DRUGS AND X-RAYS FOR PREGNANT AND BREASTFEEDING WOMEN DURING DENTAL TREATMENT

1. DENTAL CARE BEFORE PREGNANCY

A dental examination should not be regarded as an isolated episode undertaken during pregnancy. Prior to pregnancy, a regular program of dental care based on a preventive emphasis should have been established. Regular examinations, including radiographic examinations where clinically indicated form part of this program, and should be continued throughout pregnancy. Treatment planning should allow for the possibility of pregnancy.

2. DENTAL CARE DURING PREGNANCY

Established preventive dental programs and uncomplicated restoration or rehabilitation programs should continue through pregnancy as needed. Some concessions to the patient's physical comfort may be necessary.

Most dental treatment can be carried out with safety during pregnancy. Where there is a reason to defer treatment, for instance elective procedures requiring general anaesthesia, these procedures should be deferred until after the birth or if necessary until the patient's condition has been confirmed and the situation can be assessed.

RADIOGRAPHY: When radiography of an area remote from the foetus is needed, as in dental radiography, this can be undertaken with negligible dose to the foetus at any time during pregnancy. Where necessary for assessment or diagnosis of infection or trauma or for treatment of these conditions, there is NO reason on radiological grounds to defer radiographs during pregnancy.

In general, elective treatment is best performed in the 2nd trimester of pregnancy (4th, 5th, and 6th months). Clinical sessions for elective treatment should not be unduly prolonged. In the third trimester, the mother should be positioned with the right side elevated by about 15^{0}, such that the foetal mass does not press heavily on the inferior vena cava, causing hypotension.

INFECTIONS: Prolonged elevation of body temperature should be avoided as it has been shown to affect developing cells. The most likely rise in body temperature occurring in dentistry is from acute infection. This could be from infected skin flaps associated with erupting molars (usually "wisdom" teeth), from acute periodontal (gum" infections, from acute odontogenic infections (abscesses), or generalised stomatitis. The prompt treatment of such infections is essential to avoid increases in body temperature. In addition to the rising body temperature associated with acute infections, any acute or chronic infections may produce toxins. The effects of such toxins on the developing child is unknown.

Any known teratogenic substances (causing birth defects) should not be used or prescribed during pregnancy. The effects of any therapeutic substance should always be considered against the possible adverse effects on the developing child. The Australian Drug Evaluation Committee has reviewed and categorised the risks of drugs used in pregnancy, and information relevant to drugs used in dentistry is set out below.

Apart from this leaflet, information on medications can also be sought from:

- Telephone ***1300 MEDICINE*** (1300 6334 2463) When you call, you will speak with an experienced registered nurse. Your question may be answered on the spot, or you may be referred to your GP or pharmacist, or to another health professional. If you have a complex enquiry, you may be put through to an NPS pharmacist.
- Telephone ***MOTHERSAFE*** on ***9382 6539*** at the Royal Hospital for Women, Randwick.

3. CONSIDERATIONS ABOUT THE CATEGORISATION OF DRUGS

This categorisation has some limitations that must be assessed by the prescriber:

- It implies that there is a hierarchical risk, with Category C being "worse" than Category B. This is too simplistic.
- It does not give clinical context to the risks, and doesn't differentiate between drugs for more or less significant conditions.
- Medicines within the same Category do not always carry a similar risk.
- The Categories do not consider the stage of pregnancy.
- The Categories do not take the dose or route of administration into account.
- There is a different classification system for breastfeeding.

In the absence of compelling circumstances, dentists should restrict their use of drugs for pregnant patients to Categories A, B, and B1; and where absolutely necessary, B2, B3, C, and D. Drugs in Category X should not be used at all. The dentist must always weigh up the known advantages for the patient against any possible adverse effects which may occur to either the mother or the child.

