

Therapeutic group	ATC code	Subgroup for chemical substance
Group: Vasoprotectives Sub-group: agents for treatment of hemorrhoids for topical use Chemical/therapeutic sub-group: corticosteroids	C05AA01	Hydrocortisone
Group: Anesthetics sub-group: local anesthetics chemical/therapeutic sub-group: esters of aminobenzoic acid amino amides	N01BA04 N01BB01 N01BB02 N01BB03	Chloroprocaine Bupivacaine* Lidocaine HCl with or without epinephrine Mepivacaine HCl*
Group: Gynecologicals sub-group: uterotonics chemical/therapeutic sub-group: prostaglandins oxytocics	G02AD04 G02AD02 A02BB01 G02AB03 H01BB02	Carboprost Dinoprostone, Prostin E ₂ Misoprostol rectal ergonovine maleate oxytocin
Group: Vasodilator Sub-group: organic nitrates	C01DA02	Nitroglycerin
Group: Antianemic preparations Sub-group: iron preparations Group: Vitamin B and Folic Acid Sub-group: folic acid and derivatives	B03AA03 B03AA07 B03AA02 B03AE04 B03BB01	Ferrous gluconate* Ferrous sulfate* Ferrous fumarate* Iron, multivitamins and minerals Folic acid > 1 mg/dose*
Group: Antihemorrhagics chemical/therapeutic sub-group: vitamin K	B02BA01	Phytonadione
Group: Ophthalmologicals sub-group: Anti-infective agents chemical/therapeutic subgroup: antibiotics	S01AA17	Erythromycin ophthalmic ointment
Serums, Toxoids, and Vaccines	J07BC01 J07BD52	Varicella Zoster Immune globulin* Hepatitis B Immune globulin Hepatitis B vaccine MMR vaccine
Emergency Medications	V03AN C01CA24 R06AA02 R03AC02 B01AC06	oxygen Epinephrine (IV or IM) Antihistamines: Diphenhydramine HCl Salbutamol* ASA*

Therapeutic group	ATC code	Subgroup for chemical substance
Intravenous Infusions	B05XA03 B05BB01 B05BA03	Normal saline Ringer's lactate 5% dextrose in water
Group: Anesthetics sub-group: opioid anesthetics	N01AH01	Fentanyl citrate
Group: Analgesics sub-group: opioids chemical/therapeutic subgroup: natural opium alkaloids chemical/therapeutic subgroup: phenylpiperidine derivatives	NA2AA01 NA2AB02	Morphine sulphate Fentanyl

The following list provides indications, routes of administration and upper dosage limits where appropriate, for drugs that may be prescribed, ordered or administered by midwives.

Ampicillin, Penicillin G, Cefazolin, Clindamycin, and Vancomycin

For women who are Group B Strep positive and who are asymptomatic, the midwife may order these antibiotics following the NSRCP or other appropriate hospital protocol.

The antibiotic regimen of choice for intrapartum chemoprophylaxis is intravenous Penicillin G (5 million units followed by 2.5 million units every 4 hours) or Ampicillin (2 g initially followed by 1 g every 4 hours) until delivery or until labour is stopped. Penicillin G is generally considered preferable to Ampicillin. Women who are allergic to Penicillin may be given intravenous Cefazolin (2 g followed by 1 g every 8 hours) if the woman is at low risk for anaphylaxis, or intravenous clindamycin (900 mg every 8 hours) if the woman is at high risk for anaphylaxis and the GBS is sensitive to Clindamycin; or intravenous Vancomycin (1 g every 12 hours) if the woman is at high risk for anaphylaxis and the GBS is not sensitive to Clindamycin. If Vancomycin is being considered, an antenatal consultation with an infectious disease expert is recommended, given the potential for problems associated with Vancomycin antibiotic resistance. All of these antibiotics have similar activity against GBS and all cross the placenta. Ampicillin, having a broader spectrum of anti-microbial activity than Penicillin, may be more likely to lead to selection or resistant organisms than would widespread use of Penicillin. The incidence of anaphylactic reaction to Penicillin ranges from .04 to .004 (4 in 10,000 to 4 in 100,000).

Acyclovir, Valacyclovir

For prophylaxis in late pregnancy for women with known recurrent genital HSV infection. Published data from randomized controlled trials have shown that the use of suppressive antivirals starting at 36 weeks gestation reduces the risk of viral shedding, clinical herpes lesions and need for Cesarean section at the time of labour. Dose: Acyclovir: 400mg taken orally tid, or 200mg qid, from 36 weeks until delivery.

