.** Caton JG, Quinones CR. Etiology of periodontal diseases. *Current Opinion in Dentistry* 1991; **1**:17-28  
(Type IV evidence - observational studies)

**i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149 (10)**: 1409-1422  
(Type I evidence - systematic review using Medline only)

**i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149 (10)**: 1409-1422  
(Type III evidence - well designed non-randomised study)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

**2f.** There is good evidence to recommend use of **chlorhexidine oral rinse** over a short period as an adjunct to self care in the prevention of gingivitis although staining is a problem. Newer rinses and gum protection toothpastes have an increasing role to play<sup>i,ii</sup>.  
(Health gain notation - 1 "beneficial")

**2g. Community based oral health education programmes** can lead to improved gingival health (reduced plaque and gingivitis)<sup>i</sup> but positive effects are short term<sup>ii</sup>.  
(Health gain notation - 4 "unknown")

**2h. Guidelines** are available on **screening** of patients to detect periodontal diseases<sup>i</sup>.

**2i.** The **recall interval** for dental examination, for individuals at risk of plaque associated periodontal disease, should differ between patients according to oral hygiene status, the severity of gingivitis and the status of the periodontal ligament<sup>i</sup>. *Further research is recommended on suitable recall intervals.*  
(Health gain notation - 3 "trade-off between beneficial and adverse effects")

**2j.** There is good evidence to recommend **professional scaling and plaque removal** every 3-4 months in patients with periodontitis to prevent the progression of the disease<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

### The evidence

- i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149 (10)**: 1409-1422  
(Type I evidence - systematic review using Medline only);
- ii.** Adams D, Addy M. Mouthrinses. *Advances in Dental Research* 1994; **8 (2)**: 291-301  
(Type I evidence - systematic review)

- i.** Sprod A J, Anderson R, Treasure E T. Literature Review. Health Promotion Wales Technical Report 20. 1996  
(Type I evidence - systematic review);
- ii.** Kay EJ, Locker D. Is dental education effective? A systematic review of current evidence. *Community Dentistry and Oral Epidemiology*. 1996; **24(4)**: 231-235  
(Type I evidence - systematic review using MEDLINE only)

- i.** Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997  
(Recommendations classified according to type of evidence)

- i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149 (10)**: 1409-1422  
(Type V evidence - expert opinion)

- i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149 (10)**: 1409-1422  
(Type I evidence - systematic review using Medline only)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

**2k** **Antibiotics** are not generally recommended for the prevention of gingivitis or periodontitis<sup>i,ii</sup>.  
(Health gain notation - 5 "unlikely to be beneficial")

However, acute specific infections such as acute necrotising ulcerative gingivitis and lateral periodontal abscess, together with more rare forms of periodontitis such as juvenile periodontitis are indications for use<sup>i,ii</sup>.  
(Health gain notation - 2 "likely to be beneficial")

**2l.** A systematic review of **systemic tetracycline** use in chronic adult periodontitis is currently in progress<sup>i</sup>.

**2m.** There is no clear evidence to suggest that **surgical interventions** are more effective than non surgical approaches in the treatment of periodontal disease<sup>i,ii</sup>. *Further research is recommended.*  
(Health gain notation - 4 "unknown")

**2n. Short term periodontal splinting** techniques require further evaluation in their role in the continuing care of individuals who have undergone treatment for periodontal disease<sup>i</sup>.  
*Further research is recommended.*  
(Health gain notation - 4 "unknown")

The *evidence*

- i.** Ismail AI, Lewis DW. Periodic health examination, 1993 update: 3. Periodontal diseases classification, diagnosis, risk factors and prevention. *Canadian Medical Association Journal* 1993; **149 (10)**: 1409-1422  
(Type I evidence - systematic review using Medline only);
- ii.** Rams TE, Slots J. Antibiotics in periodontal therapy: an update. *Compendium of Continuing Education in Dentistry*, **XIII (12)**: 1130-1145  
(Type I evidence - systematic review);
- iii.** Van Winkelhoff AJ, Rams TE, Slots J. Systemic antibiotic therapy in periodontics. *Periodontology 2000* 1996; **10**: 45-78  
(Type I evidence - systematic review)

- i.** Hayes C, Antczak-Bouckoms AA, Burdick E. Systematic review of systemic tetracycline use in chronic adult periodontitis. *Cochrane Database of Systematic Reviews*. *Cochrane Library*. Review expected April 1998.

