Medications Commonly used in Maternal Newborn

Medication Mechanism of Action/Use Nursing considerations

Medication	Mechanism of Action/Use	Nursing considerations
Methotrexate **Contraindications: This medication should not be used if pregnant or breastfeeding.**	**It may exert immunosuppressive effects by inhibiting the replication and function of T and possibly B lymphocytes. Methotrexate also slows rapidly growing cells in psoriasis. This action may result from the drug's inhibition of dihydrofolate reductase. This enzyme reduces folic acid to tetrahydrofolic acid, interfering with DNA synthesis and cell reproduction in rapidly proliferating cells. Methotrexate also interrupts the process that causes inflammation to prevent damage to joints.** (Jones & Bartlett Learning, 2023)	**Monitor results of CBC, chest x-ray, liver and renal function tests, and urinalysis before and during treatment because the drug can cause serious adverse reactions to many symptoms.** **Increase the patient's fluid intake to 2 to 3 L daily, unless contraindicated, to reduce the risk of adverse GU reactions.** **Assess the patient for bleeding and infection.** (Jones & Bartlett Learning, 2023)
Mifepristone Brand name: Korlym, Mifeprex	**In the instance of pregnancy termination, mifepristone works by interrupting progesterone. Progesterone is the primary hormone in preparing the endometrium for implantation and sensitizing the body to the effects of prostaglandins by increasing their synthesis and decreasing their metabolism. The increase in prostaglandins results in menstrual bleeding, disruption of the endometrium, and then termination.** (Autry et al., 2022)	**Contraindications: This medication should not be used if pregnant or breastfeeding.** **This drug is used to terminate pregnancy.** (Jones & Bartlett Learning, 2023)
Rhogam	**How exactly RhIG treats immune thrombocytopenic purpura in patients needs to be clarified. The immunologic inhibition of Fc receptors (RcR) in the reticuloendothelial system (RES) prevents Rh isoimmunization; other immunomodulatory effects may be involved. When anti-D is infused intravenously**	**According to published monitoring parameters on Rh(D) immune globulin, if indicated for the alloimmunization prophylaxis, after administration, patients should be monitored for at least 20 minutes to watch for any signs of systemic reactions.** **If using RhIG to treat immune thrombocytopenic purpura, the black-box warning recommends closely monitoring patients for at least 8 hours to rule out any**

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	into a Rh-positive recipient, the circulating erythrocytes get coated with antibodies and are removed mainly by the spleen. Platelet counts rise, and bleeding decreases when the RES clears sensitive erythrocytes. **RhIG suppresses the immunological response and antibody production in Rh-incompatible persons (Rh-negative exposed to Rh-positive RBCs). However, the exact mechanism by which it prevents isoimmunization has yet to be fully understood. The incidence drops from 12% or 13% to 1% or 2% if dosing occurs within 72 hours of a full-term delivery. When the injection is given at 28 weeks gestation and within 72 hours of delivery, the likelihood of isoimmunization falls to less than 1%. (Yoham et. al., 2023)**	**evidence of intravascular hemolysis. While most patients will be asymptomatic, signs and symptoms in the minority include fever, back pain, shaking chills, and discolored urine or hematuria, which may indicate hemolysis. (Yoham et. al., 2023)**
Promethazine	**Competes with histamine for H1-receptor sites, thereby antagonizing many histamine effects and reducing allergy signs and symptoms. Promethazine also prevents motion sickness, nausea, and vertigo by acting centrally on the medullary chemoreceptive trigger zone and decreasing vestibular stimulation and labyrinthine function in the inner ear. It also promotes sedation and relieves anxiety by blocking receptor sites in the CNS, directly reducing stimuli to the brain.** (Jones & Bartlett Learning, 2023)	**Use promethazine cautiously in children and elderly patients because they may be more sensitive to its effects, patients with cardiovascular disease or hepatic dysfunction because of potential adverse effects, patients with asthma because of anticholinergic effects, and patients with seizure disorders or those who take drugs that may affect seizure threshold because the medicine may lower the seizure threshold.** **Monitor the patient's hematologic status as ordered because promethazine may cause bone marrow depression, especially when used with other known marrow-toxic agents. Assess the patient for signs and symptoms of infection or bleeding.** **Be aware that patients shouldn't**