Valacyclovir: 500mg bid. Valacyclovir is the valine ester of acyclovir and is broken down to acyclovir in the blood stream, so safety data on acyclovir may be extrapolated to valacyclovir. If preterm delivery is predicted in a woman with recurrent genital herpes, then use of suppressive antivirals may be considered at an earlier gestational age. If antiviral suppression is ineffective at preventing a lesion at the time of labour, management should be the same as for a lesion in the absence of antiviral therapy, i.e., a Cesarean section is recommended.

Chloroprocaine

(Nesacaine®). For local anaesthetic use in women who are unable to have amide local anaesthetics. Subcutaneous. The lowest dose needed to provide effective anaesthesia should be administered. Injections should always be made slowly and with frequent aspirations to avoid inadvertent rapid intravascular administration which can produce systemic toxicity.

Concentration supplied: 2%.

Maximum of 20 mLs 2% chloroprocaine in total.

Clotrimazole

(Canesten®). For the treatment of vaginal and nipple Candidiasis. Intravaginal or topical.

Dosage:

- Canesten 1% vaginal cream: 1 full applicator intravaginally for 6 consecutive days, at bedtime.
- Canesten 100 mg vaginal inserts: 1 insert intravaginally for 6 consecutive days at bedtime.
- Canesten 2% vaginal cream: 1 full applicator intravaginally for 3 consecutive days at bedtime.
- Canesten combi-pak 3-day therapy: 1 insert intravaginally for 3 consecutive days at bedtime. The cream should be spread onto the irritated area once or twice a day as needed, for up to 7 consecutive days.
- Canesten combi-pak 1-day therapy: 1 insert intravaginally for 1 day, at bedtime.
- The cream should be spread onto the irritated area once or twice a day as needed, for up to 7 consecutive days.
- Canesten Topical Cream or Solution: Thinly apply and massage sufficient solution or cream into the affected area and surrounding skin areas twice daily, in the morning and evening. To be successful, the cream or solution should be applied regularly and in sufficient quantities. Continue treatment for 2 weeks.

Diphenhydramine Hydrochloride

(Benadryl®). Adjunctive therapy in the treatment of anaphylactic reactions related to the administration of drugs, vaccines or sera. This drug is for emergency purposes, and its use should be immediately followed by a physician consultation and if out-of-hospital, emergency transport to hospital. Further definitive treatment would be managed by a physician. Intramuscular. Usual adult dose is 50 mg IM.

Domperidone

(Motilium®). A side effect of this gastrointestinal drug is increased milk production in lactating women, presumably by indirectly increasing prolactin secretion from the pituitary gland through its anti-dopaminergic effect. This use is "off-label" in Canada, but domperidone is frequently prescribed for this purpose. It is considered by the AAP to be usually compatible with breastfeeding, and the amounts present in breastmilk are well below therapeutic doses for infants.

Dosage: 20 mg qid, or 30 mg tid., for 3 to 8 weeks. Effects may be noticed within 24 hours, or may take up to 4 weeks. If there is no noticeable effect after 4-6 weeks, discontinue use. Mothers may wean from Domperidone following 4 weeks at the full dose, by taking one pill (10 mg) less per day over 4-5 days. If milk supply remains sufficient, continue to decrease dosage in this manner. If supply diminishes, return to the last effective dose, and continue for at least 2 weeks, then begin to wean again.

If a woman is taking Domperidone when she is discharged from midwifery care, the midwife should inform the primary caregiver (family physician/nurse practitioner) of the clinical indication, the dosage, its therapeutic effect, and the plan for progressive discontinuation of the drug.

Doxylamine succinate-pyridoxine hydrochloride

(Diclectin®) is used orally for the control of severe nausea in pregnancy. Oral.
Dosage: 2 tablets at bedtime and 1 at mid-morning and mid-afternoon as needed.

Ergonovine maleate

For the treatment of postpartum uterine atony or postpartum haemorrhage uncontrolled by the use of oxytocin. Usual dose is 0.25 mg IM or IV.
Supplied as 0.25 mg / mL.

Erythromycin ophthalmic ointment

Prophylaxis of ophthalmia neonatorum. Placed in the newborn's eyes within one hour of birth. This preparation is for the prevention of infection of the conjunctiva of newborns who may have contracted chlamydia, gonorrhoea or other bacteria from the maternal reproductive tract.

Hepatitis B immune globulin and Hepatitis B vaccine

For Hepatitis B Immunoprophylaxis.

(HyperHep® or BayHep®). Hepatitis immune globulin and Hepatitis B vaccine are administered to the infants of HBsAg positive mothers within 24 hours of the birth. A second dose of Hepatitis B vaccine is given at 4 weeks and may be administered by the midwife. Doses after 3 months will be administered by a physician. Whenever immune globulin or vaccines are administered, the midwife must send a record of immunization to the physician to whom care is transferred at 6 weeks postpartum.

