

COMPASS Therapeutic Notes

Prescribing for Adults by Dental Practitioners

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Glossary

Pericoronitis: inflammation of the gingiva surrounding the crown of a tooth.

Dental alveoli: the cavities or sockets in which the roots of the tooth are embedded.

Trismus: Spasmodic contraction of the masticatory muscles resulting in forceful jaw closure. This may be seen with a variety of diseases, including tetanus, as a complication of radiation therapy, trauma, or in association with neoplastic conditions.

NSAIDs: Non- Steroidal Anti-Inflammatory Drugs

Infection	Antibacterial of choice	Notes
Acute dento-alveolar abscess	Amoxicillin (250milligrams three times daily for 5 days) is the first-line choice. Metronidazole (200milligrams three times daily for 3 days) as a second-line agent.	
Pericoronitis	Metronidazole or amoxicillin	Antibacterials are required only in the presence of systemic features of infection or of trismus or persistent swelling.
Acute periodontal abscess	Amoxicillin or metronidazole	Antibacterials are only required if there are systemic features or gross local spread.
Acute ulcerative gingivitis (also known as acute necrotising gingivitis or acute ulcerative periodontitis)	Metronidazole (200milligrams three times daily for 3 days) is the treatment of choice, with amoxicillin as an alternative.	Characterised by acutely inflamed, tender, bleeding gums with necrosis and loss of the interdental papillae. The patient may be pyrexial. There is usually a marked halitosis.

What can dentists write NHS prescriptions for?

In Northern Ireland, dentists can write NHS prescriptions listed in the Dental Practitioners' Formulary (DPF). Readers are directed to the relevant section of the current BNF for guidance on items included in the DPF. There is no such limitation set on items which a dentist may prescribe by **private** prescription - provided the relevant legal requirements are observed. However, dentists are required to restrict their prescribing to areas in which they are competent.¹

Antimicrobial Agents

General dental practitioners prescribe antibacterials therapeutically and prophylactically to manage oral and dental infections. Studies show that prescribing of antimicrobials within NHS dental practice can be sub-optimal, with considerable variation from the recommended frequencies and doses.²⁻⁶ (see TABLE ONE for correct dosing).

In Northern Ireland in 2005, primary care dental practitioners prescribed 8.25% of all antimicrobial drugs. The most frequently prescribed antibacterials are shown in TABLE TWO.


In dental practice, when are antibacterial agents indicated?

In general dental practice, antibacterials are indicated:

- As an adjunct to the management of acute or chronic infection.
- For the definitive management of active infectious disease.
- For the prevention of metastatic infection such as infective endocarditis.

What antibacterial drugs should be used in acute dental infections?

The main isolates from dental abscesses are a complex mixture of facultative and anaerobic bacteria, often resistant to phenoxymethylpenicillin (penicillin V), justifying the use of amoxicillin or metronidazole.⁷ (See TABLE ONE).



Prescribing Notes

- The correct administration schedule for **amoxicillin** is **three** times daily.
- Remember to write prescriptions using the **generic** drug name. This is the case even if the drug is not available in a generic form.
- Remember to prescribe **sugar-free** medicines and state this clearly on the prescription.

Antibacterial prophylaxis against Infective Endocarditis

What is infective endocarditis?

Infective endocarditis (IE) is a microbial infection of the lining of the heart or heart valves.

Can the risk of developing IE be reduced?

Good oral hygiene is probably the most important factor in reducing the risk of endocarditis in susceptible individuals, and access to high quality dental care should be facilitated.⁸ There is a role for antibiotic prophylaxis in specific patients.

Which patients require antibiotic prophylaxis against IE prior to a dental procedure?

The Working Party of the British Society for Antimicrobial Chemotherapy recommends antibiotic prophylaxis for those patients in whom the risk of

developing endocarditis is high and, if infected, would carry a high mortality.⁸ Antibiotic prophylaxis in dental treatment is **only indicated for:**

- patients with a **previous history of endocarditis**, or
- patients who have had **cardiac valve replacement surgery**, or
- patients with a **surgically constructed systemic or pulmonary shunt or conduit**.

In these patients, which dental procedures predispose to the development of IE?

For those patients outlined previously, it is recommended that prophylaxis be given for all dental procedures involving dento-gingival manipulation or endodontics.⁸

Which antibacterials are recommended for use prophylactically against IE?