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		have intradermal allergen tests within 72 hours of receiving promethazine because the drug may significantly alter flare response. (Jones & Bartlett Learning, 2023)
Pyridoxine and Doxylamine		
Ondansetron Brand name: Zofran ODT, Zuplenz	**Blocks serotonin receptors centrally in the chemoreceptor trigger zone and peripherally at vagal nerve terminals in the intestine. This action reduces nausea and vomiting by preventing serotonin release in the small intestine (probable cause of chemotherapy and radiation-induced nausea and vomiting) and blocking CNS signals. Ondansetron may also bind to other serotonin receptors and to mu-opioid receptors.** (Jones & Bartlett Learning, 2023)	**If hypokalemia or hypomagnesemia is present, these electrolyte imbalances should be corrected before the medicine is administered because of increased QT interval prolongation, which could predispose the patient to develop torsades de pointes.** **Better patient electrocardiogram as ordered and, especially in patients with Bradyarrhythmias, congestive heart failure, hypokalemia, or hypomagnesemia or in patients taking other medications known to prolong the QT interval because the medication therapy can prolong the QT interval, resulting in life-threatening arrhythmias such as torsades de pointes be aware that no dosage greater than 16 milligrams should be given intravenously at any one time due to increased risk of prolonged QT interval also monitor patient for chest pain that may be caused by myocardial a schema which may appear immediately after administration.** (Jones & Bartlett Learning, 2023)
Betamethasone		
Indomethacin	**Blocks the activity of cyclooxygenase, the enzyme needed to synthesize prostaglandins, which mediate inflammatory response and cause local pain, swelling, and vasodilation. By blocking**	**Drug increases the risk of premature closure of the fetal ductus arteriosus if given during the third trimester of pregnancy. It may cause fetal renal dysfunction, leading to oligohydramnios and neonatal**

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	cyclooxygenase and inhibiting prostaglandins, this NSAID reduces inflammatory symptoms and helps relieve pain. (Jones & Bartlett Learning, 2023)	**renal impairment if given at 20 weeks or after that.** **Drugs should be avoided in pregnant women starting at 30 weeks of gestation and onward, and the lowest dosage for the shortest period only should be used between 20 and 30 weeks gestation if necessary.** **Drugs may delay or prevent rupture of ovarian follicles, which has been associated with reversible infertility in some women.** **If GI distress occurs, withhold the drug and notify the prescriber immediately.** (Jones & Bartlett Learning, 2023)
Magnesium Sulfate	**Assists all the enzymes that use adenosine triphosphate (ATP) in phosphate transfer processes. Magnesium is necessary for muscle membranes and the ATP-dependent sodium-potassium pump to operate normally. It may successfully treat digitalis glycoside-caused arrhythmias because treatment of hypomagnesemia enhances the sodium-potassium pump's ability to transfer potassium into intracellular spaces, and magnesium inhibits calcium uptake and potassium outflow across cardiac cell membranes as an anticonvulsant magnesium depresses the CNS and prevents peripheral neuromuscular impulse transmission by lowering accessible acetylcholine.** (Jones & Bartlett Learning, 2023)	**Magnesium sulfate may cause fetal harm if administered continuously beyond five to seven days in pregnant women, causing hypocalcemia and bone abnormalities in the developing fetus.** **Decrease range magnesium chloride and magnesium sulfate should not be administered within two hours before delivery because of the risk of hypomagnesemia-stimulated respiratory depression.** **If magnesium sulfate is administered by continuous IV infusion, especially for more than 24 hours preceding delivery, to control seizures and a toxic woman, monitor the newborn for signs of magnesium toxicity, including neuromuscular or respiratory depression.** **Be aware that the drug isn't metabolized and remains in the GI tract, producing watery stool within 30 minutes to 3 hours.** (Jones & Bartlett Learning, 2023)
Terbutaline Sulfate	**Stimulates beta 2-adrenergic receptors in the lungs, which is**	**Assess the patient's respiratory rate depth, quality of oxygen**