An Emergency Drug Release (EDR) number is required from the Canadian Blood Services (formerly National Canadian Red Cross) for BayHep. The local provider of immune globulin and vaccine will obtain the number, but require advance notice and clinical information. Contact local provider of Hepatitis immune globulin and vaccine well in advance of need to ensure availability.

Hydrocortisone compound

Used as anorectal therapy for treatment of haemorrhoids in ointment or suppository form.

Intravenous fluids

Normal saline, Ringer's lactate, 5% dextrose in water.

For use in the event of maternal dehydration during pregnancy, labour, or for fluid replacement related to postpartum haemorrhage. During labour, D5W may occasionally be the IV fluid of choice to add some calories for the woman who is fluid and calorie depleted. D5W can be piggy-backed into a main IV line of normal saline in these cases. During third stage or postpartum, IV fluid administration of Normal saline or Ringer's lactate is appropriate.

Note: Water intoxication is a potential side effect of oxytocin administration. The use of electrolyte-containing solutions (i.e. normal saline or Ringer's lactate) when administering oxytocin can prevent water intoxication. Fluid overload and hyponatremia may be prevented by close intake and output observations and the use of balanced salt solutions.

Lidocaine hydrochloride

(Xylocaine®). Without epinephrine. Used to anaesthetise the perineum and vaginal walls for repair of laceration or an emergency episiotomy.

Concentration: 1% or 2% (10 or 20 mg per mL). Subcutaneous. Maximum individual dose should not exceed 4.5 mg / kg of body weight and in general the maximum total dose should not exceed 300 mg for all local anaesthesia during second stage and the

postpartum period.

Measles / Mumps / Rubella (MMR) Vaccine

Women found to be rubella-susceptible during the antenatal period should be offered MMR vaccine in the immediate postpartum period. Women who are rubella-sensitive should be immunized only if they are not pregnant at vaccination time and if pregnancy is avoided for 3 months following vaccination. MMR Vaccine should not be administered to: (a) pregnant women, since the possible effect on the fetus is not known; (b) individuals with acute febrile respiratory or other infections, or any acute illness; (c) individuals with a history of sensitivity to neomycin or polymyxin; (d) individuals with blood dyscrasias, lymphomas or other generalized malignancies; (e) individuals with untreated active tuberculosis; (f) individuals undergoing treatment with immunosuppressive agents of any kind.

If a rubella-susceptible woman is exposed to rubella during pregnancy, one should consider the possibility of providing temporary passive immunity through the administration of immune serum globulin (human). Do not give immune globulin concurrently with MMR.

Previous administration of Rho(D) immune globulin or blood products is not a contraindication to postpartum vaccination. Serologic testing 6 to 8 weeks post-vaccination should be carried out to ascertain that seroconversion has occurred.

Store MMR vaccine at 2 to 8 degrees C and protect vaccine from light at all times. Discard reconstituted vaccine if not used within 8 hours. Additional handling and storage requirements for the vaccine, as outlined by the supplier, must be followed.

Whenever vaccines are administered the midwife must send a record of immunization to the physician to whom care is transferred at 6 weeks postpartum. A record of immunization should also be sent to the local public health unit in communities where this is required.

The client must be informed of possible vaccine reactions prior to administration. Epinephrine (1:1,000) should be available for immediate use in the event of an anaphylactic reaction.

A single dose of 0.5 ml injected s.c. (do **not** give i.v.)

Miconazole

(Monistat®). For the treatment of candida. Topical or Intravaginal.

Dosage:

- Monistat 7 cream: 15g applicator-full intravaginally once daily at bedtime for 7 consecutive days.
- Monistat 7 vaginal suppositories: 1 (100 mg) suppository intravaginally daily at bedtime for 7 consecutive days.
- Monistat derm cream: Apply a thin layer of cream topically to cover the affected area twice daily. Continue treatment for 2 weeks.
- Monistat 3 vaginal ovules: 1 (400 mg) ovule intravaginally daily at bedtime for 3 consecutive days.

Misoprostol

Cytotec®, a synthetic prostaglandin E₁ analog, for treatment of postpartum uterine atony or postpartum hemorrhage uncontrolled by the use of oxytocin. Misoprostol is supplied as either 100 or 200 mcg per tablet. Misoprostol is a water soluble, viscous liquid. The inactive ingredients of tablets are hydrogenated castor oil, hydroxypropyl methylcellulose, microcrystalline cellulose, and sodium starch glycolate. Misoprostol is a third line agent, used only after oxytocin and Ergonovine maleate, where available, have been attempted.

Usual dose is 400 to 800 mcg per rectum. It can also be given orally, but is generally not

tolerated as well. It is rapidly absorbed by both routes.

