

# Management of childhood illnesses at seven health stations in Arsi Zone

Fikru Tesfaye

**Summary:** A cross-sectional descriptive study was carried out involving seven health stations in Arsi Zone, to assess the management of childhood illnesses. The out-patient records of 636 children below five years of age, who visited the health stations during November 1996, were reviewed. Acute Respiratory Infections (ARI) and Diarrheal Diseases were identified as the leading causes of morbidity, accounting for 512 (74.4) of a total of 688 diagnoses made on children during the study period. Among the 636 children studied, only 53(8.3%) were diagnosed to have two diseases each. There was not any diagnosis of nutritional disorder (Protein-energy malnutrition, or Micro-nutrient deficiency). Among children diagnosed with diarrhea only, 195 (97.0%) were prescribed with ORS and, among those diagnosed with ARI only, more than 95% were prescribed with antibiotics. Nutritional disorders are under-diagnosed and/or neglected at this level of health institutions. It is recommended that the new approach towards the integrated management of childhood illnesses (IMCI) has to be based on a large scale study which assesses the present local situation so as to identify areas which deserve more attention. Until such time that the IMCI is put into practice, the integrated maternal and child health (MCH) training programs should give more attention to ARI and diarrhoeal diseases. A routine screening (high index of suspicion) is also required to diagnose more than one illness in a child, and also to detect nutritional disorders. [*Ethiop. J. Health Dev.* 1998;12(2):81-86]

## Introduction

Each year more than 12 million children die before their fifth birthday, many of them during the first year of life. Almost all of these deaths are in developing countries, at least a third of them in Africa. The majority (70%) of these deaths are due to only five conditions: pneumonia, diarrhoea, malaria, measles or malnutrition. While any of these on their own can prove fatal, more usually children die of a combination of illnesses. In addition to this substantial mortality, these conditions typically account for 75% of sick children seeking care at health facilities (1-8). Diarrhoeal diseases, ARI, vaccine preventable diseases, and malaria are the causes for 50%-75% of morbidity and 60% 75% of mortality in Ethiopia (9). It is also estimated that there are about half a million under-five deaths annually in Ethiopia (10).

The sick child who is brought to health institutions will very often have more than one condition, and yet, in the busy clinic, that child is quite likely to be treated only for the condition that is most obvious or which is mentioned by the mother. It is uncommon for a child presenting a minor complaint to be found to be suffering from more important conditions, particularly malnutrition or anemia, which may be missed without a routine screening procedure. Because there is considerable overlap in the signs and symptoms of several of the major childhood diseases, a single diagnosis for a sick child is often inappropriate. Focusing on the most apparent problem may lead to an associated, and potentially life-threatening, condition being overlooked (1,2).

---

From the Dept. of Community Health, Faculty of Medicine, Addis Ababa University P.O. Box 9086, Addis Ababa

In 1993 WHO, with UNICEF and other partners, began to develop a training course that would cover, in an integrated fashion, the case management at first level of the five major causes of under-five mortality. This course, on the integrated management of childhood illness (IMCI), is now being used in a small number of countries around the world, including three in Africa. More and more African countries, including Ethiopia, are beginning to explore its use and to make preparation for it (1,2). In Ethiopia, a pre-test of the IMCI guidelines was conducted in Gondar in 1994 and two international consultant training courses were held in late 1995 and in March 1996. A national task

force has been established to complete the adaptation and to prepare for the first national courses. Ethiopia is also considering introducing IMCI into the basic training of health workers, possibly through inclusion in the curriculum of health training schools. The present study is, therefore, intended to obtain baseline information that can be used to identify training needs, and is believed to help in the adaptation of the new training manual on IMCI to the local situations of the area/country.