For the dental procedures in patients outlined previously, **amoxicillin** 3grams taken 1 hour before the procedure is recommended.⁸ If the patient has a documented penicillin allergy, a single dose of oral **clindamycin** 600mg should be given 1 hour before the procedure.⁸ For those patients who are allergic to penicillin and cannot swallow capsules, oral **azithromycin** suspension 500mg given 1 hour before the procedure can be used as an alternative.⁸

In addition, where practicable, antimicrobial prophylaxis may be supplemented with pre-operative chlorhexidine gluconate gel 1% or chlorhexidine gluconate mouthwash 0.2% held in the mouth for 1 minute.⁸

For patients requiring sequential dental procedures, these should ideally be performed at intervals of at least 14 days to allow healing of oral mucosal surfaces. If further dental procedures cannot be delayed, it is suggested alternating

amoxicillin and clindamycin.⁸ In this scenario, if the patient has a penicillin allergy, it is suggested that expert advice be sought.⁸

Patients at risk of IE should be warned to report to their doctor or dentist any minor illness that develops after dental treatment, whether or not antibacterials have been given. This is because IE has an insidious onset and treatment may fail if diagnosis is delayed. If IE develops it is likely to be within one month of dental treatment.

Antibacterial prophylaxis in other situations

Do patients with a joint prosthesis require antibacterial prophylaxis?

The advice of the Working Party of the British Society for Antimicrobial Chemotherapy is that patients with prosthetic joint implants (including total hip replacements) do **not** require antimicrobial prophylaxis for dental treatment.⁹ This is because the evidence linking bacteraemias of dental origin to infection of joint replacements is tenuous and unproven, relying mainly on anecdotal case reports.

What about the need for antibacterial prophylaxis for patients with other prostheses?

Patients with cardiac pacemakers, intra-ocular lenses and prosthetic vascular grafts are **not** considered to be susceptible to infection from bacteraemias.^{10,11} Patients with central intravenous lines (used for nutrition or chemotherapy) and catheters for haemodialysis do **not** require antimicrobial cover for dental procedures.

Do otherwise healthy patients require antibacterial prophylaxis prior to dental procedures?

Antimicrobials are sometimes prescribed for healthy patients having minor oral surgery (MOS). The rationale is to prevent infection at the site of surgery. However, evidence for the effectiveness of prophylaxis for routine oral surgery procedures is scarce and antimicrobial prophylaxis in the majority of MOS cases is unnecessary. Post-operative morbidity after oral surgery is rarely serious and is readily amenable to simple treatment.

Is antibacterial prophylaxis required in healthy patients undergoing removal of mandibular third molars?

Prophylactic antibacterials are not **usually** required, however some authors advocate the routine use of antibacterial prophylaxis.¹² Some limit their prescribing to cases where there is a history of pericoronitis or when the procedure involves bone removal.¹³

The results of one study suggest that pre-operative parenteral antibacterial prophylaxis is unwarranted for routine third molar surgery in medically fit patients, and the prescription of broad spectrum antibiotics in such patients affords minimal (if any) clinically significant benefits.¹⁴

Is antibacterial prophylaxis required in healthy patients undergoing extractions and removal of retained roots and teeth?

TABLE TWO: Most frequently prescribed antibacterial agents by primary care dentists in Northern Ireland in 2005

(Data source Pharmaceutical Dept. CSA)

Agent	Form	Strength	Numbers of prescription items
Amoxicillin	Capsules	250mg	30724
Amoxicillin	Capsules	500mg	29798
Metronidazole	Tablets	200mg	23670
Metronidazole	Tablets	400mg	12425
Amoxicillin	Oral suspension (sugar-free)	125mg/5ml	8016
Amoxicillin	Sachets (sugar-free)	3grams	6687
Penicillin V	Tablets	250mg	5252
Erythromycin	Tablets	250mg	4890
Amoxil [®] †	Sachets (sugar-free)	3 grams	3840
Amoxicillin	Oral suspension (sugar-free)	250mg/5ml	1932

† NOTE: Generic amoxicillin 3gram sachets are available at considerably lower cost and should be prescribed in preference to the branded product.

