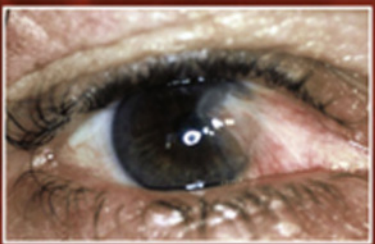


Crispian Scully

Scully's Handbook of
MEDICAL PROBLEMS IN DENTISTRY



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MEDICAL PROBLEMS
IN DENTISTRY**

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Scully's Handbook of MEDICAL PROBLEMS IN DENTISTRY

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Preface

The aim of this book is to highlight the main points and relevance in oral healthcare of human diseases (clinical medical sciences) in a practical way, indicating their aetiopathogenesis, clinical features, diagnosis and management. The book should prove of value to the whole dental healthcare team, to students, and to trainees and is not a replacement for *Medical Problems in Dentistry* – which contains far more detail. However, with increasing use of the internet, this represents a spin-off of smaller size and is intended to be more user-friendly.

Improved social and medical care has increased the life span of many people, including those with previously life-threatening disorders. Many of these people are vulnerable and require special attention in healthcare, and operative intervention can produce major problems. It is thus important that adequate attention is paid both to medical, drug and social history. It is important to apply preventive programmes and educate patients and parents in hygiene to minimize the risk of infections.

The book aims to cover the curriculum as outlined in the UK General Dental Council (GDC) document 'Preparing for practice; Dental team learning outcomes for registration'. It attempts particularly to cover areas that are of especial concern, and other important conditions, which are mainly the problems associated with providing care to people with:

- Allergies
- Bleeding tendencies
- Cardiac diseases
- Drug use and abuse
- Endocrine disorders, especially diabetes
- Fits, faints, behavioural and neuropsychiatric conditions
- Gravid (pregnant) patients
- Hepatitis and other transmissible diseases including HIV/AIDS
- Iatrogenic issues (immunosuppressive treatment; malignant disease such as cancers)

By affording substantial space to these and some other conditions, less space is committed to less significant disorders and rare conditions cannot be included.

The wide coverage is achieved by presenting material in 10 sections; the first discusses health; the second section summarizes aspects of healthcare such as medical history, preoperative assessment, preoperative planning, analgesia and behaviour management, consent, culture, and gender issues. Section 3 covers the main emergencies (others appear elsewhere in the book), while Section 4 discusses age and gender. Section 5 summarizes organ disorders presented alphabetically. Section 6 deals with issues related to trauma; Section 7 covers infections; Section 8 covers chemical dependence; Section 9 discusses therapeutic modalities; Section 10 deals with disability and impairment.

All categorizations are open to criticism; Aristotle advised:

'To avoid criticism say nothing, do nothing, be nothing.'

Conscious of the quote by Mark Twain:

'I didn't have time to write a short letter, so I wrote a long one instead',

I have endeavoured to be concise.

A risk analysis (risk–benefit analysis) is prudent before dental treatment with any patient and medical advice should be obtained if there is any concern about the medical history. Risks are generally greatest when GA or sedation are used and procedures involve haemorrhage and/or are prolonged. Defer elective care until the patient has been medically stabilized. Emergency dental care should be conservative – principally analgesics and antibiotics.

Update the medical history at every appointment. Well-managed medical conditions generally present no or few problems. Ready access to medical help, oxygen and nitroglycerin is vital. Standard infection control measures are necessary. Guidance on oral hygiene and diet are essential.

Valid consent is crucial. All patient information must be kept in a secure location, and discussing patients' medical status should only occur in a private, closed office to ensure confidentiality.

Short, stress-free appointments are recommended; it is important to avoid anxiety, stress and pain. If LA, analgesics, sedative drugs or antibiotics are contraindicated, this is highlighted below. The behaviour, conscious level, pulse, blood pressure and respiratory rate of all patients should be monitored before starting and periodically during treatment, checking with the patient that they feel well. High-risk patients should be offered dental treatment in hospital.

Drug doses must always be checked before administration. Doses must be reduced for children. Doses may need to be reduced in older people or in some medical conditions. Contraindications must always be checked and the patient warned of any possible adverse effects. Informed patient consent is crucial. The information in this book has been carefully checked, but neither the author nor publisher can accept any legal responsibility for any errors or omissions that may be made. Neither the authors nor publisher makes any warranty, expressed or implied, with respect to material herein.

More detail can be found elsewhere about medical topics (Scully C [2014] *Medical problems in dentistry*, 7e, Elsevier Churchill Livingstone, Edinburgh) and orofacial aspects (Scully C [2013] *Oral and maxillofacial medicine*, 3e, Elsevier, Edinburgh). The book does not attempt to include all dental treatment modifications, which are discussed elsewhere (Scully C et al. [2007] *Special care in dentistry: handbook of oral healthcare*. Churchill Livingstone Elsevier, Edinburgh), but includes considerations of risk assessment, pain and anxiety control, patient access and positioning, treatment modification and drug use. The book is applicable to the whole healthcare team. The aims and objectives are to educate and inspire each member of the dental team, whether in-training or post-qualification.

