



Hepcidin Screening to Guide Iron Supplementation in African Children

Sant-Rayn Pasricha^{1*}, Sarah Atkinson², Andrew Armitage¹,
Shivani Khandwala¹, Jacobien Veenemans³, Sharon Cox⁴, Lucy Eddowes¹,
Theodore Hayes¹, Conor Doherty⁵, Ayse Demir^{6,7}, Edwin Tijhaar³,
Hans Verhoef³, Andrew Prentice^{4,5} and Hal Drakesmith¹

¹Weatherall Institute of Molecular Medicine, University of Oxford, Oxford, UK.

²Department of Paediatrics, Oxford University Hospitals, University of Oxford, Oxford and Oxford University Clinical Academic Graduate School, Oxford, UK.

³Cell Biology and Immunology Group, Wageningen University, Wageningen, The Netherlands.

⁴MRC International Nutrition Group, London School of Hygiene and Tropical Medicine, London, UK.

⁵MRC Keneba, Keneba, Gambia.

⁶Royal Hospital for Sick Children, Glasgow, UK.

⁷Laboratory for Clinical Chemistry and Haematology, Meander Medical Centre, Amsterdam, The Netherlands.

Article Information

DOI: 10.9734/EJNFS/2015/20879

Special Editors:

Lucie Bohac, Micronutrient Forum Secretariat, Canada.

Klaus Kraemer, Director, Sight and Life, Basel, Switzerland.

Chief Editor

Prof. Hans Verhagen, Senior Scientific Advisor 'Nutrition and Food Safety', National Institute for Public Health and the Environment (RIVM), P.O.Box 1, 3720 BA, Bilthoven, The Netherlands.

Conference Abstract

Received 5th February 2015

Accepted 1st March 2015

Published 14th August 2015

ABSTRACT

Objectives: Hematologic and non-hematologic benefits from iron supplementation are chiefly seen in iron deficient individuals; concerns that iron might promote infection especially in non-iron deficient individuals have complicated global anemia control policies, particularly in malaria-endemic settings. Iron homeostasis, including intestinal absorption, is controlled by hepcidin. Hepcidin is regulated by iron, erythropoietic drive, and inflammation, suggesting its potential utility to appraise iron status and thus guide iron supplementation.

Methods: In 1338 African pre-school children we evaluated the Area Under the ROC Curve (AUC^{ROC}) for plasma hepcidin concentration as a diagnostic test of iron status, anemia type and erythrocyte incorporation of oral iron, determining and modeling the effects of cutoffs.

Results: Hepcidin detected iron deficiency with an $AUC^{ROC} = 0.85$ (optimal sensitivity/ specificity at