Newborn Procedures

VITAMIN K PROPHYLAXIS

Vitamin K is essential for the production of blood-clotting factors. Healthy bacteria in the intestinal tract produce Vitamin K. The newborn's intestinal tract is sterile at birth and therefore newborns have low levels of Vitamin K until their intestines are colonized with bacteria to produce it. Newborns, therefore, have lower levels of Vitamin K than adults for the first six weeks. Therefore if bleeding occurs, the newborn's blood can take longer to clot (to stop the bleeding) than an adult's.

While most newborns will not have blood-clotting problems, up to 1.5% will develop Hemorrhagic Disease of the Newborn (HDN), also commonly called Vitamin K Deficiency Bleeding (VKDB). Although rare, HDN can cause serious internal bleeding in the brain or body which can lead to brain damage or death. Prophylactic Vitamin K administration to newborns has been used since the 1950s to decrease the incidence of HDN.

There are three types of HDN:

- *early-onset* occurs in the first 24 hours, may not be prevented by Vitamin K
- *classical* occurs in the first week, protection is provided by Vitamin K
- *late-onset* occurs from 2-12 weeks of age up to 6 months of age, mostly affecting breastfed babies

In BC, Vitamin K is routinely given to all newborns to prevent HDN. A single intramuscular injection into the baby's thigh within a few hours of birth is the most common method. Another (less effective) option is to administer Vitamin K orally. There are no proven adverse effects associated with administration of Vitamin K, by either method, to the newborn.

Incidence of HDN:	
One intramuscular injection of 1.0 mg Vitamin K	1 in 1,439,000
One oral dose of 1.0 – 2.0 mg Vitamin K	1 in 70,000
No Vitamin K administered	1 in 1,700 breastfed infants
No Vitamin K administered	1 in 20,000 artificially fed infants

Parents may choose from the following options:

INTRAMUSCULAR VITAMIN K: This is the most common method to administer Vitamin K as it has been researched the most, and is the most effective. A single injection of 1 mg is administered to a term newborn within several hours of birth; no follow-up doses are necessary. Although the injection is very effective, it can be somewhat painful to the newborn. We mitigate this by trying to do the injection while the baby is comforted at the breast. In the past, there have been queries as to whether injectable Vitamin K was responsible for an increase in childhood cancers, however there has not been evidence supporting these claims. Baby boys who will be circumcised must be protected from bleeding with injectable Vitamin K.

ORAL VITAMIN K: While shown to decrease the incidence of HDN, oral administration is *not as effective* as injectable administration, especially when only administered once. Therefore, a double dose (2 mg) of the intramuscular formulation of Vitamin K is given orally at the time of the first feeding, again at 2-4 weeks, and again at 4-6 weeks of age. The double dose is also used because Vitamin K is less absorbable orally than by injection. It is important to ensure that all doses are received to provide maximum protection to the newborn. Oral Vitamin K is not the standard of care in British Columbia.

VITAMIN K PROPHYLAXIS
continued

NO VITAMIN K: Without supplemental Vitamin K the incidence of HDN is 1 in 1,700 for breastfed babies, and 1 in 20,000 for formula-fed babies. Formula contains added Vitamin K. There is no evidence showing whether maternal supplementation of Vitamin K through diet or supplements in pregnancy or while breastfeeding affect the incidence of HDN should their babies not receive Vitamin K. While it is impossible to know which babies are at highest risk of HDN, it is believed that those born prematurely, who have visible bruising, or those born via forceps or vacuum deliveries are best protected against HDN by receiving injectable Vitamin K. It is important to understand that *any* newborn who has not received Vitamin K is at risk for HDN. If you have previously chosen not to have Vitamin K administered to your baby and increased risk factors arise, your care provider will discuss this with you at the time of birth if applicable.

EYE PROPHYLAXIS

Approximately 1-12% of all newborns develop conjunctivitis (an infection of the inner lining of the eye) in their first four weeks. Many microorganisms may be responsible for neonatal conjunctivitis including *E. coli*, *hemophilus influenzae*, *staphylococcus aureus*, gonorrhea, or chlamydia. The most serious of these are gonorrhea or chlamydia, which can be passed from the mother to the newborn during the birth process. Either of these can cause permanent blindness in the newborn if untreated.

The most recent position statement published by the Canadian Paediatric Society (CPS) in March 2015, states that the current practice of treating all newborns with prophylactic erythromycin is of questionable efficacy. Instead, CPS recommends that all women be offered screening for gonorrhea and chlamydia during pregnancy, and that those who are positive be treated. Infants of mothers with untreated gonococcal infection at delivery should be treated with the antibiotic ceftriaxone, as it is more effective at treating neonatal conjunctivitis caused by gonorrhea than erythromycin.

At present, health-care providers in BC are still required by law (*Health Act Communicable Disease Regulation*) to administer antibiotic ointment to the newborn's eyes within one hour after birth in order to prevent conjunctivitis. The topical antibiotic used currently is an ointment containing 0.5% erythromycin. Erythromycin ointment is not painful for the baby, but it will cause brief blurring of the newborn's vision until the ointment is absorbed, and may cause a metallic taste in the mouth.

You may legally refuse treatment if you do not wish eye prophylaxis for your baby. Should your baby develop increased redness, discharge or swelling in the eye, a culture may be performed to rule out gonorrhea and chlamydia infection as well as to identify other bacteria and determine the proper treatment.

NEWBORN SCREENING FOR RARE BUT TREATABLE DISORDERS

Newborn screening is done between 1-3 days after birth. Routine newborn screening identifies infants with rare disorders. In BC, 1 out of every 1,000 babies are found to be have one of these rare disorders. Through early detection and treatment, the severe consequences of undiagnosed or untreated disease, including mental retardation and death, can be avoided. Screening is done by pricking the baby's heel with a lancet and collecting drops of the baby's blood on filter paper for analysis. There are no adverse effects or increased risks associated with newborn screening. However, the newborn may experience pain and/or bruising at the site of the blood draw. Midwives mitigate this by performing the procedure while the baby is comforted at the breast whenever possible. In BC, the newborn screen currently tests for 22 disorders, including:

- Citrullinemia and Argininosuccinic Acidemia One baby in 60,000
- Cobalamin Disorders and Methylmalonic Acidemia One baby in 75,000
- Glutaric Aciduria Type I One baby in 120,000
- Galactosemia One baby in 40,000
- Homocystinuria One baby in 200,000
- Isovaleric Acidemia One baby in 100,000 to 200,000
- Long-chain Hydroxyacyl-CoA Dehydrogenase Deficiency One baby in 80,000
- Maple Syrup Urine Disease One baby in 185,000
- Medium-chain Acyl-CoA Dehydrogenase Deficiency One baby in 12,000
- Phenylketonuria (PKU) One baby in 12,000
- Propionic Acidemia One baby in 50,000
- Tyrosinemia I One baby in 100,000
- Very-long chain AcylCoA Dehydrogenase Deficiency One baby in 50,000 to 120,000
- Congenital Adrenal Hyperplasia One baby in 16,000
- Congenital Hypothyroidism One baby in 4,000
- Sickle Cell Disease One or two babies each year in BC
- Homozygous Hemoglobin D
- Hemoglobin D-beta thalassemia
- Cystic Fibrosis One baby in 3,600

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