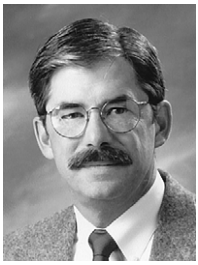
THE DENTAL CLINICS OF NORTH AMERICA

Dent Clin N Am 46 (2002) xv–xviii

Preface

Dental therapeutics update



Paul A. Moore, DMD, PhD, MPH Elliot V. Hersh, DMD, MS, PhD
Guest Editors

Dental pharmacotherapeutics is advancing rapidly. It is a field that requires constant updates in the knowledge of new drugs, drug interactions, and useful therapeutic trends. The goal of this issue of the *Dental Clinics of North America* is to provide an update of therapeutic agents of interest to general practitioners of dentistry. These agents include antimicrobial agents, analgesic and anti-inflammatory drugs, local anesthetic formulations, and sedative and anxiolytic agents. In addition, drugs of special importance for managing unique patient populations such as geriatric patients, pediatric patients, and dry mouth patients are presented. Other topics of importance include supplemental fluoride requirements, oral manifestations of drug therapy, and emergency drugs. Because of the wide variety of therapy used in dentistry, this issue limits therapeutic information to agents useful for the general practitioner. The concise presentations that have been included focus on therapies that are maximally effective and safe.

Patient demographics for the 21st century

Expected changes in the nation's demographics, patient populations, and drug consumption make this review and update of drug therapy particularly timely. The number and proportion of elderly dental patients in the United States will continue to grow. Compared with geriatric patients a decade ago, the prevalence of edentulism and tooth loss has decreased; subsequently, the need for restorative dentistry and periodontal therapy is expected to increase [1,2].

PII: S0011-8532(02)00036-8

Complex medical and drug histories have become routine for many dental practitioners. Elderly patients tend to have more chronic health problems, and they usually take more medications. The risks associated with new drugs and the implications of multiple drug therapy challenge our understanding of clinical pharmacology and adverse drug reactions.

General practitioners need clear and concise information to keep abreast of the plethora of drug advances. Continual learning is a lifelong enterprise for anyone in a health-related profession; information transfer regarding current drug therapy is particularly demanding because of the rapid changes in drug administration that have occurred in the last few decades. For example, of the 20 drugs most frequently prescribed in 1997, only 10 existed in 1987 [3]. In addition, as many as 30 new drugs are introduced to the market by the pharmaceutical industry each year in the United States [4]. The knowledge of safe and effective drug therapy learned during dental school rapidly becomes irrelevant, and the demand for obtaining reliable new information is a constant challenge for practicing dentists. The authors of this issue of the *Dental Clinics of North America* recognize that one of the most effective means of optimizing therapy is to rapidly and clearly inform practitioners of the existence of these potential complications and recommend alternative therapeutic strategies.

Patients who have chronic diseases, have multiple physician prescribers, and take many different types of drugs will require a thorough patient evaluation. Many obstacles exist to obtaining an accurate medical and drug history. Patients cannot always remember the names and the doses of the drugs they are taking, and many forget to include over-the-counter (OTC) drugs in their histories. Older patients may have limited recall abilities. Not only is it important to know which drugs are being taken by a patient, but the dose and duration of use should be noted. Patients taking higher doses of drugs for longer periods may be at higher risk for a drug interaction. Consulting with prescribing physicians, the patient's pharmacist, and family members may be required in some circumstances.

All drugs taken (including prescription medications, OTC drugs, drugs of abuse, and herbal remedies) as well as compliance with drug regimens should be documented in the patient's dental record. The dental practitioner should have a working knowledge of how these drugs act and any potential drug interactions. Selecting dental therapeutic agents with proven records of clinical efficacy and minimal risks is also recommended. Caution is particularly necessary when treating the high-risk patient. Because of the abundance of newly marketed drugs and drug combinations, the dental practitioner should be suspicious of possible unreported drug interactions until experience is gained with new drug entities.

Various electronic and printed resources are available as resources to the dentist. The *Physician's Desk Reference* provides complete product information for currently marketed drugs and quick drug references such as Lexicomp's *Drug Information Handbook for Dentistry*, Mosby's *Dental Drug*

Reference, the *ADA Guide to Dental Therapeutics*, and The Medical Letter's *Handbook of Adverse Drug Interactions* are extremely useful guides [5–9]. Additionally, the Internet has many websites that permit a practitioner to rapidly source drug information. A valuable review of electronic drug databases useful for a dental practitioner has recently been published [10].