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	believed to increase cAMP production. The increased cAMP level relaxes bronchial smooth muscles, thereby increasing bronchial airflow and relieving bronchospasm. (Jones & Bartlett Learning, 2023)	**saturation, and activity tolerance at regular intervals because continuous use of beta 2-agonists for 12 months or longer accelerates the decline in pulmonary function.** **The use of terbutaline is continuous in patients with cardiovascular disease because the drug can't adversely affect cardiovascular function. Monitor the patient's heart rate, rhythm, and blood pressure and assess for chest pain.** **This drug is not recommended during pregnancy unless the benefit to the mother outweighs the potential risk to the fetus.** (Jones & Bartlett Learning, 2023)
Glyburide	**Stimulates insulin release from beta cells in the pancreas. Glyburide also increases peripheral tissue sensitivity to insulin by enhancing insulin binding to cellular receptors or increasing the number of insulin receptors.** (Jones & Bartlett Learning, 2023)	**It is not known if the drug can cause fetal harm. However, it may cause neonatal hypoglycemia.** **The drug is not recommended during pregnancy because abnormal blood glucose levels during pregnancy are associated with a higher incidence of congenital abnormalities, making insulin the preferred drug of choice during pregnancy.** **At birth, neonates may experience birth injury, respiratory distress, and prolonged severe hypoglycemia, lasting 4 to 10 days if the mother receives the drug at the time of delivery.** **Do not use the drug if breastfeeding. If taking the medication, the client must discontinue all breastfeeding efforts.** **Arrange for diabetic teaching and consultation between the patient and the dietitian if appropriate.** (Jones & Bartlett Learning, 2023)

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Insulin	**Lowers blood glucose levels by stimulating peripheral glucose uptake by fat and skeletal muscle and inhibiting hepatic glucose production. It also enhances protein synthesis, inhibits lipolysis in adipocytes, and inhibits proteolysis.** (Jones & Bartlett Learning, 2023)	**Use with caution only if the benefit to the mother outweighs the potential risk to the fetus.** **Monitor the patient's blood glucose levels closely to detect the need for dosage adjustment, as ordered. Expect dosage changes in patients' hepatic or renal function, meal patterns, and physical activity or during acute illness.** (Jones & Bartlett Learning, 2023)
Hydralazine hydrochloride	**It may act like organic nitrates and sodium Nitroprusside t, and hydralazine is selected for arteries. It exerts a direct vasodilating effect on the vascular smooth muscle. It interferes with calcium movement and the smooth muscle of the vascular system by altering cellular calcium metabolism. It dilates arteries, not veins; minimizes orthostatic hypotension and increases cardiac output and cerebral blood flow; causes a reflex autonomic response that increases cardiac output, heart rate, and left ventricular ejection fraction; and has a positive inotropic effect on the heart.** (Jones & Bartlett Learning, 2023)	**monitor blood pressure and pulse rate regularly and weigh the patient daily during therapy.** **Ana Titer CBC and lupus erythematosus cell preparation before therapy and periodically, as ordered during treatment,** **check blood pressure with the patient and the patient's lying, sitting, and standing positions, and watch for signs of orthostatic hypotension. Expect orthostatic hypotension to be most common in the morning during hot weather and with exercise.** **Use with caution only if the benefit to the mother outweighs the potential risk to the fetus.** (Jones & Bartlett Learning, 2023)
Labetalol	**Selectively blocks alpha 1 and beta 2 receptors in vascular smooth muscle and beta 1 receptors in the heart to reduce blood pressure and peripheral vascular resistance. Potent beta-blockade prevents reflex tachycardia, commonly occurring when alpha blockers reduce cardiac output resting heart rate or stroke volume.** (Jones & Bartlett Learning, 2023)	**Monitor blood glucose levels in diabetic patients because labetalol may conceal symptoms of hypoglycemia.** **Be aware that stopping labetalol tablets abruptly after long-term therapy could result in angina and or ventricular arrhythmias.** **Expect to taper dosage over two weeks while monitoring the response.** (Jones & Bartlett Learning, 2023)
Nifedipine	**It may slow the movement of calcium into myocardial and vascular smooth muscle cells**	**monitor fluid intake output and daily weight fluid retention may lead to heart failure. Also, assess**