- i.** Kaldahl WB, Kalkwarf KL, Patil KD. A review of longitudinal studies that compared periodontal therapies. *Journal of Periodontology* 1993; **64**: 243-253  
(Type I evidence - systematic review);
- ii.** Antczak-Bouckoms A, Joshipura K, Burdick E, Tulloch JFC. Meta-analysis of surgical versus non-surgical methods of treatment for periodontal disease. *Journal of Clinical Periodontology*. 1993; **20**: 259-268  
(Type I evidence - systematic review)

- i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

### 3 DENTO-FACIAL ANOMALIES

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

#### The *statements*

#### The *evidence*

**3a. Genetic counselling** is likely to assist in the prevention of heritable dentofacial anomalies.  
(Health gain notation - 2 "*likely to be beneficial*")

**3b.** Assessment of orthodontic needs can be made using the **index of orthodontic treatment need (IOTN)**.  
(Health gain notation - 2 "*likely to be beneficial*")

**3c. IOTN 4 or 5 cases** can be improved by orthodontic treatment.  
(Health gain notation - 1 "*beneficial*")

**3d. IOTN 3 cases**, following expert opinion, can be improved by orthodontic treatment but further evaluation is recommended.  
(Health gain notation 3 "*trade-off between beneficial and adverse effects*")

**3e. IOTN 1 or 2 cases** can be treated by orthodontic interventions but the health gain is unproven.  
(Health gain notation 4 "*unknown*")

**3f.** In the **diagnosis** of dento-facial discrepancies, it is accepted custom and practice to consider information collected from sources in the following list:  
history, visual examination, palpation, radiographs (x-rays), study models, computerised tomography (CT) scans, study models.  
(Health gain notation - 1 "*beneficial*")

**3g. Prevention** of tooth decay and of gingivitis is mandatory during orthodontic treatment.  
(Health gain notation - 1 "*beneficial*")

#### The statements on this page are derived from:

Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

### 3 DENTO-FACIAL ANOMALIES CONT.

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

#### The *statements*

**3h.** Where **extractions** are indicated for orthodontic purposes, decayed or filled teeth with a poor prognosis should be chosen rather than sound teeth where possible<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

**3i.** **Multidisciplinary teamwork** is required when, for example, orthognathic surgery and/or speech therapy is required in addition to orthodontic treatment<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

**3j.** A systematic review of orthodontic treatment for **posterior cross bites** is currently in progress<sup>i</sup>.

**3k.** The benefits of **orthodontic treatment** have to be balanced against the risks and the likely success of treatment. Orthodontic treatment should be directed at those individuals in which the greatest benefit can be achieved<sup>i,ii</sup>.  
(Health gain notation - 3 "trade-off between beneficial and adverse effects")

**3l.** Orthodontic treatment assessment can be made using the **peer assessment rating index (PAR)**<sup>i</sup>.  
(Health gain notation - 2 "likely to be beneficial")

#### The *evidence*

**i.** Hunter ML, Addy M, Dummer PMH, Hunter B, Kingdon A, Shaw WC. A longitudinal study of the condition of first permanent molars in a group of adolescents with special reference to elective orthodontic tooth extraction. *Community Dental Health* 1991; **8**: 9-15  
(Type IV evidence - observational studies)

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Harrison JE, Ashby D. Orthodontic treatment for posterior cross bites. *Cochrane Database of Systematic Reviews. Cochrane Library*. Review expected in April 1998

**i.** Shaw WC, O'Brien KD, Richmond S, Brook P. Quality control in orthodontics: risk/benefit considerations. *British Dental Journal* 1991; **170**: 33-37  
(Type V evidence - expert opinion);

**ii.** Thilander BL. Complications of orthodontic treatment. *Orthodontics and Periodontics*. 1992; **2 (IV)**: 28-37  
(Type V evidence - expert opinion);

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

The *evidence*

**3m. Guidelines** on the management of patients with **impacted third molar teeth, pericoronitis** and the prevention of **dry sockets** are available<sup>1</sup>.