There is no rationale for routine antibacterial prophylaxis for the removal of teeth unless the patient is medically compromised. Patients who present with a clear history of repeated dry sockets following exodontia may warrant the use of chemoprophylaxis when extracting mandibular teeth. Metronidazole has been shown to be efficacious in this situation.¹⁵

Resistance to Antibacterials

The emergence of resistant bacterial strains due to overuse of antibiotics is a cause of worldwide concern.¹⁶ Throughout Europe and beyond, governments are devising strategies for dealing with antimicrobial resistance. The Council of the European Union has accepted "A Community Strategy Against Antimicrobial Resistance" as a recommendation for member states on the prudent use of antimicrobial agents used in human medicine. In Northern Ireland, the Antimicrobial Resistance Action Plan 2002-2005 (AMRAP) outlines the three-year action plan in this area.

How does dental prescribing contribute to antibacterial resistance?

The literature suggests that unnecessary use of antibiotics in dentistry may be a significant contributing factor in the development of antibacterial resistance.^{2-4,6,17,18} The Department of Health lists dentists, along with medical practitioners, vets and those involved in agriculture as contributors to the problem of antibacterial resistance.¹⁹ Antibiotics should be prescribed at the correct frequency, dose and duration so that the minimum inhibitory concentration (MIC) is exceeded and selection of resistant bacteria is prevented.

What are the common organisms of oral flora?

The oral cavity is colonised by a diverse range of microorganisms.²⁰ These comprise 300-500 species of bacteria, fungi and protozoa. Of the bacteria, alpha-haemolytic streptococci are among the most common. Other bacterial commensal flora includes: staphylococci, lactobacilli, corynebacteria and mycoplasmas.

Which antibiotics can dentists prescribe in NHS primary care?

Because of the limitations imposed by the Dental Practitioners' Formulary, there is

little variation in the class of antibiotic that dentists prescribe (see TABLE THREE).

Should combinations of antibiotics be prescribed?

Guidelines published by the Commission of the Federation Dentaire Internationale recommend that combination therapy should be avoided if possible in dentistry.²¹

Antiviral Therapy

Which viral infections can be treated in dental practice?

Primary or secondary infections due to human herpes simplex virus (HSV) type I can be treated in dental practice.

What is the treatment of choice for the management of recurrent HSV infections of the lips and perioral tissues?

Either, **aciclovir cream**, applied every 4 hours until lesions resolve, or **peniclovir cream**, applied every 2 hours.

Topical preparations should ideally be applied in the prodromal phase of HSV infections, when the patient feels lip-tingling, or altered lip sensations.

How should herpetic gingivostomatitis be managed?

Herpetic gingivostomatitis is an inflammation of the gingivae and oral mucosa due to infection with HSV. The management of primary herpetic gingivostomatitis is a soft diet, adequate fluid intake, analgesics and the use of chlorhexidine mouthwash. In severe cases of herpetic stomatitis, **aciclovir** tablets or oral suspension (200milligrams five times a day for 5 days) may be required.

Antifungal Therapy

Most oral fungal infections are caused by *Candida* species.

What are the main causes of oral thrush?

Oral thrush, also known as acute pseudomembranous candidiasis, can be associated with inhaled corticosteroid therapy and with use of broad-spectrum antibiotics.

Patients using inhaled corticosteroids should be encouraged to rinse their mouth after using their inhaler to help prevent thrush.

TABLE THREE: Antimicrobials in the Dental Practitioners Formulary.

AGENT	SPECTRUM	NOTES
Phenoxymethylpenicillin (penicillin V)	Gram positive, facultative bacteria, some anaerobes. Susceptible to bacterial penicillinases	Poor absorption from the gastrointestinal tract if taken within 30 minutes of food.
Amoxicillin	Gram positive, facultative bacteria, some anaerobes. Susceptible to bacterial penicillinases	Better absorption from GI tract than ampicillin
Ampicillin	Gram positive and negative facultative bacteria, some anaerobes. Susceptible to bacterial penicillinases.	Only half of an administered oral dose is absorbed. Absorption further reduced by food in the gut.
Cefradine, cefalexin	Gram positive, facultative bacteria, some anaerobes.	Good absorption from GI tract.
Clindamycin	Gram positive, facultative bacteria, some anaerobes.	Good absorption from GI tract. Antibiotic-associated colitis is a particular hazard, particularly in middle-aged and elderly women. Warn patients to discontinue treatment if diarrhoea develops.
Erythromycin	Gram positive and negative bacteria	Causes nausea, vomiting and diarrhoea. Can be used instead of penicillin for allergic patients. However, many organisms are now resistant to erythromycin; its use should be limited to short courses. Metronidazole may be preferred as an alternative to penicillin.
Metronidazole	High activity against anaerobes	Drug of choice for treatment of acute necrotising ulcerative gingivitis and pericoronitis. Disulfiram-like reaction if taken with alcohol.
Tetracyclines	Can be effective against oral anaerobes but the development of resistance has reduced their usefulness	May be useful in refractory periodontal disease. Doxycycline need only be given once daily. Antacids and milk can reduce absorption from the gut.