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	by deforming calcium channels and cell membranes, inhibiting ion-controlled gating mechanisms, and disrupting calcium release from the sarcoplasmic reticulum. Decreasing intracellular calcium levels inhibits smooth muscle cell contraction and dilates arteries, which reduces myocardial oxygen demand and peripheral resistance to blood pressure and afterload. (Jones & Bartlett Learning, 2023)	**for signs of heart failure such as crackles, jugular vein distention, peripheral edema, and weight gain.** **Use cautiously in patients with cell courses because it is unknown how the medicine exposure may be altered in those patients.** (Jones & Bartlett Learning, 2023)
Calcium gluconate	**Increases in intracellular and extracellular calcium levels are needed to maintain homeostasis, especially in nervous and musculoskeletal systems. It also affects normal cardiac and renal function, respiration, coagulation, cell membrane, and capillary permeability. It helps regulate the release and storage of neurotransmitters and hormones. Oral forms also neutralize or buffer stomach ~~acid~~ to relieve discomfort caused by hyperacidity.** (Jones & Bartlett Learning, 2023)	**It is not known if the drug can cause fetal harm.** **Be aware that pregnancy may alter the dosage needs of the mother.** **Use with caution only if the benefit to the mother outweighs the potential risk to the fetus.** **The patient should check with the prescriber before breastfeeding. Dosage needs for the mother may change breastfeeding.** (Jones & Bartlett Learning, 2023)
Misoprostol NOT FDA APPROVED	**Uterotonic effects are caused by prostaglandin binding to smooth muscle cells in the uterine lining; this is responsible for its abortifacient properties and ability to promote labor and cervical ripening. Cervical dilation is produced primarily via the degradation of collagen in the connective tissue of the stroma and reduction in cervical tone from increased amplitude and frequency of contractions. Its uterotonic properties are also helpful to help decrease postpartum bleeding. (Krugh et. al. 2023)**	**It can be used to assist in the termination of a pregnancy, evacuation of the uterine contents in a missed abortion, and dilating the cervix before labor.** (Jones & Bartlett Learning, 2023)

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Cervidil	**Prostaglandin E2 stimulates the myometrium directly, causing contractions, albeit the precise mechanism of action is unknown. It attaches itself to G protein-coupled receptors (GPCRs) EP1-4, which, depending on the EP subtype and expression patterns particular to a given cell type, can cause a range of downstream actions.[3] For instance, intracellular cyclic 3'5'-adenosine monophosphate (cAMP) and calcium channels in cell membranes are two ways EP receptors function in the myometrium. Because some of the known prostaglandin E2 receptors are antagonistic toward one another, scientists have theorized that the effects vary depending on how these receptors are expressed. Prostaglandin E2's effectiveness during pregnancy may be correlated with these receptors' expression. Like the ordinary course of pregnancy, prostaglandin E2 also encourages cervical dilatation, effacement, and softening, possibly because it increases collagenase release. (Michael et. al. 2023)**	**Initiation and/or continuation of cervical ripening in patients at or near term in whom there is a medical or obstetrical indication for the induction of labor.** (Jones & Bartlett Learning, 2023)
Penicillin G	**Inhibits the final stage of bacterial cell wall synthesis by entirely binding for penicillin-binding proteins inside the cell wall. Penicillin-binding proteins are responsible for various steps in bacterial cell wall synthesis. By binding to these proteins, penicillin leads to cell wall lysis.** (Jones & Bartlett Learning, 2023)	**Obtain tissue and fluid samples for culture and sensitivity tests as ordered before giving the first dose. Expect to provide the drug therapy before the test results are known.** **Monitor serum sodium levels and assess for early signs of heart failure in patients receiving high doses of penicillin G sodium.** **When giving penicillin G potassium to patients at risk for fluid overload or hypertension, be aware that each gram of penicillin**