## Methods

This is a cross-sectional descriptive study carried out in Arsi Zone. Arsi is one of the 12 Zones of Oromia located at the South-central part of the country. Asella town, zonal capital, is located 175 km South-East of Addis Ababa. The zone covering an area of 23,710.28 sq.km is administratively divided into 25 woredas. The population of Arsi zone is estimated to be 2,359,160 with females comprising of 50.3%, and rural population of about 90%. There are eight health centers and one hospital that belong to the Oromia Health Bureau (OHB), and one NGO hospital. Similarly, there are 82 health stations that belong to OHB, and 20 OGO and NGO clinics in the zone. Thirty-five Physicians, 130 Nurses, and 440 Health Assistants work in the health institutions owned by OHB. The immunization coverage of Arsi Zone has always been below 80% during the preceding five years (11).

In this study, the management of childhood illnesses was assessed through a review of records in seven health stations selected randomly from among health stations staffed with three or less number of health assistants each. The outpatient records of all children less than five years old, who visited the health stations during November 1996, were obtained from two sources: the Sick-child Register and the Diarrhoeal Disease Register.

The health stations were located at varying directions and distances ranging from 60 to 250 km. away from Asella. One of them was from the lowlands where malaria is endemic, while the remaining six comprised of a mid-land to high-land climate.

A structured format/questionnaire was used by the investigator for the extraction of data from the two types of registers, during the first week of December 1996. Data were entered into a computer and processed using EPI-INFO (Version 5.1) statistical software. Results were displayed in tables and a chart.

## Results

The records of a total of 636 children aged less than five years were reviewed, out of which 343 (54.0%) were males and the remaining 293 (46.0%) were females. The mean age of children studied was one year and 10 months. The majority 478 (75.2%) were obtained from the Sick-child Register, while the remaining 158 (24.8%) were from the Diarrhoeal Diseases Registers.

Table 1: Top ten diagnoses made on children below five years of age at seven health stations of Arsi Zone, during November 1996.

Diagnoses (Dx) (N=636)	Number of Dx	Percentage
Acute Respiratory Infections	284	41.3
Diarrhoeal Diseases	228	33.1
Scabies	33	4.8
Malaria	25	3.6
Intestinal Parasitosis	21	3.1
Amoebiasis	18	2.6
Skin Infections	13	1.9
Eye Diseases	9	1.3
Measles	3	0.4
Other Diagnoses	54	7.8
Total	688	100.0

ARI and Diarrhoeal Diseases were found out to be the leading causes of morbidity, accounting for 512 (74.4%) of a total of 688 diagnoses made on children during the four weeks of November 1996, the study period (Table 1 and Fig. 1). Among the 636 children studied, 53 (8.3%) were diagnosed to have two diseases each. Likewise, 489 (76.9%) had either ARI or Diarrhoea, while 23 (3.6%) had both ARI and Diarrhoea. There was not any diagnosis of nutritional disorder (proteinenergy malnutrition, or micro-nutrient deficiencies) in any of the 636 children. Growth monitoring mainly targeted healthy children coming for immunization purposes. Only two health stations assessed the weight of children presenting with diarrhoeal diseases.

Table 2: **Top ten drugs prescribed for children under five years at seven health stations of Arsi Zone, during November 1996.**

Type of Drug (N=636)	Number of Prescriptions	Percentage
Oral Rehydration Salts	251	25.0
Procain Penicillin Injection	184	18.4
Paracetamol Tablets	112	11.2
Acetyl Salicylic Acid Tablets	100	10.0
Ampicillin Suspension/Syrup	97	9.7
Co-trimoxazole suspension/syrup	79	7.9
Benzyl Benzoate Lotion	30	3.0
Chloroquine Suspension	25	2.5
Metronidazole Suspension/syrup	21	2.1
Mebendazole Suspension	20	2.0
Other Medications/Treatment	83	8.3
Total	1002	100.0

