Quality and longevity of dental restorations

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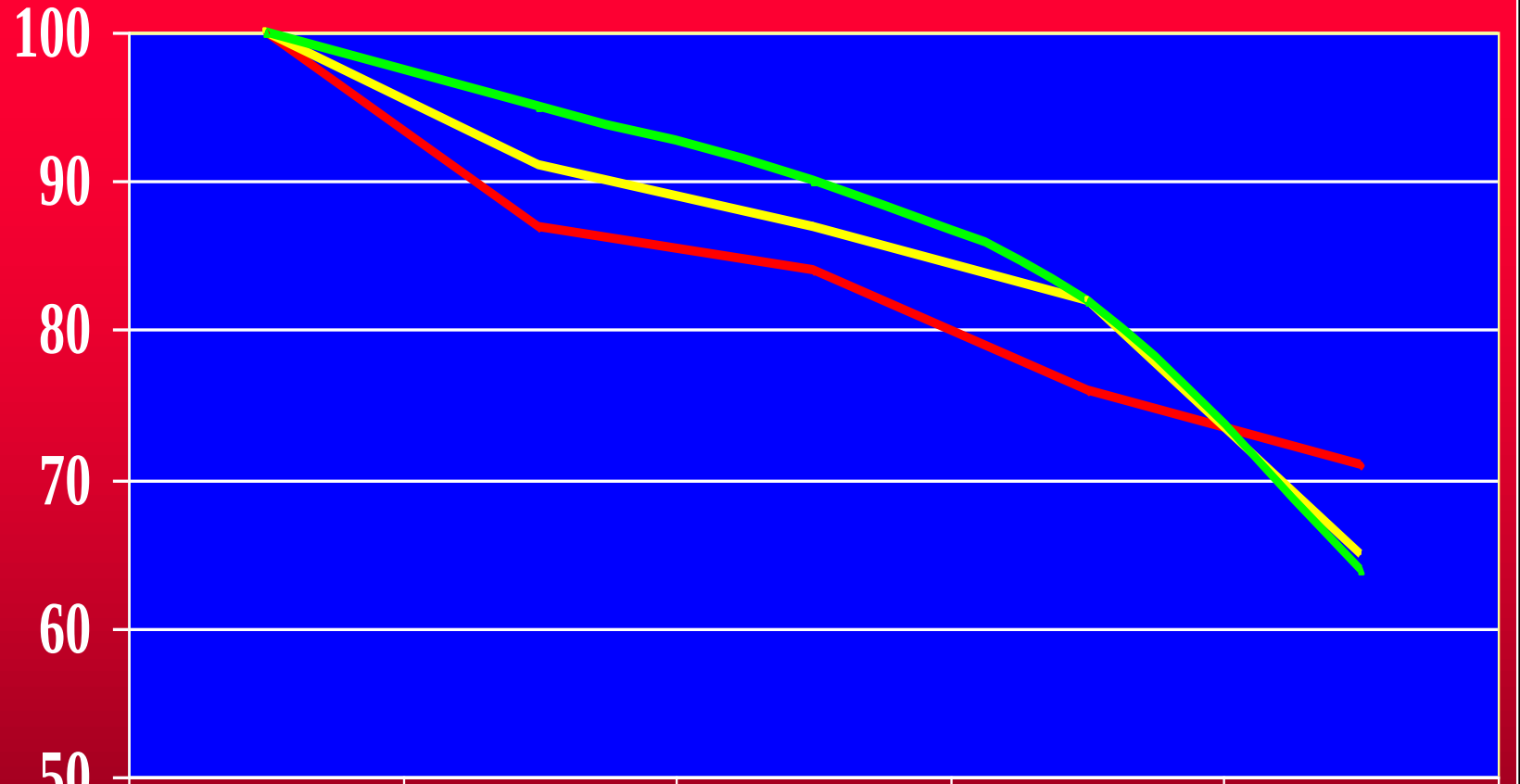
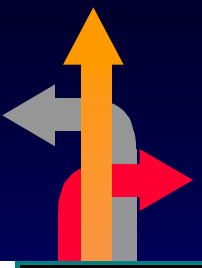