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		G potassium also contains 1.02 mEq of sodium.
Methylergonovine	**Methergine (methylergonovine maleate) acts directly on the smooth muscle of the uterus and increases the tone, rate, and amplitude of rhythmic contractions. Thus, it induces a rapid and sustained tetanic uterotonic effect that shortens the third labor stage and reduces blood loss. The onset of action after I.V. administration is immediate; after I.M. administration, 2-5 minutes, and after oral administration, 5 10 minutes. (FDA, 2023)**	**Patients with coronary artery disease or risk factors for coronary artery disease (e.g., smoking, obesity, diabetes, high cholesterol) may be more susceptible to developing myocardial ischemia and infarction associated with methylergonovine-induced vasospasm.** **This drug should not be administered I.V. routinely because of the possibility of inducing sudden hypertensive and cerebrovascular accidents. If I.V. administration is considered essential as a lifesaving measure, Methergine (methylergonovine maleate) should be given slowly over no less than 60 seconds with careful blood pressure monitoring. Intra-arterial or periarterial injection should be strictly avoided. Caution should be exercised in the presence of impaired hepatic or renal function. (FDA, 2023)**
Nalbuphine (Nubain)	**Binds with and stimulates Kappa and MU opioid receptors in the spinal cord and higher levels in the CNS. In this way, medicine alters the perception and emotional response to pain.** (Jones & Bartlett Learning, 2023)	**Know that if a patient is opioid dependent, the drug will usually not be discontinued abruptly. Monitor the patient for withdrawal symptoms such as abdominal cramps, anorexia, anxiety, backache, bone or joint pain, confusion, depression, diaphoresis, dysphoria, erythema, fear, fever, irritability, low blood pressure, and polls muscle spasm, myalgia, nasal congestion, nausea, restlessness, rhinorrhea, sensation of crawling skin, sleep disturbances, tremor uneasiness vomiting lacrimation mydriasis, piloerection, and yawning. During prolonged use, a stool softener may be given to minimize**

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		constipation. **This drug is not recommended for use in pregnant women immediately before or during labor as medication can cause severe fetal bradycardia. Opioids may alter the length of time of labor.** (Jones & Bartlett Learning, 2023)
Naloxone--	**Briefly and competitively antagonizes mu, kappa, and sigma receptors in the CNS, reversing analgesia, hypotension, respiratory depression, and sedation caused by most opioids. Mu receptors are responsible for analgesia, euphoria, miosis, and respiratory depression. Kappa receptors are accountable for analgesia and sedation. Sigma receptors control dysphoria and other delusional states.** (Jones & Bartlett Learning, 2023)	**patients and post-operative settings who have just received the medicine because abrupt postoperative reversal of opioid depression after using the drug may cause serious adverse effects. Excessive doses of naloxone and the postoperative setting have also caused a significant reversal of annual Garcia and have caused patients to become agitated. Expect patients with hepatic or renal dysfunction to have increased circulating blood naloxone at the home level.** **The drug class is the placental barrier. It may precipitate withdrawal in the fetus as well as in the opioid-dependent mother.** **Monitor the fetus for signs of distress after the drug is given and until the fetus and mother are stable.** (Jones & Bartlett Learning, 2023)
Fentanyl	**Binds to opioid receptor sites in the CNS, altering perception of and emotional response to pain by inhibiting ascending pain pathways. Fentanyl may limit neurotransmitter release from afferent nerves responsive to painful stimuli, and it causes respiratory centers in the brain stem.** (Jones & Bartlett Learning, 2023)	**Be aware that 100 mcg of fentanyl is the equivalent in potency to 10 mg of morphine.** **Understand that to achieve optimum pain control with the lowest fentanyl dose, also plan to give a nonopioid analgesic, such as acetaminophen, as prescribed.** **Be aware that opioids like fentanyl should not be given to women during pregnancy and labor and while breastfeeding as the newborn or infant may experience neonatal opioid withdrawal syndrome, which may be life-threatening and is exhibited as**

