

## Under 5 Survivals: Role of Iron Supplementation

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The prevalence of Iron deficiency anaemia among infants and young children living in developing countries is high. Because of its' chemical properties namely its' oxidative potential-Iron functions in several in biological systems that are crucial to health. Iron, which is not eliminated from the body, can also cause harm through oxidative stress, interference with absorption and metabolism of other nutrients and suppression of critical enzyme activities. Various trials of preventive oral Iron supplementation in young children (Birth to 59 months) living in developing countries had done to ascertain the health benefits and risks.

Iron is essential for all tissues in a young Childs' developing body. It is present in the brain from very early in life when it participates in the neural myelination process. Other role that would affect the growth and immune function has been postulated.

Globally, in 2013 about 6.3 million died before reaching fifth birthday. Of these deaths, 2.8 millions were neonates, 1.8 millions were post neonatal (1-11 months) and 1.7 millions death occurred between 12-59 months<sup>1</sup>. Iron deficiency is the most common cause of anaemia during pregnancy and daily use of Iron supplementation during pregnancy significantly reduces maternal anaemia by 50% and risk of Low Birth Weight by 19%<sup>2</sup>.

The current WHO guideline recommend a standard daily oral dose of 30 to 60 mgs of elemental Iron and 400mcgs of Folic acid supplements throughout pregnancy, to begin as early as a part of antenatal care programme<sup>3</sup>. Antenatal use of Iron-folic acid supplements also has an effect on child survival<sup>4</sup>. Various studies suggested that infant stores of Iron are not critical in childhood mortality and the risk of preterm birth, birth asphyxia or poor temperature regulation may be the mechanism responsible for under 5 deaths, which can be reduced by antenatal Iron-folic acid supplementation<sup>5-7</sup>.

Iron supplementation for children under five years is recommended on the basis of anaemia prevalence. Low Birth Weight infants are at high risks of Iron deficiency and the current recommendation that they receive supplementation from 6 weeks to 8 weeks of age. The consumption of iron-poor complementary diets is also to justify the supplementation in preschool aged children. Complementary feeding, even with continued breast feeding must contribute nearly 100% of dietary Iron for young children because breast milk contains little Iron for that age groups.

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Iron serves as an essential nutrient for metabolic pathways for both humans and microorganisms. Pathogenic microorganisms, including bacteria, fungi and protozoa require iron for growth and proliferation. As a defense strategy, hosts have numerous mechanisms to reduce the availability of iron to invading pathogens<sup>8</sup>. Therefore, the decision to supplement iron in patients with infections require careful consideration of risks versus benefit<sup>9</sup>. However, Cochrane Collaboration study concludes that Iron alone or with antimalarial treatment does not increase the risk of clinical Malaria or death when regular malaria surveillance and treatment service are provided<sup>10</sup>. Insufficient data are available on Iron supplementation in relation to HIV or Tuberculosis outcome for conclusion to be drawn about possible benefits or risks.

The need to address the problem of Iron deficiency and related consequences affecting millions of children worldwide is undisputed. Finding the appropriate, the response, however, particularly for young children living in developing countries, is a more difficult endeavor. The availability of resources, both financial and staffing, may be a problem if screening for Iron deficiency and targeting treatment regimens are necessary to avoid causing harm to some children in the population. Alternative prevention and control strategies such as diet based approaches may be preferred, if vulnerable population groups have access to foods, because that group may be able to avoid the adverse effects associated with supplementation.

### References

1. UNICEF, WHO, The World Bank, UN, UN inter-agency group for child mortality estimation. Level and trends in child mortality report. 2014. New York; UNICEF: 2014
2. Haider BA, Olofin I, Wang M, Spiegelman D, Ezajjiti M, Fawzi WW; Nutrition impact model Study group (anaemia). Anaemia, perinatal iron use and risk of adverse pregnancy outcomes: Systematic review and meta analysis. *BMJ* 2013; 346:34-43
3. WHO Guideline: Daily iron and folic acid supplementation in pregnant women. Geneva (Switzerland): WHO; 2012
4. Imdad A, Bhutta ZA. Routine iron/folate supplementation during pregnancy: effect on maternal anaemia and birth outcomes. *Paediatr perinat Epidemiol* 2012; 26(suppl 1):168-177
5. Brigham D, Berard J. Iron and thermoregulation: a review; *Crit Rev Food Sci Nutr* 1996; 36:747-763
6. Mullany LC, Katz J, Khattry SK, Leclercq SC, Darmstadt

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- GL, Tielsch JM. Incidence and seasonality of hypothermia among newborn in southern Nepal. *Arch Pediatr Adolesc Med*2010;164:71-77
7. Tieleh JM, Khatri SK, Stolfus RJ, Lecerc SC, Adhikary R, Mullany C, Shresta S, Black RE. Effect on routine prophylactic supplementation with iron and folic acid on preschool child mortality in southern Nepal: Community based , cluster-randomised, placebo controlled trial. *Lancet*2006; 367:144-152
8. Schaible UE, Kaufmann SH. Iron and microbial infection. *Nat Rev Microbiol*2004;2:946-953
9. Maynor L, Brophy DF. Risk of infection with intravenous iron therapy. *Ann Pharmacother*2007; 41:1476-1480
10. Okbe JU, Yahav D, Shbita R, Paul M. Oral iron supplements for children in malaria endemic areas. *Cochrane Database of systematic reviews*2011, Issue10. Art No.: CD006589. DOI:10.1002/14651858.CD0066589.Pub3.