**i.** Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997  
(Recommendations classified according to type of evidence)

**3n. Guidelines** on the management of **palatally ectopic maxillary canine** and **unerupted maxillary incisors** are available<sup>1</sup>.

**i.** Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997  
(Recommendations classified according to type of evidence)

**3o.** Scarce, highly specialised resources are required for consistent success in the management of **cleft lip and/or palate**. Appropriate levels of expertise are likely to be achieved and maintained at specialist centres<sup>1</sup>.  
(Health gain notation - 2 "*likely to be beneficial*")

**i.** Clinical Standards Advisory Group (CSAG). Report of cleft lip and/or palate. London: The Stationery Office, 1998  
(Type V evidence - expert opinion)

## 4 ORAL CANCER

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

**4a. A reduction in tobacco use** leads to a decreased incidence of oral cancer and precancer<sup>i,ii,iii,iv,v</sup>.  
(Health gain notation - 1 "beneficial")

**4b. A reduction in alcohol consumption** leads to a decreased incidence of oral cancer and precancer<sup>i,ii</sup>.  
(Health gain notation - 1 "beneficial")

### The evidence

- i.** Scully C. Oral pre-cancer: preventive and medical approaches to management. *Oral Oncology. European Journal of Cancer* 1995; **31B (1): 16-26**  
(Type IV evidence - observational studies);
  - ii.** Boyle P, Macfarlane GJ, Maisonneuve P, Zheng T, Scully C, Tedesco B. Epidemiology of mouth cancer in 1989: a review. *Journal of the Royal Society of Medicine*. 1990; **83: 724-730**  
(Type IV evidence - observational studies);
  - iii.** Johnson NW, Warnakulasuriya KAAS. Epidemiology and aetiology of oral cancer in the United Kingdom. *Community Dental Health*. 1993; **10 (Suppl.1): 13-29**  
(Type IV evidence - observational studies);
  - iv.** Gupta PC, Murti PR, Bhosle RB, Mehta FS, Pindborg JJ. Effect of cessation of tobacco use on the incidence of oral mucosal lesions in a 10-year follow-up study of 12,212 users. *Oral Diseases*. 1995; **1: 54-58**  
(Type IV evidence - observational studies);
  - v.** La Vecchia C, Tavani A, Franceschi S, Levi F, Corrao G, Negri E. Epidemiology and prevention of oral cancer. *Oral Oncology*. 1997; **33(5): 302-312**  
(Type IV evidence - observational studies)
- 
- i.** Scully C. Oral pre-cancer: preventive and medical approaches to management. *Oral Oncology. European Journal of Cancer*. 1995; **31B (1): 16-26**  
(Type IV evidence - observational studies);
  - ii.** Johnson NW, Warnakulasuriya KAAS. Epidemiology and aetiology of oral cancer in the United Kingdom. *Community Dental Health* 1993; **10(Suppl.1): 13-29**  
(Type IV evidence - observational studies)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**4c. An increased consumption of fruit and vegetables** leads to a decreased incidence of oral cancer and precancer<sup>i,ii,iii,iv</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Scully C. Oral pre-cancer: preventive and medical approaches to management. *Oral Oncology. European Journal of Cancer*. 1995; **31B (1)**: 16-26  
(Type IV evidence - observational studies);
- ii.** Boyle P, MacFarlane GJ, Blot WJ, Chiesa F *et al.*. European School of Oncology Advisory Report to the European Commission for the Europe Against Cancer Programme: Oral Carcinogenesis in Europe. *Oral Oncology. European Journal of Cancer* 1995; **31B (2)**: 75-85  
(Type IV evidence - observational studies);
- iii.** La Vecchia C, Franceschi S, Levi F, Lucchini F, Negri E. Diet and human oral carcinoma in Europe. *Oral Oncology. European Journal of Cancer* 1993; **29B (1)**: 17-22  
(Type IV evidence - observational studies);
- iv.** Johnson NW, Warnakulasuriya KAAS. Epidemiology and aetiology of oral cancer in the United Kingdom. *Community Dental Health* 1993; **10(Suppl.1)**: 13-29  
(Type IV evidence - observational studies)