What is the treatment of choice for oral thrush?

Treat with either:

- **nystatin** pastilles or suspension 100,000 units, four times daily, until 48 hours after the lesions resolve, or
- **amphotericin** (10milligram lozenges or 100milligrams of oral suspension), four times daily, until 48 hours after the lesions resolve, or
- **miconazole** oral gel applied four times daily, until 48 hours after the lesions resolve.
- **Fluconazole** (50 milligrams daily for 7-14 days) is effective for unresponsive infections.

How should erythematous candidiasis be managed?

See TABLE FOUR.

What should be remembered when prescribing antifungals?

Amphotericin and **nystatin** are polyene antifungals. They are poorly absorbed from the GI tract and are widely used topically (as lozenges or suspension) in the mouth. Resistance of *Candida* species to polyene antifungals is rare.²² Nystatin has an unpleasant taste that may lead to poor patient compliance. To help overcome this, a sweetened pastille has been developed. Amphotericin can be better tolerated than nystatin.²³

Miconazole is an imidazole antifungal. It is used by local application in the mouth but is also absorbed. Miconazole should be used with caution in those with liver disease. Miconazole is sufficiently absorbed from the GI tract into the circulation so it can still interact with drugs such as warfarin.²⁴

Fluconazole belongs to the triazole

antifungals group. It is absorbed when taken by mouth. Fluconazole has a long half-life and therefore can be administered as a single daily dose. Like miconazole, fluconazole has significant drug interactions and should be used with caution in liver disease. Another serious consideration is that of resistance of the *Candida* species to fluconazole.²²

Fluconazole can also interact with warfarin and bleeding has been reported.²⁵ While reports of resistance to fluconazole have so far been largely in patients with HIV infection, there are fears that widespread use of fluconazole may lead to wider resistance.

Are mouthwashes of any value in treating oral *Candida* infections?

Chlorhexidine mouthwashes are effective against fungi²⁶ and are a useful adjunct to other antifungals.²⁷ However, it should not be used simultaneously with nystatin as they render each other ineffective.²⁸

Cetylpyridium chloride is another agent incorporated in some mouthwashes. It has been reported, in vitro, to have greater fungicidal activity than chlorhexidine.²⁹


What should be done if a fungal infection fails to respond to treatment?

If candidal infection fails to respond to 1-2 weeks of treatment with an antifungal the patient should be referred for further investigation to eliminate the possibility of underlying disease.

What are the most frequently prescribed antifungals by dentists?

In the UK, nystatin was shown to be the most popular choice of antifungal agent amongst General Dental Practitioners.

This was followed by miconazole, amphotericin and fluconazole.³⁰ In Northern Ireland, in 2005, fluconazole was the most frequently prescribed antifungal in dental practice, followed by nystatin and amphotericin.³¹

 **Prescribing Notes – Antifungals**

- Both Nystan® Oral Suspension and Diflucan® Oral Suspension contain sucrose.
- **Nystatin oral suspension** can be obtained in a **sugar-free** formulation. Check if the pharmacist dispensing the prescription can obtain a supply.
- **Fluconazole** is **not** available as a sugar-free oral suspension.

Prescribing in patients with co-morbidities

Individuals requiring dental treatment may also suffer from an unrelated medical condition; this may require modification to their dental management. If the patient has systemic disease or is taking concurrent medication, the matter may need to be discussed with the patient's medical practitioner.

There is no statutory requirement for a dentist to communicate with a patient's medical practitioner when prescribing for dental use. There are, however, occasions when this would be in the patient's interest and such communication is to be encouraged.