Adverse reactions: Most common (especially with oral administration):

GI – diarrhea (14 – 40%), abdominal pain (13 – 20%) and fever and shiver (11%). Greater incidence than 1%: nausea (3.2%), flatulence (2.9%), headache (2.4%), dyspepsia (2 %), vomiting (1.3%) and constipation (1.1%).

Contraindications: Misoprostol should not be taken by anyone with a history of allergy to prostaglandins.

If Misoprostol is administered in response to a postpartum hemorrhage occurring out-of-hospital, transport to hospital and consultation with a physician is indicated.

The use of Misoprostol for the induction of labour is currently under evaluation.

Mupirocin – miconazole or clotrimazole – betamethasone

Jack Newman's nipple cream®: APNO (All Purpose Nipple Ointment) is a compounded ointment mixed from the following ingredients:

Mupirocin 2% ointment (15 grams)

Betamethasone 0.1% ointment (15 grams)

to which is added miconazole powder so that the final concentration is 2% miconazole.

This combination gives a total volume of just more than 30 grams. Clotrimazole powder (not as effective as miconazole) to a final concentration of 2% may be substituted if miconazole powder is unavailable. Using powder gives a better concentration of antifungal agent (miconazole or clotrimazole) and the concentrations of the mupirocin and betamethasone remain higher. ibuprofen powder may be added, to a final concentration of 2%.

Jack Newman's Nipple Cream is used as a topical treatment for candidiasis of the nipple in the breastfeeding woman, with or without secondary bacterial infection. It can be used successfully for any cause of nipple pain. The cream should be applied sparingly to the nipples after each feeding and not washed or wiped off, even prior to the next feed. If Gentian violet is being used, the cream should not be applied at the same time.

Jack Newman's Nipple Cream reduces inflammation, relieves pruritis and combats or prevents monilial and bacterial infections. The corticosteroid is absorbed through normal intact skin, with percutaneous absorption increased in the presence of skin irritation or inflammation. The antibacterial and antifungal agents are absorbed where the skin is inflamed.

Only a small amount of topically applied mupirocin is absorbed into the systemic circulation where it is rapidly metabolized. It should not be used on viral or tubercular lesions, or by anyone with a systemic viral infection or a history of allergy to any of the ingredients. If burning, itching, or local irritation increases with use, treatment should be discontinued. Jack Newman's Nipple Cream is not recommended for use in pregnancy.

While generally well tolerated, Jack Newman's Nipple Cream should not be used over large areas of the skin, and is not intended for prolonged use. The mother should use the ointment until pain free for a few days and then decrease frequency over a few days until stopped.

If the condition has not improved within a week, physician consultation is indicated.

Nitrous Oxide pre-mixed 50/50 with Oxygen

(Entonox® or Nitronox®). Premixed 50/50 concentration of nitrous oxide and oxygen for relief of moderate pain in normal labour. Self-administered by the woman in labour. To be effective, the woman must be guided in its use.

Nystatin

(Nilstat® Mycostatin®). For the treatment of Candidiasis, particularly of the mouth (thrush) and intestines of infants and children. A less potent antifungal than clotrimazole or miconazole for vaginal candida.

Dosage for oral candida:

- Oral drops: 100,000 units (1 mL) 3-4 times daily. Continue therapy for at least 48 hours after clinical cure to prevent relapse.

Also available in topical and vaginal formats but is less effective than other antifungals.

Oxytocin

For use intramuscularly or intravenously to prevent or treat postpartum uterine haemorrhage. Midwives may not autonomously administer oxytocin as IV infusion for induction or augmentation of labour. Usual dose is 10 Units IM or 5 Units IV infusion prophylactically or 20 Units added to 1000 cc of IV fluid and administered at a rate of 250 ml/hr for treatment of postpartum haemorrhage.

Oxytocin is related structurally and functionally to vasopressin. As such, it can produce the side effect of water intoxication. The use of electrolyte-containing solutions when administering oxytocin can prevent water intoxication, which can lead to hyponatremia, confusion, convulsions, coma, congestive heart failure, and death. Fluid overload and hyponatremia may be prevented by strict intake and output recordings, use of balanced salt solutions, and avoiding prolonged administration of an oxytocin infusion of 20 to 40 mU/min.

Phytonadione

(Vitamin K1). Administered orally or intramuscularly to the newborn for the prevention of haemorrhagic disease of the newborn.

The usual dose is: a) 1 mg intramuscularly within 6 hours of birth, or
b) 2 mg orally within 6 hours of birth and repeated at 1-2 weeks and 4-6 weeks postpartum.

Prenatal / Postpartum Vitamin-Mineral Supplements

Some vitamins and minerals are specifically formulated for use in women prior to conception, throughout pregnancy and during the postnatal period.