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		poor feeding, rapid breathing, trembling, and excessive or high-pitched crying. **Note that fentanyl is now only available through a restricted program called risk evaluation and mitigation strategy (REMS) because of the risk of accidental exposure, abuse, addiction, misuse, and overdose. In addition, under the transmucosal immediate-release fentanyl (TIRF) REMS program, health professionals, outpatient departments, and pharmacies must enroll in the program to prescribe the drug options. Patient pharmacists have policies and procedures in place to verify opioid tolerance for inpatients who require a transmucosal immediate-release type of fentanyl while hospitalized.** (Jones & Bartlett Learning, 2023)
Ibuprofen	**Blocks activity of cyclooxygenase, the enzyme needed to synthesize prostaglandins, which mediate inflammatory response and cause local pain, swelling, and vasodilation. By inhibiting prostaglandins, this NSAID reduces inflammatory symptoms and relieves pain. Ibuprofen's antipyretic reaction probably stems from its effect on the hypothalamus, which increases peripheral blood flow, causing vasodilation and encouraging heat dissipation.** (Jones & Bartlett Learning, 2023)	**risk of premature closure of the fetal ductus arteriosus if given at 30 weeks or later during pregnancy.** **Neonatal renal impairment and oligohydramnios may occur if the drug is given at 20 weeks gestation or later. The drug should only be administered between 20 and 30 weeks gestation if necessary, with the lowest dose in the shortest duration possible.** **The drug is present in breast milk. Breastfeeding is not recommended because the infant's renal system maturation may take up to two years.** **Drugs may delay or prevent the rupture of ovarian follicles, which may cause reversible infertility in some women.** (Jones & Bartlett Learning, 2023)
acetaminophen	**It inhibits the enzyme cyclooxygenase, blocking**	**Use of drugs at any time during pregnancy may increase the risk of**

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	prostaglandin production and interfering with pain impulse generation in the peripheral nervous system. Acetaminophen also acts directly on the temperature-regulating center in the hypothalamus by inhibiting the synthesis of prostaglandin E2-. (Jones & Bartlett Learning, 2023)	**attention deficit hyperactivity disorder (ADHD) after birth. Use with caution only if the benefit to the mother outweighs the potential risk to the fetus.** **Drugs may be present in breast milk.** **Patients should check with the prescriber before breastfeeding.** **Drugs may reduce fertility in females and males.** (Jones & Bartlett Learning, 2023)
oxycodone	**Alters perception of and emotional response to pain and spinal cord and higher levels of CNS by blocking the release of the inhibitory neurotransmitter acetylcholine and gamma-aminobutyric acid.** (Jones & Bartlett Learning, 2023)	**prolonged use of drugs during pregnancy can result in neonatal opioid withdrawal syndrome (NOWS), which may be life-threatening if not recognized and treated.** **This drug is not recommended for use in pregnant women immediately before or during labor. Opioids may alter the length of time that a woman is in labor. An opioid antagonist, such as naloxone, must be available at the end of the event. It is needed to reverse opioid-induced respiratory depression in the neonate. Opioids cross the placental barrier and may produce respiratory depression with psycho-physiologic effects in the neonate. Monitor neonates closely for signs of excess sedation and respiratory depression.** (Jones & Bartlett Learning, 2023)
hydrocodone	**Binds to and activates opioid receptors at sites in the periaqueductal and the periventricular gray matter in the ventromedial medulla and the spinal cord to relieve pain.** (Jones & Bartlett Learning, 2023)	**Prolonged use during apprenticeship should be avoided. Use with caution only if the benefit to the mother outweighs the potential risk to the fetus.** **Do not administer hydrocodone to a patient wearing a transdermal fentanyl patch until the patch has been removed for 18 hours. I also**