	0	5	10	15	20 years
bonding A	100	87	84	76	71
bonding B	100	91	87	82	65
bonding C	100	95	90	82	64



Quality of dental restorations

Independent variables	*Bi-variate odds ratios*	*Bivariate significance*	*95% Confidence intervals bivariate odds ratios*	*Multi-variate odds ratios*	*Multivariate significance*	*95% Confidence intervals for multivariate odds ratios*
Age group						
20-30	-	-	-	-	-	-
30-40	2.32	**	1.15 - 3.13	2.52	**	1.35 - 3.33
+40	2.63	***	1.43 - 3.08	2.63	***	1.83 - 3.8
Gender						
Male	-	-	-	-	-	-
Female	2.42	**	1.61 - 2.79	2.12	**	1.91 - 2.9
Material						
Amalgam	-	-	-	-	-	-
Composites	1.12	NS	0.13 - 1.56	1.42	NS	1.13 - 1.96
Glass ionom.	3.12	***	2.52 - 4.34	5.65	**	4.67 - 7.23
Dentists						
#1	-	-	-	-	-	-
#2	1.34	NS	0.35 - 1.61	1.04	NS	1.35 - 2.01
Location						
Mandible	-	-	-	-	-	-
Maxilla	1.55	*	1.17 - 2.04	1.15	*	1.57 - 2.14

Guidelines for the Assessment of Clinical Quality and Professional Performance

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Printed in the United States of America

California Dental Association

P.O. Box 13749

Sacramento, California 95853

Third Edition

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CLINICAL EVALUATION OF DENTAL RESTORATIVE MATERIALS

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service, National Institutes of Health

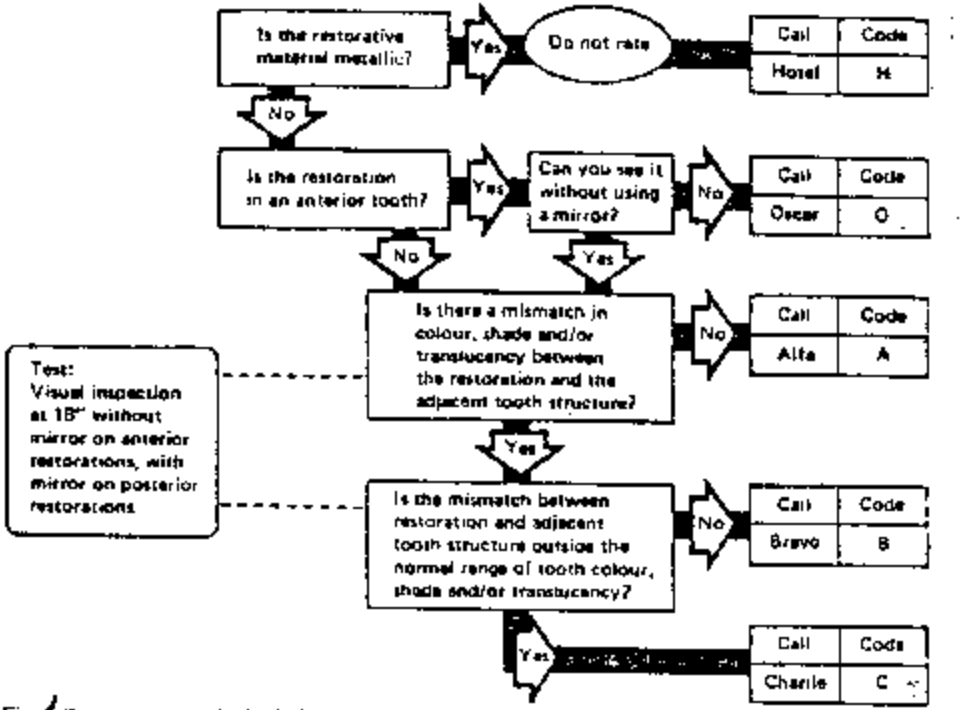


Fig. 1 Rating system and criteria for colour match.