Dental pharmacotherapeutics

Many of the characteristics of drug therapy in dentistry are unique and limit the likelihood of serious drug interactions (see following list). Drug therapy in dentistry is typically administered either as a single dose or for only a short duration. Many of the adverse drug reactions and drug interactions that are associated with changes in the rate of drug metabolism and excretion require repeated dosing before blood concentrations are altered significantly. Most of the drugs used in dental therapy have large margins of safety, which limits the likelihood of many drug interactions. In addition, much of dental therapy is elective and can be postponed if the medical status of a patient is in question or increases the risk of an adverse drug interaction. Finally, there are a limited number of drugs routinely used in dental therapeutics: antibiotics, local anesthetics and vasoconstrictors, analgesics, and sedatives and anxiolytic agents. Consequently, many dental practitioners have a thorough knowledge of the indications, contraindications, and precautions of the drugs they routinely use. Dental practitioners are able to focus their drug information needs toward the clinical significant drug interactions of only a few drugs and drug classes.

Unique characteristics of dental therapeutics

- There are a limited number of agents in a practitioner's armamentarium.
- Either single-dose regimens or therapies with short durations are most common.
- Most dental drug therapies have large margins of safety.
- There is limited use of intravenously administered drugs.
- Elective dental procedures may be scheduled to avoid concomitant medical treatment.
- Research using the third molar extraction model provides robust data sources regarding use of analgesics, local anesthetics, and pharmacosedation.

As the population becomes older and drug consumption subsequently increases, adverse drug interactions will continue to be a major concern in dental practice. The number of elderly patients in the United States will increase for at least the next few decades. Because older patients tend to have more chronic health problems and tend to take more medications, complex medical and drug histories have become routine requirements for many dental practitioners. The risks associated with new drug therapies and

the implications of multiple drug therapy challenge our understanding of clinical pharmacology and adverse drug interactions. Fortunately, when used within acceptable dosage guidelines, drugs routinely used in dental practice are relatively safe, and few significant adverse drug reactions or drug interactions are encountered.

The drug therapies described in this issue of the *Dental Clinics of North America* fall into the realm of basic dental therapeutics. Local anesthetic agents are administered for regional anesthesia during one setting and within accepted dose recommendations. Sedative and anxiolytic agents are administered orally immediately before (or possibly the day before) dental treatment. Intravenous drug use and dental therapies lasting beyond a few weeks are not considered common dental therapies and are not included in establishing the significance of drug interactions that are most important for general practitioners.

References

[1] Burt BA, Eklund SA. Dentistry, dental practice, and the community. 4th edition. Philadelphia: WB Saunders Co; 1992.
[2] Marcus SE, Drury TF, Brown LJ, Zion GR. Tooth retention and tooth loss in the permanent dentition of adults: United States, 1988–1991. J Dent Res 1996;75:684–95.
[3] The top 200 drugs. American Druggist 1997;Feb:30–7.
[4] New drugs approved by the FDA in 1997. Pharmacists Letter 1998;2:14.
[5] Physcian's desk reference. 55th edition. Montvale (NJ): Medical Economics; 2001.
[6] Wynn RL, Meiller TF, Crossley HL. Drug information handbook for dentistry. 7th edition. Hudson (OH): Lexicomp; 2001.
[7] Gage TW, Pickett FA. Dental drug reference. 4th edition. St. Louis: Mosby, Inc; 1999.
[8] Rizack MA. The Medical Letter handbook of adverse drug interactions. New Rochelle (NY): Medical Letter, Inc; 1998.
[9] Ciancio SG, editor. ADA guide to dental therapeutics. 2nd edition. Chicago: ADA Publishing; 2000.
[10] Wynn RL. Internet Web sites for drug information. Gen Dent 1998;46:12–8.

Paul A. Moore, DMD, PhD, MPH
Professor, Pharmacology and Dental Public Health
Department of Dental Public Health
University of Pittsburgh
School of Dental Medicine
552 Salk Hall, 3501 Terrace Street
Pittsburgh, PA 15261, USA

Elliot V. Hersh, DMD, MS, PhD
Associate Professor of Oral Surgery and Pharmacology
Department of Oral Surgery and Pharmacology
University of Pennsylvania School of Dental Medicine
4001 Spruce Street, Philadelphia, PA 19104-6003, USA