**4d. Health education of 'at risk' groups** in the prevention of oral cancer appears promising but requires further evaluation<sup>i</sup>. *Further research is recommended.*  
(Health gain notation - 2 "likely to be beneficial")

- i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain.  
Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**4e. Education of medical and dental professionals** in the prevention of oral cancer appears promising but requires further evaluation<sup>i</sup>.  
(Health gain notation - 2 "likely to be beneficial")

- i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain.  
Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**4f. Early diagnosis of oral cancer** can dramatically increase survival<sup>i</sup>. *Further research is recommended to evaluate the effect of early diagnosis on survival rates.*  
(Health gain notation - 1 "beneficial")

- i.** Silverman S. Early diagnosis of oral cancer. *Cancer* 1988; **62**: 1796-1799(112)  
(Type V evidence - expert opinion)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

The *evidence*

**4g.** The following approach to **diagnosis and assessment** of oral cancers is recommended<sup>1</sup>:  
history, visual examination of soft tissue, palpation, biopsy, radiography (x-rays), computerised tomography (CT) scans.  
(Health gain notation - 1 "beneficial")

**i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain.  
Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**4h.** Effective **treatment and care** for individuals with oral cancer includes surgery, radiotherapy, chemotherapy and reconstructive surgery<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

**i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain.  
Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**4i.** There may be some evidence available soon concerning the role of **chemopreventive agents** (retinoids/beta-carotenes) in the reversal of carcinogenesis<sup>1</sup>.  
(Health gain notation - 4 "unknown")

**i.** Lippman SM, Benner SE, Hong WK. Cancer Chemoprevention. *Journal of Clinical Oncology* 1994; **12** (4): 851-873  
(Type I evidence - systematic review)

**4j.** **Effective rehabilitation and continuing care** of oral cancer patients includes implants, implant-supported prostheses, restorative dentistry, psychological support, speech therapy, smoking cessation and regular follow-up examination<sup>1,ii</sup>.  
(Health gain notation - 3 "trade-off between beneficial and adverse effects")

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion);  
**ii.** Finlay PM, Dawson F, Robertson AG, Soutar DS. An evaluation of functional outcome after surgery and radiotherapy for intraoral cancer. *British Journal of Oral and Maxillofacial Surgery* 1992; **30**: 14-17  
(Type V evidence - expert opinion)

## 5 TEMPOROMANDIBULAR JOINT DISORDERS AND COMPLEX FACIAL PAIN

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**5a. Guidelines** are available for the management of **unilateral fractures of the condyl**<sup>1</sup>.

- i. Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997 (Recommendations classified according to type of evidence)

**5b.** Temporomandibular joint disorders and facial pain may require **multiple diagnostic aids** followed by management which may include: counselling, physiotherapy, pharmacotherapy, occlusal treatments, surgery, pain clinics, behaviour therapy<sup>1</sup>.  
(Health gain notation - 2 "likely to be beneficial")

- i. Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992 (Type V evidence - expert opinion)

**5c** There is no evidence that the presence or extent of **radiographic signs of pathology** are of prognostic value in temporomandibular joint disorders<sup>1</sup>.  
(Health gain notation - 6 "likely to be ineffective")

- i. Eliasson S, Isacsson G. Radiographic signs of temporomandibular disorders to predict outcome of treatment. *Journal of Craniomandibular Disorders: Facial and Oral Pain* 1992; **6 (4)**: 281-287 (Type III evidence - well designed non-randomised trial)

**5d.** A key **outcome measure** of the treatment of temporomandibular joint disorders (TMJ) is a stable functional TMJ with maximal intercuspation of the dentition. Success is dependent on the skills of the clinician in assessment as well as surgery, if indicated<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

- i. White RD. Temporomandibular joint considerations in orthognathic surgery. *Annals of the Academy of Medicine, Singapore* 1995; **24**: 76-82 (Type V evidence - expert opinion)