(For example, **PregVit Prenatal/Postpartum Vitamin-Mineral Supplement**)

Dosage: Oral administration. One pink tablet in the morning and one blue tablet in the evening.

Contraindications: Known hypersensitivity to any of the ingredients.

Adverse Reactions: Allergic sensitization has been reported following both oral & parenteral administration of folic acid.

Rho (D) immune globulin (Human)

See NS RCP protocol for the prevention of RhD sensitisation.

(WinRho®). Routinely administered intramuscularly both prenatally and postnatally to Rh negative women for the purpose of preventing Rh sensitisation and resultant risks to the foetus and/or future pregnancies

- Usual antepartum dose at 28 weeks is 300 µg IM.
- Postpartum dose is dependent on Rh status of the baby and the level of fetal cells in

maternal circulation, determined by the Kleihauer-Betke test. The lab will identify appropriate dosage to be administered within 72 hours of birth of Rh positive babies. The usual postpartum dose is 120 µg.

- Where Rosette test (foetal blood screen) and Kleihauer-Betke tests are not available, the midwife is advised to administer 300 µg IM within 72 hours of birth.

Indication	120 µg	300 µg
At 28 weeks gestation		x
After termination < 12 weeks > 12 weeks	x	x
Amniocentesis prior to 34 weeks		x
Chorionic villus sampling (repeat dose q12 weeks until delivery)		x
Amniocentesis after 34 weeks	x	
Antepartum haemorrhage <12 weeks >12 weeks, Abdominal trauma, External cephalic version (Actual dose given depends on the results of a Kleihauer test Each antepartum haemorrhage should be treated as a separate incident and the appropriate dose of RhIG given.	x x x	x
Within 72 hours after birth of confirmed Rh D positive baby (depending on FMH)	x	

Therapeutic oxygen

Administered by inhalation in the course of normal labour as therapy for abnormal foetal heart tones or in the postpartum period for maternal haemorrhage or shock. One hundred percent oxygen is used in neonatal resuscitation with resuscitation bag and mask following 90 seconds of PPV, or as free-flow.

Triamcinolone - neomycin sulfate - nystatin - gramicidin

(Kenacomb®) cream or ointment. Used as a topical treatment for candidiasis of the nipple in the breastfeeding woman, with or without secondary bacterial infection, as well as candidiasis-related diaper rash in the healthy newborn. Each gram contains 100,000 units nystatin, 2.5 mg neomycin base (as sulphate), 0.25 mg gramicidin, and 1.0 mg triamcinolone. Kenacomb reduces inflammation, relieves pruritis and combats or prevents monilial and bacterial infections. The corticosteroid is absorbed through normal intact skin, with percutaneous absorption increased in the presence of skin irritation or inflammation. The antibacterial and antifungal agents are absorbed where the skin is inflamed. It should not be used on viral or tubercular lesions, or by anyone with a systemic viral infection or a history of allergy to any of the ingredients. If burning, itching, or local irritation increases with use, treatment should be discontinued. Kenacomb is not recommended for use in pregnancy. While generally well tolerated, kenacomb should not be used over large areas of the skin, particularly in the newborn, and is not intended for prolonged use with either a

breastfeeding mother or her newborn. If the condition has not improved within a week, physician consultation is indicated.

1.2 Drugs which may be administered under emergency conditions in consultation with a medical practitioner.

Carboprost tromethamine

(Hemabate®). For treatment of postpartum hemorrhage due to uterine atony that is unresponsive to conventional methods of management. It is used only after oxytocin and ergonovine maleate, where available, have been attempted. Consultation and transfer of care to a physician should be initiated in any situation requiring the use of carboprost. The usual dosage is 250 µg I.M. This may be repeated at 15 to 90 minute intervals on the basis of response up to a cumulative dose of 2 mg. Peak serum concentrations occur 15 to 60 minutes after injection and the duration of action is 4 to 6 hours. Adverse effects reported include nausea, vomiting, diarrhea, chills, shivering, transient elevated temperature, transient bronchoconstriction, headache, flushing and moderate increase in blood pressure. Adverse effects are generally temporary and end when the therapy is discontinued. The contraindications to use are active cardiac, pulmonary or renal disease, hypersensitivity to prostaglandins and active pelvic inflammatory disease.

Epinephrine hydrochloride

For the treatment of anaphylactic shock as a result of an allergic reaction following administration of a drug, vaccine or serum. Also used as a cardiac stimulant in neonatal resuscitation. This drug is for emergency purposes, and its use should be immediately followed by a physician consultation and if out-of-hospital, emergency transport to hospital.