I warmly acknowledge the guidance and help of Dr Tony Brooke (UK), Professor Mark Griffiths (UK), Professor Oslei paes de Almeida (Brazil), Professor Jose Bagan (Spain), Professor Pedro Diz Dios (Spain), Dr Navdeep Kumar (UK), Dr Eleni Georgakopoulou (Greece), Dr Yazan Hassona (Jordan), Dr Dimitris Malamos (Greece), Professor Adalberto Mosqueda-Taylor (Mexico), Dr Rachel Cowie (UK) and Dr Andrew Robinson (Singapore), and the support of Professor Justin Stebbing (UK) and Sister Jane Dean (UK). My sincere thanks also to Zoe and Frances without whose patience the work would not have been possible.

**C.S.
2016**

1

Health

Health hazards

Causes of disease are genetic (inherited) or acquired – environmental (e.g. from trauma, infection, chemical or irradiation) or due to lifestyle (e.g. lack of exercise, poor diet, habits – tobacco, alcohol, drugs, betel and other habits) – often combinations of these factors. Since disease arises from interactions of genetic, environmental and lifestyle factors, it may be minimized by avoiding or minimizing these factors. Already genetic diseases like haemophilia effects can be minimized by providing the missing protein (blood clotting factor VIII). Genetic manipulation ('gene therapy') is increasingly possible, and the genetic basis for drug actions and reactions is being elucidated.

Health promotion

We all aspire to health. The World Health Organization (WHO) definition of health is *Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*. Health includes the ability to undertake normally, activities such as communication, excretion, feeding, recreation, sexual activity, sleep and work, and have no physical suffering, mental suffering or dependency on others.

The leading causes of death (mortality) differ between genders, change with age and vary between and within countries and even cities – determined mainly by social inequalities and factors such as climate and disease (morbidity). For example, in men in the UK, though heart disease, cancers, chronic respiratory diseases, and diabetes consistently rank as top diseases, once a man hits midlife many of these threats have been years in the making, attributable largely to lifestyle choices (Table 1.1). The quality of life (QoL) is as important as, or more important than, its duration.

Disease can be more readily prevented by avoiding certain lifestyle and environmental factors, or minimizing them. Apart from a lifestyle designed to improve or maintain good health by avoiding violence (Section 6) and infections (Section 7), the three most important measures are regular exercise, a healthy diet, and avoiding chemical dependence (Section 8).

Exercise

Physical inactivity often occurs together with an unhealthy diet, contributing to obesity, diabetes, heart disease and cancers. When exercise is combined with a proper diet, weight can be controlled, and obesity – a major risk factor for many diseases – prevented. Other health benefits from exercise, may include for example, some protection against depression and anxiety, osteoporosis, hypertension and Alzheimer disease.

Table 1.1 Five main causes of male deaths in US adults (adapted from www.health.harvard.edu)

	Age					
	35–44	45–54	55–64	65–74	75–84	85+
1	Unintentional injuries	Heart disease	Cancer		Heart disease	
2	Heart disease	Cancer	Heart disease		Cancer	
3	Cancer	Un-intentional injuries		Chronic lung diseases		Stroke
4	Suicide		Chronic lung diseases	Stroke		Chronic lung diseases
5	Murder	Chronic liver disease	Diabetes			Alzheimer disease

Healthy diet

A healthy diet – eating the right amount of food for the activity undertaken and eating a range of foods to ensure a balanced diet (fruit and vegetables; wholegrain bread, pasta and rice; some protein-rich foods such as meat, fish, eggs and lentils; and some dairy foods; but low in fat (especially saturated fat), salt and sugar) is important. Carbohydrates as wholegrain unrefined products may help protect against colon cancer, diverticulitis and dental caries. Generous amounts of vegetables and fruit daily appear to protect against cancers of stomach, colon and lung, and possibly against cancers of the mouth, larynx, cervix, bladder and breast. A high-fibre diet may also offer some protection against hypertension and ischaemic heart disease (IHD). Minimizing the intake of saturated fats (especially those from dairy sources) and partially halogenated vegetable fats may lower the risk of heart disease and some cancers.

See www.healthierus.gov/dietaryguidelines and US Department of Agriculture’s food guidance system (My Pyramid; www.mypyramid.gov).

Chemical avoidance

Chemical dependence is defined as self-administration without any medical indication and despite adverse medical and social consequences, and in a manner that is harmful. This is discussed in Section 8.