**5e.** There is no good evidence concerning the effectiveness of **interventions** for temporomandibular joint disorders<sup>i,ii</sup>.  
(Health gain notation - 4 "unknown")

- i. Holmlund AB. Surgery for TMJ internal derangement. Evaluation of treatment outcome and criteria for success. *International Journal of Oral and Maxillofacial Surgery*. 1993; **22**: 75-77 (Type V evidence - expert opinion);
- ii. Dworkin S F, Le Resches L. Research diagnostic criteria for temporomandibular disorders: Review, Criteria, Examinations and Specifications, Critique. *Cranio-disorders. Facial and Oral Pain* 1992; **6(64)**: 301-355 (Type V evidence - expert opinion)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

**5f. Long term outcome of facial pain treatment**

is largely unknown. Research shows that conservative treatments including drug therapy and counselling are effective for 70% of patients. Refractory pain is associated with a long complex history of pain, a preoccupation with physical symptoms and poor psychosocial adjustment<sup>1</sup>.  
(Health gain notation - 4 "unknown")

**5g.** For the majority of patients with facial pain, symptoms can be managed quite effectively with **nonsteroidal anti-inflammatory drugs (NSAIDs) and physical therapy** to produce long term freedom from pain<sup>1</sup>.  
(Health gain notation - 3 "trade-off between beneficial and adverse effects")

The *evidence*

**i.** Feinman C. The long-term outcome of facial pain treatment. *Journal of Psychomatic Research*. 1993; **37 (4)**: 381-387  
(Type V evidence - expert opinion)

**i.** Heft MW. Orofacial pain. *Clinics in Geriatric Medicine*. 1992; **8(3)**: 557-568  
(Type V evidence - expert opinion)

## 6 TOOTH WEAR AND HYPERSENSITIVITY

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

**6a.** The prevalence of **tooth wear** (loss of enamel with or without exposure of dentine) is widespread in children<sup>i,ii</sup>.

**6b** Tooth wear may be caused by **acidic drinks**<sup>i,ii,iii,iv,v</sup>.  
(Health gain notation - 6 "likely to be harmful")

The sale of unconcentrated soft drinks in the United Kingdom has more than doubled between 1985 and 1995 (from 251 to 514 ml per person per week)<sup>vi</sup>.

### The evidence

- i.** Milosevic A, Young PJ, Lennon MA. The prevalence of tooth wear in 14-year-old school children in Liverpool. *Community Dental Health*.1994; **11**: 83-86  
(Type IV evidence - observational studies);
- ii.** O'Brien M. Children's dental health in the United Kingdom 1993. London: HMSO,1995 pp. 75-76  
(Type IV evidence - observational studies);

- i.** Eccles JD. Dental erosion of non-industrial origin. A clinical survey and classification. *Journal of Prosthetic Dentistry*. 1979; **42**: 649-653  
(Type IV evidence - observational studies);
- ii.** Eccles JD. Erosion affecting the palatal surfaces of upper anterior teeth in young people. *British Dental Journal* 1982; **152**: 375-378  
(Type IV evidence - observational studies);
- iii.** Smith AJ, Shaw L. Baby fruit juices and tooth erosion. *British Dental Journal* 1987; **162**: 65-67  
(Type IV evidence - observational studies);
- iv.** Millward A, Shaw L, Smith AJ, Rippin JW, Harrington E. The distribution and severity of tooth wear and the relationship between erosion and dietary constituents in a group of children. *International Journal of Paediatric Dentistry*. 1994; **4**: 151-157  
(Type IV evidence - observational studies);
- v.** Milosevic A, Lennon MA, Fear SC. Risk factors associated with tooth wear in teenagers: a case control study. *Community Dental Health*. 1997; **14**: 143-147  
(Type IV evidence - observational studies);
- vi.** Ministry of Agriculture, Fisheries and Food. National Food Survey 1995. London: Stationery Office, 1995. p.12  
(Type IV evidence - statistical information)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

6c. **Tooth wear and dentine hypersensitivity** may be prevented by:

- correct **toothbrushing**
- the application of **fluoride varnish**  
(Health gain notation - 1 "*beneficial*")