The usual adult dose is 0.3 mg (0.3 mL) of 1:1000 concentration. Midwives may choose to use an auto-injector (EpiPen®) for ease of administration. Each auto-injector contains: 2 mL epinephrine injection 1:1000 and is designed to deliver a single dose of epinephrine 0.3 mg. EpiPen contains 2 mL but delivers a single dose of 0.3 mL only, with 1.7 mL remaining in the unit after use.

Epinephrine should be administered during neonatal resuscitation when the neonate's heart rate remains below 80 beats per minute despite a minimum of 30 seconds of adequate ventilation with 100% oxygen and chest compressions, or the heart rate is zero. If a heartbeat cannot be detected, epinephrine should be given immediately - at the same time PPV and chest compressions are initiated.

The neonatal dose is 1.0 mL/kg, of 1:10,000 concentration up to a maximum of 3mL/dose, given rapidly by ET. DO NOT follow with a flush. Given IV, the neonatal dose is 0.1 mL/kg of 1:10,000 concentration, is given rapidly and followed with up to 5 mL 0.9% NaCL flush.

Naloxone Hydrochloride

(Narcan®). To reverse narcotic-induced depression in the neonate. Usual dose is 0.1 mg/kg. (NRP Standard). Give rapidly by IV or ET. IM and SC routes are also acceptable. May repeat dosage at 2-3 minute intervals.

Available in concentrations of 0.4 mg/mL and 1 mg/mL. Choose 1 mg/mL concentration when available as this will result in a smaller volume to be administered.

Concentration	Dosage	Weight	Total dose	Total mL
0.4 mg/mL	0.1 mg/kg 0.25 mL/kg	3 kg	0.3 mg	0.75 mL
1.0 mg/mL	0.1 mg/kg 0.1 mL/kg	3 kg	0.3 mg	0.3 mL

Nitroglycerin

For the treatment of hypertonic uterine contractions with non-reassuring fetal status as an adjunct to intrauterine resuscitation. This drug is for emergency purposes only, and its use should be immediately followed by a physician consultation and transfer of care. If used in an out-of-hospital setting, immediate emergency transport to hospital is indicated.

Nitroglycerin relaxes uterine smooth muscle, as well as relaxing vascular, bronchial, biliary, gastrointestinal and ureteral muscles.

Nitroglycerin is given either 50 µg sublingual, or by metered dose oral spray, or 50 µg IV push, to a maximum of 200 µg. IV nitroglycerin must be diluted in 5% dextrose or in normal saline and should NOT be mixed with other medications. An IV should be established, regardless of the route of administration, to prevent hypotension. Adverse reactions include headache, which occurs in up to 50% of users at the beginning of therapy. Less than 1% of users may experience itching, wheezing, tracheobronchitis, hypotension, reflex tachycardia, palpitations or bradycardia. Syncope due to nitrate vasodilation, although rare, has been reported. Weakness, dizziness, apprehension, restlessness, nausea, vomiting, diarrhea, abdominal pain, arthralgia, muscle twitching, blurred vision, and upper and lower respiratory infections have also been reported.

Overdose symptoms are primarily related to vasodilation: flushing, headache, nausea, dizziness, hypotension and tachycardia. Most of these can be obviated by discontinuing the drug. Treatment is symptomatic and supportive. The hemodynamic effect of nitrates is brief.

Contraindications: Nitrates should not be administered to those with known hypersensitivity or idiosyncratic reaction to organic nitrates, severe anemia, hypotension or uncorrected hypovolemia. Although unlikely to be encountered in the provision of midwifery care, conditions of head trauma or cerebral hemorrhage, constrictive pericarditis and pericardial tamponade also contraindicate the use of nitrates.

1.3 Drugs which a midwife may administer after consulting with and on the order of a medical practitioner

Midwives have no independent access to narcotics; they may administer morphine, meperidine, fentanyl under the order of a physician. Midwives are seeking direct access to controlled substances for pain relief. Health Canada is considering changes to regulations under the Controlled Drugs and Substances Act (Canada) to permit midwives and other designated practitioners to possess, administer, prescribe, sell or provide and/or transport certain controlled substances as defined by the regulation.

Controlled Substances for Use in Prodromal labour

The MRC NS is awaiting changes to federal drug regulations in order for midwives to prescribe Lorazepam and Oxazepam independently.

Lorazepam

(Ativan). Lorazepam is a benzodiazepine that can be used for therapeutic rest during prodromal labour, particularly where anxiety is a factor. All practitioners caring for an individual taking a benzodiazepine should be aware that long-term use could result in dependency and withdrawal symptoms when the medication is discontinued.

Dose and administration: Usual dose is 1-2 mg sublingually. Lorazepam by injection should not be used in an obstetric situation. This dose may be repeated 12 hours later if needed and labour is not yet active. No more than two doses should be given. The sublingual tablet, when placed under the tongue will dissolve in approximately 20 seconds. The woman should not swallow for at least 2 minutes to allow sufficient time for absorption.