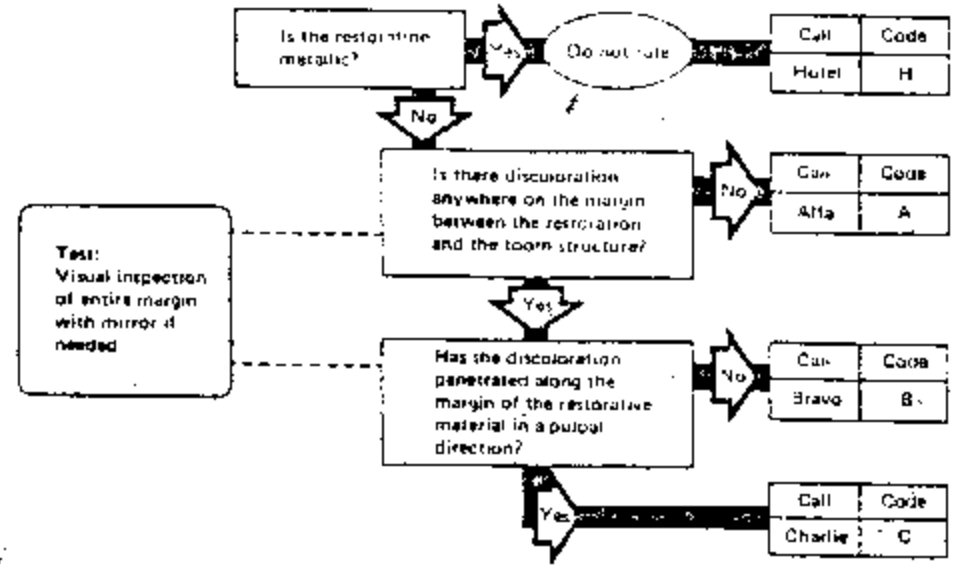


Fig. 2 Rating system and criteria for cavity surface margin discolouration.

QUALITY EVALUATION RECORDING FORM

SS#

Name: Patient #: Date:

Sex: ☐ M ☐ F Age: Recorder #:

Treatment Aspect		Removable Partial or Complete Prosthodontics	Crown and Bridge	Operative	Examiner #	Satisfactory / Not Acceptable				Abbreviations for S, T, V, Categories	Placement Code
History and Clinical Examination	Periodontics	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		
Radiographs	Endodontics	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		
Diagnosis	Oral Surgery	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		
Treatment Plan	Pediatric Dentistry	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		
Management of Pain, Anxiety and Emergencies	Orthodontics	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		
Preventive Measures	Implants	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		
TMJ	Bonding and Veneering	Max Mand	Single Crown Bridge Tooth (Teeth) #	Tooth # Surface Material		R	S	T	V		
						R	S	T	V		
					Final	R	S	T	V		

Quality versus technical excellence

The concept of quality of dental restorations should also include temporal and patient satisfaction aspects, as well as economic and biologic cost-benefit aspects, which are not adressed in these evaluation systems.

Quality of dental restorations

The risk of jeopardising the integrity of remaining dental and oral tissues and the extent to which the form, function and properties of the tooth is imitated to the patient's satisfaction and maintained over time.

FDI Draft Statement, 2000.

“Longevity data”

- Numerical measures of the quality and longevity of dental restorations can simply be regarded as a consequence of either a correct or an incorrect examination approach

It may come as a big surprise for some, but among many diseases found in the population, Absence of Ideal Dental Restoration Structure does not rank among them.