6d. **Dentine Hypersensitivity** may be reduced by

- a **reduction in gingival trauma**  
(Health gain notation - 1 "*beneficial*")
- a **reduction in periodontal disease**  
(Health gain notation - 2 "*likely to be beneficial*")

6e. In the **diagnosis and assessment of tooth wear**, a dietary and medical history should be taken into account and referral made to medical personnel if appropriate.  
(Health gain notation - 1 "*beneficial*")

6f. In the **diagnosis and assessment of dentine hypersensitivity**, it is important to eliminate other causes. History-taking, gentle tactile examination and cold air are useful diagnostic aids.  
(Health gain notation - 1 "*beneficial*")

6g. Individuals suffering from **dentine hypersensitivity** should be advised on its aetiology.  
(Health gain notation - 1 "*beneficial*")

6h. **Tooth wear** related to parafunction, may be controlled by the use of:

- **muscle relaxants or antidepressants**
- **bite raising appliances**
- **stress counselling**  
(Health gain notation - 2 "*likely to be beneficial*")

The *evidence*

**Statements on this page are derived from:**

Oral Health. Protocol for Investment in Health Gain.  
Welsh Health Planning Forum. Cardiff: Welsh Office  
NHS Directorate, November 1992  
(Type V evidence - expert opinion)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**6i.** The aim of treatment of **dentine hypersensitivity** is to block dental tubules or to block nerve transmissions at the pulpal surface<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**6j.** **Therapeutic toothpaste** or **glass ionomer cement** can be used to treat dentine hypersensitivity<sup>i</sup>.  
(Health gain notation - 2 "likely to be beneficial")  
*Further research is recommended on treatments for dentine hypersensitivity.*

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**6k.** **Adhesive resin retained veneers** and **onlays** can effectively restore lost tissue and remain retentive<sup>i,ii</sup>.  
(Health gain notation - 2 "likely to be beneficial")

**i.** Nohl FSA, King PA, Harley KE, Ibbetson RJ. Retrospective survey of resin-retained cast-metal palatal veneers for the treatment of anterior palatal tooth wear. *Quintessence International* 1997; **28**: 7-14  
(Type IV evidence - observational studies);

**ii.** Hunter L, Stone D. Supraoccluding cobalt-chrome onlays in the management of amelogenesis imperfecta in children: a 2 year case report. *Quintessence International* 1997; **28(1)**: 15-19  
(Type IV evidence - observational studies)

**6l.** **Veneers, fillings** and/or **crowns** can replace lost tooth tissue<sup>i</sup>.  
(Health gain notation - 1 "beneficial")  
*Further research is recommended to evaluate restorative treatment for toothwear.*

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

## 7 DENTAL INJURIES

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

**7a.** A major risk factor in the aetiology of trauma to incisors is **protruding upper incisors**.

In 1993, the proportions of 12-13 year-old children in the United Kingdom with fractured incisors was as follows<sup>1</sup>:

overjet under 5mm = 16%

overjet over 5mm = 24%

Odds ratio = 1.66 for overjets over 5mm.

**7b. Mouthguards** used during sports reduce oral injuries<sup>i,ii,iii</sup>.

(Health gain notation - 2 "likely to be beneficial")

**7c. Measures to prevent dental injuries** in addition to mouth protection include head protection and seat belts at the appropriate times<sup>1</sup>.

(Health gain notation - 1 "beneficial")

See also the *Injury Prevention Bulletin* in this series

**7d.** Parents/school and sports staff should be educated in **first aid measures** for dental injuries<sup>1</sup>.

(Health gain notation - 1 "beneficial")

### The evidence

- i.** O'Brien M. Children's dental health in the United Kingdom 1993. HMSO London, 1994 p.81  
(Type IV evidence - observational studies)
- ii.** Scott J, Burke FJT, Watts DC. A review of dental injuries and the use of mouthguards in contact team sports. *British Dental Journal*. 1994; **176**: 310-314  
(Type V evidence - expert opinion);
- iii.** Jennings DC. Injuries sustained by users and non-users of gum shields in local rugby union. *British Journal of Sports Medicine*. 1990; **24**: 159-164  
(Type IV evidence - observational studies);
- iii.** McNutt T, Shannon SW, Wright JT, et al. Oral trauma in adolescent athletes: a study of mouth protectors. *Paediatric Dentistry*. 1989; **11**: 209-213  
(Type IV evidence - observational studies)
- i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)
- i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The statements

