Newborn Critical Care Center (NCCC) Clinical Guidelines

Vitamin A Therapy

Bronchopulmonary dysplasia (BPD) is the most common serious pulmonary morbidity in premature infants. The pathogenesis of BPD is multifactorial and may include injury to an immature lung (volutrauma, barotrauma, oxygen toxicity, infection) and factors inhibiting its healing. The lung healing can also be influenced by many factors including nutrients, antioxidants and inflammatory cells. Many trials have been conducted to evaluate treatments aimed at reducing the incidence of BPD with minimal success. Vitamin A (Aquasol A) is one of the only treatments proven to reduce the incidence of death or BPD at 36 weeks' postmenstrual age in premature infants. A recent Cochrane Review concludes that Vitamin A therapy is associated with a small reduction in death or oxygen requirement at one month of age and a marginal reduction in oxygen use at 36 weeks' postmenstrual age for very low birth weight infants[1] There may also be a reduction in the incidence of retinopathy of prematurity and nosocomial sepsis[1].

CRITERIA FOR ADMINISTRATION

1. All ELBW infants < 27 weeks gestation (as recommended in the NCCC ELBW Guidelines)
2. Infants ≥ 27 weeks gestation meeting the following criteria:
   A. Birth weight < 1000 grams

      AND

   B. The need for mechanical ventilation or supplemental oxygen at 24 hours of life

      Example: *CPAP, FiO2 0.21 would* ***NOT*** *qualify*
3. Qualifying outborn infants as long as the first dose is given by 96 hours of life

DRUG INFORMATION FOR VITAMIN A (AQUASOL A)

- *Dose & Interval:* Aquasol A 5000 IU IM every Monday, Wednesday, Friday
- *Length of treatment:* 4 weeks or 12 doses
- *Administration:* Light-shielded via 30 gauge needle

CONSIDERATIONS

- First dose must be given by 96 hours of life

References:

1. Darlow BA, Graham PJ, Rojas-Reyes MX. Vitamin A supplementation to prevent mortality and short- and long-term morbidity in very low birth weight infants. Cochrane Database of Systematic Reviews 2016, Issue 8. Art. No.: CD000501. DOI: 10.1002/14651858.CD000501.pub4.

Additional Reading:

1. Chabra S, Mayock DE, Zerzan J, Bittner R, Neufeld MD, Gleason CA. Vitamin A status after prophylactic intramuscular vitamin A supplementation in extremely low birth weight infants. Nutr Clin Pract. 2013 Jun; 28(3):381-6. doi: 10.1177/0884533613479132. Epub 2013 Mar 5. PubMed PMID: 23462416.
2. Jensen, E. A., Foglia, E. E., & Schmidt, B. (2016). Evidence-based pharmacologic therapies for prevention of bronchopulmonary dysplasia. Clinics in Perinatology, 42(4), 755-779. DOI: 10.1016/j.clp.2015.08.005
3. Laughon MM. Vitamin A shortage and risk of bronchopulmonary dysplasia. JAMA Pediatr. 2014 Nov; 168(11):995-6. doi: 10.1001/jamapediatrics.2014.1416. PubMed PMID: 25222155.
4. Poets CF, Lorenz L. Prevention of bronchopulmonary dysplasia in extremely low gestational age neonates: current evidence. *Arch Dis Child Fetal Neonatal Ed.* 2018 May;103(3):F285-F291. doi: 10.1136/archdischild-2017-314264. Epub 2018 Jan 23.
5. Schwartz E, Zelig R, Parker A, Johnson S. Vitamin A Supplementation for the Prevention of Bronchopulmonary Dysplasia in Preterm Infants: An Update. *Nutr Clin Pract.* 2017 Jun;32(3):346-353. doi: 10.1177/0884533616673613. Epub 2016 Oct 21.
6. Tyson JE, Wright LL, Oh W, Kennedy KA, Mele L, Ehrenkranz RA, Stoll BJ, Lemons JA, Stevenson DK, Bauer CR, Korones SB, Fanaroff AA. Vitamin A supplementation for extremely-low-birth-weight infants. National Institute of Child Health and Human Development Neonatal Research Network. N Engl J Med. 1999 Jun 24; 340(25):1962-8. PubMed PMID: 10379020.