Community-Level Interventions to Prevent and Treat Anemia: A Review of Evidence from India

Evidence Review Series 3

March 2008

Context

Iron deficiency anemia is a serious public health problem that affects the ability to study and work as well as health and well being. It is one of the most prevalent nutritional deficiencies in the world, and more than half of the population in India is anemic. The prevalence of anemia is as high as 70 – 80 per cent among children and 60 per cent among pregnant women[7]. In the northern states of Uttar Pradesh and Jharkhand, anemia prevalence among preschool children is 74 per cent and 82 per cent respectively.[7]

Anemia is most often caused by iron or folate deficiency and is especially common during pregnancy. Although supplementation of diets with Iron and Folic Acid (IFA) tablets has been a part of Government programming for over three decades, levels of IFA intake remain low. For example, only 22 per cent of pregnant women reported consuming IFA for 90 days or more when they were pregnant[7]. There are significant challenges in reaching the at-risk population as well as in managing the side effects of IFA consumption which discourage adequate intake.

This paper provides highlights from an evidence review on anemia prevention and treatment. The purpose of the evidence review was to assist Government programs such as the National Rural Health Mission (NRHM) to make evidence-based decisions about which Maternal, Newborn and Child Health and Nutrition (MNCHN) interventions and approaches to adopt to meet its national objectives.

Evidence Review Process

Considering the importance of anemia prevention and treatment as a priority for improved MNCHN, leaders from the central and state Government, including Health and Family Welfare and Women and Child Development officials, agreed that an evidence review on the prevention and treatment of anemia would be helpful. The USAID-funded Vistaar Project facilitated this review, which was conducted by recognized national experts in this field.

The Project team identified existing evidence from India for the review, through a literature review as well as direct requests for information from many experts working in this field. The team initially identified 23 interventions and then short-listed nine interventions based on the main selection criteria that the intervention should have a sound evaluation that documented results at the outcome or impact level (e.g., IFA consumption).

Of the nine community-level anemia interventions selected for the review, six focused on anemia among adolescent girls, two on maternal anemia and two on fortification. All of the interventions were community-based with most working in rural areas and two in an urban area. See Table 1 for more information about the interventions reviewed.

USAID FROM THE AMERICAN PEOPLE

ज्ञान से व्यवहार तक विस्तार vistaar From Knowledge to Practice

Table 1: Overview of Interventions

Intervention Name	Lead Agencies	Focus Areas
Uplifting Marriage Age Nutrition and Growth (UMANG) [16, 17]	Govt. of Uttar Pradesh, Vatsalya and UNICEF	In-school and out-of-school adolescent girls with anemia using a "girl to girl " approach of peer education to reach beyond those girls in school. Implemented in two Districts of Uttar Pradesh. (2000-2007)
Reducing Iron Deficiency Anemia and Changing Dietary Behaviors Among Adolescent Girls [3, 4]	Institute of Health Management, Pachod, Maharashtra and ICRW	Changing dietary behaviors, weekly IFA for first three months implemented in 16 slums in Pune and expanded to 72 villages of Maharashtra. (2000-2003)
Adolescent Girls Anemia Control Program [5]	Dept. of Preventive and Social Medicine, Medical College Vadodara, UNICEF and Govt. of Gujarat	Weekly IFA supplementation and improved dietary practices. Implemented in Vadodara District, Gujarat. (2000-on going)
Identification of an Appropriate Strategy to Control Anemia in Adolescent Girls of Poor Communities [10, 13]	Nutrition Foundation of India	Tested once a week vs. daily supplementation of IFA among adolescent girls. Implemented in urban areas of Delhi and rural areas of Bharatpur, Rajasthan. (2002)
Anemia Prevention Project [18, 19]	Govt. of Jharkhand, Vikas Bharti and Micronutrient Project (USAID)	Package of services, focus on maternal and adolescent anemia. Implemented in Gumla District, Jharkhand. (2004-2006)
Anemia Control Program for Adolescent School Girls [12]	Govt. of Jharkhand and UNICEF	Weekly supplementation of IFA among adolescent girls. Implemented across Jharkhand. (2000- on going)
Community-Based Maternal and Child Health Nutrition MCHN Project [2, 9]	Govt. of Uttar Pradesh and UNICEF	Focused on compliance with 100 tabs IFA supplementation in pregnant women. Implemented in four districts of Uttar Pradesh. (2001-2004)
Community-level Micronutrient Fortification of a Food Supplement in India [10, 15]	Govt. of West Bengal ICDS, CINI, Micronutrient Initiative and Tufts University	Focus on childhood anemia (36-66 months) through a fortified premix added to *Khichri*. Implemented in Mahestala block in South 24 Pargana district of West Bengal. (2005)
Extruded Rice fortified with Micronized Ground Ferric Pyrophosphate [8]	Micronutrient Initiative and St. Johns National Academy of Health Sciences	Focus on childhood anemia (6-13 yrs), through a school-based program. Implemented in one school in Bangalore. (2004-2005)

The Vistaar Project team prepared a summary of each selected intervention which included available data in the areas of effectiveness, efficiency, and expandability. These summaries were provided to the lead implementing organizations for their feedback and then shared with the expert reviewers prior to the expert review meeting (These summaries are available on the IntraHealth website: http://www.intrahealth.org).