Adverse effects: Lorazepam is given for the purpose of promoting sleep or rest in early labour. It may cause drowsiness, blurred vision, dizziness and impaired concentration. Women taking this medication should not operate machinery or drive a vehicle. It should not be taken in combination with alcohol or other sedating medications. Other potential side effects include lack of muscle coordination, nausea, constipation, visual disturbances, skin rash, and loss of bladder control. If breathing difficulties, fainting, rash or hypotension are experienced a physician should be contacted immediately.

Clinical judgment should be exercised as the half life of Lorazepam is 12 to 15 hours, the half life of the conjugate is 16 to 20 hours, and Lorazepam does cross the placental barrier. Should labour progress more rapidly than anticipated naloxone may be required and should be readily available for administration to the mother or neonate. Physician consultation is required if Naloxone is administered.

Contraindication: Lorazepam should not be taken in conjunction with alcohol. Benzodiazepines should not be used with women who have the following medical conditions: glaucoma, liver or kidney impairment, hyperkinesias, hypoalbuminaemia, myasthenia gravis, or any type of organic brain disorder.

Oxazepam

(Serax). Oxazepam is a benzodiazepine that may be used for therapeutic rest during prodromal labour. All practitioners caring for an individual taking a benzodiazepine should be aware that long-term use could result in dependency and withdrawal symptoms when the medication is discontinued.

Dose and administration: Usual dose is 15 or 30 mg orally. Oxazepam by injection should not be used in an obstetric situation. Dose may be repeated 8 or 12 hours following first dose if active labour is not yet established. No more than two doses should be given.

Adverse effects: Oxazepam is given for the purpose of promoting sleep or rest in early labour. It may cause drowsiness, blurred vision, dizziness and impaired concentration. Women taking this medication should not operate machinery or drive a vehicle. It should not be taken in combination with alcohol or other sedating medications. Other potential side effects include lack of muscle coordination, nausea, constipation, visual disturbances, skin rash, and loss of bladder control. If breathing difficulties, fainting, rash or hypotension are experienced a physician should be contacted immediately.

Clinical judgment should be exercised as the half life of Oxazepam is 5 to 15 hours and it does cross the placental barrier. Should labour progress more rapidly than anticipated naloxone may be required and should be readily available for administration to the mother or neonate. Physician consultation is required if Naloxone is administered.

Contraindication: Oxazepam should not be taken in conjunction with alcohol. Benzodiazepines should not be used with women who have the following medical conditions: glaucoma, liver or kidney impairment, hyperkinesias, hypoalbuminaemia, myasthenia gravis, or any type of organic brain disorder. Benzodiazepines should not be given to women with a history of drug abuse or dependency.

Benzodiazepines are contraindicated in the first trimester of pregnancy because of the potential for congenital malformations. Women taking these drugs to treat anxiety disorders should be advised of the risk and offered alternate approaches to therapy. Prolonged doses of benzodiazepines during pregnancy may cause physical dependence with resulting withdrawal symptoms in the newborn. While a physician may prescribe a benzodiazepine for postpartum psychosis, these medications may enter breast milk and if used by nursing mothers, midwives should watch for possible sedation, feeding difficulties and weight loss in the newborn.

Controlled Substances for Use in Active Labour

The MRC NS is awaiting changes to federal drug regulations in order for midwives to prescribe fentanyl citrate and morphine sulphate independently.

Fentanyl citrate

Fentanyl citrate (Sublimase) is a short-acting opioid that is administered intravenously as an analgesic for pain relief in labour. Naloxone should be readily available for administration to the mother or neonate. Physician consultation immediately after administration is required if Naloxone needs to be given.

Fentanyl is useful in early active labour, when a multiparous woman having a rapid, intense labour is requesting analgesia, and for women who wish pain relief and have a contraindication to epidural analgesia, where epidural is not available, or when epidural is not preferred by the woman.

Dose and administration: Dilute 100 mcg (2mL – 2 cc ampoule) into 8 mL normal saline to obtain 10 mL solution (concentration 10 mcg/mL) and give IV during a contraction. The recommended weight-based dose is 0.5 mcg/kg over 30 seconds waiting 5 minutes for effect and repeating every 5 minutes until satisfactory pain relief or a total maximum dose of 2 mcg/kg/hr (or 200 mcg/hr, or 4 doses in 1 hr) has been given. Alternatively, with continuous maternal O₂ saturation monitoring, doses up to 1 mcg/kg (max 100 mcg) can be given initially with repeat dosing every 15-20 minutes to a total of 200 mcg/hr (2 doses/hr). Once a total dose of 3 mcg/kg has been administered, epidural or other alternate pain relief measures should be considered.