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		know that close monitoring is essential for a patient converting from methadone because methadone has a long half-life and tends to accumulate in the blood. Be aware that opioids like hydrocodone should not be given to women during pregnancy, while in labor, or when breastfeeding, as the newborn or the infant may experience neonatal opioid withdrawal syndrome, which could be life-threatening. This syndrome may exhibit excessive or high-pitched crying, poor feeding, rapid breathing, or trembling. If not recognized and treated appropriately, it can be life-threatening. (Jones & Bartlett Learning, 2023)
ketorolac	**Blocks cyclooxygenase, an enzyme needed to synthesize prostaglandins. Prostaglandins mediate inflammatory response and cause local vasodilation, pain, and swelling. They also promote pain transmission from the periphery to the spinal cord. The NSAID reduces inflammation and relieves pain by blocking cyclooxygenase and inhibiting prostaglandins.** (Jones & Bartlett Learning, 2023)	**This drug increases the risk of premature closure of the fetal ductus if given during the third trimester of pregnancy and fetal renal dysfunction if given after 20 weeks gestation.** **This drug should be avoided in pregnant women starting at 20 weeks of gestation and onward.** **This drug is contraindicated during labor and delivery.** **This drug may affect fertility by delaying or preventing the rupture of ovarian follicles.** **This drug should not be given to women who are planning to conceive or who are having difficulty conceiving.** **Understand that the risk of heart failure increases with ketorolac use because the drug is an NSAID.** (Jones & Bartlett Learning, 2023)
Hepatitis B vaccine		
Erythromycin eye ointment		
Phytonadione	**It serves as a cofactor**	

Medication	Mechanism of Action/Use	Nursing considerations
	necessary for the action of proteins that are dependent on vitamin K (VKD) factors II (prothrombin), VII, IX, and X, as well as protein C and protein S. Phytonadione treatment replaces reserves in vitamin K insufficiency. In the digestive system, vitamin K is absorbed like most dietary lipids, which involves absorption into micelles made of bile salts. Through the thoracic duct, they pass from the lymphatic system into intestinal enterocytes and eventually enter the venous circulation. It is estimated that the body will eliminate more than 60% of the vitamin K that has been absorbed. The liver breaks down phytonadione, which is eliminated in the bile and urine. (Ingold et al., 2023)	
Prenatal vitamins		
MMR vaccine	**Measles Mumps & Rubella is a vaccine given to prevent to spread of these diseases.**	
Tetanus & reduced diptheria toxoids/acellular pertussis vaccine		
Lidocaine mucosal gel	**It combines with fast sodium channels and myocardial cell membranes, inhibiting sodium influx into cells and decreasing ventricular depolarization, automaticity, and excitability during diastole. Lidocaine also blocks nerve impulses by decreasing the permanent permeability of neuronal membranes to sodium, which produces local anesthesia.** (Jones & Bartlett Learning, 2023)	**Observe for respiratory depression after bolus injection during IV infusion of lidocaine. Use caution when administering medicine to patients who have no cardio function because of the risk of electrolyte disturbances or fluid overload.** (Jones & Bartlett Learning, 2023)

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