Tobacco use is a major cause worldwide of illness and death, particularly linked to atherosclerotic heart disease, hypertension, stroke and their consequent major adverse cardiac/cerebrovascular events (MACE), and chronic obstructive pulmonary disease (COPD). In addition to nicotine, cigarette smoke is primarily composed of a dozen gases (mainly carbon monoxide) and tar, but also about 4000 other compounds, including nitrosamines and aromatic amines, which are known carcinogens. Cancers of the mouth, larynx, oesophagus, lung, and bladder in particular are linked to tobacco. Secondhand smoke (passive smoking) causes lung cancer in adults and greatly increases the risk of respiratory illnesses in children and also sudden infant death. Pregnant women who smoke cigarettes run a greater risk of having stillborn or premature infants, sudden infant death, infants with low birthweight or children with conduct disorders.

Table 1.2 Prevention of disease

Environmental		Lifestyle	
Trauma	Avoid alcohol, accidents, aggression and dangerous environments, activities and sports	Exercise	Take regular daily exercise for 30 min minimum
Infections	Avoid needlestick injuries. Use latex protection (condoms, gloves, rubber dam). Be vaccinated with routine advised vaccines and hepatitis B (Section 7).	Diet	Eat a balanced diet with at least 5 portions of fruit/vegetables daily, minimize sugar and avoid food fads
Chemical	Label and take care with use of and exposure to toxic agents	Substance dependence	Abstain from use of alcohol, betel, recreational drugs, tobacco. Safe storage and adhere to COSHH (Control Of Substances Hazardous to Health) regulations
Irradiation	Minimize exposure (to radon, sun, X-rays, lasers, damaging lights, etc.) and use safety measures such as protective eyewear and screens		Adhere to IRMER (Ionizing Radiation Medical Exposure Regulations)

Alcohol or use of illegal drugs is damaging to social interactions, and may cause violence/trauma, mental health issues, liver disease and many other issues. Injected illegal drugs can also easily lead to infections. Alcohol consumed by pregnant mothers can cause foetal alcohol syndrome (Section 8).

Environmental chemicals exposure should also be minimized; particular dangers are associated for example with asbestos (mesothelioma), benzene (leukaemias), lead and mercury (neurotoxicity). See www.hse.gov.uk/chemicals/ and www.osha.gov/SLTC/hazardoustoxicsubstances/

Advising on good lifestyles and safe environments, and offering access to smoking cessation and other support groups is an important function of all healthcare professionals, including dental.

Detecting most diseases including cancers early, usually means fewer complications and that treatment is more likely to be successful (Table 1.2).

Further reading

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2

Healthcare

Essential points from the outset of a patient's consultation with a dental clinician as with any other Health Care Professional (HCP) are to:

1. determine what the patient requires and wants;
2. obtain an accurate medical (including drug [medication]), family, social, and sometimes dental, travel or developmental history;
3. perform a risk–benefit analysis related to treatment intents;
4. obtain informed consent to any investigations or procedures that may be needed, from the patient or their legally responsible representative;
5. obtain informed consent to the resulting treatment plan from the patient or their legally responsible representative.

Medical history

A medical history is essential in order to:

- assess the fitness of the patient for the procedure
- decide on the type of behaviour and pain control required
- decide how treatment may need to be modified
- warn of any possible emergencies that could arise
- warn of any possible risk to staff or other patients or visitors.

Some clinicians also use questionnaires completed by the patient ([Table 2.1](#)). Relevant systemic disease is generally more common in old people, those with other disabilities, and hospital in-patients.

Preoperative risk assessment

An arbitrary guideline for patient selection for treatment may be based on the classification of Physical Status of the American Society of Anesthesiology (ASA) ([Table 2.2](#)). A fairly high percentage of the population aged 65–74 (23.9%) and >75 (34.9%) have ASA scores of III or IV.

Risks increase when the patient is not completely healthy (if the patient has ASA score of III or IV) and any procedure contemplated is invasive, or staff attempt anything overambitious in terms of their skill, knowledge or available facilities. Current guidelines suggest that *surgical* treatment such as oral and maxillofacial, endodontic or periodontal or implant surgery must be significantly modified if the patient has ASA score of III or IV.