Note: average number of prescriptions = 1.57 per child

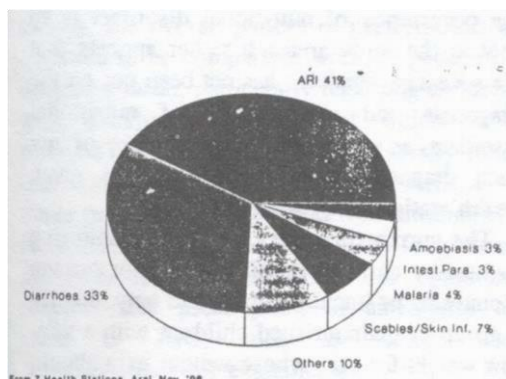


Figure 1: **Distribution of 588 diagnoses among children less than five years old**

ORS, Procaine Penicillin injection, Paracetamol tabs., ASA tabs., Ampicillin Suspension, and Co-trimoxazole suspension, in the same order, were the most frequently prescribed drugs (Table 2). Of the 636 children, 320 (50.3%) were prescribed with two types of drugs, and 42 (6.6%) were prescribed with three different types of drugs. The average number of prescriptions was 1.6 per child.

Table 3: **Prescription pattern among 201 children diagnosed with diarrhoea only, at seven health stations of Arsi Zone, during Nov. 1996**

Prescription	(N=201) #	%
--------------	-----------	---

Oral Rehydration Salts	195	97.0
Co-trimoxazole susp./syrup	18	9.0
Metronidazole susp./syrup	6	3.0
Acetyl Salicylic Acid	6	3.0
Ampicillin susp./syrup	4	2.0
Mebendazole susp./syrup	4	2.0

Note. Total number of prescriptions = 236

Average number of prescriptions = 1.17 per child

ORS was prescribed in 195 (97.0%) of the children diagnosed with diarrhoea only (N=201), while antibiotics and/or antiprotozoal drugs were prescribed in about 16% of them (Table 3). Similarly, among children diagnosed with ARI only (N=242), Procaine penicillin injection, Ampicillin suspension/syrup, and Co-trimoxazole suspension/syrup were prescribed in 45.5%, 34.3%, and 15.7% of the cases, respectively (Table 4).

Table 4: **Prescription pattern among 242 children diagnosed with ARI only, at seven health stations of Arsi Zone, during Nov., 1996.**

Prescription	(N=242) #	%
Procaine penicillin inj.	110	45.5
Ampicillin susp./syrup	83	34.3
Paracetamol tabs	81	33.5
ASA tabs	63	26.0
Co-trimoxazole susp./syrup	38	15.7
Berantine cough syrup	16	6.6
Oral Rehydration Salts	14	5.8
Benzathine penicillin inj.	7	2.9
Other drugs	15	6.2

Note: Total number of prescriptions = 427      Average number of prescriptions = 1.76 per child

## Discussion and Conclusions

This study has revealed that the diagnoses of childhood illnesses at health stations in Arsi are overwhelmed by ARI and diarrhoeal diseases. Malaria and measles were not diagnosed as much as would otherwise be expected. There has not been any diagnosis of nutritional disorders.

Likewise, only a few of the children were diagnosed with more than one illness.

As in the case of similar studies (1,4,5,12), ARI and diarrhoea make up a major portion (74.4%) of the diagnoses made on children in this study. A longitudinal community-based survey in Butajira (12) indicated that ARI and diarrhoea were the two leading causes of childhood morbidity and mortality. In another study, respiratory diseases were the first cause of hospital admissions accounting for 40% of all paediatric admissions to Jimma Hospital over three years period (13). This obviously implies that health care strategies that address the appropriate case management of the two diseases can bring about a substantial improvement in the quality of care, with the subsequent improvement (reduction) in the morbidity and mortality levels due to these diseases.

The proportion of malaria cases in this study appears to be underestimated as only one of the health stations was from the malaria endemic areas. Part of the explanation could also be that the study was not conducted during one of the peak seasons of malaria epidemic, August to October. Similarly, the proportion of measles cases has not been as much as it is otherwise reported in similar studies (1,2,12). This can not be explained by the EPI coverage, as the latter is below 75% for

measles antigen at the zonal level. The Butajira study cited above (12) indicated that measles was one of the main causes of death in both infants and children 1-4 years.