Cardiovascular System

Patients with angina

Local anaesthetics which contain adrenaline are best avoided.³² Effective analgesia, short appointments, availability of oxygen and GTN are important in dental treatment regimes. GTN spray should relieve chest pain in angina within 5 minutes.

Patients with Hypertension

Stress may further increase an already raised BP, leading to an increased risk of stroke or cardiac arrest.

Patients with Heart Failure

In uncontrolled cardiac failure, dental treatment under any form of anaesthesia should be deferred until medication and symptoms are stabilised. Even when relatively well controlled, putting the patient in the supine position may exacerbate dyspnoea and is therefore best avoided.

Patients with palpitations or arrhythmias

Such patients may have a pacemaker. Care needs to be taken with electrical equipment that can unbalance the circuits within a pacemaker. Electric pulp testers do not present a risk.

Patients with atrial fibrillation may be receiving anticoagulant therapy. (see later for management).

Patients with a history of Myocardial Infarction (MI)

In patients post-MI, elective procedures under GA or LA should be postponed for at least 3 months. Within 3 months of an MI, even emergency treatment is best carried out with medical consultation.

Which cardiovascular drugs should dentists take particular care with?

Local anaesthetic preparations often also contain adrenaline, which may interact with **beta-blockers**, particularly propranolol.³³ A severe and potentially life-threatening hypertensive reaction and/or bradycardia can occur. Cardioselective beta-blockers such as atenolol and metoprolol interact minimally. Thus dose limitation of adrenaline is wise when patients are taking beta-blockers; two cartridges of an adrenaline-containing solution in an adult is a sensible limit.³⁴

Patients receiving non-potassium sparing **diuretics** have been shown to experience an increased hypokalaemic response to adrenaline in dental local anaesthetics.³⁵ This could predispose to arrhythmias. A limit of one or two adrenaline-containing local anaesthetic cartridges is recommended.

The published evidence on **warfarin** would suggest that most dental patients can undergo procedures **without** alteration to their oral anticoagulant provided that local haemostatic measures are used to control bleeding.³⁶⁻⁴³ The coagulation status (based on the International Normalised Ratio, INR) of patients on warfarin must be evaluated before invasive dental procedures are performed.

When should the INR be measured before a dental procedure?

Ideally, the INR should be measured within 24 hours before the procedure. However, this may be difficult to achieve in primary care. For patients with a stable INR, an INR measured within 72 hours before the procedure is acceptable.

Up to what INR value can dental procedures be carried out in primary care?

Published data suggest that limiting treatment to patients with an upper INR limit of 4.0 enables procedures to be carried out safely without excessive postoperative bleeding.^{40,43,44} Reviews on the management of dental patients taking warfarin indicate that minor dental surgical procedures can be carried out without alteration to the patient's warfarin therapy if the INR is within therapeutic range (INR 2.0 - 4.0).³⁶⁻³⁸

For which dental procedures can warfarin be continued safely?

Simple extraction of up to 3 teeth, gingival surgery, crown and bridge procedures, dental scaling and the surgical removal of teeth can be safely carried out without altering the warfarin dose.^{37,38,41,44}

Which patients taking warfarin should not undergo dental surgical procedures in primary care?

Patients who have an INR greater than 4.0 should not undergo any form of surgical procedure without consultation with the clinician responsible for maintaining their anticoagulation.

Are patients at increased risk of bleeding if warfarin continues?

Patients on warfarin might bleed more than normal. In most cases pressure or repacking and resuturing the socket can manage postoperative bleeding.

The increased risk of postoperative bleeding must be balanced against the consequences of thromboembolism if warfarin is discontinued.

How do the risks of thromboembolic events and postoperative bleeding balance?

Bleeding complications, while inconvenient, do not carry the same risks as thromboembolic complications. If warfarin is discontinued prior to a dental procedure, the risk of thromboembolic events may be between 0.02% to 1%.^{36,45}

Should antiplatelet medications be stopped prior to dental procedures?

Most patients taking low-dose **aspirin** (75mg - 300mg daily), **clopidogrel**, or **dipyridamole** should **not** have their medications stopped prior to dental surgical procedures.⁴⁶⁻⁴⁸

Respiratory System

What particular problems are associated with drugs used in respiratory disorders?

