# Nutrition News for Africa

## Abstract - August 2009

### Effect of the Integrated Management of Childhood Illness strategy on childhood mortality and nutrition in a rural area in Bangladesh: a cluster randomized trial.

Arifeen SE, Hoque DM, Akter T, Rahman M, Hoque ME, Begum K, Chowdhury EK, Khan R, Blum LS, Ahmed S, Hossain MA, Siddik A, Begum N, Rahman QS, Haque TM, Billah SM, Islam M, Rumi RA, Law E, Al-Helal ZA, Baqui AH, Schellenberg J, Adam T, Moulton LH, Habicht JP, Scherpbier RW, Victora CG, Bryce J, Black RE. Lancet August 2009; 374: 393 – 403.

### (comment paper)

### Child survival and IMCI: in need of sustained global support. Duke T. Lancet August 2009; 374: 361 – 362.

**Introduction**

The Integrated Management of Childhood Illness (IMCI) program was jointly developed by WHO and UNICEF in 1996 as a major strategy to enhance child health by promoting improved clinical routines in health facilities and recommended child care practices in the home. The original objectives of the IMCI were to reduce disability, illness, and death due to pneumonia, diarrhea, malaria, measles and malnutrition, and to promote improved growth and development among children less than five years of age. The IMCI strategy includes three main components: 1) upgrading the organization and operation of health care systems; 2) enhancing the performance of health workers to prevent and treat childhood diseases; and 3) improving family and community health care practices1.

To determine the impact and cost-effectiveness of IMCI, a multi-country evaluation (MCE)2 was carried out in five countries – Bangladesh, Brazil, Peru, Tanzania, and Uganda. Of these MCE assessments, only the study in Bangladesh could be conducted as a cluster-randomized trial, so we are presenting the results of this assessment in the current issue of NNA. Although the study was conducted in Asia, the results provide important information that is relevant for Africa as well.

**Methods**

Prior to the start of the study, the IMCI strategy had not yet been implemented in Bangladesh; therefore, the researchers were able to conduct a cluster-randomized trial, in which 20 health centers (and surrounding areas) in the Matlab sub-district were paired and randomly assigned to either IMCI (intervention group; 10 clusters) or usual services (comparison group; 10 clusters). All three IMCI components described above were locally adapted and implemented in the intervention clusters, while no changes were made in the comparison clusters. The nutrition-related components of IMCI included promotion of appropriate breastfeeding and complementary feeding practices, growth monitoring, oral rehydration therapy for diarrhea, anemia diagnosis and treatment, and vitamin A supplementation.

The research team completed baseline surveys of health center and household practices to ascertain the initial performance levels in the two sets of communities. Staff members of health facilities in the IMCI clusters and key village health practitioners and religious leaders were then trained on specific aspects of child health care. Follow-up surveys were conducted at intervals over nearly six years to assess the intermediate effects on health worker knowledge and practices and household care-seeking behaviors, along with associated changes in child feeding practices, nutritional status and mortality among children 7 days to 59 months.

**Results and Conclusions**

There were no major differences at baseline between the IMCI and comparison areas, except for higher reported use of sanitary latrines in the IMCI areas and a larger catchment population in the comparison areas. There were no significant

differences in the yearly reductions in under-5 mortality in both cluster areas (IMCI: ~9 %; comparison: ~8 %), but during the last 2-years of the study, the mortality rate was ~13 % lower in IMCI areas than in comparison areas ($p = 0.30$). Health system support and health worker skills improved in IMCI areas throughout the course of the study. For example, by the third year 70 % of priority illnesses were correctly managed in IMCI areas vs. 4 % in comparison areas ($p < 0.001$). In particular, with regard to nutrition-related practices, health workers in IMCI areas were considerably more likely to assess children's body weight using a growth chart, ask about child feeding practices and related problems, offer advice on feeding during illness, and provide counseling for underweight children. The improved health worker performance also translated into greater care seeking for child illness.

At the end of the study, 76% of the children less than 6-months of age were exclusively breastfeeding in the IMCI areas vs. 65 % in the comparison areas ($p = 0.011$). On the other hand, there were no significant differences in complementary feeding practices of children 6-9 months of age by study area. Nevertheless, the prevalence of stunting decreased significantly more from the beginning to the end of the study in the IMCI areas (from 63% to 50%) compared with the decline in the comparison areas (from 62% to 57%, $p = 0.029$ for the difference of differences).

The authors concluded that, although there was no significant effect on overall mortality within the timeframe of the study, there were significant improvements in the healthcare infrastructure and workforce capacity, which resulted in improved child care and child feeding practices, and a lower prevalence of stunting in the IMCI areas.

**Program and Policy Implications**

Improving the quality of care delivered in health centers and communities is an essential element in the overall strategy to improve child survival, and incorporating selected nutrition-related activities within IMCI can contribute to this longer term objective. This study shows that focused attention to the nutrition components of IMCI can have a significant beneficial impact on nutrition outcomes. To maximize the potential benefit of these activities, facility-based screening and dietary counseling should be linked to community-based interventions to improve nutrition.

**NNA Editors' comments***

The IMCI strategy represents the first step towards implementing a standardized case-management approach for common diseases in many low-income countries. An often under-appreciated component of this strategy is the opportunity that it provides for completing nutritional status screening, disseminating information on optimal infant and young child feeding practices, and distributing nutritional supplements. This study shows that these nutrition-related IMCI services can have a significant impact on feeding practices and young children's nutritional status. Notably, these IMCI activities were implemented in the context of an ongoing National Nutrition Program, which provided growth monitoring services, vitamin A supplementation, and food supplementation and nutritional counseling to undernourished children and women in both the IMCI and control communities. Thus, the potential impact of IMCI-linked nutrition services might be even greater in settings that do not already have this type of nutrition program in place.

Although the prevalence of stunting declined more sharply in the IMCI communities, the final prevalence of stunting remained alarmingly high. Thus, additional preventive efforts need to be considered, including attention to maternal nutrition before and during pregnancy and provision of improved complementary foods and/or supplements of micronutrients, like zinc and possibly others, that are essential for growth. In the present study, IMCI counseling did not have a significant impact on complementary feeding practices, so more effective communication and behavior-change strategies regarding this aspect of child feeding need further development. Likewise, clinical practices related to the diagnosis and treatment of anemia were largely neglected, so these aspects of the IMCI protocol require additional attention.

Although the IMCI strategy was effective in mobilizing the formal and informal healthcare workforce and improving their health care practices, no significant reductions in child mortality were achieved. The author of the related commentary suggested that this may simply mean that more time is required for these services to mature and result in measurable mortality reduction. Indeed, by the final two years of the evaluation, mortality was 13% lower in the IMCI communities,

suggesting that an important reduction in mortality may have been occurring although this was not statistically evident within the time frame of the study and the sample size available to detect such changes.

* Note that the **comments have been added by the editorial team and are not part of the cited publication.**

**References**

1 Integrated Management of Childhood Illness (IMCI). Website address: http://www.who.int/child_adolescent_health/topics/prevention_care/child/imci/en/index.html. Accessed: August 3, 2009.

2 WHO IMCI Multi Country Evaluation (MCE). Website address: http://www.who.int/imci-mce/. Accessed: August 3, 2009.