Strikingly, there has not been any diagnosis of nutritional disorders as protein-energy malnutrition or micro-nutrient deficiencies, even in the two health stations assessing for malnutrition whereas, the two forms of nutritional disorders are known to be rampant in the country (10). In a nationwide survey in the 6-59 months age group, 64.2% were found to be stunted, 8% wasted and 47.7% were underweight (14). Another nation wide survey (15) consisting of children from six months to six years old revealed 4.8% and 1.0% prevalence of conjunctival xerosis and Bitot's spots, respectively. Blinding malnutrition was reported from 17 villages in Arsi among children six months to six years of age (16). In this area Vitamin A deficiency of as high as 28.3% was found, but the overall prevalence of xerophthalmia was 10.9% (Bitot's spots prevalence of 8.8%) (16). Hyperendemic vitamin A deficiency was reported in wheat farming areas of Bale and Arsi, average prevalence of 5.0% for Bitot's spots, 0.8% for corneal xerosis and ulceration and 0.5% for corneal scar (15). Similarly, in the paediatrics ward of Jimma Hospital, among 1730 patients with secondary diagnoses, anaemia (6.6%) was the most commonly diagnosed ailment (13). A three-year review of 1815 paediatric admissions to Jimma Hospital revealed that 64.2% of all admitted cases were children less than five years old, in half of whom malnutrition was found. The study also found a significantly high mortality in severely malnourished children.

In this study, only healthy children coming for immunization and in some cases (two health stations) those with diarrhoeal diseases are weighed, and some advice is supposedly offered to parents. It is difficult to believe that the occurrence of nutritional disorders is so low in the study area. It rather appears that the necessary emphasis has not been put on the diagnosis and management of nutritional disorders, as evidenced by the absence of any such diagnosis from records of the seven health stations reviewed.

The current practice of growth monitoring to healthy children coming solely for growth monitoring or immunization could only identify a group of malnourished children with a very low weight-for-age, whose weight gain should be monitored in a follow-up visit and whose feeding needs careful assessment so that problems can be identified and remedied as early as possible.

In a review of child health problems in Ethiopia (17), it was indicated that despite integration of growth monitoring and promotion in MCH activities in health units since 1988, these activities are not being adequately performed. Most of the time, they are reduced to weighing and charting of children. Outreach and community-based approaches are limited.

But, as indicated in the IMCI guidelines (1), sick children should be assessed (routinely screened) for malnutrition and anemia, visible severe wasting (marasmus), and oedema of both feet (kwashiorkor) to identify those with severe malnutrition who need urgent referral to a health centre or a hospital.

In a study (3) documenting the distribution of 12.2 million deaths among children less than five years old in all developing countries in 1993, malnutrition was involved in more than 50% of the deaths (alone or superimposed to other conditions). The same study revealed that more than 70% of the children died due to a combination of diseases rather than only one disease entity. In our study, only about 8% of the children were diagnosed to have more than one illness, possibly indicating the comparably low level of awareness towards the diagnoses of multiple illness in a child.

Even though the present study was not designed to enable a detailed assessment into the quality of care (correctness of prescriptions) with respect to each individual patient, the overall pattern of prescriptions is observed to be compatible with the pattern of diagnoses made, particularly regarding children with diarrhoeal diseases, of which 97% received ORS. This does not necessarily hold true with respect to children with ARI, as a major proportion of them received antibiotics. However, as mentioned above, the study does not enable the detection of possible inappropriate prescription of antibiotics to cases of ARI, such as 'colds' and 'bronchiolitis', for example.

### **Recommendations**

The IMCI approaches planned at the national level should be preceded by a large scale survey aimed at characterizing the present distribution of childhood illness at the local and national levels measuring the contribution of each of the five diseases identified globally to be accountable for about 75% of the morbidity and mortality during childhood. There is also an apparent need to assess the corresponding practice in the management of childhood illness. Such studies, also involving higher levels of the health care system, like health stations staffed with nurses, and health centres, will help to compare quality of care at the different levels so as to set priorities for training in IMCI.