The history must particularly be reviewed before any treatment changes, surgical procedure, general anaesthetic, conscious sedation or local anaesthetic is given. Do not assume

Table 2.1 Simple medical questionnaire example for dental patients to complete

		Yes	No	Do not know	Details
1	Have you had any operation or general anaesthetic?				
2	Have you had any problems with anaesthetics?				
3	Have any of your relatives had any problems with anaesthetics?				
4	Are you taking any drugs or other medications (anticoagulants, inhalers, Pill)?				
5	If female, are you or could you be pregnant?				
6	Have you had any corticosteroid drugs in the past? If yes, when?				
7	Have you any allergies (drugs/plasters/latex/antiseptics/foodstuffs)?				
8	Do you have heart disease or have you had a heart attack?				
9	Do you ever have to take antibiotics routinely prior to dental surgery?				
10	Do you get chest pains, indigestion, or acid in the throat?				
11	Do you have a hiatus hernia?				
12	Do you have high blood pressure?				
13	Do you get breathless walking, climbing stairs or lying flat?				
14	Do you have asthma, bronchitis, or chest disease?				
15	Have you ever had a convulsion or a fit?				
16	Do you have arthritis or muscle disease?				
17	Do you have anaemia or other blood disorder?				
18	Do you know your sickle status (if relevant)?				
19	Have you ever had liver disease or been jaundiced?				
20	Have you ever had kidney disease?				
21	Do you have diabetes?				
22	Do you smoke tobacco? If yes, how many a day (also last six months)?				
23	Do you take recreational drugs or drink alcohol? If yes, how many units per week?				
24	Do you have any infection?				
25	Is there anything else you think the doctor should know?				

Table 2.2 American Society of Anesthesiology (ASA) classification of physical status

	Definition	Treatment modifications
I	Normal, healthy patient	None
II	Patient with mild systemic disease, e.g. controlled diabetes, anticoagulation, asthma, hypertension, epilepsy, pregnancy, anxiety.	Medical advice may be helpful. Often few treatment modifications needed, unless GA or major surgery needed.
III	Patient with severe systemic disease limiting activity but not incapacitating, e.g. chronic renal failure, epilepsy with frequent seizures, uncontrolled hypertension, recent myocardial infarct, uncontrolled diabetes.	Medical advice is helpful. Patients are often best treated surgically in a hospital based clinic where expert medical support is available.
IV	Severe asthma, stroke, patient with incapacitating disease that is a constant threat to life, e.g. cancer, unstable angina or recent MI, arrhythmia, recent CVA, end-stage renal disease, liver failure.	Medical advice is indicated. Patients are often best treated surgically in a hospital-based clinic where expert medical support is available.
V	Moribund patient not expected to live more than 24 hours with or without treatment.	Medical advice is essential. Patients are often best treated surgically in a hospital based clinic where expert medical support is available.

normal function has been established after treatment of any condition. Further, many patients with life-threatening diseases now survive as a result of advances in surgical and medical care. An apparently fit patient coming for treatment, can have a serious systemic disease and be under treatment with significant medications. Either or both can significantly affect management or even the fate of the patient. These problems may be compounded if the patient is seen briefly and support is lacking. Morbidity is minimal when local anaesthesia (LA) is used. Conscious sedation (CS) is more hazardous than LA, and must be carried out by adequately trained personnel and with due consideration of the possible risks. General anaesthesia (GA), whether intravenous or inhalational, leads to impaired control of vital functions and is thus only carried out by a qualified anaesthetist, and permitted in a hospital with appropriate facilities.

Preoperative planning

Good preoperative assessment and organization endeavour to anticipate and prevent any issues (Table 2.3).

Pre-treatment issues

- Access
- Anaesthetic

Table 2.3 Example of dental clinic appointment schedule			
Patient	Last name First name Date of birth Unit number Telephones E-mail		
Systemic disease	Main problems		
Communication difficulties	Main problems		
Appointment	Date	hour	Date hour Date hour Date hour
Treatment planned			
Support required	Transport Disabled parking Special seating Caregiver present Additional staff, e.g. chaperone, interpreter Other		
Appropriate operative care	Antibiotic prophylaxis Bleeding test BP (blood pressure) monitoring Cardiac monitoring Medical assessment Others		
Drugs to avoid			
Behaviour control	No restraints Drugs, medications or others LA CS GA Others		

- Chaperoning
- Communication
- Co-morbidities
- Consent
- Factor replacement, haemoglobin (Hb) level, International Normalized Ratio (INR)
- Materials, procedures or medication considerations.

At treatment

- Appointment timing and duration
- Chaperoning
- Devices to consider
- Facilities required

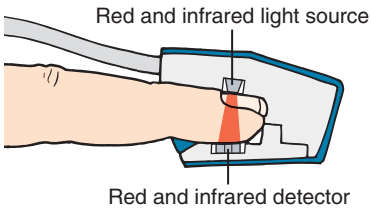


Figure 2.1 Pulse oximeter for measuring oxygen saturation levels.



Figure 2.2 Thermometer (aural use).



Figure 2.3 IntelliSense sphygmomanometer (Omron, Shiokoji Horikawa, Shimogyo-ku, Kyoto 600-8530 Japan).

- Haemostatics
- Patient posture
- Surgical considerations
- Monitor; vital signs – pulse, BP, respiration, oxygen saturation.

Post-treatment

- Accompanying responsible person
- Care at home
- Dietary considerations
- Hygiene
- Postoperative care
- Recall.