The team worked with Government officials and recognized experts to form a panel of experts in this field to conduct the evidence review. The expert group included Government officials, donors, and representatives from NGOs, academia and professional associations (See Table 2).

Table 2: List of Experts

Prof. A.K. Nigam	Institute of Applied Statistics & Development Studies, Uttar Pradesh
Dr. Anand Lakshman	The Micronutrient Initiative, New Delhi
Dr. Deepika N. Chaudhery	The Micronutrient initiative, New Delhi
Dr. G.S. Toteja	Indian Council of Medical Research, New Delhi
Dr. N.K. Arora	INCLEN Trust, New Delhi
Dr. Prakash V Kotecha	Academy of Educational Development, New Delhi
Dr. Ramesh K Singh	HOPE Foundation, New Delhi
Dr. Rajiv Tandon	USAID, New Delhi
Dr. Saroj Menon	National Institute of Health & Family Welfare, New Delhi
Mr. Satyavrat Vyas	Population Foundation of India, New Delhi
Dr. Shubada Kanani	M.S. University, Gujarat
Dr. Subhadra Seshadri	Senior Nutrition Expert, Karnataka
Prof. Sudha Salhan	Safdarjung Hospital, New Delhi

Note: Other invited experts were unable to attend.

Lessons Learned

Thirteen technical experts met for one day on July 19, 2007 to review the nine selected interventions. The experts worked in a consultative manner and primarily in small groups to achieve the following objective:

> *Analyze the available evidence to make recommendations to the Government about achieving impact in the area of anemia prevention and treatment.*

The experts also identified several important evidence gaps where additional information needs to be generated. The experts placed significant focus on the quality of data and results available.

The experts commended the implementing agencies for their evaluation and documentation work and the contributions they have made to the evidence base about anemia prevention and treatment in India. However, they did not feel the evidence was compelling enough to recommend a set intervention or model to the Government for adoption at scale. Instead, they produced a list of lessons learned and general recommendations based on the available evidence (listed below).

- There is a need to strengthen monitoring, evaluation and documentation capacity in the public and private (including NGO) sector to improve the data available for decision making and to fill important evidence gaps
- NGO and donor-funded projects have produced more documentation on outcome-level results, as compared to Government-led programs; this may be an issue of data availability and limited public access to Government program evaluations, but it would be useful to have more data on Government-led interventions to guide program decision making
- The Government and private sector groups should seek to contribute to the evidence base by evaluating and documenting existing "natural experiments" and successes within Government programs
- The existing evidence does not provide much information on which specific approaches or components were the most effective within a package of approaches
- Some interventions with significant results used the "positive deviance approach" (e.g., the Adolescent Anemia Control Program for Girls in Vadodara District and the UMANG Project in Uttar Pradesh), and this approach should be further implemented and documented
- Collaboration among the Ministry of Health and Family Welfare, the Ministry of Women and Child Development, the Ministry of Education and *Panchayati Raj* Institutions was associated with better results (e.g., MCHN and UMANG in Uttar Pradesh, and the Anemia Control Program for Adolescent School Girls in Jharkhand)
- More comprehensive efforts that included health and nutrition education, de-worming and the promotion of convergence were more successful

Evidence Gaps

The reviewers noted the following gaps in evidence.

- Most of the research is on adolescent girls; there is a need for more documentation of work with other target groups such as pregnant women and boy and girl children
- More evidence should be collected and made available from Government programs
- There is very little evidence on efficiency or cost issues
- Program implementers should evaluate and report more data on the equity and gender-related outcomes of their interventions

In Summary

The evidence review process is a useful approach to build consensus among experts and program leaders, inform program planning, and assist with decision making. The Vistaar Project experience shows that this process is most valuable when:

- It is conducted in an open, inclusive and participatory manner
- The focus is on learning lessons, not identifying the "best model"
- The audience is clear, and the evidence is reviewed from their perspective (i.e., in this case, the evidence was reviewed for application in Government programming)

The Vistaar Project greatly appreciated the opportunity to be a part of this evidence review and is honored to join with the technical experts, implementing agencies, and Government program leaders and implementers who are using evidence to improve MNCHN program impact.

INTRAHEALTH INTERNATIONAL

Vision

We believe in a world where all people have an equal opportunity for health and well-being.

