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INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS — A NEW APPROACH TO OLD DISEASES

The World Health Organisation (WHO) has estimated that approximately 24% of the world's disease burden is caused by five conditions — pneumonia, diarrhoea, measles, malaria and severe malnutrition.[1] These illnesses primarily affect children. In sub-Saharan Africa their contribution to the burden of childhood disease is substantially greater and is estimated to be more than 40%. These five conditions account for over 70% of the mortality in children under 5 years of age.[2] Moreover, the WHO global burden of disease analysis projections indicate that these conditions will continue to be significant contributors to childhood mortality well into the next century. Pneumonia is responsible for approximately 4 million of the estimated 12 million deaths that occur in children under 5 years of age in developing countries. Most deaths occur in children under 2 years of age, and over 60% of deaths follow *S. pneumoniae* and *H. influenzae* infections. Pneumonia is also the leading cause of death in children with measles. Diarrhoeal disease kills another 3 million children and ranks second among all causes of disease burden. More than half of diarrhoea-associated deaths are caused by dehydration due to fluid losses. Measles and malaria are each responsible for approximately a million deaths, and malnutrition is estimated to be associated with approximately 3.5 million deaths. This is probably an underestimate, since malnutrition is a significant risk factor for the other conditions. Recent estimates from a survey of 53 developing countries indicate that 56% of child deaths were attributable to the potentiating effects of malnutrition.[3]

These clinical problems are also the most common reasons for health service utilisation, accounting for at least 75% of all visits to health centres and admissions to hospital. Data from hospital-based studies report overall case fatality rates of 7 - 10%, with 30 - 60% of deaths occurring within 24 hours of admission. Reasons for this high mortality within the first day following admission are probably related to delay in seeking care (lack of caregiver knowledge) or inadequacy of care (unavailability, inaccessibility and inadequacy of care and referral mechanisms). The WHO, together with other international agencies, have over the last 2 decades facilitated implementation of disease-specific case management strategies to reduce the burden of these diseases.

Specific interventions for the five main childhood diseases include oral rehydration therapy (ORT) for diarrhoea,[4] antibiotics for pneumonia,[5] feeding and micronutrient supplementation for malnutrition,[6] vitamin A supplementation for measles[7] and anti-parasitic drugs for malaria.[8] These case management strategies have proved very effective in reducing childhood morbidity and mortality in developing countries. Significant reductions in hospital admissions and case fatality rates from diarrhoea have occurred following the implementation of ORT in a number of countries.[4] A meta-analysis of the effectiveness of pneumonia case management guidelines demonstrated a 35% and 53% reduction in pneumonia mortality in infants and children (1 - 4 years), respectively.[5] A study of severely malnourished children showed a reduction in mortality from 20% to 7% following the institution of a malnutrition case management initiative.[6] Vitamin A supplementation has resulted in a significant reduction in case fatality rates from measles and in the incidence and severity of measles-related complications.[7] Studies evaluating the impact of malaria case management have reported improvements in malaria case detection and management.[8]

However, a single diagnosis for a sick child is often inappropriate, since children frequently present with multiple clinical problems.[9] Pneumonia and diarrhoea are frequent complications in children who present with either measles or malnutrition.[10] Multiple clinical problems increase disease severity and mortality. Pneumonia, measles and malnutrition have been identified as significant risk factors for fatal diarrhoea.[11] In addition, the clinical signs and symptoms of the major paediatric conditions frequently overlap. Rapid breathing and chest indrawing, which are cardinal signs for the diagnosis of pneumonia in the context of the WHO acute respiratory infection (ARI) guidelines, also occur *inter alia* in severe dehydration with metabolic acidosis and in malaria.[12]

Although the relatively inexpensive disease-specific case management strategies have contributed to a reduction of disease burden, efficiency and effectiveness can be improved by addressing the sick child as a whole rather than focusing on a single disease. For these reasons the Integrated Management of Childhood Illness (IMCI) programme was launched in 1993. This is a more comprehensive approach to the care of the ill child, ensuring appropriate and combined treatment of the five major diseases. In addition IMCI emphasises preventive and promotive strategies that are integral to the maintenance and well-being of the child. These include immunisation, breast-feeding, nutrition and maternal education.

IMCI contains guidelines for the management of the five major diseases in infants and children. The process involves assessing and classifying the extent of illness, treating the child, counselling the caregiver and advising on follow-up of the

patient. Sick children are assessed according to their symptoms and signs. This process uses the fewest reliable clinical signs to classify illness according to the level of intervention required: severely ill and requiring hospital referral, moderately ill requiring specific treatment at a primary health care facility and at home, or mildly ill requiring supportive therapy and counselling. The disease-specific interventions described above are used. Health care workers are taught to rationalise treatment, prescribing the minimum number of essential medicines. The caregiver is counselled about the child's illness, feeding and follow-up. When the mother is the caregiver, she is also counselled on issues pertaining to her own health such as nutrition, immunisation, family planning and sexually transmitted diseases.

Although IMCI focuses on five specific diseases, many more childhood illnesses can be identified and treated using these guidelines. Furthermore, guidelines can be expanded to include additional priority childhood diseases such as asthma. Thus, IMCI can be adapted to accommodate different child health problems identified in various geographical areas. An additional advantage is the cost efficiency of this project. According to the 1993 World Bank Report IMCI is likely to have the greatest impact in reducing global disease burden in children under the age of 5 years at an annual cost of $1.6 per capita, which ranks among the most cost-effective interventions in low- and middle-income countries.[13]

The Department of Health (DOH), recognising the potential impact of IMCI on child health in South Africa, has embarked on a national programme to institute this approach. This timely intervention is consistent with the National Programme of Action (NPA) for children that stresses provision of preventive and curative services at a primary level and appropriate utilisation of health care resources. A technical task team (TTT) consisting of members from the provinces, academic institutions, non-governmental organisations and the WHO was established by the DOH in 1996 to advise on the implementation and monitoring of this initiative. The TTT also includes members of other national departments such as nutrition, communicable diseases, environmental health and water affairs, underscoring the importance of the involvement of other sectors in this project. A national workshop of provincial delegates and TTT members established a consensus and need for this project. Subsequently the heads of the national and provincial departments of health gave the implementation of IMCI enthusiastic support. Plans for implementation, monitoring, surveillance and social mobilisation around the project are currently underway.

The impact of IMCI has not yet been evaluated as it is a relatively new programme. However, given the success of the case management approach it is probable that IMCI may significantly improve child health, particularly in areas that are under-resourced and have a high under-5 mortality rate. The success of this initiative will depend on several factors.

Continued support from the DOH and effective implementation and training at a provincial level are essential. Efficient functioning of the health care system is a fundamental component for the success of this strategy. Drug supply, efficient referral mechanisms and an appropriate health information system at primary level are also essential elements. Support from the medical and nursing professions is vital and ideally IMCI needs be incorporated into the formal medical education of health care workers. Moreover, community participation and social mobilisation must be part of effective implementation. Finally, it will be important to evaluate the efficacy of IMCI in different areas of South Africa once this initiative is implemented.

Besides the impact on childhood morbidity and mortality and cost efficiency, this approach may ultimately promote equity of care by promoting access to simple, effective and affordable treatment for children. IMCI should form part of a broad strategy to improve the health of all of our children.

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