### The evidence

**7e. Avulsed permanent teeth** should be **stored in isotonic media** (eg milk) if instant replantation is not possible (over 80% periodontium healed in 8 weeks in an animal experiment where pre-implantation storage time was up to 3h)<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Blomlöf L, Lindskog S, Hammarström L. Periodontal healing of exarticulated teeth stored in milk or saliva. *Scandinavian Journal of Dental Research*. 1981; **89**: 231-239  
(Type II evidence - randomised controlled trial)

**7f.** The following information sources contribute to diagnosis and assessment<sup>1</sup>:

- **history**
- **visual examination**
- **palpation**
- **radiographs (x-rays)**  
(Health gain notation - 1 "beneficial")
- **transillumination**  
(Health gain notation - 2 "likely to be beneficial")

- i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**7g.** Avulsed permanent teeth should be **replanted within 15 minutes**. (Radiographic follow up for 5 years showed that 14/21 teeth were stable at the end of the study)<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Andersson L, Bodin I. Avulsed human teeth replanted within 15 minutes - a long term clinical follow-up study. *Endodontics and Dental Traumatology*. 1990; **6**: 37-42  
(Type III evidence - well designed non-randomised trial)

**7h.** On reimplantation there should be a **short period of splinting** to allow re-establishment of a periodontal ligament)<sup>1</sup>.  
(Health gain notation - 2 "likely to be beneficial")

- i.** Oikarinen K. Tooth splinting: a review of the literature and consideration of the versatility of a wire-composite splint. *Endodontics and Dental Traumatology*. 1990; **6**: 237-250  
(Type V evidence - expert opinion)

**7i.** In the event of pulp death occurring before the root apex has formed, **calcium hydroxide pastes** may promote formation of the apex or of a calcified barrier. (Bone healing and apical closure was noted in 50/55 cases)<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Cvek M. Treatment of non vital permanent incisors with calcium hydroxide. *Odontologisk Revy*. 1972; **23**: 27-44  
(Type III evidence - well designed non-randomised trial)

**7j.** Root resorption can be arrested by inserting **calcium hydroxide paste** into the root canal followed by **obturation with gutta percha**. (Healing was obtained in 192/197 teeth)<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

- i.** Cvek M. Prognosis of luxated non-vital maxillary incisors treated with calcium hydroxide and filled with gutta-percha. A retrospective clinical study. *Endodontics and Dental Traumatology* 1992; **8**: 45-55  
(Type III evidence - well designed non-randomised trial)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

### The *statements*

**7k.** The **etch retained composite technique** is now the accepted clinical standard for repairing an uncomplicated crown fracture, providing aesthetically pleasing restoration with acceptable longevity<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

**7l. Regular follow-up** is recommended after treatment of dental trauma<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

**7m. Orthodontics**, if indicated, is beneficial after treatment of dental trauma<sup>i</sup>.  
(Health gain notation - 1 "beneficial")

**7n.** The dental team should be educated as to their role in the detection of **non-accidental injury**<sup>i</sup>.  
(Health gain notation - 2 "likely to be beneficial")

**7o. Guidelines** on the treatment of **avulsed permanent teeth** and **traumatically intruded permanent incisor teeth in children** are available<sup>i</sup>.

**7p.** There is some evidence in the United Kingdom that **primary care services** for the treatment of dental trauma are inadequate, as dentists have insufficient knowledge. The situation should be reviewed locally and steps taken to address the problem if detected<sup>ii</sup>.