The share of diseases like malnutrition and measles in the burden of illness and death needs to be determined so as to design more efficient training programs and cost-effective management approaches. There is a need to identify the causes of poor reports of nutritional disorders; whether it be poor awareness and diagnostic capability of health workers at the grass-roots level, or a real low prevalence of the illness. Such attempts could help in adapting the IMCI training manuals to the local situation in our country by making the best use of health workers' time at the first level of contact, which are often health stations, or the newly re-organized primary health care units.

At the regional/zonal level, the integrated MCH training programs should give more attention to diseases such as acute respiratory infections, acute diarrhoeal diseases, and nutritional disorders. Moreover, such training programs should be geared in such a way that increases the awareness of health workers towards looking for more than one diagnoses in a single child.

### **Acknowledgements**

The author would like to acknowledge the Arsi Zone Health Department for facilitating activities during the study. I am also grateful to all the health stations and health workers who participated in the study.

### **References:**

1. WHO, Division of Diarrhoeal and Acute Respiratory Disease control. Integrated management of the sick child. Bulletin of the World Health Organization, 1995;73(6):735-740.

2. David Robson. The Intergrated management of childhood illness. Division of Child Health and Development, WHO, Geneva. *Africa Health*, 1996;18(6).
3. The World Health Report 1995. Bridging the gaps, Geneva, WHO 1995.
4. Stansfield SK, Shepard DS. Acute Respiratory Infection. In: Jamison DT, Mosley WH, Measham AR Bobadilla JL, eds. *Disease Control Priorities in Developing Countries*. New York: Oxford University Press, 1993.
5. Martines J, Phillips M, Feacham GGA. Diarrheal Diseases. In: Jamison DT, Mosley WH, Measham AR Bobadilla JL, eds. *Disease Control Priorities in Developing Countries*. New York: Oxford University Press, 1993.
6. Grant JP. The state of the World's children. Oxford University Press for UNICEF, 1993.
7. WHO/UNICEF. The Management of Diarrhoea and use of Oral Rehydration Therapy. Second ed. Geneva 1985:6
8. Grant JP. The state of the World's children. Oxford University Press for UNICEF, 1991.
  
9. Mekonnen Admassu. Review of Child Health Programs and Future Plan to meet the Mid-decade Goals, Subnational Sensitization Workshop on EPI/ORT. April, 1995. (Unpublished).
10. Tadesse M and Tesfaye S. Review of student's anthropometric appraisal of pre-school children in South Western Ethiopia. *Bull JIHS* 1992;2:123-132.
11. Arsi Zone Health Department. Annual Report of 1988 E.C. (Unpublished)
12. Desta S et al. The Butajira Project in Ethiopia: a nested case-referent study of under-five mortality and its Public Health Determinants. *Bull WHO* 1993;71:389-396.
13. Messeret E. Analysis of paediatric admission to Jimma Hospital Paediatric Ward: A three year restrospective study. *Bull JIHS* 1994;4:1-11.
14. Central Statistical Authority. National Nutritional Survellance System, statistical Bulletin 113. Addis Ababa, May 1993.
15. Wolde Gebriel Z. Micronutriet Deficiencies in Ethiopia and their inter-relationship. March 1992 (Master Thesis).
16. Tezera F, Yonas T, Wondimu T and Jemal H. Blinding Malnutrition: a serious threat in a district of Arsi Zone.
17. Amha Mekasha, Frew Lemma, and Tesfaye Shiferaw. Child Health Problems in Ethiopia. EPHA Expert Group Report. (Review Article). *Ethiop J Health Dev*. 1995;9(3).
18. James Farrow, Renato Correggia, Salelesh Abebe. Management of Children with ARI and/or Diarrhoea in Addis Ababa, Ethiopia. *Ethiop Med J* 1996;34.