Category A	Drugs which have been taken by a **large** number of pregnant women and women of childbearing age without any proven increase in the risk of malformations or other direct or indirect harmful effects on the foetus being observed.
Category B	Drugs which have been taken by a **limited** number of pregnant women and women of childbearing age without any proven increase in the risk of malformations or other direct or indirect harmful effects on the foetus being observed.
Category B1	Drugs where animal studies have not shown evidence of an increased occurrence of foetal damage.
Category B2	Drugs where animal studies are inadequate or may be lacking; but available data show no evidence of an increased occurrence of foetal damage.
Category B3	Drugs where animal studies have shown an increased occurrence of foetal damage, the significance of which is unknown in humans.
Category C	Drugs which because of their pharmacological effects, have caused or may be suspected to cause, harmful effects on the human foetus or neonate without causing malformations. These effects may be reversible.
Category D	Drugs which because of their pharmacological effects, have caused or may be suspected to cause, an increased incidence of human foetal malformations or irreversible damage. These drugs may also have adverse
Category X	Drugs that have such a high risk of causing permanent damage to the foetus that they should never be used in pregnancy or where there is a possibility of pregnancy.

4. DRUGS AND BREAST MILK

During lactation drugs can be excreted in milk and in some cases are of adequate concentration to affect the nursing infant. The concentration present in milk is usually in the same order as the serum concentration of the mother but there are exceptions where the drug is concentrated in the milk.

Occasionally single doses or several doses within a 24 hour period of a drug which may have an effect on a nursing infant are essential for the mother's health or treatment. The presence of the drug in milk can be minimised if expressed breast milk is stored (in a refrigerator) for several days before the procedure, and used to feed the child during and after the procedure, usually for a period of 24 - 48 hours.

Drugs excreted in the milk can affect a nursing infant in any of these 4 ways:

1. They may have a direct effect on the infant, e.g. sedatives may cause drowsiness;
2. The infant's sucking reflex may be inhibited;
3. The taste of the milk may be altered;
4. Even small amounts of the drug excreted in the milk may cause an allergy or drug hypersensitivity.

Category 1	Very low concentrations in milk, no adverse effects on infant known.
Category 2	Adverse effects may occur
Category 3	Adverse effect on infant have been recorded.

References:

1. ***AUSTRALIAN RADIATION AND NUCLEAR SAFETY AGENCY (ARPANSA)***
   Radiation Protection in Dentistry: Radiation Protection Series No. 10; 2005.
2. ***NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL (NHMRC)***
   Guidelines for Dental Treatment in dentistry; 2002
3. ***THERAPEUTIC GOODS ADMINISTRATION (TGA)***
   Australian Categorisation system for prescribing medicines in pregnancy; 2011
   www.tga.gov.au/hp/medicines-pregnancy-categorisation.htm
4. **Classifying Drugs in Dentistry**
   Australian Prescriber 37:4; 38-40
5. **MIMS; Jan 2014**

These are commonly used drugs in dentistry. Those marked in a **bold** are often used at Family Dental Care.