### The *evidence*

**i.** Andreasen J O, Andreasen FM. Essentials of traumatic injuries to the teeth. Copenhagen: Munksgard, 1990  
(Type V evidence - expert opinion)

**i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Welsh Health Planning Forum. Oral Health. Protocol for Investment in Health Gain. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Welbury RR, Murphy JM. The dental practitioner's role in protecting children from abuse 3. Reporting and subsequent management of abuse. *British Dental Journal*. 1998; **184(32)**: 115-119  
(Type V evidence - expert opinion)

**i.** Faculty of Dental Surgery. National Clinical Guidelines 1997. London: Royal College of Surgeons, 1997  
(Recommendations classified according to type of evidence)

**i.** Hamilton FA, Hill FJ, Holloway PJ. An investigation of dento-alveolar trauma and its treatment in an adolescent population. Part 1: the prevalence and incidence of injuries and the extent and adequacy of treatment received. *British Dental Journal*. 1997; **182(3)**: 91-95  
(Type IV evidence - observational studies);

**ii.** Hamilton FA, Hill FJ, Holloway PJ. An investigation of dento-alveolar trauma and its treatment in an adolescent population. Part 2: dentists' knowledge of management methods and their perceptions of barriers to providing care. *British Dental Journal*. 1997; **182(4)**: 129-133  
(Type IV evidence - observational studies)

## 8 INHERITED DENTAL ANOMALIES

**Users are advised to consult the supporting evidence** for a consideration of all the implications of a recommendation.

The incidence of Amelogenesis Imperfecta is 1:4,000 - 1:14,000 births;

The incidence of Dentinogenesis Imperfecta is 1:5,000 - 1: 8,000 births;

Hypodontia is observed in 5.7% women and 3.1% men<sup>1</sup>.

**i.** Welsh Office: Oral Health. A technical document produced by the Health Gain Panel of Review. Cardiff: Welsh Office, 1992, p 176.  
(Type IV evidence - statistical information)

### The statements

**8a. Genetic Counselling** can be of value in order to prevent inherited dental anomalies, although alone they are not fatal<sup>1</sup>.  
(Health gain notation - 2 "likely to be beneficial")

**8b.** As the effects of inherited dental anomalies can be minimised by professional treatment, **early diagnosis** and **regular dental attendance** favourably influence the treatment outcome<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

**8c. Treatment aims** include prevention of caries and periodontal disease<sup>1</sup>.  
(Health gain notation - 1 "beneficial")

**8d.** In the treatment of **Amelogenesis imperfecta** the aim is to retain the maximum amount of dental hard tissue until the individual reaches an age at which the necessary advanced restorative work can be carried out to rehabilitate the teeth. This can be measured as the proportion of permanent teeth remaining at age 16<sup>i,iii</sup>.  
(Health gain notation - 1 "beneficial")

### The evidence

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Witkop CJ, Rau S. Inherited defects in tooth structure. Baltimore: Williams and Wilkins, 1971  
(Type V evidence - expert opinion);

**ii.** Roberts JF and Sherriff M. The fate and survival of amalgam and preformed molar stainless steel crowns placed in a specialist, paediatric dental practice. *British Dental Journal* 1990; **169**: 237-244  
(Type IV evidence - observational studies)

Users are advised to consult the supporting evidence for a consideration of all the implications of a recommendation.

The *statements*

**8e.** For **Dentinogenesis imperfecta early diagnosis and treatment** are required in order to prevent loss of vertical height<sup>1</sup>.  
(Health gain notation - 1 "*beneficial*")

**8f.** As the disorder dictates, the following treatments may be indicated<sup>1</sup>:

- fluoride varnish
- glass ionomer cements
- composite veneers
- enamel micro-abrasion
- preformed stainless steel crowns
- overdentures

(Health gain notation - 2 "*likely to be beneficial*")

**8g.** **Longterm care** (throughout adulthood) requires prevention of decay and of periodontal disease, crowns, bridges, dentures, possibly implants<sup>1</sup>.  
(Health gain notation - 1 "*beneficial*")

The *evidence*

**i.** Witkop CJ. Hereditary defects of dentin. *Dental Clinics of North America*. 1975; **19(1)**: 25-45  
(Type V evidence - expert opinion)

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

**i.** Oral Health. Protocol for Investment in Health Gain. Welsh Health Planning Forum. Cardiff: Welsh Office NHS Directorate, November 1992  
(Type V evidence - expert opinion)

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