Mission

To mobilize local talent to create sustainable and accessible health care

The Purpose of the Vistaar Project is:

To assist the Government of India and the State Governments of Uttar Pradesh and Jharkhand in taking knowledge to practice for improved maternal, newborn, and child health and nutritional status

IntraHealth International, Inc. is the lead agency for the Vistaar Project

References

1. Chatterjee, Patralekha. *Mayurbhanj, IMNCI: Thinking Big Scaling Up Fast.* New Delhi: UNICEF, India. 2006.
2. Integrated Child Development Services and Department of Women and Child Development, Government of Uttar Pradesh. Community based Maternal and Child Health Nutrition (MCHN). Project Information Dissemination Brochure. Uttar Pradesh: ICDS/ WCD. June 2007.
3. Institute of Health Management, Pachod and International Center for Research on Women. Reducing Iron-Deficiency Anemia and Changing Dietary Behaviors among Adolescent Girls in Maharashtra, India. Project Information Dissemination. Pachod: IHMP and New Delhi: ICRW Accessed on 18th June 2007 at http://www.icrw.org/docs/publications-2006/R-2_new.pdf
4. Kapadia-Kundu, Nandita and Tupe, Rama. Anemia Prevention in Unmarried Adolescent Girls: A Randomized Control Field Cluster Trial. *Unpublished Presentation Obtained by Email from Dr. Nandita Kapadia-Kundu, Additional Director, IHMP, Pune. Pune: IHMP and New Delhi: ICRW. September 2006.
5. Kotecha, Prakash V., Karkar, Purvi and Nirupam, Siddharth. Adolescent Girls Anemia Control Program, Government of Gujarat (Departments of Health and Education): Summary Report. Vadodara: Medical College Vadodara/ UNICEF. 2001.
6. Ministry of Health and Family Welfare, Government of India. *National Family Health Survey-II (NFHS-II):* India. New Delhi: MoHFW. 1998-1999.
7. Ministry of Health and Family Welfare, Government of India. *National Family Health Survey-III (NFHS-III)*, 2005-2006: India. Vol. 1. New Delhi: MoHFW. 2007.
8. Moreti, Diego et al. Extruded Rice Fortified with Micronized Ground Ferric Pyrophosphate Reduces Iron Deficiency in Indian School Children: A Double Blind Randomized Controlled Trial. *American Journal of Nutrition.* 84. 2006. pp.822- 9.
9. ORG Center for Social Research. *Community based Maternal and Child Health Nutrition(MCHN) Evaluation Report.* Uttar Pradesh: ICDS/Department of Women and Child Development, Government of Uttar Pradesh. 2006.
10. Pena-Rosas J.P. and Viteri F.E. Effects of Routine Oral Iron Supplementation With or Without Folic Acid for Women During Pregnancy (Review). *The Cochrane Library 2007.* Issue 2. 2007.
11. Planning Commission, Government of India. Annual Plan 1999-2000. New Delhi: Planning Commission. 1999. Accessed on 18th June 2007 at http://planningcommission.nic.in/plans/annualplan/1999-00/ap9920ch6f.htm
12. Seshadri, Subhadra, Sharma, Kavita. Iron Supplementation to Control Anemia in Adolescent Girls. Documentation of Process and Impact, Ranchi District. Jharkhand: Department of Education, Jharkhand/ UNICEF. 2003.
13. Sharma, Anshu, Prasad, Kanti and Rao, K. Visveswara. Identification of an Appropriate Strategy to Control Anemia in Adolescent Girls of Poor Communities. *Indian Pediatrics.* 37. 2000. pp.261-267
14. UNICEF. Maternal Health. Information Dissemination Brochure. New Delhi: UNICEF, India. June 2007.
15. Varma, Jessica L. et al. Community Level Micronutrient Fortification of a Food Supplement in India: A Controlled Trial in Preschool Children aged 36 to 66 Months. *American Journal of Nutrition. 85 (4).* April 2007. pp.1127- 33.
16. Vatsalya. UMANG: Empowering Adolescent Girls for a Better Future. Lucknow: Vatsalya/ ICDS. 2006.
17. Vatsalya. UMANG Project Report September 2001-December 2006. Lucknow: Vatsalya. 2007.
18. Vikas Bharti. Process Documentation of Gumla Anemia Project. Jharkhand: Department of Health and Family Welfare. 2005.
19. Vikas Bharti and Department of Health and Family Welfare, Government of Jharkhand. Anemia Prevention Gumla Model Final Report: Phase I. Jharkhand: Department of Health and Family Welfare. 2005.
20. World Bank. World Bank Report on Best Practices. Washington D.C./ New Delhi: World Bank. 2007.

Vistaar Project Contacts:

infovistaar@intrahealth.org; Website: www.intrahealth.org

Delhi:

The Vistaar Project
A-2/35 Safdarjung Enclave, New Delhi-110029 India
Tel.:+91-11-46019999, Fax: +91-11-46019950

Jharkhand:

The Vistaar Project
153 C, Road No. 4, Ashok Nagar, Ranchi -834 002 Jharkhand
Tel.:+91-9234369217, Fax: +91-651-2244844

Uttar Pradesh:

The Vistaar Project
1/55 A, Vipul Khand, Gomti Nagar, Lucknow-226 010 Uttar Pradesh
Tel.:+91-522-4027805, Fax: +91-522-2302416