The dental version of

Absence of

Ideal

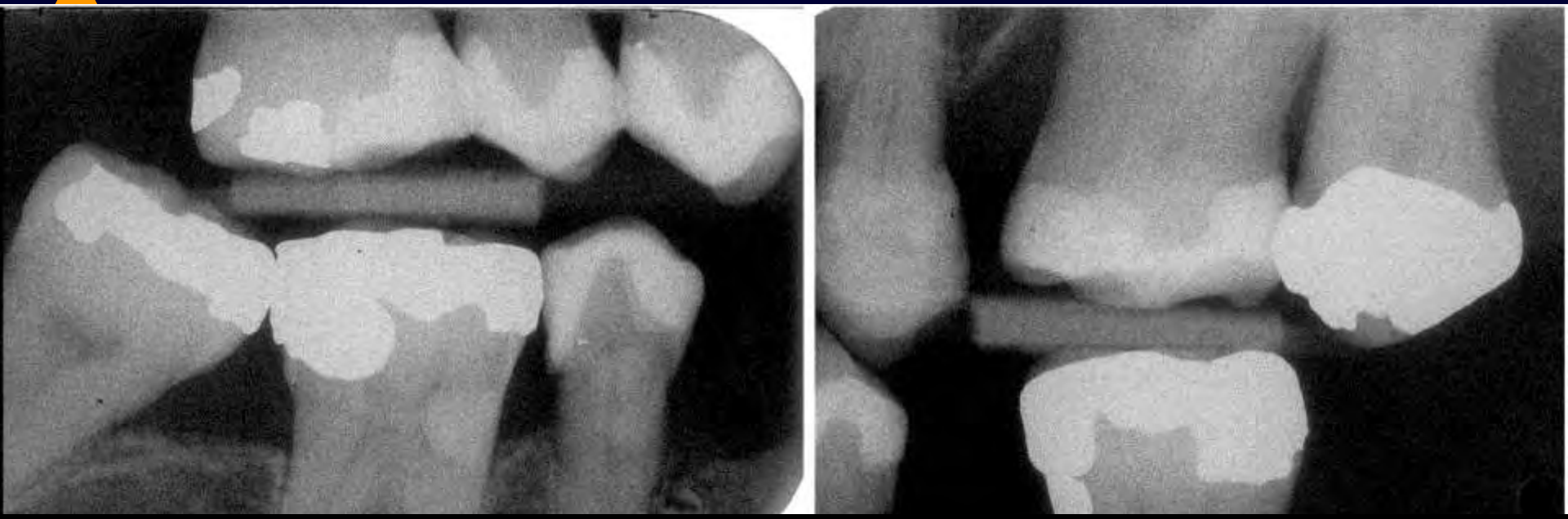
Dental restoration

Structure

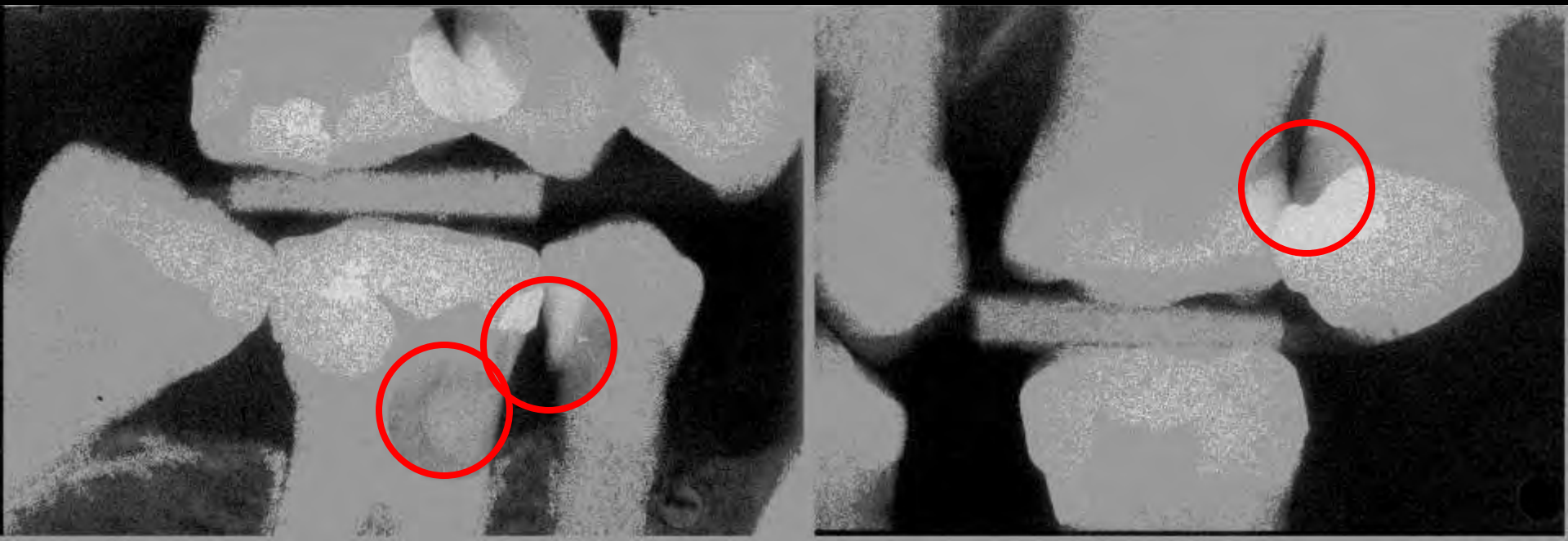
Cannot be considered a disease!