The use of **corticosteroid** inhalers can lead to localised lowered resistance and to opportunistic infections. As a result of this, oro-pharyngeal candidal infection may occur.⁴⁹ In order to avoid this complication, patients should be advised to rinse and gargle with water after use of their inhaler.

Beta-2 Agonists (salbutamol, terbutaline)

- these can produce a dry mouth, taste alteration and discolouration of the teeth. Dry mouth may increase the incidence of caries and thus a preventative regimen is important. If the dry mouth is severe, artificial saliva may be indicated.

Antimuscarinic bronchodilators

Drugs such as ipratropium can produce dry mouth and taste disturbance and may also cause stomatitis.

Gastrointestinal System

Antacids are usually aluminium and/or magnesium based compounds or alginates. They interfere with absorption of drugs including fluoride, ketoconazole, metronidazole and tetracycline.

It has been shown that maintaining antacids in the mouth for a time before swallowing can counteract reductions in oral pH produced by acidic materials and it has been suggested that this might help counteract the erosion produced by gastrointestinal reflux.⁵⁰

Neurological System

Drugs to treat neurological conditions can produce unwanted effects in and around the mouth. Anticonvulsants have a number of unwanted effects of interest to dentists. Gingival overgrowth is a recognised side effect of **phenytoin**, but may also occur with **sodium valproate** and **ethosuximide**. In addition, **phenytoin**

TABLE FOUR: Management of erythematous candidiasis

	Notes	Treatment
Acute erythematous candidiasis	Also known as acute atrophic candidiasis	Fluconazole 50mg, orally, daily for 7-14 days.
Chronic erythematous candidiasis	Also known as denture stomatitis, or chronic atrophic candidiasis. Usually characterised by inflammation on a denture-bearing area of the maxillary mucosa. Note , denture stomatitis is not always associated with candidiasis, other factors e.g. mechanical or chemical irritation may be the cause.	Patients should be advised to leave dentures out at night and on aspects of denture hygiene. If these measures are unsuccessful, miconazole oral gel can be applied to the fitting surface of the denture before insertion (for short periods only) or nystatin pastilles or amphotericin lozenges can be allowed to dissolve slowly in the mouth.

causes taste disturbance and has been implicated in producing hypercementosis and shortening of the roots. **Sodium valproate** may produce parotid gland enlargement. **Lamotrigine** may cause dry mouth. **Ethosuximide** may produce gingival bleeding. **Carbamazepine** may produce xerostomia, glossitis and oral ulceration. The antimuscarinic anti-Parkinsonian drugs such as **orphenadrine** and **benzhexol** can produce dry mouth, which may increase the incidence of caries. In addition, the dopaminergic drugs such as **levodopa** may produce taste disturbance.

Liver Disease

A history of liver disease is important in terms of potential drug toxicity, bleeding tendency and the possibility of viral hepatitis. Severe bleeding can occur after dental extractions in patients with chronic liver disease.⁵¹

Local anaesthesia is not entirely safe in patients with hepatic impairment. Most of the amide local anaesthetics used in dental practice undergo biotransformation in the liver. As little as two cartridges in an adult patient may be too much if liver disease is severe.

Prescribing for patients with liver disease

The use of any drug in a patient with severe liver disease should be discussed with the patient's physician. Hepatic impairment will lead to failure of metabolism of many drugs that can result in toxicity. In some cases dose reduction is required, other drugs should be avoided completely.

- **miconazole**, and **erythromycin** are contraindicated in hepatic impairment.
- care should be taken using **tetracycline** in hepatic impairment and high doses should be avoided.
- **metronidazole** - in severe liver disease reduce total daily dose to one-third, and give once daily.

Endocrine System

The most common condition to consider is the management of the **diabetic patient**. When providing treatment under local anaesthetic it is important to check if the patient has eaten that day and taken their usual medication.

The prescription of some drugs by dentists is affected by concurrent endocrine therapy:

- **erythromycin** may interact with diabetic medication. Take care with gliclazide, glibenclamide, or glipizide.
- there may be a reduced efficacy of the **combined oral contraceptive** during treatment with antibiotics. (see TABLE SEVEN for information about interactions).