Fentanyl has an onset time of 3-5 minutes, takes peak effect in 5-15 minutes, has a duration effect of < 1 hour, an maternal T_{1/2} of less than 1 hour and a neonatal T_{1/2} of 1-6 hours. It has no active metabolites and produces less maternal sedation, nausea, and vomiting than morphine.

Adverse effects: As with other opioids, fentanyl can depress maternal and newborn respiration. Extra caution should be observed if fentanyl use continues for more than 5 hours or a total dose of 300 mcg has been administered. The larger the maternal dose, the more likely the neonate is to be depressed. O₂ saturation monitoring of the newborn is advised for at least 2 hours after birth whenever more than 250 mcg has been given. As with any narcotic, watch for aspiration, drowsiness, hypotension, obtunded reflexes in addition to respiratory depression.

Monitoring: One to one care must be provided. Monitor maternal vital signs, including respirations, and sedation scores for 30 minutes after IV fentanyl administration, then hourly for 4 hours.

Monitor maternal oxygen saturation for 5 minute periods if bolus dose of 2 mcg/kg or total doses greater than 200 mcg/kg are used or if morphine or meperidine has been administered IM in the 3 hours preceding IV fentanyl administration. A physician should be

consulted if O2 saturations fall below 94 %.

Contraindications: Fentanyl should not be used when the woman has PIH, is hypotensive or hypovolemic, has liver or kidney disease, is obese (BMI greater than 35), is in preterm labour, is at high risk of emergency caesarean delivery (e.g. breech) or as respiratory compromise (e.g. severe asthma, cystic fibrosis) or is allergic to fentanyl. Fentanyl should not be used in the presence of non-reassuring fetal heart rate patterns or in the second stage of labour. Fentanyl should be used with caution in multiple pregnancy, for a woman with a history of difficult intubation or who has already received more than one dose of a longer acting narcotic in labour.

Morphine sulphate:

Morphine sulphate (morphine) is an opioid that can be administered intramuscularly as an analgesic for pain relief in labour. Naloxone should be readily available for administration to the mother or neonate. Physician consultation immediately after administration is required if Naloxone needs to be given.

Morphine has a similar analgesic action to Demerol (Meperidine), but with less nausea and fewer significant side effects for the neonate. As morphine is more sedating and has a longer half life than fentanyl, it should be reserved for early labour analgesia when intramuscular administration will provide longer relief, or for women who do not want IV access in labour.

Dose and administration: Usual dose is 10-15 mg IM every 4 hours. IM injections act in 15-20 minutes, peak effect is in 40-50 minutes, and effect duration is 3-4 hours. Morphine may also be given in a 3-5 mg dose IV bolus every 10 minutes prn for 1-2 hours of relief. IV administration may be particularly appropriate for the nulliparous woman seeking pain relief in early active first stage. Morphine should not be administered subcutaneously as consistency of uptake and effectiveness cannot be determined.

Morphine has a maternal half-life of 1 hour and a neonatal half-life of 6 hours. It has no active metabolites. Morphine may be used up to 4 hours prior to anticipated delivery. Most infants born 3 hours after a dose have been found to have no detectable morphine in their cord blood.

Dimenhydrinate (Gravol) 25 mg IV or 25-50 mg IM is often given with morphine to counteract the side effects of nausea and vomiting. (The two drugs are compatible in a syringe for only 15 minutes.) While it is considered safe, Gravol may produce some sedation.

Adverse effects: As with other opioids, morphine can depress maternal and newborn respiration. The larger the maternal dose, the more likely the neonate is to be depressed. As with any narcotic, watch for aspiration, drowsiness, hypotension, obtunded reflexes, in addition to respiratory depression and urinary retention.

Monitoring: Assess maternal and fetal well-being prior to morphine administration, 15 minutes post administration and every 1 to 4 hours thereafter. Determine cervical dilation prior to administration. With IM administration, protocols in some centres allow the woman to be discharged home in early labour if both mother and fetus are well.

Contraindication: Morphine should not be used in the presence of non-reassuring fetal heart rate patterns, in late first stage active labour, or the second stage of labour.

1.4 Prescribing and use of other drugs in the profession of midwifery:

- a) A midwife registered in active clinical practice by the MRC NS may prescribe, administer or order any drug or substance that may lawfully be purchased or acquired without a prescription.
- b) A midwife registered in active clinical practice by the MRC NS may prescribe or administer by injection or inhalation, on order of a member of the College of Physicians and Surgeons of Nova Scotia, any drug or substance.
- c) A midwife registered in active clinical practice by the MRC NS may use in the practice of midwifery, on order of a member of the College of Physicians and Surgeons of Nova Scotia, any drug.

Approved by the MRC on April 8, 2009