Can we, in light of other pressing population health problems, justify calling ourselves health care workers if time and resources are allocated to interventions that have little or no oral health benefits?

Do we really expect that policy makers in the health care systems are of the same opinion?



Should these restorations be monitored, corrected, removed or replaced?



Which factors determine my treatment decision?

- Do we know which factors that influence our decisions to replace restorations?
- A number of both objective and subjective factors have been identified.

Table 1 Factors influencing the decision to restore

a) Possible objective influences

General patient factors

- Exposure to fluoride
- Caries status
- General health
- Parafunction
- Age (particularly child/adult)
- Xerostomia
- Socio-economic status
- Diet

Tooth factors

- Tooth location/type/size
- Cavity design/type
- Dentition
- Occlusal load
- Tooth quality e.g. hypoplasia

Operator and restoration process factors

- Material type
- Physical properties
- Quality of finish
- Moisture control
- Anaesthesia during restoration
- Expertise
- Training

b) Subjective factors

- Incentives (payment structure: salaried, government funded, private, insurance)
- Clinical setting (university, private practice, general dental practice, specialist practice, field trial)
- Country (local treatment fashions)
- Clinician's diagnostic, treatment and maintenance philosophy (influenced by training)
- Patient preferences

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Restoration replacement decisions

- What takes place during a treatment decision?
- Considerations if more good than harm is done by replacing restorations, i.e. a risk-benefit analysis.
- What must a diagnostic examination include so that a risk-benefit analysis can be carried out?
- Appraisal of the presence or absence of markers of oral disease
- Error to focus attention on the appearance of the restorations.

Restoration quality in relation to the state of oral disease

1. consider my patient's overall risk profile

Step 1: Overall risk profile

- Lack of compliance to a recall program or irregular dental attendance
- Presence of a systemic disease
- Medication side effects
- Cigarette smoking
- Dietary habits
  - Frequency of sugar intake
  - Availability of snacks
- Use of fluorides
- Social deprivation
- Low knowledge of dental disease
- Low dental aspirations
- History of repeated interventions

Restoration quality in relation to the state of oral disease

1. consider my patient's overall risk profile
2. look for key risk markers of oral disease

Step 2: Key risk markers of oral disease

- Previous caries experience or loss of periodontal support in relation to the patient's age
- Full mouth plaque and/or bleeding scores
- Saliva quantity and quality
- Prevalence of residual pockets

Restoration quality in relation to the state of oral disease.

1. consider my patient's overall risk profile
2. look for key risk markers of oral disease
3. look out for pathogenic conditions or detect risk markers of a progressive oral disease

Step 3: Pathogenic conditions and risk markers of progressive oral disease

- Inflammatory periodontal parameters and their persistence
- Caries and caries location
- Presence of ecological niches with difficult access such as furcations
- Presence of iatrogenic factors such as restoration discrepancies

Stepwise risk assessment

1. Overall risk profile
2. Key risk markers of oral disease
3. Pathogenic conditions and risk markers of progressive oral disease

4. It is not until this stage that concern about the technical excellence of a particular restoration should be addressed in context with the estimate of possible risk for disease progression at a particular tooth site.

What is coming?

- The oral diseases are the same
- The need for high technical excellence remains unchanged
- better understanding of etiological mechanisms of oral diseases
- documented effectiveness of a range of prophylactic interventions to avoid or arrest oral diseases
- aggressive promotion of oral health care products through advertising
- majority of the population have topical fluoride treatments 365x2 per year

Oral disease management

- The considerations of the consequences of monitoring, correcting, removing or replacing dental restorations must be only one component of management of oral diseases.
- Additional requirements should include patient communication about future risks and prognosis, assessment of aetiology, the counseling of preventive procedures such as dietary advice, and instruction of plaque control to avoid future oral disease.