Drug	Preg.	Comments	Bfeedg	Comments
LOCAL ANAESTHETICS				
lignocaine, mepivacaine, prilocaine, ropivacaine, marcain	A	*Lignocaine is the most widely used local anaesthetic in dentistry.*	1	Pasees into the milk but insignificant amounts during dentistry and very unlikely to cause adverse effects.
adrenaline	A	*Lignocaine and marcain are often combined with adrenaline to create better and longer-lasting local anaesthesia.*	1	In the mother, the half-life of adrenaline is too short to be expressed in breast milk.
felypressin	A	*Prilocaine is combined with felypressin to create better and longer-lasting local anaesthesia.*	1	In single episode use, it enters the milk in very small amounts. No adverse effects have been recorded.
SEDATIVES				
nitrous oxide (Happy Gas)	A		1	Inhalational; does not get expressed into breast milk.
diazepam (Valium) **triazolam** (Halcion) temazepam (Temaze)	C	Prolonged use during pregnancy and the administration of high doses during labour should be avoided. Benzodiazepines cross the placenta and may cause hypertonia, respiratory depression, and hypothermia in the newborn infant. Withdrawal symptoms in newborn infants have been recorded.	3	Where single doses of drugs of this class with a short half-life have been used, there have been no adverse effects reported. Prolonged use and a long half-life have been associated with lethargy, feeding difficulties, and jaundice.
ANTIBIOTICS				
amoxicillin (Amoxil) **phenoxymethylpenicillin** (Penicillin V)	A		2	There have been no adverse drug reactions reported, but there is the potential for development of allergy or hypersensitivity from the small amounts in milk. Temporary cessation of breastfeeding is a consideration, especially where there is a family history of allergy.
cephalexin (Keflex)	A		1	Cephalosporins are expressed in m ilk.
clavulanic acid (Augmentin)	B1	Clavulanic acid is combined with penicillin in some preparations. Not commonly used by dentists.	2	There are no data on the excretion of clavulanic acid in human milk.
metronidazole (Flagyl)	B2	Metronidazole should not be given in the first trimester of pregnancy as it crosses the placenta and rapidly enters the foetal circulation. In addition, the drug has been shown to be tumorigenic in rodents as well as mutagenic in vitro and in some animal studies.	3	Metronidazole is secreted in breast milk, and in view of the tumorigenic and mutagenic potential, breastfeeding is not generally recommended. However, short courses, up to 7 days, are not contraindicated. The normal dose (600mg/day) may give milk a bitter taste. It is secreted in milk in significant amounts and may cause vomiting, diarrhoea, or reduced appetite.
erythromycin *(Eryc)*	A		1	Erythromycin is excreted in breast milk.
clindamycin (Cleocin, Dalacin) lincomycin (Lincocin)	A		2	Clindamycin has been reported to appear in breast milk in ranges of 0.7 – 3.8 µgm/ml. Therefore, clindamycin capsules are not recommended for breastfeeding mothers.

Drug	Preg.	Comments	Bfeedg	Comments
PAINKILLERS				
aspirin (Aspro, Disprin)	C	When given late in pregnancy, it may cause premature closure of the foetal ductus arteriosus, prolong labour, and delay birth. Some birth defects have been shown in animal studies, but no conclusive evidence of malformation in humans.	2	Aspirin is excreted in milk in low concentrations, but since newborns excrete salicylates slowly and are sensitive to aspirin, it should be avoided in breastfeeding mothers, particularly in high doses. Small risks of bleeding, poor growth, and rashes have been reported. For low does and occasional use only.
ibuprofen (Nurofen), naproxen (Naprosyn), mefenamic acid (Ponstan)	C	There is insufficient experience about the safety of use of ibuprofen in human pregnancy. Ibuprofen has caused or may be suspected of causing malformations which may be irreversible. They should therefore not be used within the first 6 months unless the potential benefits to the patient outweigh the risks to the foetus. Like aspirin, when given late in pregnancy, it may cause premature closure of the foetal ductus arteriosus, prolong labour, and delay birth.It is therefore contraindicated during the 3rd trimester of pregnancy, including the last few days before expected birth.	1	Negligible levels in milk.
paracetamol (Panadol)	A		2	Paracetamol is excreted in breast milk. The amount available for ingestion by the infant has been reported variously as less than 0.1% of a single dose of paracetamol 500mg, and as 0.04 to 0.23% of a single 650mg dose
codeine (Panadeine, Panadeine Forte)	A	Short term use of standard doses during the 1st two trimesters is acceptable if required. Long term usage may cause dependence in the neonate; large doses during labour may depress the neonate respiration.	1	Limited evidence suggests that individuals who are ultrarapid metabolisers may convert codeine to its active metabolite, morphine, more rapidly and completely than other people. In breastfeeding mothers, this can result in higher than expected serum and breast morphine levels.
dextroprpopoxyphene (Digesic, Capadex)	C	Safe use in pregnancy has not been established relative to possible adverse effects on foetal development. Newborns may suffer from respiratory depression, and with prolonged use they may also exhibit withdrawal symptoms. It should not be used during pregnancy unless the benefits outweigh the risks.	3	Low levels of dextropropoxyphene have been detected in human milk. No adverse effects were noted in the infants.