Adrenal Insufficiency

Dentists need to be aware if a patient is taking or has been taking a long-term corticosteroid. Patients who have been receiving prolonged therapy with corticosteroids develop adrenal atrophy which may persist after stopping the corticosteroids. To compensate for a

diminished adrenocortical response caused by prolonged corticosteroid treatment any significant trauma or surgical procedure may require a temporary increase in corticosteroid dose, or if already stopped, a temporary reintroduction of corticosteroid treatment.

In order to avoid precipitating acute adrenocortical insufficiency, dentists must determine whether "steroid cover" is required prior to any stressful dental treatment.

Patients undergoing minor dental surgery procedures under local anaesthetic are at very low risk, if any, for developing adrenal crisis. Available evidence suggests that corticosteroid supplementation is unnecessary for patients taking **less than 10mg prednisolone** daily (or equivalent, see TABLE FIVE). These patients should simply maintain their usual dose of corticosteroids.⁵³ Patients taking **more than 10mg prednisolone** daily (or equivalent, see TABLE FIVE), within 3 months of the procedure may require replacement corticosteroids.⁵² (see TABLE SIX).

Renal Disorders

It is important to appreciate the problems faced by a patient with chronic renal disease and anticipate their reduced resistance to infection as well as their concurrent disease.

These patients are often hypertensive and this should be considered prior to any form of treatment. It is important to ensure good haemostasis after oral surgical procedures because of this and a bleeding tendency in these patients.

For those renal patients who require dialysis, dental procedures are best carried out the day after dialysis as platelet function will be optimal and the effect of heparin will have reduced.

TABLE FIVE*: Equivalent anti-inflammatory doses of corticosteroids.⁵²

Prednisolone 10mg
= Betamethasone 1.5mg
= Cortisone acetate 50mg
= Deflazacort 12mg
= Dexamethasone 1.5mg
= Hydrocortisone 40mg
= Methylprednisolone 8mg
= Triamcinolone 8mg

* This table takes no account of mineralocorticoid effects, nor does it take account of variations in duration of action

Renal disease influences the use of drugs in dentistry. Many drugs, which dentists prescribe, are excreted by the kidney. Failure to excrete a drug or its metabolites may lead to toxicity. Drugs may be contraindicated or may require dose reduction.

- **aciclovir** requires dose reduction in moderate to severe renal failure.
- **amoxicillin** and **ampicillin** require dose reduction in severe renal failure.

• **cefalexin** requires dose reduction in all degrees of renal impairment.

• **erythromycin** - use a maximum dose of 1.5grams daily in patients with severe renal impairment.

• **tetracyclines**, other than doxycycline, should be avoided in renal impairment.

• **NSAIDs** should not be prescribed in those with more than mild renal impairment. Paracetamol is the drug of choice for post-operative analgesia in patients with renal impairment.

Analgesics for relieving dental pain

Aspirin, dihydrocodeine, ibuprofen, paracetamol and pethidine all appear on the Dental Practitioners Formulary:

For mild to moderate dental pain, paracetamol or NSAIDs continue to be the most appropriate options.⁵⁴

Paracetamol, in doses of 500mg to 1000mg every six hours, is a reasonable first choice. Paracetamol is generally well tolerated, effective and inexpensive. It is



Prescribing paracetamol:

- The maximum daily dose of paracetamol is **4000mg**.
- Excessive doses can lead to irreversible liver damage.
- Caution must be exercised in patients with a history of liver disease or alcoholism.
- Paracetamol can cause hepatotoxicity in patients taking enzyme-inducing anticonvulsants (phenobarbital, phenytoin, carbamazepine).
- Patients taking paracetamol should be reminded not to exceed the recommended dosage and to avoid other products containing paracetamol, particularly "over the counter" preparations.



Prescribing Aspirin and NSAIDs:

- Owing to an association with Reye's syndrome, it is advised that **aspirin** should not be given to children and adolescents **under 16 years**.
- All patients taking NSAIDs should be warned about GI toxicity.
- Patients requiring an NSAID should be started on a low dosage, used for the shortest time.
- Low dose ibuprofen has been associated with the lowest GI risk.
- Use of NSAIDs can be associated with bronchospasm. Caution is advised in using NSAIDs in patients with asthma.
- High dose regimens of NSAIDs such as diclofenac and ibuprofen are associated with an increased risk of cardiovascular events.⁶³ Use NSAIDs with caution in patients with cardiovascular disease.

